

RECEIVED

AUG 18 2019

Form 3160-3
(June 2015)FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

DISTRICT/ARTESIAO.C.D.

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM138607
1b. Type of Well: ☐ Oil Well ☒ Gas Well ☐ Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: ☐ Hydraulic Fracturing ☒ Single Zone ☐ Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator TAP ROCK OPERATING LLC		8. Lease Name and Well No. MONEY GRAHAM FED COM 238H 326031
3a. Address 602 Park Point Drive Suite 200 Golden CO 80401	3b. Phone No. (include area code) (720)460-3316	9. API Well No. 30-015 46221
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface: LOT 4 / 250 FSL / 879 FEL / LAT 32.0007996 / LONG -104.001033 At proposed prod. zone NENE / 200 FNL / 750 FEL / LAT 32.020531 / LONG -104.0003342		10. Field and Pool, or Exploratory PURPLE SAGE WOLFCAMP
11. Sec., T. R. M. or Blk. and Survey or Area SEC 32 / T26S / R29E / NMP		
14. Distance in miles and direction from nearest town or post office* 16 miles		12. County or Parish EDDY
13. State NM		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 879 feet	16. No of acres in lease 874.57	17. Spacing Unit dedicated to this well 445.6
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 25 feet	19. Proposed Depth 10712 feet / 18012 feet	20. BLM/BIA Bond No. in file FED: NMB001443
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 2866 feet	22. Approximate date work will start* 04/01/2019	23. Estimated duration 60 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 (Electronic Submission)	Name (Printed/Typed) Brian Wood / Ph: (505)466-8120	Date 01/24/2019
Title President		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575)234-5959	Date 08/09/2019
Title Assistant Field Manager Lands & Minerals		
Office CARLSBAD		

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

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

APPROVED WITH CONDITIONS
Approval Date: 08/09/2019

(Continued on page 2)

*(Instructions on page 2)

RVP 8-13-19

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

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

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

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

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

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 L.S., Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

I. SHL: LOT 4 / 250 FSL / 879 FEL / TWSP: 26S / RANGE: 29E / SECTION: 32 / LAT: 32.0007996 / LONG: -104.001033 (TVD: 0 feet, MD: 0 feet)

PPP: LOT 4 / 444 FSL / 747 FEL / TWSP: 26S / RANGE: 29E / SECTION: 32 / LAT: 32.0013308 / LONG: -104.001033 (TVD: 10543 feet, MD: 10722 feet)

BHL: NENE / 200 FNL / 750 FEL / TWSP: 26S / RANGE: 29E / SECTION: 29 / LAT: 32.020531 / LONG: -104.0003342 (TVD: 10712 feet, MD: 18012 feet)

BLM Point of Contact

Name: Priscilla Perez

Title: Legal Instruments Examiner

Phone: 5752345934

Email: pperez@blm.gov

Review and Appeal Rights

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

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	TAP ROCK OPERATING LLC
LEASE NO.:	NMNM38636
WELL NAME & NO.:	238H – MONEY GRAHAM FED COM
SURFACE HOLE FOOTAGE:	250'/S & 879'/E
BOTTOM HOLE FOOTAGE:	200'/N & 750'/E
LOCATION:	SECTION 32, T26S, R29E, NMPM
COUNTY:	EDDY

COA

H2S	☐ Yes	☒ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☐ Low	☒ Medium	☐ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☒ COM	☐ Unit

A. HYDROGEN SULFIDE

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

B. CASING

1. The 13-3/8 inch surface casing shall be set at approximately **580** feet (a minimum of 70 feet (Eddy County) into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to

- a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
 - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
- a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
 - b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time.
 - c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
 - d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall

have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

ZS 062119



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

Operator Certification Data Report

08/12/2019

Operator Certification

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

NAME: Brian Wood

Signed on: 01/24/2019

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

08/12/2019

APD ID: 10400038212

Submission Date: 01/24/2019

Highlighted data
reflects the most
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

Section 1 - General

APD ID: 10400038212

Tie to previous NOS? N

Submission Date: 01/24/2019

BLM Office: CARLSBAD

User: Brian Wood

Title: President

Federal/Indian APD: FED

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

Lease number: NMNM138607

Lease Acres: 874.57

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: MONEY GRAHAM FED COM

Well Number: 238H

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? USEABLE WATER

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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:** 1

MONEY GRAHAM EAST PAD

Well Class: HORIZONTAL

Number of Legs: 1

Well Work Type: Drill

Well Type: CONVENTIONAL GAS WELL

Describe Well Type:

Well sub-Type: INFILL

Describe sub-type:

Distance to town: 16 Miles

Distance to nearest well: 25 FT

Distance to lease line: 879 FT

Reservoir well spacing assigned acres Measurement: 445.6 Acres

Well plat: Money_238H_C102_ETAL_011519_20190118092831.pdf

Well work start Date: 04/01/2019

Duration: 60 DAYS

Section 3 - Well Location Table

Survey Type: RECTANGULAR

Describe Survey Type:

Datum: NAD83

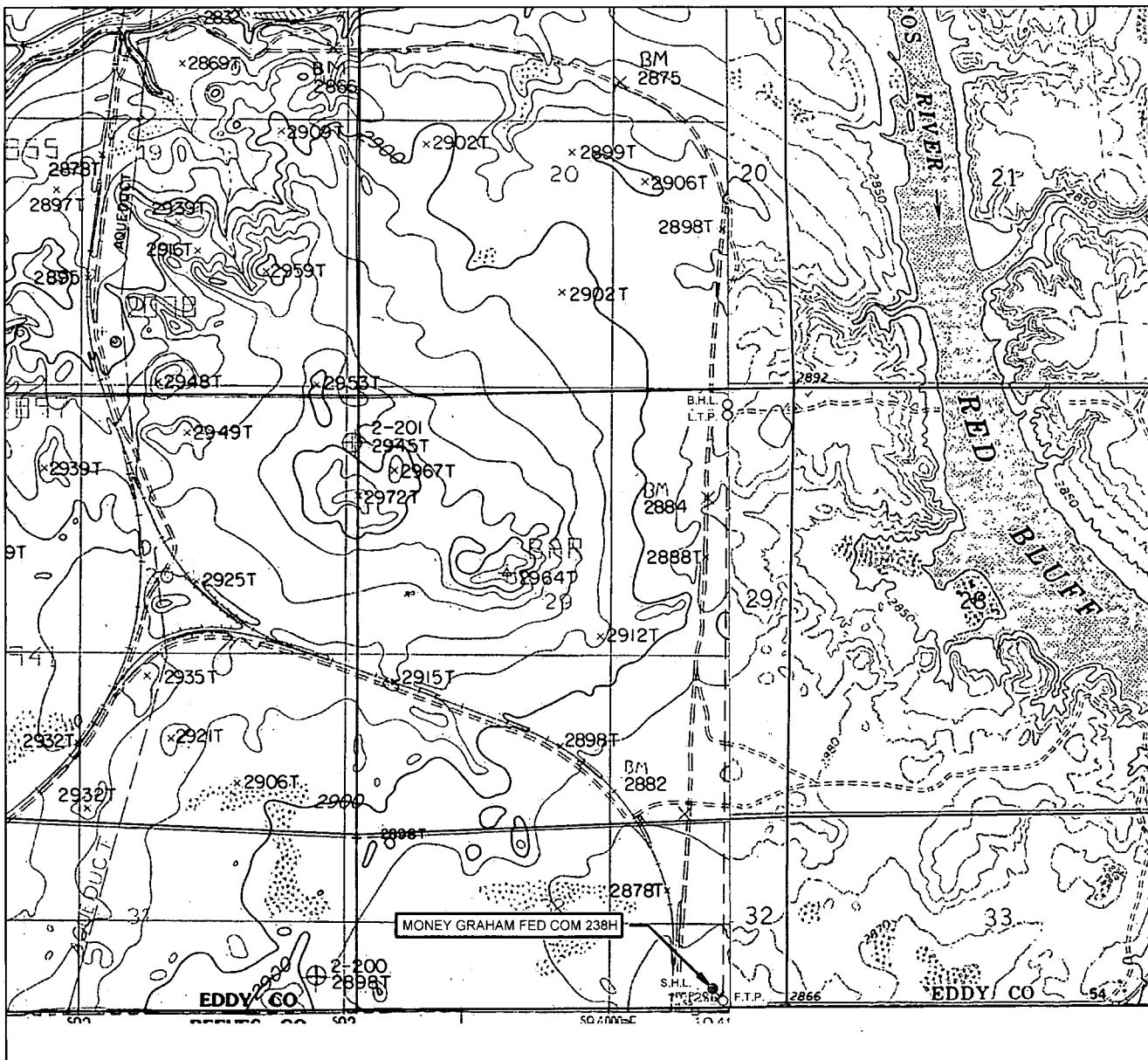
Vertical Datum: NAVD88

Survey number: 18329

Reference Datum:

	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Section	Aliquot/Lot/Tract	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	MD	TVD
SHL Leg #1	250	FSL	879	FEL	26S	29E	32	Lot 4	32.00079 96	- 104.0010 33	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	286 6	0	0
KOP Leg #1	50	FSL	750	FEL	26S	29E	32	Lot 4	32.00025 2	- 104.0006 169	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 713 3	100 05	999 9
PPP Leg #1	444	FSL	747	FEL	26S	29E	32	Lot 4	32.00133 08	- 104.0010 33	EDD Y	NEW MEXI CO	NEW MEXI CO	F	FEE	- 767 7	107 22	105 43

LOCATION & ELEVATION VERIFICATION MAP



LEASE NAME & WELL NO.: MONEY GRAHAM FED COM 238H

SECTION 32 TWP 26-S RGE 29-E SURVEY N.M.P.M.
 COUNTY EDDY STATE NM ELEVATION 2866'
 DESCRIPTION 250' FSL & 879' FEL

LATITUDE N 32.0007996 LONGITUDE W 104.0010330



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



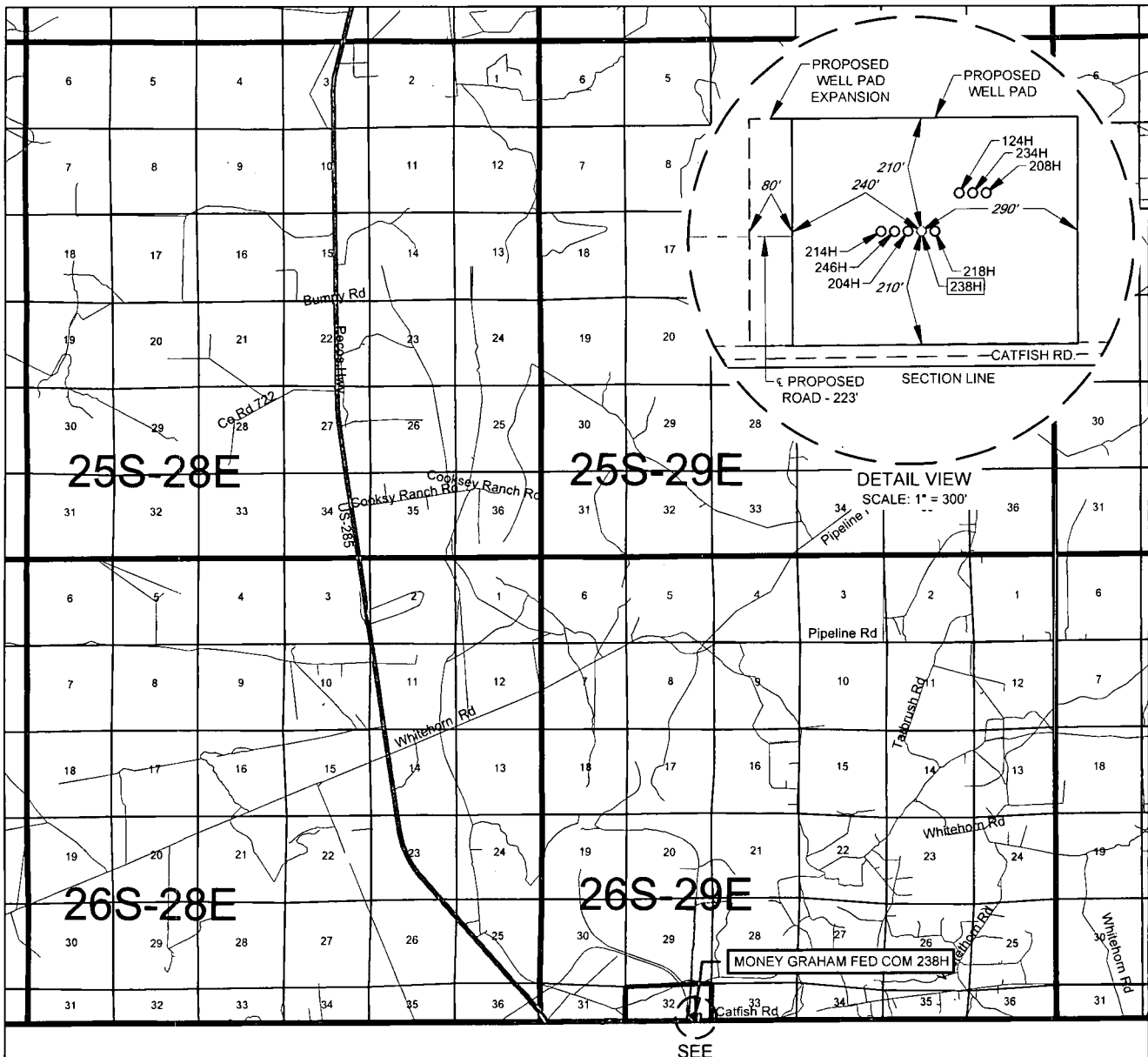
TOPOGRAPHIC
 LOYALTY INNOVATION LEGACY

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

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.

EXHIBIT 2 VICINITY MAP



LEASE NAME & WELL NO.: MONEY GRAHAM FED COM 238H

SECTION 32 TWP 26-S RGE 29-E SURVEY N.M.P.M.

COUNTY EDDY STATE NM

DESCRIPTION 250' FSL & 879' FEL

DISTANCE & DIRECTION

FROM INT. OF US-285 & BLACK RIVER VILLAGE RD., GO SOUTH ON US-285
±16.4 MILES, THENCE EAST (LEFT) ON CATFISH RD. ±1.7 MILES, THENCE
NORTH (LEFT) ON LEASE RD. ±210 FEET, THENCE EAST (RIGHT) ON
PROPOSED RD. ±223 FEET TO A POINT ±240 FEET WEST 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.

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



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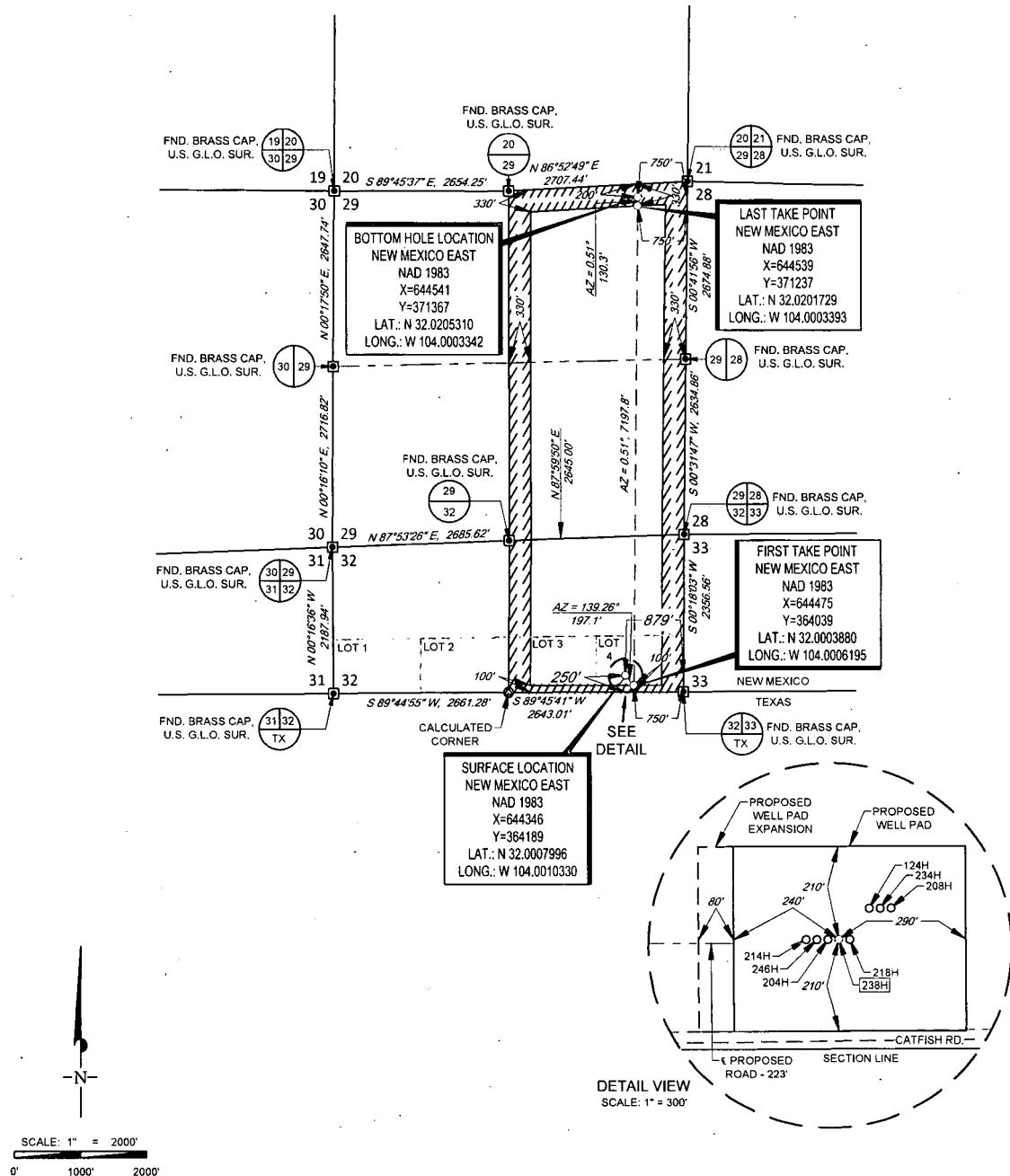
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WWW.TOPOGRAPHIC.COM

TAP ROCK

EXHIBIT 2A

SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

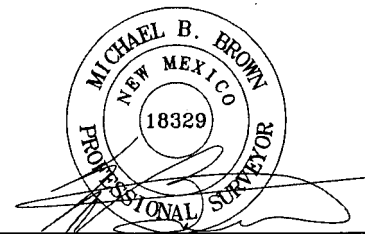


LEASE NAME & WELL NO.: MONEY GRAHAM FED COM 238H

SECTION 32 TWP 26-S RGE 29-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM
DESCRIPTION 250' FSL & 879' FEL

DISTANCE & DIRECTION
FROM INT. OF US-285 & BLACK RIVER VILLAGE RD., GO SOUTH ON US-285
±16.4 MILES, THENCE EAST (LEFT) ON CATFISH RD. ±1.7 MILES, THENCE
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BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY
FEET.
THIS EASEMENT/SERVITUDE LOCATION SHOWN HEREON HAS BEEN SURVEYED ON THE GROUND
UNDER MY SUPERVISION AND PREPARED ACCORDING TO THE EVIDENCE FOUND AT THE TIME OF
SURVEY, AND DATA PROVIDED BY TAP ROCK OPERATING, LLC THIS CERTIFICATION IS MADE AND
LIMITED TO THOSE PERSONS OR ENTITIES SHOWN ON THE FACE OF THIS PLAT AND IS
NON-TRANSFERABLE. THIS SURVEY IS CERTIFIED FOR THIS TRANSACTION ONLY.



Michael Blake Brown, P.S. No. 18329
DECEMBER 12, 2018

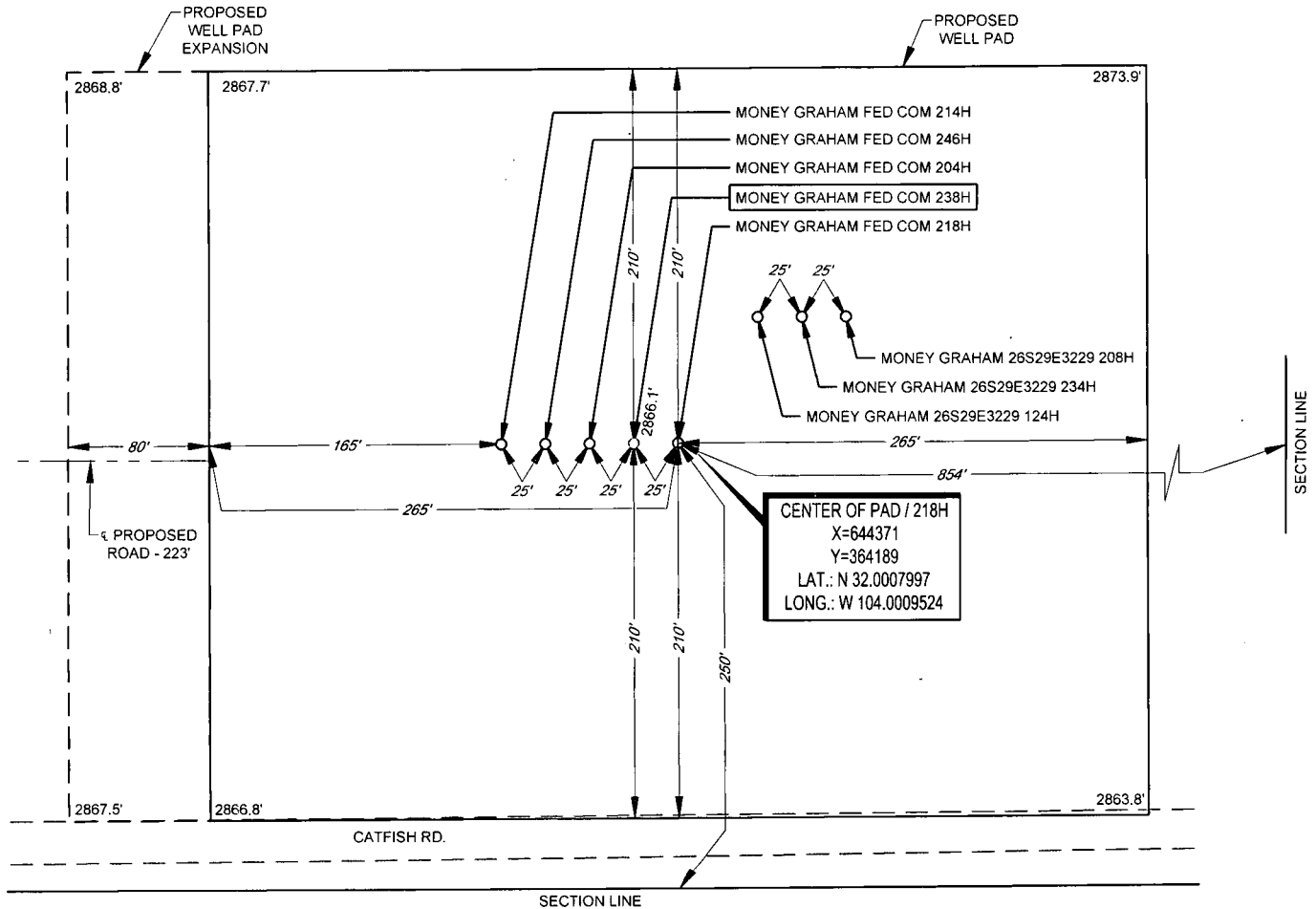
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EXHIBIT 2B



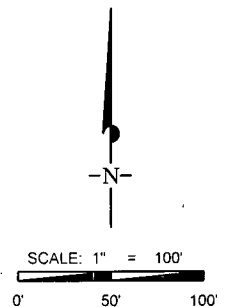
SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: MONEY GRAHAM FED COM 238H
238H LATITUDE N 32.0007996 238H LONGITUDE W 104.0010330

CENTER OF PAD IS 250' FSL & 854' 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.



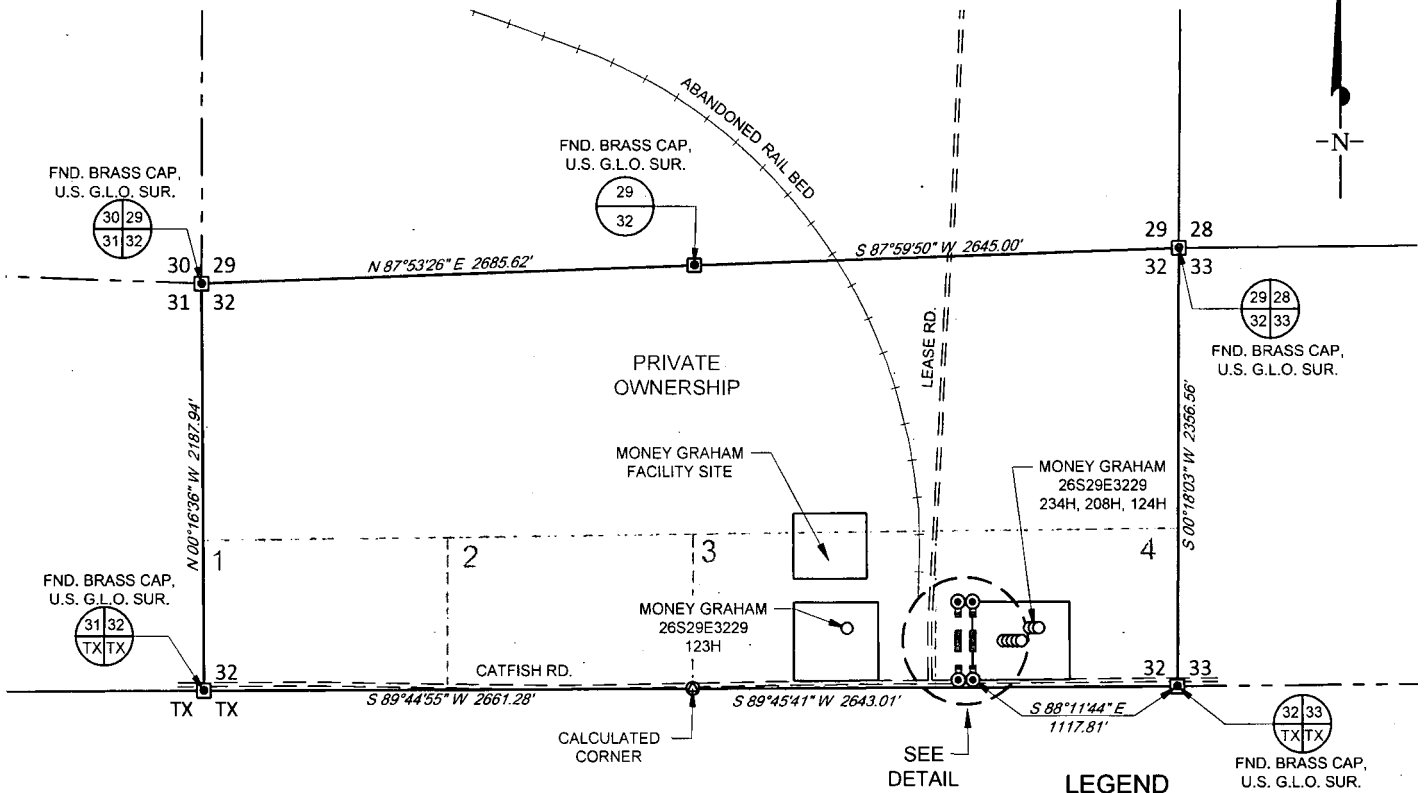
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WWW.TOPOGRAPHIC.COM

SCALE: 1" = 1000'

0' 500' 1000'

SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



**MONEY GRAHAM FED COM
PAD SITE EXPANSION**

Metes and Bounds Description of a proposed 0.77 acre pad site expansion located within Section 32, Township 26 South, Range 29 East, N.M.P.M., in Eddy County, New Mexico.

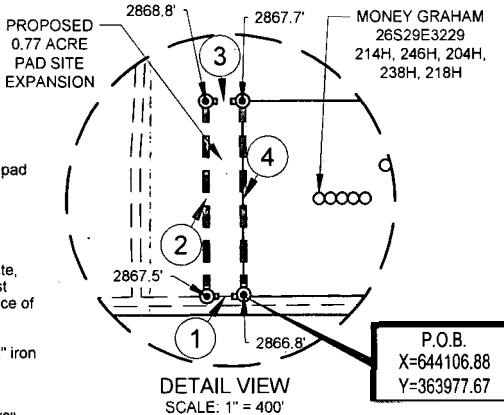
BEGINNING at a 1/2" iron rod with cap marked "TOPOGRAPHIC" set for the Southeast corner of this site, whence a U.S. G.L.O. brass cap found for the Southeast corner of said Section 32, bears S 88°11'44" E, a distance of 1,117.81 feet;

Thence S 89°45'18" W, a distance of 80.00 feet to a 1/2" iron rod with cap marked "TOPOGRAPHIC" set for the Southwest corner of this site;

Thence N 00°14'42" W, a distance of 420.00 feet to a 1/2" iron rod with cap marked "TOPOGRAPHIC" set for the Northwest corner of this site;

Thence N 89°45'18" E, a distance of 80.00 feet to a 1/2" iron rod with cap marked "TOPOGRAPHIC" set for the Northeast corner of this site;

Thence S 00°14'42" E, a distance of 420.00 feet to the POINT OF BEGINNING.



LEGEND

---	SURVEY/SECTION LINE
- - - -	PROPOSED SITE
---	TRACT BORDER
---	ROAD WAY
---	RAILROAD
■	MONUMENT
●	CALCULATED CORNER
⊙	IRON ROD SET

LINE TABLE

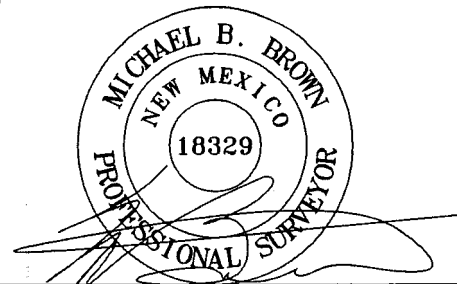
LINE	BEARING	DISTANCE
1	S 89°45'18" W	80.00'
2	N 00°14'42" W	420.00'
3	N 89°45'18" E	80.00'
4	S 00°14'42" E	420.00'

**TAP
ROCK**



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



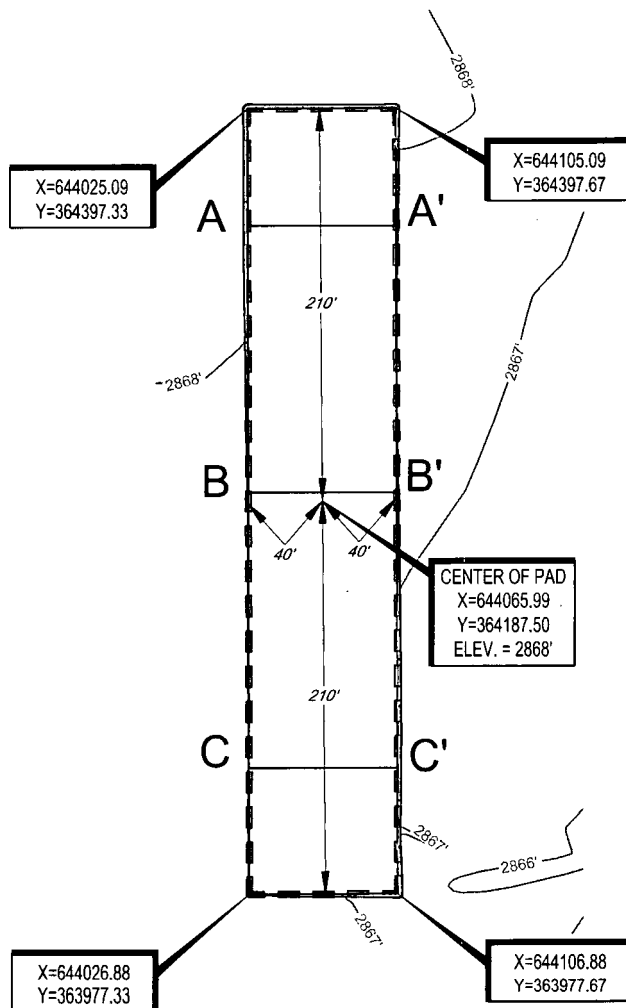
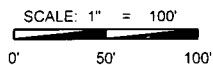
Michael Blake Brown, P.S. No. 18329
DECEMBER 12, 2018

MONEY GRAHAM FED COM PAD SITE EXPANSION	REVISION:	
	INT	DATE
DATE: 12/07/18		
FILE: 30 MONEY GRAHAM FED COM PAD SITE EXPANSION		
DRAWN BY: MML		
SHEET: 1 OF 1		

NOTES:

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

SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



PAD EARTHWORK VOLUMES
CUT : 5,574.1 C.F., 206.45 C.Y.
FILL: 5,574.1 C.F., 206.45 C.Y.
AREA: 34759.6 SQ.FT., 0.798 ACRES

NOTE: 1' CONTOUR INTERVALS



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

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TAP ROCK

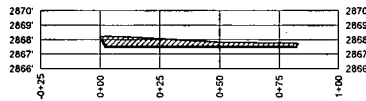
MONEY GRAHAM 26S29E3229 EXPANSION PAD SITE	REVISION:		NOTES: 1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
	INT	DATE	
DATE: 12/10/18			
FILE: CD MONEY GRAHAM 26S29E3229 PAD SITE EXPANSION			
DRAWN BY: EAH			
SHEET: 1 OF 3			

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

PRELIMINARY
SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

TAP

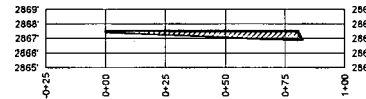
A-A'



B-B'



C-C'



1400 EVERMAN PARKWAY, Ste. 148 • FT. WORTH, TEXAS 76140
TELEPHONE: (817) 744-7512 • FAX: (817) 744-7554
2803 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

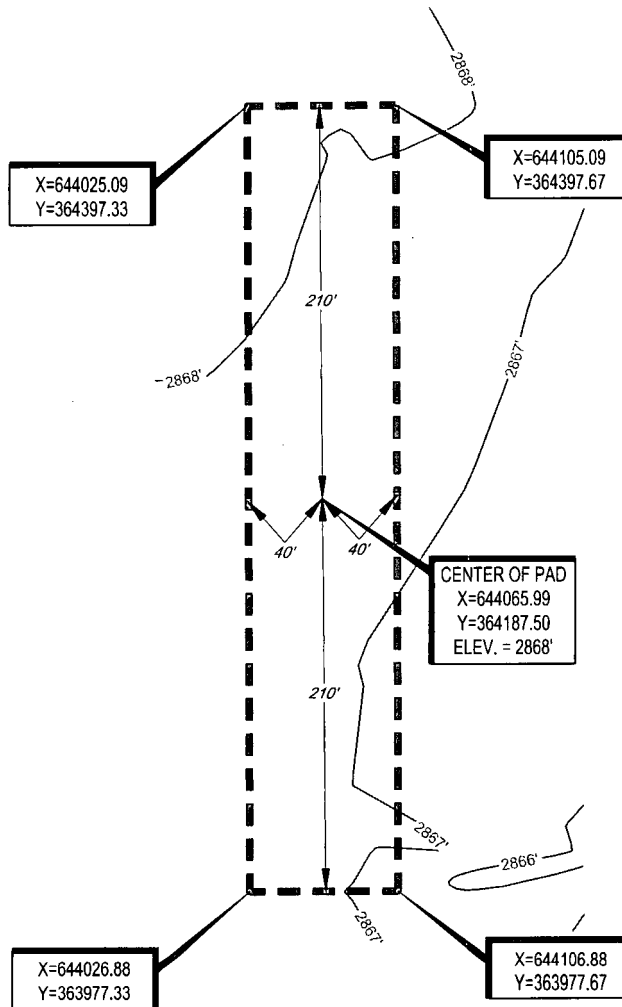
MONEY GRAHAM 26S29E3229 EXPANSION PAD SITE	REVISION:		NOTES: 1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
	INT	DATE	
DATE: 12/10/18			
FILE: \\01\MONEY_GRAHAM_26S29E3229_PAD_SITE_EXPANSION			
DRAWN BY: EAH			
SHEET: 2 OF 3			

S:\SURVEY\BROCK\MONEY_GRAHAM_UNIT\FINAL_PRODUCT\5202_MONEY_GRAHAM_26S29E3229_PAD_SITE_EXPANSION.DWG 12/11/2018 1:42:21 PM kmahery

PRELIMINARY

SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

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



TOP OF PAD ELEVATION: 2867.5
CUT SLOPE: 33.33% 3.000:1 18.43°
FILL SLOPE: 33.33% 3.000:1 18.43°
BALANCE TOLERANCE (C.Y.): 0.00
CUT SWELL FACTOR: 1.00
FILL SHRINK FACTOR: 1.00

PAD EARTHWORK VOLUMES
CUT : 5,574.1 C.F., 206.45 C.Y.
FILL: 5,574.1 C.F., 206.45 C.Y.
AREA: 34759.6 SQ.FT., 0.798 ACRES

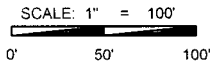
NOTE: 1' CONTOUR INTERVALS



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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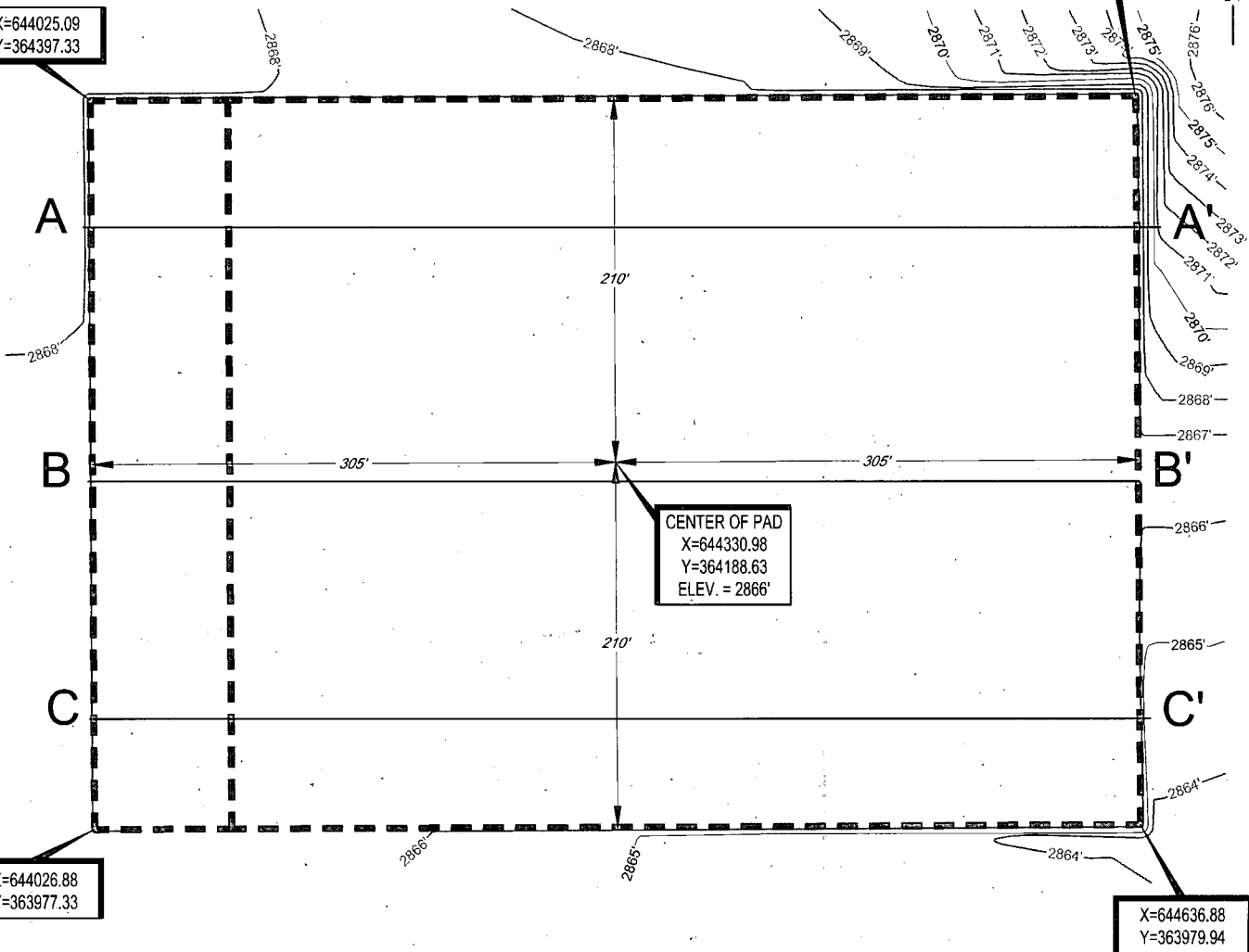
MONEY GRAHAM 26S29E3229 EXPANSION PAD SITE	REVISION:		NOTES:
	INT	DATE	
DATE: 12/10/18			1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
FILE: 00_MONEY_GRAHAM_26S29E3229_PAD_SITE_EXPANSION			
DRAWN BY: EAH			
SHEET: 3 OF 3			



PRELIMINARY
SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

X=644025.09
Y=364397.33

X=644635.08
Y=364399.94



TOP OF PAD ELEVATION: 2866.6
CUT SLOPE: 33.33% 3,000:1 18.43°
FILL SLOPE: 33.33% 3,000:1 18.43°
BALANCE TOLERANCE (C.Y.): 0.00
CUT SWELL FACTOR: 1.00
FILL SHRINK FACTOR: 1.00

PAD EARTHWORK VOLUMES
CUT: 136,378.3 C.F., 5,051.05 C.Y.
FILL: 136,376.7 C.F., 5,050.99 C.Y.
BALANCE EXPORT: 1.6 C.F., 0.06 C.Y.
AREA: 267759.1 SQ.FT., 6.147 ACRES

NOTE: 1' CONTOUR INTERVALS



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LOYALTY INNOVATION LEGACY

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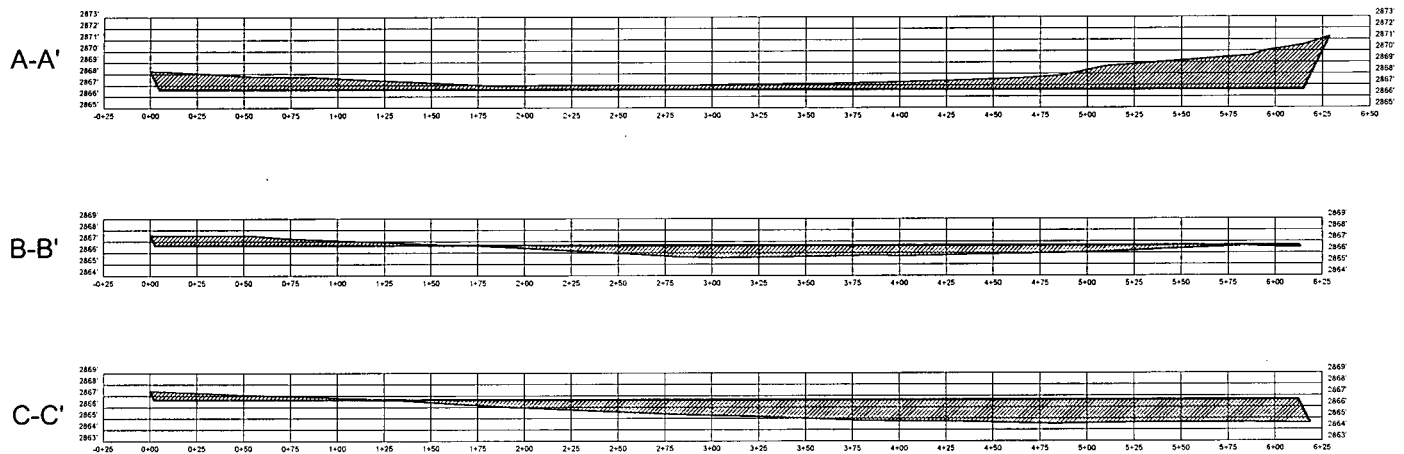


MONEY GRAHAM FED COM EXPANSION PAD SITE	REVISION:		NOTES:
	MLL	12/12/18	
DATE: 12/10/18			1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
FILE: CD_MONEY_GRAHAM_FED_COM_SITE_EXPANSION_REV1			
DRAWN BY: EAH			
SHEET: 1 OF 3			



PRELIMINARY
SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

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



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY
1400 EVERMAN PARKWAY, Ste. 140 • FT. WORTH, TEXAS 76140
TELEPHONE (817) 744-7612 • FAX (817) 744-7554
2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
TELEPHONE (432) 562-1653 OR (800) 767-1653 • FAX (432) 682-1743
WWW.TOPOGRAPHIC.COM

MONEY GRAHAM FED COM EXPANSION PAD SITE	REVISION:	
	MML	12/12/18
DATE: 12/10/18		
FILE: MML-GRAHAM-FEDCOM-EXPANSION-18		
DRAWN BY: EAH		
SHEET: 2 OF 3		

NOTES:
1. ORIGINAL DOCUMENT SIZE 8.5" X 14"
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.

D:\CURVE\TAPROCK\MONEY_GRAHAM\INITIAL_PRODUCT\BAY\MONEY_GRAHAM_FEDCOM_SITE_EXPANSION_REVISED.12102018.11117.dwg

PRELIMINARY

SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

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

X=644635.08
Y=364399.94

X=644025.09
Y=364397.33

CENTER OF PAD
X=644330.98
Y=364188.63
ELEV. = 2866'

X=644026.88
Y=363977.33

X=644636.88
Y=363979.94

TOP OF PAD ELEVATION: 2866.6
CUT SLOPE: 33.33% 3.000:1 18.43°
FILL SLOPE: 33.33% 3.000:1 18.43°
BALANCE TOLERANCE (C.Y.): 0.00
CUT SWELL FACTOR: 1.00
FILL SHRINK FACTOR: 1.00

PAD EARTHWORK VOLUMES
CUT: 136,378.3 C.F., 5,051.05 C.Y.
FILL: 136,376.7 C.F., 5,050.99 C.Y.
BALANCE EXPORT: 1.6 C.F., 0.06 C.Y.
AREA: 267759.1 SQ.FT., 6.147 ACRES

NOTE: 1' CONTOUR INTERVALS



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

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WWW.TOPOGRAPHIC.COM

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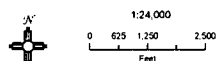
MONEY GRAHAM FED COM EXPANSION PAD SITE	REVISION:		NOTES:
	MML	12/12/18	
DATE: 12/10/18			1. ORIGINAL DOCUMENT SIZE: 8.5" X 11" 2. ALL BEARINGS, DISTANCES, AND COORDINATE VALUES CONTAINED HEREIN ARE GRID BASED UPON THE NEW MEXICO COORDINATE SYSTEM OF 1983, EAST ZONE, U.S. SURVEY FEET.
FILE: CD_MONEY_GRAHAM_FED_COM_SITE_EXPANSION_REV1			
DRAWN BY: EAH			
SHEET: 3 OF 3			

Tap Rock Operating LLC

Proposed Money Graham Fed Com
East Well Pad
Well Vicinity & Lease Map

Section 32, Township 26S, Range 29E
Eddy County, New Mexico

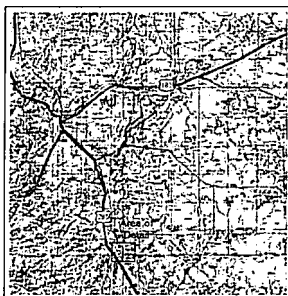
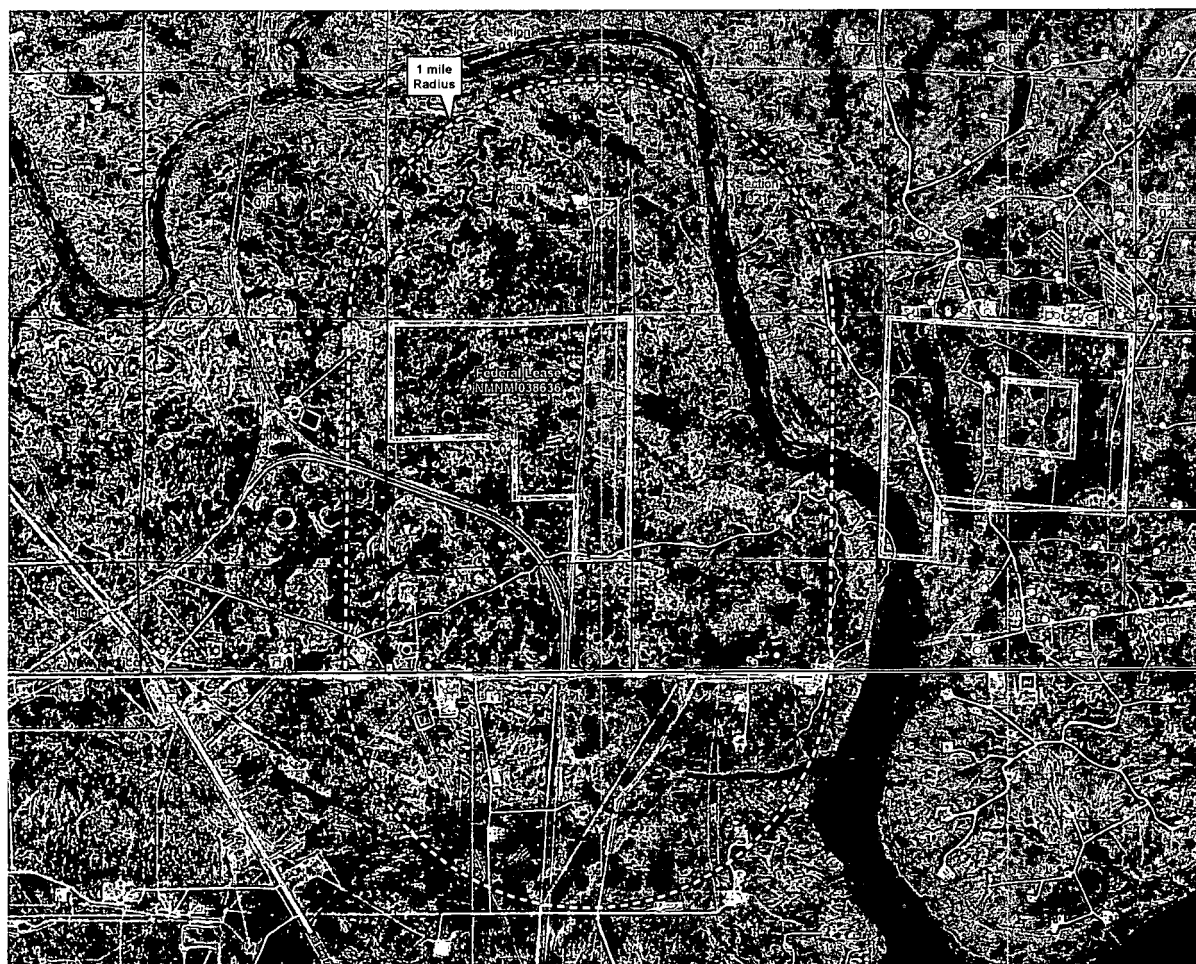
- Oil - Active
- Oil - New
- Oil - TA
- Oil - P&A
- ✕ Gas - Active
- ✕ Gas - New
- ✱ Gas - P&A
- ✦ SWD - Active
- ⊙ Proposed SHL
- ▽ Proposed BHL
- - - Proposed Wellbore
- BLM
- STATE
- PRIVATE



NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST, INC.

Prepared by Permits West, Inc., January 9, 2019
for Tap Rock Operating





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

Drilling Plan Data Report

08/12/2019

APD ID: 10400038212

Submission Date: 01/24/2019

Highlighted data
reflects the most
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

[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	2866	0	0	OTHER : Caliche	USEABLE WATER,OTHER : Salt	N
2	RUSTLER ANHYDRITE	2359	507	507		OTHER : Salt	N
3	TOP SALT	2184	682	682		OTHER : Salt	N
4	BASE OF SALT	474	2392	2393		NATURAL GAS,OIL	N
5	BELL CANYON	19	2847	2848		NATURAL GAS,OIL	N
6	BRUSHY CANYON	-1971	4837	4840		NATURAL GAS,OIL	N
7	BONE SPRING	-3561	6427	6432	LIMESTONE	NATURAL GAS,OIL	N
8	BONE SPRING 1ST	-4486	7352	7357	SANDSTONE	NATURAL GAS,OIL	N
9	BONE SPRING 2ND	-5066	7932	7937	SANDSTONE	NATURAL GAS,OIL	N
10	BONE SPRING 3RD	-6318	9184	9189	SANDSTONE	NATURAL GAS,OIL	N
11	BONE SPRING 3RD	-6575	9441	9447	OTHER,SANDSTONE : W	NATURAL GAS,OIL	N
12	WOLFCAMP	-6666	9532	9537	OTHER : A	NATURAL GAS,OIL	N
13	WOLFCAMP	-6775	9641	9647	OTHER,SANDSTONE : A Y	NATURAL GAS,OIL	N
14	WOLFCAMP	-6905	9771	9777	OTHER : A Fat	NATURAL GAS,OIL	N
15	WOLFCAMP	-7165	10031	10037	OTHER : B	NATURAL GAS,OIL	Y
16	WOLFCAMP	-7677	10543	10722	OTHER : B2	NATURAL GAS,OIL	N

Section 2 - Blowout Prevention

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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:

Money_238H_10M_Choke_032918_20190118105049.pdf

BOP Diagram Attachment:

Money_218H_10M_BOP_5M_Annular_REVISED_20190430144218.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	580	0	580	2866		580	J-55	54.5	BUTT	1.13	1.15	DRY	1.51	DRY	1.51
2	INTERMEDIATE	8.75	7.625	NEW	API	N	0	2700	0	2699	2866		2700	P-110	29.7	BUTT	1.13	1.15	DRY	1.51	DRY	1.51
3	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2900	0	2898	2866		2900	J-55	40	BUTT	1.13	1.15	DRY	1.51	DRY	1.51
4	PRODUCTION	6.75	5.5	NEW	API	Y	0	9672	0	9666	2866		9672	P-110	20	BUTT	1.13	1.15	DRY	1.51	DRY	1.51
5	INTERMEDIATE	8.75	7.625	NEW	API	N	2700	9872	2699	9866			7172	P-110	29.7	OTHER - Flush	1.13	1.15	DRY	1.51	DRY	1.51
6	PRODUCTION	6.75	5.0	NEW	API	Y	9672	18012	9666	10612			8340	P-110	18	BUTT	1.13	1.15	DRY	1.51	DRY	1.51

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Money_238H_Casing_Design_Assumptions_20190118105214.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Money_238H_Casing_Design_Assumptions_20190118105324.pdf

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

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Money_238H_Casing_Design_Assumptions_20190118105257.pdf

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Casing Attachments

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

Inspection Document:

Spec Document:

Tapered String Spec:

Money_238H_5.5in_Casing_Spec_20190118105533.PDF

Casing Design Assumptions and Worksheet(s):

Money_238H_Casing_Design_Assumptions_20190118105549.pdf

Casing ID: 5 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Money_238H_Casing_Design_Assumptions_20190118105510.pdf

Casing ID: 6 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Money_238H_5in_Casing_Spec_20190118105621.pdf

Casing Design Assumptions and Worksheet(s):

Money_238H_Casing_Design_Assumptions_20190118105634.pdf

Section 4 - Cement

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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		8872	18012	950	1.17	15.8	1112	10	Class H	Fluid Loss + Dispersant + Retarder + LCM
SURFACE	Lead		0	580	554	1.38	14.8	765	100	Class C	5% NaCl + LCM

INTERMEDIATE	Lead		0	2700	346	2.35	11.5	813	35	TXI	Fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Tail		0	2700	193	1.39	13.2	268	35	TXI	Fluid Loss + Dispersant + Retarder + LCM
INTERMEDIATE	Lead		0	2900	803	1.81	13.5	1453	100	Class C	Bentonite + 1% CaCl2 + 8% NaCl + LCM
INTERMEDIATE	Tail		0	2900	263	1.38	14.8	363	100	Class C	5% NaCl + LCM
INTERMEDIATE	Lead		2700	9872	346	2.35	11.5	813	35	TXI	Fluid loss + dispersant + retarder + LCM
INTERMEDIATE	Tail		2700	9872	193	1.39	13.2	268	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

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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	580	OTHER : Fresh water spud mud	8.3	8.3							
580	2900	OTHER : Brine water	10	10							
2900	9872	OTHER : Fresh water/cut brine	9	9							
9872	18012	OIL-BASED MUD	12.5	12.5							

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: 6400

Anticipated Surface Pressure: 4043.36

Anticipated Bottom Hole Temperature(F): 145

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:

Money_East_Pad_H2S_Plan_20190118110143.pdf

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Money_238H_Horizontal_Plan_011519_20190118110214.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Money_238H_Speedhead_Specs_033018_20190118110247.pdf

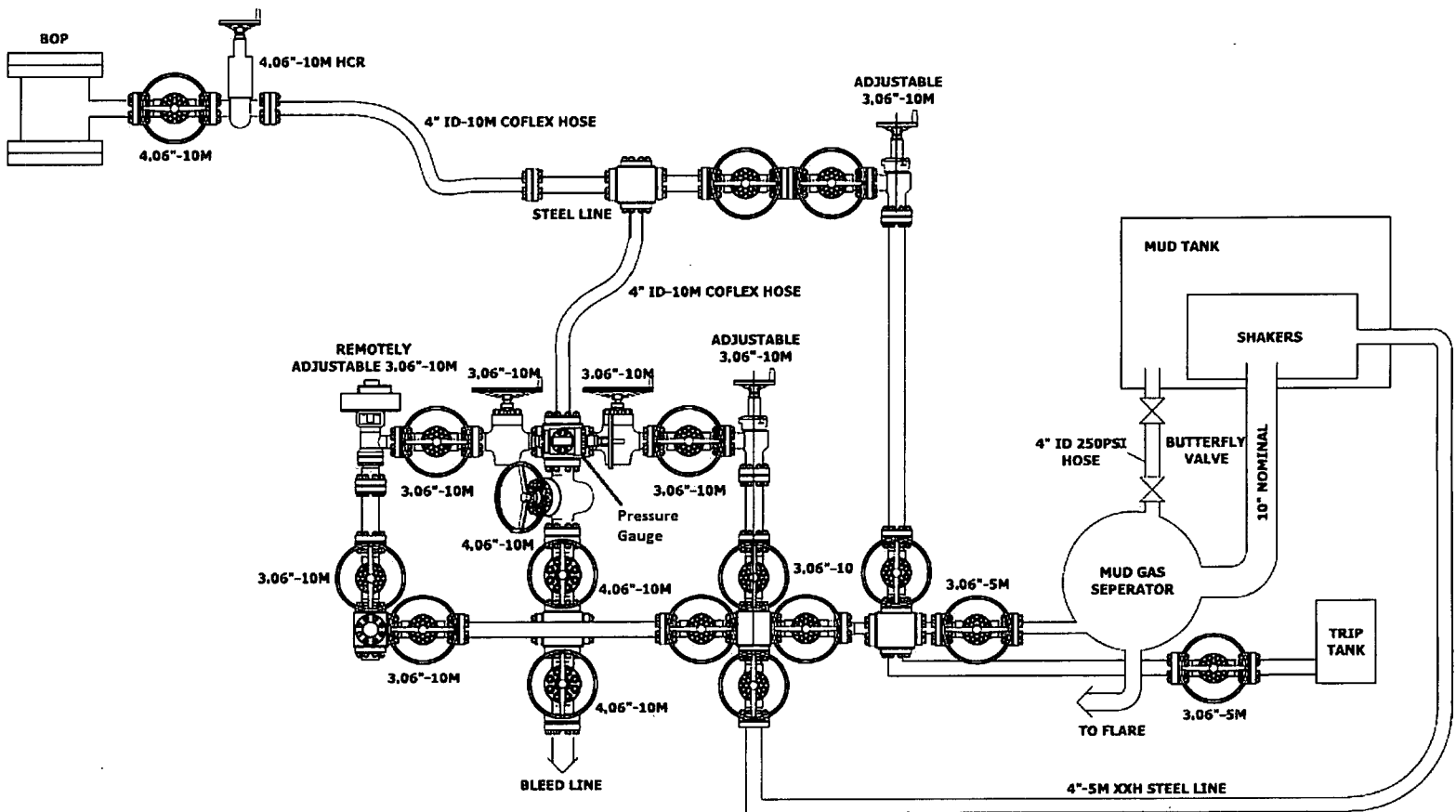
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Money_238H_7.625_W513_Casing_Spec_20190617151949.pdf

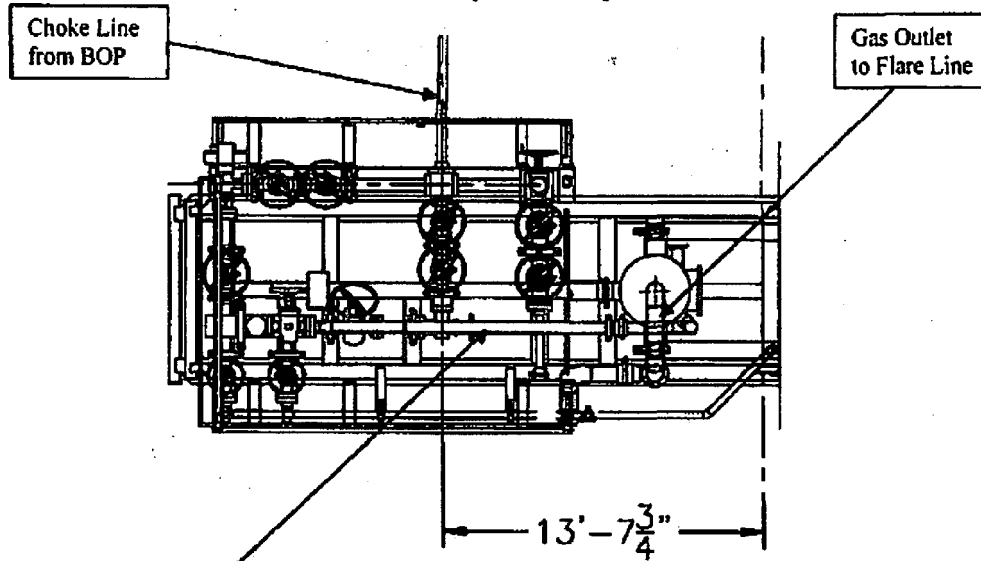
Money_238H_Drill_Plan_v3_061219_REVISED_20190617152026.pdf

Other Variance attachment:

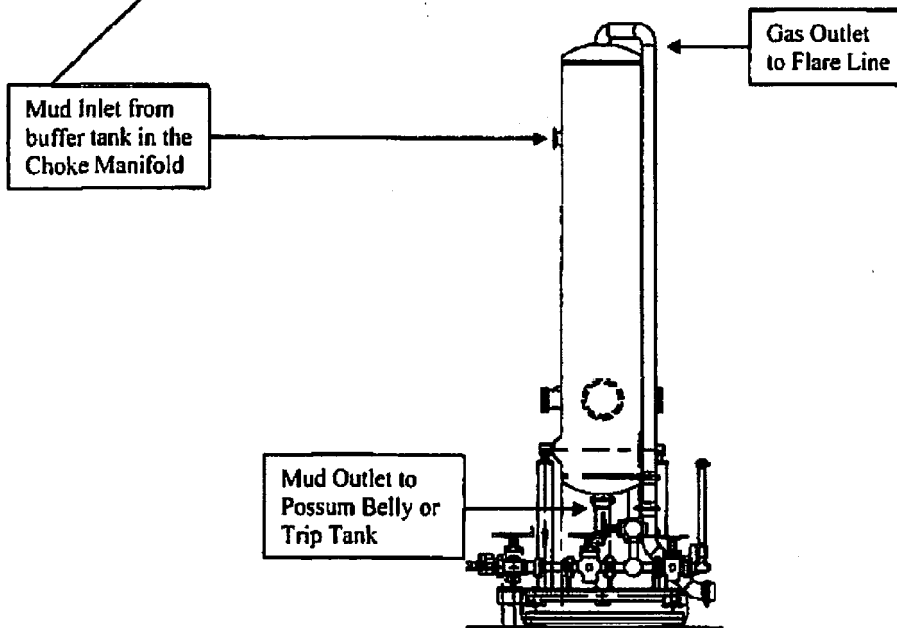
Money_238H_Casing_Variance_Request_20190118110223.pdf



Choke Manifold – Gas Separator (Top View)



Choke Manifold – Gas Separator (Side View)

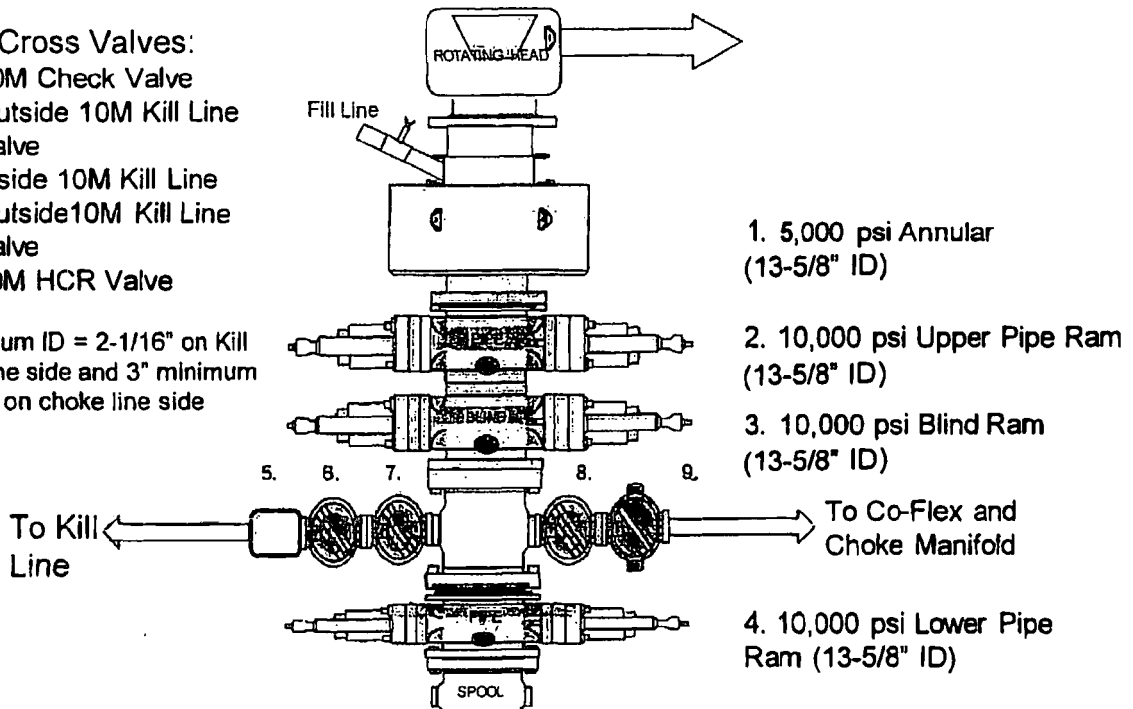


10,000 psi BOP Stack

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



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

1st Band: -

2nd Band: Pale

2nd Band: -

Green

3rd Band: -

3rd Band: -

4th Band: -

Type Casing

GEOMETRY			
Nominal OD	5.000 in.	Nominal Weight	18.00 lbs/ft
Nominal ID	4.276 in.	Wall Thickness	0.362 in.
OD Tolerance	API		
		Drift	4.151 in.
		Plain End Weight	17.95 lbs/ft
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.
Threads per in	3.36	Connection OD Option	REGULAR
		Make-Up Loss	3.620 in.
PERFORMANCE			
Tension Efficiency	73.8 %	Joint Yield Strength	428.040 x1000 lbs
Compression Efficiency	88.7 %	Compression Strength	514.460 x1000 lbs
External Pressure Capacity	14840.000 psi	Internal Pressure Capacity	13940.000 psi
		Max. Allowable Bending	74.5 °/100 ft
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

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

TXP® BTC

SHARE EXPORT DATA PRINT



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

Clear Filters

Compare

Request Info

CONNECTION INFORMATION

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

PIPE BODY DATA

GEOMETRY

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

PERFORMANCE

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

CONNECTION DATA

GEOMETRY

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

PERFORMANCE

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

MAKE-UP TORQUES

Minimum	11270 ft-lbs	Optimum	12520 ft-lbs	Maximum	13770 ft-lbs
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OPERATION LIMIT TORQUES

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

Casing Design Assumptions

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

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Hydrogen Sulfide Drilling

Operations Plan

Tap Rock Resources

1 H2S safety instructions to the following:

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

2 H2S Detection and Alarm Systems:

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

3 Windssocks and / Wind Streamers:

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

4 Condition Flags and Signs:

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

5 Well Control Equipment:

- See Drilling Operations Plan Schematics

6 Communication:

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



7 Drilling Stem Testing:

- No DST cores are planned at this time

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

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

11 Emergency Contacts

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	

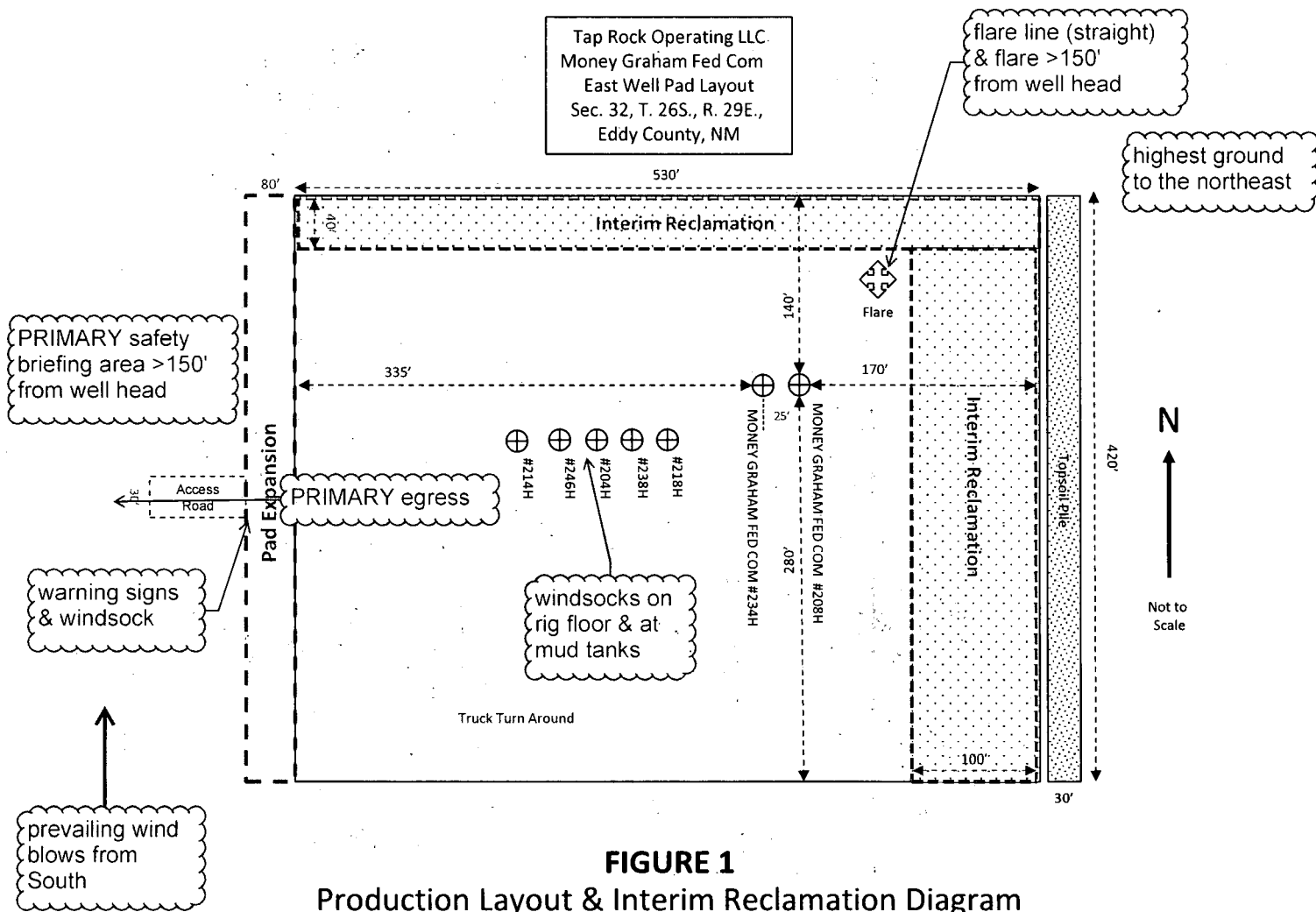


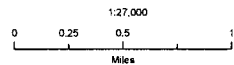
FIGURE 1
Production Layout & Interim Reclamation Diagram

Tap Rock Operating, LLC

Money Graham East Pad
H2S Contingency Plan:
Radius Map

Section 32, Township 26S, Range 29E
Eddy County, New Mexico

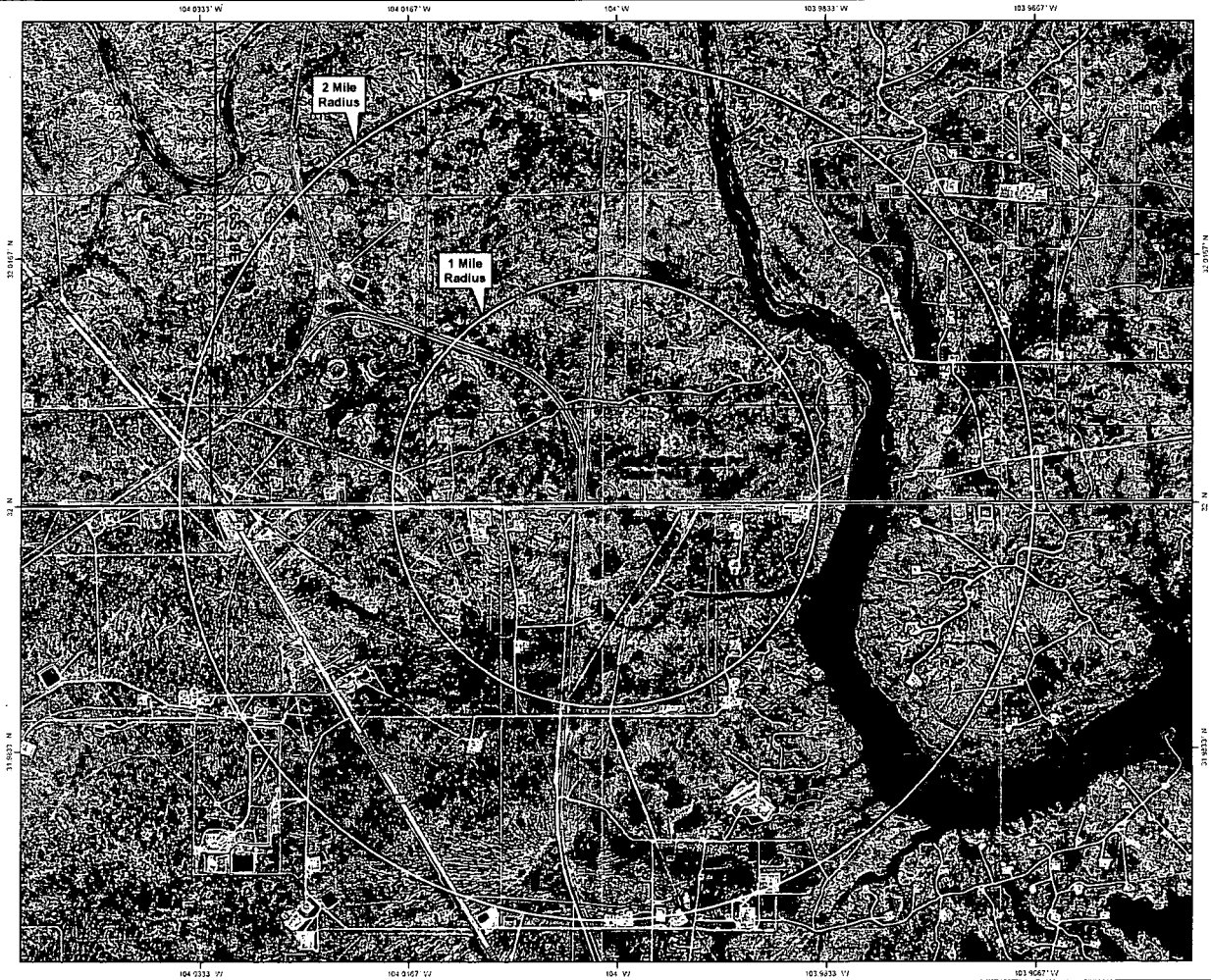
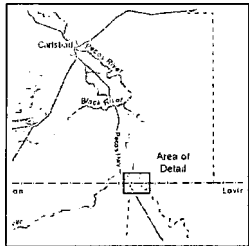
⊙ Surface Hole Location



NAD 1983 New Mexico State Plane East
FIPS 3001 Feet

PERMITS WEST

Prepared by Permits West, Inc., July 26, 2018
for Tap Rock Operating, LLC





Well: Money Graham Fed Com Well No. 238 H
Site: Section 32-T26S-R29E
Project: Eddy County, New Mexico NAD83 NM east
Design: rev0
Rig:

SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	V/Sect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	KOP Begin 1.5"/100' build
3	1588.33	-2.82	147.22	1588.26	-3.90	2.51	1.50	-3.88	Begin 2.82" tangent
4	6217.45	2.82	147.22	6211.74	-195.72	126.04	0.00	-194.57	Begin 1.5"/100' drop
5	6405.78	0.00	0.52	6400.00	-199.62	128.55	1.50	-198.45	Begin vertical hold
6	10004.83	0.00	0.52	9999.05	-199.62	128.55	0.00	-198.45	Begin 10"/100' build
7	10901.46	89.66	0.52	10572.00	369.95	133.68	10.00	371.15	Begin 89.66° lateral
8	17709.92	89.66	0.52	10612.00	7178.01	195.00	0.00	7179.49	PBHL/TD 17709.92 MD/10612.00 TVD

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
Money Graham 23H VT 50 FSL 750 FEL	6400.00	-199.62	128.55	363989.38	644474.55
Money Graham 23H PBHL 200 FNL 750 FEL	10612.00	7178.01	195.00	371367.00	644541.00

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

System Datum: Mean Sea Level
Depth Reference: RKB=2866+26 @ 2892.00ft
Surface location:

Northing	Easting	Latitude	Longitude
364189.00	644346.00	32.00080043	-104.00103299

West(-)/East(+) (1600 ft/in)

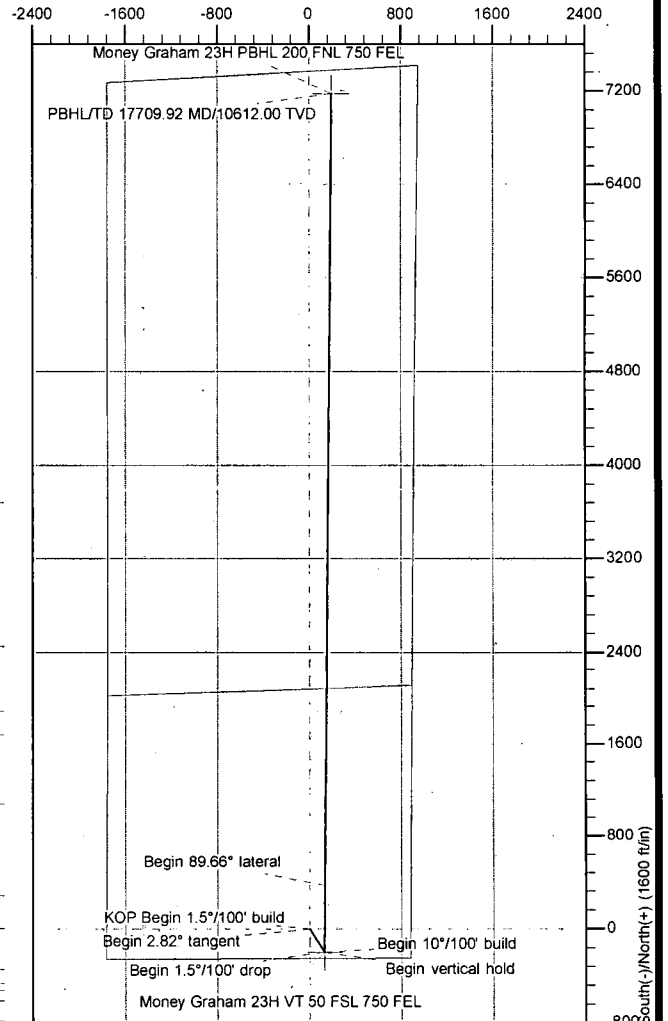


Azimuths to Grid North
True North: -0.18°
Magnetic North: 6.79°

Magnetic Field
Strength: 47607.6snT
Dip Angle: 59.77°
Date: 12/26/2018
Model: IGRF2015

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
507.00	507.00	Rustler Anhydrite
682.00	682.00	Top Salt
2391.78	2392.83	Base Salt
2731.70	2733.16	Delaware Mountain Gp
2846.67	2848.28	Bell Canyon
2846.67	2848.28	Lamar
2886.66	2888.32	Ramsey Sand
3861.42	3864.26	Cherry Canyon
4836.18	4840.21	Brushy Canyon
6425.82	6431.60	Bone Spring Lime
7350.82	7356.60	1st Bone Spring Sand
7930.82	7936.60	2nd Bone Spring Sand
9182.82	9188.60	3rd Bone Spring Sand
9440.82	9446.60	3rd BS W Sand
9530.82	9536.60	Wolfcamp A
9640.82	9646.60	Wolfcamp A Y Sand
9770.82	9776.60	Wolfcamp A Fat
10030.82	10036.62	Wolfcamp B
10543.16	10722.23	Wolfcamp B2



Vertical Section at 0.52° (1200 ft/in)



Planning Report

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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

Site	Section 32-T26S-R29E		
Site Position:	Northing:	364,189.00 usft	Latitude: 32.00080022
From: Map	Easting:	644,371.00 usft	Longitude: -104.00095235
Position Uncertainty:	0.00 ft	Slot Radius: 13-3/16 "	Grid Convergence: 0.18 °

Well	Money Graham Fed Com Well No. 238 H, Surf loc: 250 FSL 879 FEL Section 32-T26S-R29E		
Well Position	+N/-S	0.00 ft	Latitude: 32.00080044
	+E/-W	-25.00 ft	Longitude: -104.00103300
Position Uncertainty	0.00 ft	Wellhead Elevation:	Ground Level: 2,866.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/26/2018	6.97	59.77	47,607.59597066

Design	rev0			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	0.52

Plan Survey Tool/Program	Date	12/28/2018		
Depth From (ft)	Depth To (ft)	Survey (Wellbore)	Tool Name	Remarks
1	0.00	17,709.92 rev0 (Original Hole)	MWD	
			OWSG MWD - Standard	

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,588.33	2.82	147.22	1,588.26	-3.90	2.51	1.50	1.50	0.00	147.22	
6,217.45	2.82	147.22	6,211.74	-195.72	126.04	0.00	0.00	0.00	0.00	
6,405.78	0.00	0.52	6,400.00	-199.62	128.55	1.50	-1.50	0.00	180.00	Money Graham 23H \
10,004.83	0.00	0.52	9,999.05	-199.62	128.55	0.00	0.00	0.00	0.52	
10,901.46	89.66	0.52	10,572.00	369.95	133.68	10.00	10.00	0.00	0.52	
17,709.92	89.66	0.52	10,612.00	7,178.01	195.00	0.00	0.00	0.00	0.00	Money Graham 23H F



Planning Report

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
507.00	0.00	0.00	507.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler Anhydrite									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
682.00	0.00	0.00	682.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt									
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP Begin 1.5°/100' build									
1,500.00	1.50	147.22	1,499.99	-1.10	0.71	-1.09	1.50	1.50	0.00
1,588.33	2.82	147.22	1,588.26	-3.90	2.51	-3.88	1.50	1.50	0.00
Begin 2.82° tangent									
1,600.00	2.82	147.22	1,599.91	-4.39	2.82	-4.36	0.00	0.00	0.00
1,700.00	2.82	147.22	1,699.79	-8.53	5.49	-8.48	0.00	0.00	0.00
1,800.00	2.82	147.22	1,799.67	-12.67	8.16	-12.60	0.00	0.00	0.00
1,900.00	2.82	147.22	1,899.54	-16.82	10.83	-16.72	0.00	0.00	0.00
2,000.00	2.82	147.22	1,999.42	-20.96	13.50	-20.84	0.00	0.00	0.00
2,100.00	2.82	147.22	2,099.30	-25.10	16.17	-24.96	0.00	0.00	0.00
2,200.00	2.82	147.22	2,199.18	-29.25	18.84	-29.08	0.00	0.00	0.00
2,300.00	2.82	147.22	2,299.06	-33.39	21.50	-33.20	0.00	0.00	0.00
2,392.83	2.82	147.22	2,391.78	-37.24	23.98	-37.02	0.00	0.00	0.00
Base Salt									
2,400.00	2.82	147.22	2,398.94	-37.54	24.17	-37.31	0.00	0.00	0.00
2,500.00	2.82	147.22	2,498.82	-41.68	26.84	-41.43	0.00	0.00	0.00
2,600.00	2.82	147.22	2,598.69	-45.82	29.51	-45.55	0.00	0.00	0.00
2,700.00	2.82	147.22	2,698.57	-49.97	32.18	-49.67	0.00	0.00	0.00
2,733.16	2.82	147.22	2,731.70	-51.34	33.06	-51.04	0.00	0.00	0.00
Delaware Mountain Gp									
2,800.00	2.82	147.22	2,798.45	-54.11	34.85	-53.79	0.00	0.00	0.00
2,848.28	2.82	147.22	2,846.67	-56.11	36.13	-55.78	0.00	0.00	0.00
Bell Canyon - Lamar									
2,888.32	2.82	147.22	2,886.66	-57.77	37.20	-57.43	0.00	0.00	0.00
Ramsey Sand									
2,900.00	2.82	147.22	2,898.33	-58.25	37.51	-57.91	0.00	0.00	0.00
3,000.00	2.82	147.22	2,998.21	-62.40	40.18	-62.03	0.00	0.00	0.00
3,100.00	2.82	147.22	3,098.09	-66.54	42.85	-66.15	0.00	0.00	0.00
3,200.00	2.82	147.22	3,197.97	-70.68	45.52	-70.27	0.00	0.00	0.00
3,300.00	2.82	147.22	3,297.84	-74.83	48.19	-74.39	0.00	0.00	0.00
3,400.00	2.82	147.22	3,397.72	-78.97	50.86	-78.51	0.00	0.00	0.00
3,500.00	2.82	147.22	3,497.60	-83.12	53.52	-82.63	0.00	0.00	0.00
3,600.00	2.82	147.22	3,597.48	-87.26	56.19	-86.75	0.00	0.00	0.00
3,700.00	2.82	147.22	3,697.36	-91.40	58.86	-90.87	0.00	0.00	0.00



Planning Report

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
3,800.00	2.82	147.22	3,797.24	-95.55	61.53	-94.98	0.00	0.00	0.00	
3,864.26	2.82	147.22	3,861.42	-98.21	63.24	-97.63	0.00	0.00	0.00	
Cherry Canyon										
3,900.00	2.82	147.22	3,897.11	-99.69	64.20	-99.10	0.00	0.00	0.00	
4,000.00	2.82	147.22	3,996.99	-103.83	66.87	-103.22	0.00	0.00	0.00	
4,100.00	2.82	147.22	4,096.87	-107.98	69.53	-107.34	0.00	0.00	0.00	
4,200.00	2.82	147.22	4,196.75	-112.12	72.20	-111.46	0.00	0.00	0.00	
4,300.00	2.82	147.22	4,296.63	-116.27	74.87	-115.58	0.00	0.00	0.00	
4,400.00	2.82	147.22	4,396.51	-120.41	77.54	-119.70	0.00	0.00	0.00	
4,500.00	2.82	147.22	4,496.39	-124.55	80.21	-123.82	0.00	0.00	0.00	
4,600.00	2.82	147.22	4,596.26	-128.70	82.88	-127.94	0.00	0.00	0.00	
4,700.00	2.82	147.22	4,696.14	-132.84	85.55	-132.06	0.00	0.00	0.00	
4,800.00	2.82	147.22	4,796.02	-136.98	88.21	-136.18	0.00	0.00	0.00	
4,840.21	2.82	147.22	4,836.18	-138.65	89.29	-137.83	0.00	0.00	0.00	
Brushy Canyon										
4,900.00	2.82	147.22	4,895.90	-141.13	90.88	-140.30	0.00	0.00	0.00	
5,000.00	2.82	147.22	4,995.78	-145.27	93.55	-144.42	0.00	0.00	0.00	
5,100.00	2.82	147.22	5,095.66	-149.41	96.22	-148.54	0.00	0.00	0.00	
5,200.00	2.82	147.22	5,195.53	-153.56	98.89	-152.65	0.00	0.00	0.00	
5,300.00	2.82	147.22	5,295.41	-157.70	101.56	-156.77	0.00	0.00	0.00	
5,400.00	2.82	147.22	5,395.29	-161.85	104.22	-160.89	0.00	0.00	0.00	
5,500.00	2.82	147.22	5,495.17	-165.99	106.89	-165.01	0.00	0.00	0.00	
5,600.00	2.82	147.22	5,595.05	-170.13	109.56	-169.13	0.00	0.00	0.00	
5,700.00	2.82	147.22	5,694.93	-174.28	112.23	-173.25	0.00	0.00	0.00	
5,800.00	2.82	147.22	5,794.81	-178.42	114.90	-177.37	0.00	0.00	0.00	
5,900.00	2.82	147.22	5,894.68	-182.56	117.57	-181.49	0.00	0.00	0.00	
6,000.00	2.82	147.22	5,994.56	-186.71	120.23	-185.61	0.00	0.00	0.00	
6,100.00	2.82	147.22	6,094.44	-190.85	122.90	-189.73	0.00	0.00	0.00	
6,200.00	2.82	147.22	6,194.32	-194.99	125.57	-193.85	0.00	0.00	0.00	
6,217.45	2.82	147.22	6,211.74	-195.72	126.04	-194.57	0.00	0.00	0.00	
Begin 1.5°/100' drop										
6,300.00	1.59	147.22	6,294.24	-198.39	127.76	-197.22	1.50	-1.50	0.00	
6,400.00	0.09	147.22	6,394.22	-199.62	128.55	-198.44	1.50	-1.50	0.00	
6,405.78	0.00	0.52	6,400.00	-199.62	128.55	-198.45	1.50	-1.50	0.00	
Begin vertical hold										
6,431.60	0.00	0.00	6,425.82	-199.62	128.55	-198.45	0.00	0.00	0.00	
Bone Spring Lime										
6,500.00	0.00	0.00	6,494.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,594.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,694.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,794.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
6,900.00	0.00	0.00	6,894.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,000.00	0.00	0.00	6,994.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,100.00	0.00	0.00	7,094.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,200.00	0.00	0.00	7,194.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,300.00	0.00	0.00	7,294.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,356.60	0.00	0.00	7,350.82	-199.62	128.55	-198.45	0.00	0.00	0.00	
1st Bone Spring Sand										
7,400.00	0.00	0.00	7,394.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,500.00	0.00	0.00	7,494.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,600.00	0.00	0.00	7,594.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,700.00	0.00	0.00	7,694.22	-199.62	128.55	-198.45	0.00	0.00	0.00	
7,800.00	0.00	0.00	7,794.22	-199.62	128.55	-198.45	0.00	0.00	0.00	



Planning Report

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,900.00	0.00	0.00	7,894.22	-199.62	128.55	-198.45	0.00	0.00	0.00
7,936.60	0.00	0.00	7,930.82	-199.62	128.55	-198.45	0.00	0.00	0.00
2nd Bone Spring Sand									
8,000.00	0.00	0.00	7,994.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,100.00	0.00	0.00	8,094.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,200.00	0.00	0.00	8,194.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,300.00	0.00	0.00	8,294.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,400.00	0.00	0.00	8,394.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,500.00	0.00	0.00	8,494.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,600.00	0.00	0.00	8,594.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,700.00	0.00	0.00	8,694.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,800.00	0.00	0.00	8,794.22	-199.62	128.55	-198.45	0.00	0.00	0.00
8,900.00	0.00	0.00	8,894.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,000.00	0.00	0.00	8,994.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,100.00	0.00	0.00	9,094.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,188.60	0.00	0.00	9,182.82	-199.62	128.55	-198.45	0.00	0.00	0.00
3rd Bone Spring Sand									
9,200.00	0.00	0.00	9,194.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,300.00	0.00	0.00	9,294.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,400.00	0.00	0.00	9,394.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,446.60	0.00	0.00	9,440.82	-199.62	128.55	-198.45	0.00	0.00	0.00
3rd BS W Sand									
9,500.00	0.00	0.00	9,494.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,536.60	0.00	0.00	9,530.82	-199.62	128.55	-198.45	0.00	0.00	0.00
Wolfcamp A									
9,600.00	0.00	0.00	9,594.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,646.60	0.00	0.00	9,640.82	-199.62	128.55	-198.45	0.00	0.00	0.00
Wolfcamp A Y Sand									
9,700.00	0.00	0.00	9,694.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,776.60	0.00	0.00	9,770.82	-199.62	128.55	-198.45	0.00	0.00	0.00
Wolfcamp A Fat									
9,800.00	0.00	0.00	9,794.22	-199.62	128.55	-198.45	0.00	0.00	0.00
9,900.00	0.00	0.00	9,894.22	-199.62	128.55	-198.45	0.00	0.00	0.00
10,000.00	0.00	0.00	9,994.22	-199.62	128.55	-198.45	0.00	0.00	0.00
10,004.83	0.00	0.00	9,999.05	-199.62	128.55	-198.45	0.00	0.00	0.00
Begin 10°/100' build									
10,036.62	3.18	0.52	10,030.83	-198.74	128.56	-197.56	10.00	10.00	0.00
Wolfcamp B									
10,100.00	9.52	0.52	10,093.79	-191.73	128.62	-190.56	10.00	10.00	0.00
10,200.00	19.52	0.52	10,190.47	-166.70	128.85	-165.52	10.00	10.00	0.00
10,300.00	29.52	0.52	10,281.34	-125.26	129.22	-124.08	10.00	10.00	0.00
10,400.00	39.52	0.52	10,363.63	-68.67	129.73	-67.49	10.00	10.00	0.00
10,500.00	49.52	0.52	10,434.84	1.35	130.36	2.54	10.00	10.00	0.00
10,600.00	59.52	0.52	10,492.81	82.68	131.09	83.86	10.00	10.00	0.00
10,700.00	69.52	0.52	10,535.78	172.83	131.90	174.02	10.00	10.00	0.00
10,722.23	71.74	0.52	10,543.16	193.80	132.09	194.99	10.00	10.00	0.00
Wolfcamp B2									
10,800.00	79.52	0.52	10,562.45	269.07	132.77	270.27	10.00	10.00	0.00
10,900.00	89.52	0.52	10,571.99	368.49	133.67	369.68	10.00	10.00	0.00
10,901.46	89.66	0.52	10,572.00	369.95	133.68	371.15	10.00	10.00	0.00
Begin 89.66° lateral									
11,000.00	89.66	0.52	10,572.58	468.48	134.57	469.68	0.00	0.00	0.00
11,100.00	89.66	0.52	10,573.16	568.47	135.47	569.68	0.00	0.00	0.00



Planning Report

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
11,200.00	89.66	0.52	10,573.75	668.47	136.37	669.68	0.00	0.00	0.00
11,300.00	89.66	0.52	10,574.34	768.46	137.27	769.68	0.00	0.00	0.00
11,400.00	89.66	0.52	10,574.93	868.46	138.17	869.68	0.00	0.00	0.00
11,500.00	89.66	0.52	10,575.51	968.45	139.07	969.67	0.00	0.00	0.00
11,600.00	89.66	0.52	10,576.10	1,068.45	139.97	1,069.67	0.00	0.00	0.00
11,700.00	89.66	0.52	10,576.69	1,168.44	140.87	1,169.67	0.00	0.00	0.00
11,800.00	89.66	0.52	10,577.28	1,268.43	141.77	1,269.67	0.00	0.00	0.00
11,900.00	89.66	0.52	10,577.86	1,368.43	142.67	1,369.67	0.00	0.00	0.00
12,000.00	89.66	0.52	10,578.45	1,468.42	143.57	1,469.67	0.00	0.00	0.00
12,100.00	89.66	0.52	10,579.04	1,568.42	144.47	1,569.66	0.00	0.00	0.00
12,200.00	89.66	0.52	10,579.63	1,668.41	145.38	1,669.66	0.00	0.00	0.00
12,300.00	89.66	0.52	10,580.22	1,768.41	146.28	1,769.66	0.00	0.00	0.00
12,400.00	89.66	0.52	10,580.80	1,868.40	147.18	1,869.66	0.00	0.00	0.00
12,500.00	89.66	0.52	10,581.39	1,968.39	148.08	1,969.66	0.00	0.00	0.00
12,600.00	89.66	0.52	10,581.98	2,068.39	148.98	2,069.65	0.00	0.00	0.00
12,700.00	89.66	0.52	10,582.57	2,168.38	149.88	2,169.65	0.00	0.00	0.00
12,800.00	89.66	0.52	10,583.15	2,268.38	150.78	2,269.65	0.00	0.00	0.00
12,900.00	89.66	0.52	10,583.74	2,368.37	151.68	2,369.65	0.00	0.00	0.00
13,000.00	89.66	0.52	10,584.33	2,468.36	152.58	2,469.65	0.00	0.00	0.00
13,100.00	89.66	0.52	10,584.92	2,568.36	153.48	2,569.65	0.00	0.00	0.00
13,200.00	89.66	0.52	10,585.50	2,668.35	154.38	2,669.64	0.00	0.00	0.00
13,300.00	89.66	0.52	10,586.09	2,768.35	155.28	2,769.64	0.00	0.00	0.00
13,400.00	89.66	0.52	10,586.68	2,868.34	156.18	2,869.64	0.00	0.00	0.00
13,500.00	89.66	0.52	10,587.27	2,968.34	157.08	2,969.64	0.00	0.00	0.00
13,600.00	89.66	0.52	10,587.85	3,068.33	157.98	3,069.64	0.00	0.00	0.00
13,700.00	89.66	0.52	10,588.44	3,168.32	158.89	3,169.64	0.00	0.00	0.00
13,800.00	89.66	0.52	10,589.03	3,268.32	159.79	3,269.63	0.00	0.00	0.00
13,900.00	89.66	0.52	10,589.62	3,368.31	160.69	3,369.63	0.00	0.00	0.00
14,000.00	89.66	0.52	10,590.20	3,468.31	161.59	3,469.63	0.00	0.00	0.00
14,100.00	89.66	0.52	10,590.79	3,568.30	162.49	3,569.63	0.00	0.00	0.00
14,200.00	89.66	0.52	10,591.38	3,668.30	163.39	3,669.63	0.00	0.00	0.00
14,300.00	89.66	0.52	10,591.97	3,768.29	164.29	3,769.63	0.00	0.00	0.00
14,400.00	89.66	0.52	10,592.55	3,868.28	165.19	3,869.62	0.00	0.00	0.00
14,500.00	89.66	0.52	10,593.14	3,968.28	166.09	3,969.62	0.00	0.00	0.00
14,600.00	89.66	0.52	10,593.73	4,068.27	166.99	4,069.62	0.00	0.00	0.00
14,700.00	89.66	0.52	10,594.32	4,168.27	167.89	4,169.62	0.00	0.00	0.00
14,800.00	89.66	0.52	10,594.90	4,268.26	168.79	4,269.62	0.00	0.00	0.00
14,900.00	89.66	0.52	10,595.49	4,368.26	169.69	4,369.62	0.00	0.00	0.00
15,000.00	89.66	0.52	10,596.08	4,468.25	170.59	4,469.61	0.00	0.00	0.00
15,100.00	89.66	0.52	10,596.67	4,568.24	171.49	4,569.61	0.00	0.00	0.00
15,200.00	89.66	0.52	10,597.25	4,668.24	172.39	4,669.61	0.00	0.00	0.00
15,300.00	89.66	0.52	10,597.84	4,768.23	173.30	4,769.61	0.00	0.00	0.00
15,400.00	89.66	0.52	10,598.43	4,868.23	174.20	4,869.61	0.00	0.00	0.00
15,500.00	89.66	0.52	10,599.02	4,968.22	175.10	4,969.60	0.00	0.00	0.00
15,600.00	89.66	0.52	10,599.60	5,068.21	176.00	5,069.60	0.00	0.00	0.00
15,700.00	89.66	0.52	10,600.19	5,168.21	176.90	5,169.60	0.00	0.00	0.00
15,800.00	89.66	0.52	10,600.78	5,268.20	177.80	5,269.60	0.00	0.00	0.00
15,900.00	89.66	0.52	10,601.37	5,368.20	178.70	5,369.60	0.00	0.00	0.00
16,000.00	89.66	0.52	10,601.95	5,468.19	179.60	5,469.60	0.00	0.00	0.00
16,100.00	89.66	0.52	10,602.54	5,568.19	180.50	5,569.59	0.00	0.00	0.00
16,200.00	89.66	0.52	10,603.13	5,668.18	181.40	5,669.59	0.00	0.00	0.00
16,300.00	89.66	0.52	10,603.72	5,768.17	182.30	5,769.59	0.00	0.00	0.00
16,400.00	89.66	0.52	10,604.30	5,868.17	183.20	5,869.59	0.00	0.00	0.00
16,500.00	89.66	0.52	10,604.89	5,968.16	184.10	5,969.59	0.00	0.00	0.00



Planning Report

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
16,600.00	89.66	0.52	10,605.48	6,068.16	185.00	6,069.59	0.00	0.00	0.00
16,700.00	89.66	0.52	10,606.07	6,168.15	185.90	6,169.58	0.00	0.00	0.00
16,800.00	89.66	0.52	10,606.65	6,268.15	186.81	6,269.58	0.00	0.00	0.00
16,900.00	89.66	0.52	10,607.24	6,368.14	187.71	6,369.58	0.00	0.00	0.00
17,000.00	89.66	0.52	10,607.83	6,468.13	188.61	6,469.58	0.00	0.00	0.00
17,100.00	89.66	0.52	10,608.42	6,568.13	189.51	6,569.58	0.00	0.00	0.00
17,200.00	89.66	0.52	10,609.00	6,668.12	190.41	6,669.58	0.00	0.00	0.00
17,300.00	89.66	0.52	10,609.59	6,768.12	191.31	6,769.57	0.00	0.00	0.00
17,400.00	89.66	0.52	10,610.18	6,868.11	192.21	6,869.57	0.00	0.00	0.00
17,500.00	89.66	0.52	10,610.77	6,968.10	193.11	6,969.57	0.00	0.00	0.00
17,600.00	89.66	0.52	10,611.35	7,068.10	194.01	7,069.57	0.00	0.00	0.00
17,700.00	89.66	0.52	10,611.94	7,168.09	194.91	7,169.57	0.00	0.00	0.00
17,709.92	89.66	0.52	10,612.00	7,178.01	195.00	7,179.49	0.00	0.00	0.00
PBHL/TD 17709.92 MD/10612.00 TVD									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Money Graham.23H VT	0.00	0.00	6,400.00	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
- plan hits target center									
- Point									
Money Graham 23H PBI	0.00	0.00	10,612.00	7,178.01	195.00	371,367.00	644,541.00	32.02053077	-104.00033261
- plan hits target center									
- Point									



Planning Report

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
507.00	507.00	Rustler Anhydrite		0.34	0.52
682.00	682.00	Top Salt		0.34	0.52
2,392.83	2,391.78	Base Salt		0.34	0.52
2,733.16	2,731.70	Delaware Mountain Gp		0.34	0.52
2,848.28	2,846.67	Bell Canyon		0.34	0.52
2,848.28	2,846.67	Lamar		0.34	0.52
2,888.32	2,886.66	Ramsey Sand		0.34	0.52
3,864.26	3,861.42	Cherry Canyon		0.34	0.52
4,840.21	4,836.18	Brushy Canyon		0.34	0.52
6,431.60	6,425.82	Bone Spring Lime		0.34	0.52
7,356.60	7,350.82	1st Bone Spring Sand		0.34	0.52
7,936.60	7,930.82	2nd Bone Spring Sand		0.34	0.52
9,188.60	9,182.82	3rd Bone Spring Sand		0.34	0.52
9,446.60	9,440.82	3rd BS W Sand		0.34	0.52
9,536.60	9,530.82	Wolfcamp A		0.34	0.52
9,646.60	9,640.82	Wolfcamp A Y Sand		0.34	0.52
9,776.60	9,770.82	Wolfcamp A Fat		0.34	0.52
10,036.62	10,030.83	Wolfcamp B		0.34	0.52
10,722.23	10,543.16	Wolfcamp B2		0.34	0.52

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,400.00	1,400.00	0.00	0.00	KOP Begin 1.5°/100' build	
1,588.33	1,588.26	-3.90	2.51	Begin 2.82° tangent	
6,217.45	6,211.74	-195.72	126.04	Begin 1.5°/100' drop	
6,405.78	6,400.00	-199.62	128.55	Begin vertical hold	
10,004.83	9,999.05	-199.62	128.55	Begin 10°/100' build	
10,901.46	10,572.00	369.95	133.68	Begin 89.66° lateral	
17,709.92	10,612.00	7,178.01	195.00	PBHL/TD 17709.92 MD/10612.00 TVD	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

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

Site	Section 32-T26S-R29E		
Site Position:	Map	From:	
From:	Map	Position Uncertainty:	
Position Uncertainty:	0.00 ft	Slot Radius:	
North:	364,189.00 usft	Latitude:	32.00080022
East:	644,371.00 usft	Longitude:	-104.00095235
Slot Radius:	13-3/16 "	Grid Convergence:	0.18 °

Well	Money Graham Fed Com Well No. 238 H, Surf loc: 250 FSL 879 FEL Section 32-T26S-R29E		
Well Position	+N/-S	0.00 ft	North:
	+E/-W	0.00 ft	East:
Position Uncertainty	0.00 ft	Wellhead Elevation:	
		Latitude:	32.00080044
		Longitude:	-104.00103300
		Ground Level:	2,866.00 ft

Wellbore	Original Hole		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2015	12/26/2018	6.97
			59.77
			47,607.59597066

Design	rev0		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			0.52

Plan Survey Tool Program	Date 12/28/2018		
Depth From	Depth To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
1	0.00	17,709.92 rev0 (Original Hole)	MWD
			OWSG MWD - Standard

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(ft)	(ft)	Rate	Rate	Rate	(°)	
(ft)			(ft)			(°/100ft)	(°/100ft)	(°/100ft)		
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,588.33	2.82	147.22	1,588.26	-3.90	2.51	1.50	1.50	0.00	147.22	
6,217.45	2.82	147.22	6,211.74	-195.72	128.04	0.00	0.00	0.00	0.00	
6,405.78	0.00	0.52	6,400.00	-199.62	128.55	1.50	-1.50	0.00	180.00	Money Graham 23H \
10,004.83	0.00	0.52	9,999.05	-199.62	128.55	0.00	0.00	0.00	0.52	
10,901.46	89.66	0.52	10,572.00	369.95	133.68	10.00	10.00	0.00	0.52	
17,709.92	89.66	0.52	10,612.00	7,178.01	195.00	0.00	0.00	0.00	0.00	Money Graham 23H F



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238
Company:	Tap Rock Operating LLC	TVD Reference:	H
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	RKB=2866+26 @ 2892.00ft
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Grid
Wellbore:	Original Hole		Minimum Curvature
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
100.00	0.00	0.00	100.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
200.00	0.00	0.00	200.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
300.00	0.00	0.00	300.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
400.00	0.00	0.00	400.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
500.00	0.00	0.00	500.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
507.00	0.00	0.00	507.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
Rustler Anhydrite									
600.00	0.00	0.00	600.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
682.00	0.00	0.00	682.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
Top Salt									
700.00	0.00	0.00	700.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
800.00	0.00	0.00	800.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
900.00	0.00	0.00	900.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
1,000.00	0.00	0.00	1,000.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
1,100.00	0.00	0.00	1,100.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
1,200.00	0.00	0.00	1,200.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
1,300.00	0.00	0.00	1,300.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
1,400.00	0.00	0.00	1,400.00	0.00	0.00	364,189.00	644,346.00	32.00080044	-104.00103300
KOP Begin 1.5°/100' build									
1,500.00	1.50	147.22	1,499.99	-1.10	0.71	364,187.90	644,346.71	32.00079740	-104.00103072
1,588.33	2.82	147.22	1,588.26	-3.90	2.51	364,185.10	644,348.52	32.00078969	-104.00102493
Begin 2.82° tangent									
1,600.00	2.82	147.22	1,599.91	-4.39	2.82	364,184.61	644,348.83	32.00078835	-104.00102393
1,700.00	2.82	147.22	1,699.79	-8.53	5.49	364,180.47	644,351.50	32.00077694	-104.00101536
1,800.00	2.82	147.22	1,799.67	-12.67	8.16	364,176.32	644,354.17	32.00076553	-104.00100679
1,900.00	2.82	147.22	1,899.54	-16.82	10.83	364,172.18	644,356.83	32.00075411	-104.00099823
2,000.00	2.82	147.22	1,999.42	-20.96	13.50	364,168.04	644,359.50	32.00074270	-104.00098966
2,100.00	2.82	147.22	2,099.30	-25.10	16.17	364,163.89	644,362.17	32.00073129	-104.00098109
2,200.00	2.82	147.22	2,199.18	-29.25	18.84	364,159.75	644,364.84	32.00071987	-104.00097253
2,300.00	2.82	147.22	2,299.06	-33.39	21.50	364,155.61	644,367.51	32.00070846	-104.00096396
2,392.83	2.82	147.22	2,391.78	-37.24	23.98	364,151.76	644,369.99	32.00069787	-104.00095601
Base Salt									
2,400.00	2.82	147.22	2,398.94	-37.54	24.17	364,151.46	644,370.18	32.00069705	-104.00095539
2,500.00	2.82	147.22	2,498.82	-41.68	26.84	364,147.32	644,372.84	32.00068563	-104.00094682
2,600.00	2.82	147.22	2,598.69	-45.82	29.51	364,143.18	644,375.51	32.00067422	-104.00093826
2,700.00	2.82	147.22	2,698.57	-49.97	32.18	364,139.03	644,378.18	32.00066281	-104.00092969
2,733.16	2.82	147.22	2,731.70	-51.34	33.06	364,137.66	644,379.07	32.00065902	-104.00092685
Delaware Mountain Gp									
2,800.00	2.82	147.22	2,798.45	-54.11	34.85	364,134.89	644,380.85	32.00065139	-104.00092112
2,848.28	2.82	147.22	2,846.67	-56.11	36.13	364,132.89	644,382.14	32.00064588	-104.00091699
Bell Canyon - Lamar									
2,888.32	2.82	147.22	2,886.66	-57.77	37.20	364,131.23	644,383.21	32.00064131	-104.00091356
Ramsey Sand									
2,900.00	2.82	147.22	2,898.33	-58.25	37.51	364,130.74	644,383.52	32.00063998	-104.00091256
3,000.00	2.82	147.22	2,998.21	-62.40	40.18	364,126.60	644,386.19	32.00062857	-104.00090399
3,100.00	2.82	147.22	3,098.09	-66.54	42.85	364,122.46	644,388.86	32.00061715	-104.00089542
3,200.00	2.82	147.22	3,197.97	-70.68	45.52	364,118.31	644,391.52	32.00060574	-104.00088686
3,300.00	2.82	147.22	3,297.84	-74.83	48.19	364,114.17	644,394.19	32.00059433	-104.00087829
3,400.00	2.82	147.22	3,397.72	-78.97	50.86	364,110.03	644,396.86	32.00058291	-104.00086972
3,500.00	2.82	147.22	3,497.60	-83.12	53.52	364,105.88	644,399.53	32.00057150	-104.00086116
3,600.00	2.82	147.22	3,597.48	-87.26	56.19	364,101.74	644,402.20	32.00056009	-104.00085259
3,700.00	2.82	147.22	3,697.36	-91.40	58.86	364,097.60	644,404.87	32.00054868	-104.00084402



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238
Company:	Tap Rock Operating LLC	TVD Reference:	H
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	RKB=2866+26 @ 2892.00ft
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Grid
Wellbore:	Original Hole		Minimum Curvature
Design:	rev0		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
3,800.00	2.82	147.22	3,797.24	-95.55	61.53	364,093.45	644,407.53	32.00053726	-104.00083546
3,864.26	2.82	147.22	3,861.42	-98.21	63.24	364,090.79	644,409.25	32.00052993	-104.00082995
Cherry Canyon									
3,900.00	2.82	147.22	3,897.11	-99.69	64.20	364,089.31	644,410.20	32.00052585	-104.00082689
4,000.00	2.82	147.22	3,996.99	-103.83	66.87	364,085.16	644,412.87	32.00051444	-104.00081832
4,100.00	2.82	147.22	4,096.87	-107.98	69.53	364,081.02	644,415.54	32.00050302	-104.00080975
4,200.00	2.82	147.22	4,196.75	-112.12	72.20	364,076.88	644,418.21	32.00049161	-104.00080119
4,300.00	2.82	147.22	4,296.63	-116.27	74.87	364,072.73	644,420.88	32.00048020	-104.00079262
4,400.00	2.82	147.22	4,396.51	-120.41	77.54	364,068.59	644,423.54	32.00046878	-104.00078405
4,500.00	2.82	147.22	4,496.39	-124.55	80.21	364,064.45	644,426.21	32.00045737	-104.00077549
4,600.00	2.82	147.22	4,596.26	-128.70	82.88	364,060.30	644,428.88	32.00044596	-104.00076692
4,700.00	2.82	147.22	4,696.14	-132.84	85.55	364,056.16	644,431.55	32.00043454	-104.00075835
4,800.00	2.82	147.22	4,796.02	-136.98	88.21	364,052.01	644,434.22	32.00042313	-104.00074979
4,840.21	2.82	147.22	4,836.18	-138.65	89.29	364,050.35	644,435.29	32.00041854	-104.00074634
Brushy Canyon									
4,900.00	2.82	147.22	4,895.90	-141.13	90.88	364,047.87	644,436.89	32.00041172	-104.00074122
5,000.00	2.82	147.22	4,995.78	-145.27	93.55	364,043.73	644,439.55	32.00040030	-104.00073265
5,100.00	2.82	147.22	5,095.66	-149.41	96.22	364,039.58	644,442.22	32.00038889	-104.00072409
5,200.00	2.82	147.22	5,195.53	-153.56	98.89	364,035.44	644,444.89	32.00037748	-104.00071552
5,300.00	2.82	147.22	5,295.41	-157.70	101.56	364,031.30	644,447.56	32.00036606	-104.00070695
5,400.00	2.82	147.22	5,395.29	-161.85	104.22	364,027.15	644,450.23	32.00035465	-104.00069839
5,500.00	2.82	147.22	5,495.17	-165.99	106.89	364,023.01	644,452.90	32.00034324	-104.00068982
5,600.00	2.82	147.22	5,595.05	-170.13	109.56	364,018.87	644,455.57	32.00033182	-104.00068125
5,700.00	2.82	147.22	5,694.93	-174.28	112.23	364,014.72	644,458.23	32.00032041	-104.00067268
5,800.00	2.82	147.22	5,794.81	-178.42	114.90	364,010.58	644,460.90	32.00030900	-104.00066412
5,900.00	2.82	147.22	5,894.68	-182.56	117.57	364,006.43	644,463.57	32.00029758	-104.00065555
6,000.00	2.82	147.22	5,994.56	-186.71	120.23	364,002.29	644,466.24	32.00028617	-104.00064698
6,100.00	2.82	147.22	6,094.44	-190.85	122.90	363,998.15	644,468.91	32.00027476	-104.00063842
6,200.00	2.82	147.22	6,194.32	-194.99	125.57	363,994.00	644,471.58	32.00026334	-104.00062985
6,217.45	2.82	147.22	6,211.74	-195.72	126.04	363,993.28	644,472.04	32.00026135	-104.00062836
Begin 1.5"/100' drop									
6,300.00	1.59	147.22	6,294.24	-198.39	127.76	363,990.61	644,473.76	32.00025399	-104.00062283
6,400.00	0.09	147.22	6,394.22	-199.62	128.55	363,989.38	644,474.55	32.00025061	-104.00062029
6,405.78	0.00	0.52	6,400.00	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
Begin vertical hold									
6,431.60	0.00	0.00	6,425.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
Bone Spring Lime									
6,500.00	0.00	0.00	6,494.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
6,600.00	0.00	0.00	6,594.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
6,700.00	0.00	0.00	6,694.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
6,800.00	0.00	0.00	6,794.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
6,900.00	0.00	0.00	6,894.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,000.00	0.00	0.00	6,994.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,100.00	0.00	0.00	7,094.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,200.00	0.00	0.00	7,194.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,300.00	0.00	0.00	7,294.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,356.60	0.00	0.00	7,350.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
1st Bone Spring Sand									
7,400.00	0.00	0.00	7,394.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,500.00	0.00	0.00	7,494.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,600.00	0.00	0.00	7,594.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,700.00	0.00	0.00	7,694.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,800.00	0.00	0.00	7,794.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
7,900.00	0.00	0.00	7,894.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
7,936.60	0.00	0.00	7,930.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
2nd Bone Spring Sand									
8,000.00	0.00	0.00	7,994.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,100.00	0.00	0.00	8,094.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,200.00	0.00	0.00	8,194.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,300.00	0.00	0.00	8,294.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,400.00	0.00	0.00	8,394.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,500.00	0.00	0.00	8,494.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,600.00	0.00	0.00	8,594.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,700.00	0.00	0.00	8,694.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,800.00	0.00	0.00	8,794.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
8,900.00	0.00	0.00	8,894.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,000.00	0.00	0.00	8,994.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,100.00	0.00	0.00	9,094.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,188.60	0.00	0.00	9,182.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
3rd Bone Spring Sand									
9,200.00	0.00	0.00	9,194.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,300.00	0.00	0.00	9,294.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,400.00	0.00	0.00	9,394.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,446.60	0.00	0.00	9,440.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
3rd BS W Sand									
9,500.00	0.00	0.00	9,494.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,536.60	0.00	0.00	9,530.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
Wolfcamp A									
9,600.00	0.00	0.00	9,594.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,646.60	0.00	0.00	9,640.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
Wolfcamp A Y Sand									
9,700.00	0.00	0.00	9,694.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,776.60	0.00	0.00	9,770.82	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
Wolfcamp A Fat									
9,800.00	0.00	0.00	9,794.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
9,900.00	0.00	0.00	9,894.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
10,000.00	0.00	0.00	9,994.22	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
10,004.83	0.00	0.00	9,999.05	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
Begin 10°/100' build									
10,036.62	3.18	0.52	10,030.83	-198.74	128.56	363,990.26	644,474.56	32.00025303	-104.00062025
Wolfcamp B									
10,100.00	9.52	0.52	10,093.79	-191.73	128.62	363,997.26	644,474.63	32.00027228	-104.00061998
10,200.00	19.52	0.52	10,190.47	-166.70	128.85	364,022.30	644,474.85	32.00034109	-104.00061900
10,300.00	29.52	0.52	10,281.34	-125.26	129.22	364,063.74	644,475.22	32.00045501	-104.00061739
10,400.00	39.52	0.52	10,363.63	-68.67	129.73	364,120.33	644,475.73	32.00061058	-104.00061518
10,500.00	49.52	0.52	10,434.84	1.35	130.36	364,190.35	644,476.36	32.00080305	-104.00061245
10,600.00	59.52	0.52	10,492.81	82.68	131.09	364,271.67	644,477.10	32.00102660	-104.00060928
10,700.00	69.52	0.52	10,535.78	172.83	131.90	364,361.83	644,477.91	32.00127442	-104.00060577
10,722.23	71.74	0.52	10,543.16	193.80	132.09	364,382.80	644,478.10	32.00133206	-104.00060495
Wolfcamp B2									
10,800.00	79.52	0.52	10,562.45	269.07	132.77	364,458.07	644,478.78	32.00153898	-104.00060202
10,900.00	89.52	0.52	10,571.99	368.49	133.67	364,557.48	644,479.67	32.00181226	-104.00059814
10,901.46	89.66	0.52	10,572.00	369.95	133.68	364,558.95	644,479.68	32.00181627	-104.00059808
Begin 89.66° lateral									
11,000.00	89.66	0.52	10,572.58	468.48	134.57	364,657.48	644,480.57	32.00208713	-104.00059424



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238
Company:	Tap Rock Operating LLC	TVD Reference:	H
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	RKB=2866+26 @ 2892.00ft
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Grid
Wellbore:	Original Hole		Minimum Curvature
Design:	rev0		

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N-S (ft)	+E-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
11,100.00	89.66	0.52	10,573.16	568.47	135.47	364,757.47	644,481.47	32.00236200	-104.00059034	
11,200.00	89.66	0.52	10,573.75	668.47	136.37	364,857.47	644,482.37	32.00263687	-104.00058645	
11,300.00	89.66	0.52	10,574.34	768.46	137.27	364,957.46	644,483.27	32.00291174	-104.00058255	
11,400.00	89.66	0.52	10,574.93	868.46	138.17	365,057.45	644,484.17	32.00318661	-104.00057865	
11,500.00	89.66	0.52	10,575.51	968.45	139.07	365,157.45	644,485.08	32.00346149	-104.00057475	
11,600.00	89.66	0.52	10,576.10	1,068.45	139.97	365,257.44	644,485.98	32.00373636	-104.00057085	
11,700.00	89.66	0.52	10,576.69	1,168.44	140.87	365,357.44	644,486.88	32.00401123	-104.00056695	
11,800.00	89.66	0.52	10,577.28	1,268.43	141.77	365,457.43	644,487.78	32.00428610	-104.00056306	
11,900.00	89.66	0.52	10,577.86	1,368.43	142.67	365,557.42	644,488.68	32.00456097	-104.00055916	
12,000.00	89.66	0.52	10,578.45	1,468.42	143.57	365,657.42	644,489.58	32.00483584	-104.00055526	
12,100.00	89.66	0.52	10,579.04	1,568.42	144.47	365,757.41	644,490.48	32.00511071	-104.00055136	
12,200.00	89.66	0.52	10,579.63	1,668.41	145.38	365,857.41	644,491.38	32.00538559	-104.00054746	
12,300.00	89.66	0.52	10,580.22	1,768.41	146.28	365,957.40	644,492.28	32.00566046	-104.00054356	
12,400.00	89.66	0.52	10,580.80	1,868.40	147.18	366,057.39	644,493.18	32.00593533	-104.00053966	
12,500.00	89.66	0.52	10,581.39	1,968.39	148.08	366,157.39	644,494.08	32.00621020	-104.00053577	
12,600.00	89.66	0.52	10,581.98	2,068.39	148.98	366,257.38	644,494.98	32.00648507	-104.00053187	
12,700.00	89.66	0.52	10,582.57	2,168.38	149.88	366,357.38	644,495.88	32.00675994	-104.00052797	
12,800.00	89.66	0.52	10,583.15	2,268.38	150.78	366,457.37	644,496.78	32.00703482	-104.00052407	
12,900.00	89.66	0.52	10,583.74	2,368.37	151.68	366,557.36	644,497.68	32.00730969	-104.00052017	
13,000.00	89.66	0.52	10,584.33	2,468.36	152.58	366,657.36	644,498.58	32.00758456	-104.00051627	
13,100.00	89.66	0.52	10,584.92	2,568.36	153.48	366,757.35	644,499.49	32.00785943	-104.00051237	
13,200.00	89.66	0.52	10,585.50	2,668.35	154.38	366,857.35	644,500.39	32.00813430	-104.00050847	
13,300.00	89.66	0.52	10,586.09	2,768.35	155.28	366,957.34	644,501.29	32.00840917	-104.00050457	
13,400.00	89.66	0.52	10,586.68	2,868.34	156.18	367,057.33	644,502.19	32.00868404	-104.00050067	
13,500.00	89.66	0.52	10,587.27	2,968.34	157.08	367,157.33	644,503.09	32.00895891	-104.00049677	
13,600.00	89.66	0.52	10,587.85	3,068.33	157.98	367,257.32	644,503.99	32.00923379	-104.00049287	
13,700.00	89.66	0.52	10,588.44	3,168.32	158.89	367,357.32	644,504.89	32.00950866	-104.00048897	
13,800.00	89.66	0.52	10,589.03	3,268.32	159.79	367,457.31	644,505.79	32.00978353	-104.00048507	
13,900.00	89.66	0.52	10,589.62	3,368.31	160.69	367,557.30	644,506.69	32.01005840	-104.00048117	
14,000.00	89.66	0.52	10,590.20	3,468.31	161.59	367,657.30	644,507.59	32.01033327	-104.00047727	
14,100.00	89.66	0.52	10,590.79	3,568.30	162.49	367,757.29	644,508.49	32.01060814	-104.00047337	
14,200.00	89.66	0.52	10,591.38	3,668.30	163.39	367,857.29	644,509.39	32.01088301	-104.00046947	
14,300.00	89.66	0.52	10,591.97	3,768.29	164.29	367,957.28	644,510.29	32.01115788	-104.00046557	
14,400.00	89.66	0.52	10,592.55	3,868.28	165.19	368,057.27	644,511.19	32.01143276	-104.00046167	
14,500.00	89.66	0.52	10,593.14	3,968.28	166.09	368,157.27	644,512.09	32.01170763	-104.00045777	
14,600.00	89.66	0.52	10,593.73	4,068.27	166.99	368,257.26	644,513.00	32.01198250	-104.00045387	
14,700.00	89.66	0.52	10,594.32	4,168.27	167.89	368,357.26	644,513.90	32.01225737	-104.00044997	
14,800.00	89.66	0.52	10,594.90	4,268.26	168.79	368,457.25	644,514.80	32.01253224	-104.00044607	
14,900.00	89.66	0.52	10,595.49	4,368.26	169.69	368,557.24	644,515.70	32.01280711	-104.00044217	
15,000.00	89.66	0.52	10,596.08	4,468.25	170.59	368,657.24	644,516.60	32.01308198	-104.00043827	
15,100.00	89.66	0.52	10,596.67	4,568.24	171.49	368,757.23	644,517.50	32.01335685	-104.00043437	
15,200.00	89.66	0.52	10,597.25	4,668.24	172.39	368,857.23	644,518.40	32.01363173	-104.00043047	
15,300.00	89.66	0.52	10,597.84	4,768.23	173.30	368,957.22	644,519.30	32.01390660	-104.00042657	
15,400.00	89.66	0.52	10,598.43	4,868.23	174.20	369,057.21	644,520.20	32.01418147	-104.00042267	
15,500.00	89.66	0.52	10,599.02	4,968.22	175.10	369,157.21	644,521.10	32.01445634	-104.00041877	
15,600.00	89.66	0.52	10,599.60	5,068.21	176.00	369,257.20	644,522.00	32.01473121	-104.00041487	
15,700.00	89.66	0.52	10,600.19	5,168.21	176.90	369,357.20	644,522.90	32.01500608	-104.00041097	
15,800.00	89.66	0.52	10,600.78	5,268.20	177.80	369,457.19	644,523.80	32.01528095	-104.00040707	
15,900.00	89.66	0.52	10,601.37	5,368.20	178.70	369,557.18	644,524.70	32.01555582	-104.00040317	
16,000.00	89.66	0.52	10,601.95	5,468.19	179.60	369,657.18	644,525.60	32.01583069	-104.00039927	
16,100.00	89.66	0.52	10,602.54	5,568.19	180.50	369,757.17	644,526.50	32.01610557	-104.00039537	
16,200.00	89.66	0.52	10,603.13	5,668.18	181.40	369,857.17	644,527.41	32.01638044	-104.00039147	
16,300.00	89.66	0.52	10,603.72	5,768.17	182.30	369,957.16	644,528.31	32.01665531	-104.00038757	
16,400.00	89.66	0.52	10,604.30	5,868.17	183.20	370,057.15	644,529.21	32.01693018	-104.00038367	



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
16,500.00	89.66	0.52	10,604.89	5,968.16	184.10	370,157.15	644,530.11	32.01720505	-104.00037979
16,600.00	89.66	0.52	10,605.48	6,068.16	185.00	370,257.14	644,531.01	32.01747992	-104.00037589
16,700.00	89.66	0.52	10,606.07	6,168.15	185.90	370,357.14	644,531.91	32.01775479	-104.00037199
16,800.00	89.66	0.52	10,606.65	6,268.15	186.81	370,457.13	644,532.81	32.01802966	-104.00036809
16,900.00	89.66	0.52	10,607.24	6,368.14	187.71	370,557.12	644,533.71	32.01830453	-104.00036419
17,000.00	89.66	0.52	10,607.83	6,468.13	188.61	370,657.12	644,534.61	32.01857940	-104.00036029
17,100.00	89.66	0.52	10,608.42	6,568.13	189.51	370,757.11	644,535.51	32.01885427	-104.00035639
17,200.00	89.66	0.52	10,609.00	6,668.12	190.41	370,857.11	644,536.41	32.01912915	-104.00035249
17,300.00	89.66	0.52	10,609.59	6,768.12	191.31	370,957.10	644,537.31	32.01940402	-104.00034859
17,400.00	89.66	0.52	10,610.18	6,868.11	192.21	371,057.09	644,538.21	32.01967889	-104.00034469
17,500.00	89.66	0.52	10,610.77	6,968.10	193.11	371,157.09	644,539.11	32.01995376	-104.00034079
17,600.00	89.66	0.52	10,611.35	7,068.10	194.01	371,257.08	644,540.01	32.02022863	-104.00033689
17,700.00	89.66	0.52	10,611.94	7,168.09	194.91	371,357.08	644,540.92	32.02050350	-104.00033299
17,709.92	89.66	0.52	10,612.00	7,178.01	195.00	371,367.00	644,541.00	32.02053077	-104.00033261
PBHL/TD 17709.92 MD/10612.00 TVD									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Money Graham 23H VT	0.00	0.00	6,400.00	-199.62	128.55	363,989.38	644,474.55	32.00025060	-104.00062029
- plan hits target center									
- Point									
Money Graham 23H PBI	0.00	0.00	10,612.00	7,178.01	195.00	371,367.00	644,541.00	32.02053077	-104.00033261
- plan hits target center									
- Point									



Planning Report - Geographic

Database:	DB_Jul2216dt_v14	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Company:	Tap Rock Operating LLC	TVD Reference:	RKB=2866+26 @ 2892.00ft
Project:	Eddy County, New Mexico NAD83 NM east	MD Reference:	RKB=2866+26 @ 2892.00ft
Site:	Section 32-T26S-R29E	North Reference:	Grid
Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Original Hole		
Design:	rev0		

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
507.00	507.00	Rustler Anhydrite		0.34	0.52
682.00	682.00	Top Salt		0.34	0.52
2,392.83	2,391.78	Base Salt		0.34	0.52
2,733.16	2,731.70	Delaware Mountain Gp		0.34	0.52
2,848.28	2,846.67	Bell Canyon		0.34	0.52
2,848.28	2,846.67	Lamar		0.34	0.52
2,888.32	2,886.66	Ramsey Sand		0.34	0.52
3,864.26	3,861.42	Cherry Canyon		0.34	0.52
4,840.21	4,836.18	Brushy Canyon		0.34	0.52
6,431.60	6,425.82	Bone Spring Lime		0.34	0.52
7,356.60	7,350.82	1st Bone Spring Sand		0.34	0.52
7,936.60	7,930.82	2nd Bone Spring Sand		0.34	0.52
9,188.60	9,182.82	3rd Bone Spring Sand		0.34	0.52
9,446.60	9,440.82	3rd BS W Sand		0.34	0.52
9,536.60	9,530.82	Wolfcamp A		0.34	0.52
9,646.60	9,640.82	Wolfcamp A Y Sand		0.34	0.52
9,776.60	9,770.82	Wolfcamp A Fat		0.34	0.52
10,036.62	10,030.83	Wolfcamp B		0.34	0.52
10,722.23	10,543.16	Wolfcamp B2		0.34	0.52

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,400.00	1,400.00	0.00	0.00	KOP Begin 1.5°/100' build	
1,588.33	1,588.26	-3.90	2.51	Begin 2.82° tangent	
6,217.45	6,211.74	-195.72	126.04	Begin 1.5°/100' drop	
6,405.78	6,400.00	-199.62	128.55	Begin vertical hold	
10,004.83	9,999.05	-199.62	128.55	Begin 10°/100' build	
10,901.46	10,572.00	369.95	133.68	Begin 89.66° lateral	
17,709.92	10,612.00	7,178.01	195.00	PBHL/TD 17709.92 MD/10612.00 TVD	



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at:	3.00 sigma
Reference Wellbore:	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Reference	rev0		
Filter type:	GLOBAL FILTER APPLIED: All wellpaths within 200'+ 100/1000 of reference		
Interpolation Method:	MD Interval 100.00ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 1,970.99 ft	Error Surface:	Ellipsoid Separation
Warning Levels Evaluated at:	3.00 Sigma	Casing Method:	Not applied

Survey Tool Program		Date	12/28/2018		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.00	17,709.92	rev0 (Original Hole)	MWD	OWSG MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Section 32-T26S-R29E						
Money Graham Fed Com Well No. 204 H - Original Hole	1,400.00	1,400.00	25.00	10.62	1.739	Level 3<2.00, CC
Money Graham Fed Com Well No. 204 H - Original Hole	1,500.00	1,500.01	25.73	10.30	1.668	Level 3<2.00, ES, SF
Money Graham Fed Com Well No. 214 H - Original Hole	1,200.00	1,200.00	75.01	62.78	6.134	CC, ES
Money Graham Fed Com Well No. 214 H - Original Hole	17,709.92	17,040.11	841.03	594.54	3.412	SF
Money Graham Fed Com Well No. 218 H - Original Hole	1,200.00	1,200.00	25.00	12.77	2.045	CC, ES
Money Graham Fed Com Well No. 218 H - Original Hole	1,300.00	1,299.43	26.11	12.83	1.967	Level 3<2.00, SF
Money Graham Fed Com Well No. 246 H - Original Hole	1,400.00	1,400.00	50.01	35.63	3.478	CC, ES
Money Graham Fed Com Well No. 246 H - Original Hole	17,700.00	17,891.06	465.37	146.15	1.458	Level 2<1.50, SF
Sidewinder #1H - Original Hole - Surveys Original Hole	6,893.96	10,675.13	287.88	101.98	1.549	Level 3<2.00, CC, ES, SF

Offset Design		Section 32-T26S-R29E - Money Graham Fed Com Well No. 204 H - Original Hole - rev0										Offset Site Error: 0.00 ft	
Survey Program: 0-MWD												Offset Well Error: 0.00 ft	
Reference		Offset		Semi Major Axis			Distance					Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)		Separation Factor
0.00	0.00	0.00	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		-25.00	25.00	24.60	0.40	62.829	
200.00	200.00	200.00	200.00	0.74	0.74	-90.00		-25.00	25.00	23.53	1.47	16.969	
300.00	300.00	300.00	300.00	1.27	1.27	-90.00		-25.00	25.00	22.45	2.55	9.809	
400.00	400.00	400.00	400.00	1.81	1.81	-90.00		-25.00	25.00	21.38	3.62	6.898	
500.00	500.00	500.00	500.00	2.35	2.35	-90.00		-25.00	25.00	20.30	4.70	5.320	
600.00	600.00	600.00	600.00	2.89	2.89	-90.00		-25.00	25.00	19.23	5.77	4.329	
700.00	700.00	700.00	700.00	3.43	3.43	-90.00		-25.00	25.00	18.15	6.85	3.649	
800.00	800.00	800.00	800.00	3.96	3.96	-90.00		-25.00	25.00	17.07	7.93	3.154	
900.00	900.00	900.00	900.00	4.50	4.50	-90.00		-25.00	25.00	16.00	9.00	2.777	
1,000.00	1,000.00	1,000.00	1,000.00	5.04	5.04	-90.00		-25.00	25.00	14.92	10.08	2.481	
1,100.00	1,100.00	1,100.00	1,100.00	5.58	5.58	-90.00		-25.00	25.00	13.85	11.15	2.242	
1,200.00	1,200.00	1,200.00	1,200.00	6.11	6.11	-90.00		-25.00	25.00	12.77	12.23	2.045	
1,300.00	1,300.00	1,300.00	1,300.00	6.65	6.65	-90.00		-25.00	25.00	11.70	13.30	1.879	Level 3<2.00
1,400.00	1,400.00	1,400.00	1,400.00	7.19	7.19	-90.00		-25.00	25.00	10.62	14.38	1.739	Level 3<2.00, CC
1,500.00	1,499.99	1,500.01	1,499.99	7.70	7.73	125.22		-25.00	25.73	10.30	15.43	1.668	Level 3<2.00, ES, SF
1,600.00	1,599.91	1,600.09	1,599.91	8.20	8.27	131.70		-25.00	28.17	11.71	16.46	1.711	Level 3<2.00

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



Anticollision Report

Company:	Tap Rock Operating LLC.	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83-NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Section 32-T26S-R29E - Money Graham Fed Com Well No. 204 H - Original Hole - rev0													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Reference		Offset		Semi Major Axis:			Distance						Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	
1,700.00	1,699.79	1,700.21	1,699.79	8.70	8.80	138.37	0.00	-25.00	31.66	14.17	17.50	1.810 Level 3<2.00	
1,800.00	1,799.67	1,800.33	1,799.67	9.20	9.34	143.66	0.00	-25.00	35.50	16.96	18.54	1.915 Level 3<2.00	
1,900.00	1,899.54	1,900.46	1,899.54	9.71	9.88	147.89	0.00	-25.00	39.58	20.00	19.58	2.021	
2,000.00	1,999.42	1,999.42	1,999.42	10.23	10.41	151.32	0.00	-25.00	43.83	23.21	20.63	2.125	
2,100.00	2,099.30	2,099.70	2,099.69	10.75	10.92	152.67	-1.27	-25.27	47.80	26.15	21.65	2.208	
2,200.00	2,199.18	2,200.03	2,199.88	11.27	11.41	151.04	-5.09	-26.08	51.00	28.35	22.65	2.251	
2,300.00	2,299.06	2,300.10	2,299.69	11.79	11.91	148.63	-9.84	-27.08	54.00	30.33	23.67	2.282	
2,400.00	2,398.94	2,400.17	2,399.50	12.32	12.40	146.47	-14.59	-28.09	57.08	32.39	24.69	2.312	
2,500.00	2,498.82	2,500.24	2,499.32	12.85	12.90	144.54	-19.33	-29.09	60.24	34.52	25.71	2.342	
2,600.00	2,598.69	2,600.31	2,599.13	13.38	13.41	142.80	-24.08	-30.10	63.45	36.70	26.75	2.372	
2,700.00	2,698.57	2,700.38	2,698.94	13.91	13.92	141.23	-28.83	-31.11	66.72	38.93	27.79	2.401	
2,800.00	2,798.45	2,800.45	2,798.75	14.45	14.43	139.80	-33.58	-32.11	70.04	41.21	28.83	2.429	
2,900.00	2,898.33	2,900.52	2,898.57	14.98	14.95	138.51	-38.32	-33.12	73.39	43.51	29.88	2.456	
3,000.00	2,998.21	3,000.59	2,998.38	15.52	15.46	137.33	-43.07	-34.12	76.78	45.85	30.93	2.483	
3,100.00	3,098.09	3,100.66	3,098.19	16.06	15.98	136.25	-47.82	-35.13	80.19	48.21	31.98	2.508	
3,200.00	3,197.97	3,200.73	3,198.00	16.60	16.51	135.26	-52.56	-36.13	83.64	50.60	33.04	2.531	
3,300.00	3,297.84	3,300.80	3,297.82	17.13	17.03	134.35	-57.31	-37.14	87.10	53.01	34.10	2.554	
3,400.00	3,397.72	3,400.87	3,397.63	17.67	17.55	133.50	-62.06	-38.14	90.59	55.43	35.16	2.576	
3,500.00	3,497.60	3,500.93	3,497.44	18.22	18.08	132.72	-66.81	-39.15	94.10	57.87	36.23	2.597	
3,600.00	3,597.48	3,601.00	3,597.26	18.76	18.61	132.00	-71.55	-40.15	97.62	60.32	37.30	2.617	
3,700.00	3,697.36	3,701.07	3,697.07	19.30	19.14	131.33	-76.30	-41.16	101.15	62.79	38.37	2.637	
3,800.00	3,797.24	3,801.14	3,796.88	19.84	19.67	130.70	-81.05	-42.16	104.70	65.27	39.44	2.655	
3,900.00	3,897.11	3,901.21	3,896.69	20.39	20.21	130.11	-85.79	-43.17	108.26	67.75	40.51	2.673	
4,000.00	3,996.99	4,001.28	3,996.51	20.93	20.74	129.56	-90.54	-44.18	111.84	70.25	41.58	2.689	
4,100.00	4,096.87	4,101.35	4,096.32	21.47	21.27	129.05	-95.29	-45.18	115.42	72.76	42.66	2.705	
4,200.00	4,196.75	4,201.42	4,196.13	22.02	21.81	128.56	-100.04	-46.19	119.01	75.27	43.74	2.721	
4,300.00	4,296.63	4,301.49	4,295.95	22.56	22.35	128.11	-104.78	-47.19	122.60	77.79	44.82	2.736	
4,400.00	4,396.51	4,401.56	4,395.76	23.11	22.88	127.68	-109.53	-48.20	126.21	80.31	45.90	2.750	
4,500.00	4,496.39	4,501.63	4,495.57	23.65	23.42	127.27	-114.28	-49.20	129.82	82.84	46.98	2.764	
4,600.00	4,596.26	4,601.70	4,595.38	24.20	23.96	126.89	-119.02	-50.21	133.44	85.38	48.06	2.777	
4,700.00	4,696.14	4,701.77	4,695.20	24.75	24.50	126.52	-123.77	-51.21	137.06	87.92	49.14	2.789	
4,800.00	4,796.02	4,801.84	4,795.01	25.29	25.04	126.18	-128.52	-52.22	140.69	90.47	50.22	2.801	
4,900.00	4,895.90	4,901.91	4,894.82	25.84	25.58	125.85	-133.27	-53.22	144.32	93.02	51.31	2.813	
5,000.00	4,995.78	5,001.98	4,994.63	26.39	26.12	125.54	-138.01	-54.23	147.96	95.57	52.39	2.824	
5,100.00	5,095.66	5,102.04	5,094.45	26.93	26.66	125.24	-142.76	-55.23	151.60	98.13	53.48	2.835	
5,200.00	5,195.53	5,202.11	5,194.26	27.48	27.20	124.96	-147.51	-56.24	155.25	100.69	54.57	2.845	
5,300.00	5,295.41	5,302.18	5,294.07	28.03	27.74	124.69	-152.26	-57.25	158.90	103.25	55.65	2.855	
5,400.00	5,395.29	5,402.25	5,393.89	28.57	28.29	124.44	-157.00	-58.25	162.55	105.81	56.74	2.865	
5,500.00	5,495.17	5,502.32	5,493.70	29.12	28.83	124.19	-161.75	-59.26	166.21	108.38	57.83	2.874	
5,600.00	5,595.05	5,602.39	5,593.51	29.67	29.37	123.95	-166.50	-60.26	169.87	110.95	58.92	2.883	
5,700.00	5,694.93	5,702.46	5,693.32	30.22	29.92	123.73	-171.24	-61.27	173.53	113.53	60.00	2.892	
5,800.00	5,794.81	5,802.53	5,793.14	30.77	30.46	123.51	-175.99	-62.27	177.19	116.10	61.09	2.900	
5,900.00	5,894.68	5,902.60	5,892.95	31.32	31.00	123.30	-180.74	-63.28	180.86	118.68	62.18	2.908	
6,000.00	5,994.56	6,002.67	5,992.76	31.86	31.55	123.10	-185.49	-64.28	184.53	121.26	63.27	2.916	
6,100.00	6,094.44	6,102.74	6,092.57	32.41	32.09	122.91	-190.23	-65.29	188.20	123.84	64.37	2.924	
6,200.00	6,194.32	6,197.19	6,192.39	32.96	32.61	122.73	-194.98	-66.29	191.87	126.45	65.43	2.933	
6,300.00	6,294.24	6,297.98	6,293.09	33.51	33.15	122.59	-199.68	-67.14	194.90	128.38	66.52	2.930	
6,400.00	6,394.22	6,399.06	6,394.16	34.02	33.68	122.54	-200.44	-67.45	196.00	128.43	67.57	2.901	
6,500.00	6,494.22	6,500.87	6,494.22	34.52	34.20	-90.24	-200.44	-67.45	196.00	127.42	68.59	2.858	
6,600.00	6,594.22	6,600.87	6,594.22	35.02	34.70	-90.24	-200.44	-67.45	196.00	126.41	69.59	2.816	
6,700.00	6,694.22	6,700.87	6,694.22	35.52	35.21	-90.24	-200.44	-67.45	196.00	125.40	70.60	2.776	

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
6,800.00	6,794.22	6,800.87	6,794.22	36.03	35.72	-90.24	-200.44	-67.45	196.00	124.39	71.61	2.737		
6,900.00	6,894.22	6,900.87	6,894.22	36.53	36.22	-90.24	-200.44	-67.45	196.00	123.38	72.62	2.699		
7,000.00	6,994.22	7,000.87	6,994.22	37.03	36.73	-90.24	-200.44	-67.45	196.00	122.36	73.64	2.662		
7,100.00	7,094.22	7,100.87	7,094.22	37.54	37.24	-90.24	-200.44	-67.45	196.00	121.35	74.65	2.626		
7,200.00	7,194.22	7,200.87	7,194.22	38.04	37.75	-90.24	-200.44	-67.45	196.00	120.33	75.67	2.590		
7,300.00	7,294.22	7,300.87	7,294.22	38.55	38.27	-90.24	-200.44	-67.45	196.00	119.31	76.69	2.556		
7,400.00	7,394.22	7,400.87	7,394.22	39.06	38.78	-90.24	-200.44	-67.45	196.00	118.29	77.71	2.522		
7,500.00	7,494.22	7,500.87	7,494.22	39.56	39.29	-90.24	-200.44	-67.45	196.00	117.27	78.73	2.489		
7,600.00	7,594.22	7,600.87	7,594.22	40.07	39.80	-90.24	-200.44	-67.45	196.00	116.25	79.76	2.458		
7,700.00	7,694.22	7,700.87	7,694.22	40.58	40.32	-90.24	-200.44	-67.45	196.00	115.22	80.78	2.426		
7,800.00	7,794.22	7,800.87	7,794.22	41.09	40.83	-90.24	-200.44	-67.45	196.00	114.20	81.81	2.396		
7,900.00	7,894.22	7,900.87	7,894.22	41.60	41.35	-90.24	-200.44	-67.45	196.00	113.17	82.83	2.366		
8,000.00	7,994.22	8,000.87	7,994.22	42.12	41.87	-90.24	-200.44	-67.45	196.00	112.14	83.86	2.337		
8,100.00	8,094.22	8,100.87	8,094.22	42.63	42.38	-90.24	-200.44	-67.45	196.00	111.11	84.89	2.309		
8,200.00	8,194.22	8,200.87	8,194.22	43.14	42.90	-90.24	-200.44	-67.45	196.00	110.08	85.92	2.281		
8,300.00	8,294.22	8,300.87	8,294.22	43.65	43.42	-90.24	-200.44	-67.45	196.00	109.05	86.95	2.254		
8,400.00	8,394.22	8,400.87	8,394.22	44.17	43.93	-90.24	-200.44	-67.45	196.00	108.02	87.99	2.228		
8,500.00	8,494.22	8,500.87	8,494.22	44.68	44.45	-90.24	-200.44	-67.45	196.00	106.98	89.02	2.202		
8,600.00	8,594.22	8,600.87	8,594.22	45.20	44.97	-90.24	-200.44	-67.45	196.00	105.95	90.06	2.176		
8,700.00	8,694.22	8,700.87	8,694.22	45.71	45.49	-90.24	-200.44	-67.45	196.00	104.91	91.09	2.152		
8,800.00	8,794.22	8,800.87	8,794.22	46.23	46.01	-90.24	-200.44	-67.45	196.00	103.87	92.13	2.127		
8,900.00	8,894.22	8,900.87	8,894.22	46.75	46.53	-90.24	-200.44	-67.45	196.00	102.84	93.17	2.104		
9,000.00	8,994.22	9,000.87	8,994.22	47.26	47.05	-90.24	-200.44	-67.45	196.00	101.80	94.20	2.081		
9,100.00	9,094.22	9,099.16	9,094.25	47.78	47.56	-90.23	-200.40	-67.45	196.00	100.77	95.23	2.058		
9,147.22	9,141.44	9,146.43	9,141.44	48.03	47.80	-89.48	-197.85	-67.43	195.99	100.27	95.72	2.048		
9,200.00	9,194.22	9,198.37	9,192.86	48.30	48.06	-87.36	-190.59	-67.36	196.12	99.89	96.23	2.038		
9,300.00	9,294.22	9,291.58	9,282.66	48.82	48.49	-80.26	-166.02	-67.14	198.89	101.98	96.91	2.052		
9,400.00	9,394.22	9,375.00	9,358.72	49.34	48.85	-70.89	-131.94	-66.83	209.80	113.55	96.25	2.180		
9,500.00	9,494.22	9,447.17	9,419.95	49.86	49.14	-61.52	-93.81	-66.49	233.99	140.77	93.22	2.510		
9,600.00	9,594.22	9,508.39	9,467.78	50.38	49.38	-53.52	-55.66	-66.14	273.17	184.59	88.58	3.084		
9,700.00	9,694.22	9,559.86	9,504.65	50.90	49.57	-47.22	-19.78	-65.82	325.67	241.90	83.77	3.888		
9,800.00	9,794.22	9,600.00	9,531.09	51.42	49.73	-42.74	10.42	-65.55	388.62	309.35	79.27	4.903		
9,900.00	9,894.22	9,639.49	9,554.97	51.94	49.88	-38.75	41.86	-65.26	459.31	383.12	76.19	6.029		
10,000.00	9,994.22	9,670.36	9,572.10	52.46	50.01	-35.93	67.54	-65.03	535.76	462.25	73.50	7.289		
10,100.00	10,093.79	9,700.00	9,587.22	52.97	50.13	-28.37	93.02	-64.80	612.46	541.23	71.23	8.599		
10,200.00	10,190.47	9,732.26	9,602.15	53.43	50.26	-22.78	121.61	-64.55	683.11	614.02	69.09	9.887		
10,300.00	10,281.34	9,766.42	9,616.19	53.85	50.40	-19.03	152.74	-64.26	746.42	679.34	67.08	11.127		
10,400.00	10,363.63	9,800.00	9,628.15	54.22	50.55	-16.50	184.12	-63.98	801.47	736.31	65.16	12.301		
10,500.00	10,434.84	9,850.00	9,642.51	54.58	50.77	-14.62	231.99	-63.55	847.69	783.69	64.00	13.244		
10,600.00	10,492.81	9,876.15	9,648.34	54.94	50.90	-13.51	257.48	-63.32	884.01	821.69	62.32	14.184		
10,700.00	10,535.78	9,914.17	9,654.74	55.34	51.08	-12.73	294.95	-62.98	910.57	849.16	61.41	14.828		
10,800.00	10,562.45	9,950.00	9,658.47	55.76	51.25	-12.29	330.58	-62.66	926.90	865.96	60.94	15.210		
10,900.00	10,571.99	9,995.08	9,660.04	56.20	51.47	-12.13	375.82	-62.25	932.79	871.74	61.05	15.279		
11,000.00	10,572.58	10,095.08	9,660.62	56.71	52.05	-12.13	475.61	-61.35	932.79	871.23	61.56	15.153		
11,100.00	10,573.16	10,204.92	9,661.21	57.32	52.80	-12.13	575.61	-60.45	932.79	870.59	62.20	14.997		
11,200.00	10,573.75	10,304.92	9,661.80	58.04	53.60	-12.13	675.60	-59.55	932.79	869.88	62.90	14.829		
11,300.00	10,574.34	10,404.92	9,662.39	58.84	54.50	-12.13	775.60	-58.65	932.78	869.09	63.69	14.645		
11,400.00	10,574.93	10,504.92	9,662.98	59.74	55.49	-12.13	875.59	-57.74	932.78	868.21	64.57	14.446		
11,500.00	10,575.51	10,595.08	9,663.57	60.72	56.46	-12.13	975.58	-56.84	932.78	867.30	65.48	14.246		
11,600.00	10,576.10	10,704.92	9,664.16	61.79	57.74	-12.13	1,075.58	-55.94	932.78	866.21	66.57	14.012		
11,700.00	10,576.69	10,804.92	9,664.74	62.94	58.99	-12.13	1,175.57	-55.04	932.78	865.10	67.68	13.781		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No: 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at:	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Section 32-T26S-R29E - Money Graham Fed Com Well No. 204 H - Original Hole - rev0														Offset Site Error: 0.00 ft	
Survey Program: 0-MWD														Offset Well Error: 0.00 ft	
Reference		Offset		Semi Major Axis			Distance							Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor			
11,800.00	10,577.28	10,904.92	9,665.33	64.16	60.32	-12.13	1,275.57	-54.14	932.78	863.91	68.87	13.544			
11,900.00	10,577.86	10,995.08	9,665.92	65.45	61.57	-12.13	1,375.56	-53.24	932.78	862.72	70.06	13.314			
12,000.00	10,578.45	11,104.92	9,666.51	66.80	63.18	-12.13	1,475.56	-52.33	932.78	861.34	71.44	13.057			
12,100.00	10,579.04	11,204.92	9,667.10	68.22	64.70	-12.13	1,575.55	-51.43	932.78	859.96	72.82	12.810			
12,200.00	10,579.63	11,304.92	9,667.69	69.70	66.28	-12.13	1,675.54	-50.53	932.77	858.52	74.25	12.562			
12,300.00	10,580.22	11,404.92	9,668.27	71.24	67.91	-12.13	1,775.54	-49.63	932.77	857.03	75.74	12.316			
12,400.00	10,580.80	11,495.08	9,668.86	72.82	69.43	-12.13	1,875.53	-48.73	932.77	855.58	77.20	12.083			
12,500.00	10,581.39	11,604.92	9,669.45	74.46	71.32	-12.13	1,975.53	-47.82	932.77	853.91	78.86	11.828			
12,600.00	10,581.98	11,704.92	9,670.04	76.13	73.10	-12.13	2,075.52	-46.92	932.77	852.28	80.49	11.589			
12,700.00	10,582.57	11,804.92	9,670.63	77.86	74.91	-12.13	2,175.52	-46.02	932.77	850.61	82.16	11.353			
12,800.00	10,583.15	11,895.08	9,671.22	79.62	76.57	-12.13	2,275.51	-45.12	932.77	848.99	83.78	11.134			
12,900.00	10,583.74	12,004.92	9,671.80	81.41	78.64	-12.13	2,375.50	-44.22	932.77	847.15	85.61	10.895			
13,000.00	10,584.33	12,104.92	9,672.39	83.25	80.55	-12.13	2,475.50	-43.31	932.77	845.37	87.39	10.673			
13,100.00	10,584.92	12,204.92	9,672.98	85.11	82.50	-12.13	2,575.49	-42.41	932.76	843.56	89.20	10.456			
13,200.00	10,585.50	12,304.92	9,673.57	87.01	84.47	-12.13	2,675.49	-41.51	932.76	841.72	91.04	10.245			
13,300.00	10,586.09	12,395.08	9,674.16	88.93	86.27	-12.13	2,775.48	-40.61	932.76	839.94	92.82	10.049			
13,400.00	10,586.68	12,504.92	9,674.75	90.88	88.49	-12.13	2,875.47	-39.71	932.76	837.95	94.81	9.838			
13,500.00	10,587.27	12,604.92	9,675.34	92.85	90.53	-12.13	2,975.47	-38.81	932.76	836.03	96.73	9.643			
13,600.00	10,587.85	12,704.92	9,675.92	94.85	92.59	-12.13	3,075.46	-37.90	932.76	834.08	98.67	9.453			
13,700.00	10,588.44	12,795.08	9,676.51	96.87	94.47	-12.13	3,175.46	-37.00	932.76	832.22	100.54	9.277			
13,800.00	10,589.03	12,904.92	9,677.10	98.91	96.78	-12.13	3,275.45	-36.10	932.76	830.13	102.63	9.089			
13,900.00	10,589.62	13,004.92	9,677.69	100.97	98.90	-12.13	3,375.45	-35.20	932.76	828.12	104.63	8.915			
14,000.00	10,590.20	13,104.92	9,678.28	103.05	101.03	-12.13	3,475.44	-34.30	932.75	826.10	106.65	8.746			
14,100.00	10,590.79	13,204.92	9,678.87	105.14	103.18	-12.13	3,575.43	-33.39	932.75	824.06	108.69	8.581			
14,200.00	10,591.38	13,295.08	9,679.45	107.25	105.14	-12.13	3,675.43	-32.49	932.75	822.10	110.65	8.430			
14,300.00	10,591.97	13,404.92	9,680.04	109.38	107.53	-12.13	3,775.42	-31.59	932.75	819.93	112.82	8.268			
14,400.00	10,592.55	13,504.92	9,680.63	111.52	109.72	-12.13	3,875.42	-30.69	932.75	817.84	114.91	8.117			
14,500.00	10,593.14	13,604.92	9,681.22	113.67	111.92	-12.13	3,975.41	-29.79	932.75	815.74	117.00	7.972			
14,600.00	10,593.73	13,704.92	9,681.81	115.84	114.13	-12.13	4,075.41	-28.88	932.75	813.63	119.12	7.831			
14,700.00	10,594.32	13,795.08	9,682.40	118.02	116.14	-12.13	4,175.40	-27.98	932.75	811.61	121.13	7.700			
14,800.00	10,594.90	13,904.92	9,682.98	120.21	118.59	-12.13	4,275.39	-27.08	932.75	809.37	123.38	7.560			
14,900.00	10,595.49	14,004.92	9,683.57	122.41	120.83	-12.13	4,375.39	-26.18	932.74	807.23	125.52	7.431			
15,000.00	10,596.08	14,104.92	9,684.16	124.62	123.08	-12.13	4,475.38	-25.28	932.74	805.07	127.67	7.306			
15,100.00	10,596.67	14,204.92	9,684.75	126.84	125.34	-12.13	4,575.38	-24.38	932.74	802.90	129.84	7.184			
15,200.00	10,597.25	14,304.92	9,685.34	129.07	127.61	-12.13	4,675.37	-23.47	932.74	800.73	132.01	7.066			
15,300.00	10,597.84	14,404.92	9,685.93	131.30	129.88	-12.13	4,775.36	-22.57	932.74	798.55	134.19	6.951			
15,400.00	10,598.43	14,504.92	9,686.51	133.55	132.17	-12.13	4,875.36	-21.67	932.74	796.36	136.38	6.839			
15,500.00	10,599.02	14,604.92	9,687.10	135.80	134.45	-12.13	4,975.35	-20.77	932.74	794.16	138.58	6.731			
15,600.00	10,599.60	14,695.08	9,687.69	138.07	136.52	-12.13	5,075.35	-19.87	932.74	792.06	140.67	6.630			
15,700.00	10,600.19	14,804.92	9,688.28	140.33	139.05	-12.13	5,175.34	-18.96	932.73	789.74	143.00	6.523			
15,800.00	10,600.78	14,904.92	9,688.87	142.61	141.36	-12.13	5,275.34	-18.06	932.73	787.52	145.22	6.423			
15,900.00	10,601.37	15,004.92	9,689.46	144.89	143.67	-12.12	5,375.33	-17.16	932.73	785.29	147.44	6.326			
16,000.00	10,601.95	15,104.92	9,690.05	147.18	145.99	-12.12	5,475.32	-16.26	932.73	783.06	149.67	6.232			
16,100.00	10,602.54	15,204.92	9,690.63	149.47	148.31	-12.12	5,575.32	-15.36	932.73	780.83	151.90	6.140			
16,200.00	10,603.13	15,304.92	9,691.22	151.77	150.64	-12.12	5,675.31	-14.45	932.73	778.58	154.15	6.051			
16,300.00	10,603.72	15,404.92	9,691.81	154.08	152.97	-12.12	5,775.31	-13.55	932.73	776.34	156.39	5.964			
16,400.00	10,604.30	15,504.92	9,692.40	156.39	155.31	-12.12	5,875.30	-12.65	932.73	774.08	158.64	5.879			
16,500.00	10,604.89	15,595.08	9,692.99	158.70	157.42	-12.12	5,975.30	-11.75	932.73	771.94	160.78	5.801			
16,600.00	10,605.48	15,704.92	9,693.58	161.02	159.99	-12.12	6,075.29	-10.85	932.72	769.57	163.16	5.717			
16,700.00	10,606.07	15,804.92	9,694.16	163.34	162.34	-12.12	6,175.28	-9.94	932.72	767.30	165.42	5.638			
16,800.00	10,606.65	15,904.92	9,694.75	165.67	164.69	-12.12	6,275.28	-9.04	932.72	765.03	167.69	5.562			

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design Section 32-T26S-R29E - Money Graham Fed Com Well No. 204 H - Original Hole - rev0													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft.
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
16,900.00	10,607.24	16,004.92	9,695.34	168.00	167.04	-12.12	6,375.27	-8.14	932.72	762.76	169.96	5.488		
17,000.00	10,607.83	16,104.92	9,695.93	170.34	169.40	-12.12	6,475.27	-7.24	932.72	760.48	172.24	5.415		
17,100.00	10,608.42	16,204.92	9,696.52	172.68	171.76	-12.12	6,575.26	-6.34	932.72	758.21	174.51	5.345		
17,200.00	10,609.00	16,304.92	9,697.11	175.02	174.13	-12.12	6,675.25	-5.44	932.72	755.92	176.79	5.276		
17,300.00	10,609.59	16,404.92	9,697.69	177.37	176.50	-12.12	6,775.25	-4.53	932.72	753.64	179.08	5.208		
17,400.00	10,610.18	16,495.08	9,698.28	179.72	178.63	-12.12	6,875.24	-3.63	932.72	751.46	181.25	5.146		
17,500.00	10,610.77	16,604.92	9,698.87	182.07	181.24	-12.12	6,975.24	-2.73	932.71	749.06	183.66	5.079		
17,600.00	10,611.35	16,704.92	9,699.46	184.43	183.62	-12.12	7,075.23	-1.83	932.71	746.76	185.95	5.016		
17,700.00	10,611.94	16,795.08	9,700.05	186.79	185.76	-12.12	7,175.23	-0.93	932.71	744.58	188.13	4.958		
17,700.45	10,611.94	16,795.53	9,700.05	186.80	185.77	-12.12	7,175.68	-0.92	932.71	744.57	188.14	4.957		
17,709.92	10,612.00	16,786.87	9,700.00	187.03	185.57	-12.12	7,167.01	-1.00	932.89	744.54	188.35	4.953		



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design Section 32-T26S-R29E - Money Graham Fed Com Well No. 214 H - Original Hole - rev0													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
0.00	0.00	0.00	0.00	0.00	0.00	-90.76	-1.00	-75.00	75.01					
100.00	100.00	100.00	100.00	0.20	0.20	-90.76	-1.00	-75.00	75.01	74.61	0.40	188.505		
200.00	200.00	200.00	200.00	0.74	0.74	-90.76	-1.00	-75.00	75.01	73.53	1.47	50.910		
300.00	300.00	300.00	300.00	1.27	1.27	-90.76	-1.00	-75.00	75.01	72.46	2.55	29.429		
400.00	400.00	400.00	400.00	1.81	1.81	-90.76	-1.00	-75.00	75.01	71.38	3.62	20.696		
500.00	500.00	500.00	500.00	2.35	2.35	-90.76	-1.00	-75.00	75.01	70.31	4.70	15.960		
600.00	600.00	600.00	600.00	2.89	2.89	-90.76	-1.00	-75.00	75.01	69.23	5.77	12.988		
700.00	700.00	700.00	700.00	3.43	3.43	-90.76	-1.00	-75.00	75.01	68.16	6.85	10.949		
800.00	800.00	800.00	800.00	3.96	3.96	-90.76	-1.00	-75.00	75.01	67.08	7.93	9.464		
900.00	900.00	900.00	900.00	4.50	4.50	-90.76	-1.00	-75.00	75.01	66.01	9.00	8.333		
1,000.00	1,000.00	1,000.00	1,000.00	5.04	5.04	-90.76	-1.00	-75.00	75.01	64.93	10.08	7.444		
1,100.00	1,100.00	1,100.00	1,100.00	5.58	5.58	-90.76	-1.00	-75.00	75.01	63.85	11.15	6.726		
1,200.00	1,200.00	1,200.00	1,200.00	6.11	6.11	-90.76	-1.00	-75.00	75.01	62.78	12.23	6.134 CC, ES		
1,300.00	1,300.00	1,298.22	1,298.21	6.65	6.62	-91.16	-1.54	-76.14	76.18	62.91	13.27	5.740		
1,400.00	1,400.00	1,396.32	1,396.23	7.19	7.12	-92.27	-3.16	-79.56	79.71	65.42	14.29	5.577		
1,500.00	1,499.99	1,494.13	1,493.84	7.70	7.62	-119.52	-5.84	-85.23	86.29	71.01	15.28	5.645		
1,600.00	1,599.91	1,608.08	1,591.24	8.20	8.22	119.44	-9.57	-93.11	96.46	80.12	16.34	5.902		
1,700.00	1,699.79	1,708.73	1,690.12	8.70	8.75	119.78	-13.69	-101.82	107.87	90.51	17.36	6.214		
1,800.00	1,799.67	1,809.39	1,788.99	9.20	9.30	120.05	-17.81	-110.53	119.28	100.90	18.39	6.487		
1,900.00	1,899.54	1,889.96	1,887.87	9.71	9.73	120.28	-21.93	-119.25	130.70	111.38	19.32	6.765		
2,000.00	1,999.42	1,989.30	1,986.75	10.23	10.28	120.47	-26.05	-127.96	142.11	121.76	20.35	6.982		
2,100.00	2,099.30	2,088.65	2,085.62	10.75	10.83	120.63	-30.17	-136.67	153.53	132.13	21.40	7.175		
2,200.00	2,199.18	2,187.99	2,184.50	11.27	11.38	120.77	-34.29	-145.38	164.95	142.50	22.45	7.349		
2,300.00	2,299.06	2,287.34	2,283.38	11.79	11.94	120.90	-38.41	-154.09	176.37	152.87	23.50	7.506		
2,400.00	2,398.94	2,386.68	2,382.25	12.32	12.49	121.00	-42.53	-162.81	187.79	163.23	24.55	7.648		
2,500.00	2,498.82	2,486.03	2,481.13	12.85	13.05	121.10	-46.65	-171.52	199.21	173.59	25.61	7.777		
2,600.00	2,598.69	2,585.38	2,580.01	13.38	13.62	121.18	-50.77	-180.23	210.63	183.95	26.68	7.896		
2,700.00	2,698.57	2,684.72	2,678.88	13.91	14.18	121.26	-54.90	-189.94	222.05	194.31	27.74	8.004		
2,800.00	2,798.45	2,784.07	2,777.76	14.45	14.74	121.33	-59.02	-197.65	233.47	204.66	28.81	8.103		
2,900.00	2,898.33	2,883.41	2,876.64	14.98	15.31	121.39	-63.14	-206.37	244.89	215.01	29.88	8.195		
3,000.00	2,998.21	2,982.76	2,975.51	15.52	15.88	121.44	-67.26	-215.08	256.31	225.36	30.95	8.280		
3,100.00	3,098.09	3,082.10	3,074.39	16.06	16.45	121.50	-71.38	-223.79	267.74	235.71	32.03	8.359		
3,200.00	3,197.97	3,181.45	3,173.27	16.60	17.02	121.54	-75.50	-232.50	279.16	246.05	33.11	8.432		
3,300.00	3,297.84	3,280.79	3,272.14	17.13	17.59	121.59	-79.62	-241.22	290.58	256.40	34.18	8.501		
3,400.00	3,397.72	3,380.14	3,371.02	17.67	18.16	121.63	-83.74	-249.93	302.00	266.74	35.26	8.565		
3,500.00	3,497.60	3,479.48	3,469.90	18.22	18.73	121.66	-87.86	-258.64	313.43	277.09	36.34	8.624		
3,600.00	3,597.48	3,578.83	3,568.77	18.76	19.31	121.70	-91.98	-267.35	324.85	287.43	37.42	8.680		
3,700.00	3,697.36	3,678.17	3,667.65	19.30	19.88	121.73	-96.10	-276.06	336.27	297.77	38.51	8.733		
3,800.00	3,797.24	3,777.52	3,766.53	19.84	20.46	121.76	-100.23	-284.78	347.70	308.11	39.59	8.783		
3,900.00	3,897.11	3,876.86	3,865.40	20.39	21.03	121.79	-104.35	-293.49	359.12	318.45	40.67	8.830		
4,000.00	3,996.99	3,976.21	3,964.28	20.93	21.61	121.82	-108.47	-302.20	370.54	328.79	41.76	8.874		
4,100.00	4,096.87	4,075.55	4,063.16	21.47	22.18	121.84	-112.59	-310.91	381.97	339.12	42.84	8.915		
4,200.00	4,196.75	4,174.90	4,162.03	22.02	22.76	121.87	-116.71	-319.62	393.39	349.46	43.93	8.955		
4,300.00	4,296.63	4,274.24	4,260.91	22.56	23.33	121.89	-120.83	-328.34	404.81	359.80	45.02	8.993		
4,400.00	4,396.51	4,373.59	4,359.79	23.11	23.91	121.91	-124.95	-337.05	416.24	370.13	46.10	9.028		
4,500.00	4,496.39	4,472.93	4,458.66	23.65	24.49	121.93	-129.07	-345.76	427.66	380.47	47.19	9.062		
4,600.00	4,596.26	4,572.28	4,557.54	24.20	25.07	121.95	-133.19	-354.47	439.08	390.80	48.28	9.094		
4,700.00	4,696.14	4,671.63	4,656.42	24.75	25.64	121.97	-137.31	-363.19	450.51	401.14	49.37	9.125		
4,800.00	4,796.02	4,770.97	4,755.29	25.29	26.22	121.98	-141.43	-371.90	461.93	411.47	50.46	9.155		
4,900.00	4,895.90	4,870.32	4,854.17	25.84	26.80	122.00	-145.55	-380.61	473.36	421.81	51.55	9.183		
5,000.00	4,995.78	4,969.66	4,953.05	26.39	27.38	122.01	-149.68	-389.32	484.78	432.14	52.64	9.209		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 32-T26S-R29E - Money Graham Fed Com Well No. 214 H - Original Hole - rev0													Offset Well Error:	0.00 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.00	5,095.66	5,069.01	5,051.92	26.93	27.96	122.03	-153.80	-398.03	496.20	442.47	53.73	9.235		
5,200.00	5,195.53	5,168.35	5,150.80	27.48	28.54	122.04	-157.92	-406.75	507.63	452.81	54.82	9.260		
5,300.00	5,295.41	5,267.70	5,249.68	28.03	29.12	122.06	-162.04	-415.46	519.05	463.14	55.91	9.283		
5,400.00	5,395.29	5,367.04	5,348.55	28.57	29.70	122.07	-166.16	-424.17	530.48	473.47	57.01	9.306		
5,500.00	5,495.17	5,466.39	5,447.43	29.12	30.28	122.08	-170.28	-432.88	541.90	483.80	58.10	9.327		
5,600.00	5,595.05	5,565.73	5,546.31	29.67	30.85	122.09	-174.40	-441.59	553.32	494.13	59.19	9.348		
5,700.00	5,694.93	5,665.08	5,645.18	30.22	31.43	122.10	-178.52	-450.31	564.75	504.46	60.28	9.368		
5,800.00	5,794.81	5,764.42	5,744.06	30.77	32.01	122.12	-182.64	-459.02	576.17	514.80	61.38	9.388		
5,900.00	5,894.68	5,863.77	5,842.94	31.32	32.59	122.13	-186.75	-467.73	587.60	525.13	62.47	9.406		
6,000.00	5,994.56	5,963.11	5,941.81	31.86	33.18	122.14	-190.88	-476.44	599.02	535.46	63.56	9.424		
6,100.00	6,094.44	6,064.38	6,042.60	32.41	33.77	122.15	-195.08	-485.30	610.43	545.75	64.68	9.438		
6,200.00	6,194.32	6,180.94	6,158.80	32.96	34.43	122.24	-198.98	-493.56	620.16	554.22	65.94	9.405		
6,300.00	6,294.24	6,298.04	6,275.77	33.51	35.07	122.46	-201.38	-498.62	626.66	559.52	67.15	9.333		
6,400.00	6,394.22	6,415.51	6,393.21	34.02	35.68	122.54	-202.24	-500.45	629.00	560.73	68.27	9.213		
6,500.00	6,494.22	6,516.52	6,494.22	34.52	36.17	-90.24	-202.24	-500.45	629.01	559.73	69.27	9.080		
6,600.00	6,594.22	6,616.52	6,594.22	35.02	36.66	-90.24	-202.24	-500.45	629.01	558.73	70.27	8.951		
6,700.00	6,694.22	6,716.52	6,694.22	35.52	37.14	-90.24	-202.24	-500.45	629.01	557.73	71.28	8.825		
6,800.00	6,794.22	6,816.52	6,794.22	36.03	37.63	-90.24	-202.24	-500.45	629.01	556.72	72.28	8.702		
6,900.00	6,894.22	6,916.52	6,894.22	36.53	38.12	-90.24	-202.24	-500.45	629.01	555.72	73.29	8.583		
7,000.00	6,994.22	7,016.52	6,994.22	37.03	38.61	-90.24	-202.24	-500.45	629.01	554.71	74.30	8.466		
7,100.00	7,094.22	7,116.52	7,094.22	37.54	39.11	-90.24	-202.24	-500.45	629.01	553.70	75.31	8.352		
7,200.00	7,194.22	7,216.52	7,194.22	38.04	39.60	-90.24	-202.24	-500.45	629.01	552.69	76.32	8.242		
7,300.00	7,294.22	7,316.52	7,294.22	38.55	40.10	-90.24	-202.24	-500.45	629.01	551.67	77.34	8.134		
7,400.00	7,394.22	7,416.52	7,394.22	39.06	40.59	-90.24	-202.24	-500.45	629.01	550.66	78.35	8.028		
7,500.00	7,494.22	7,516.52	7,494.22	39.56	41.09	-90.24	-202.24	-500.45	629.01	549.64	79.37	7.925		
7,600.00	7,594.22	7,616.52	7,594.22	40.07	41.59	-90.24	-202.24	-500.45	629.01	548.62	80.39	7.825		
7,700.00	7,694.22	7,716.52	7,694.22	40.58	42.09	-90.24	-202.24	-500.45	629.01	547.60	81.41	7.727		
7,800.00	7,794.22	7,816.52	7,794.22	41.09	42.59	-90.24	-202.24	-500.45	629.01	546.58	82.43	7.631		
7,900.00	7,894.22	7,916.52	7,894.22	41.60	43.09	-90.24	-202.24	-500.45	629.01	545.55	83.45	7.537		
8,000.00	7,994.22	8,016.52	7,994.22	42.12	43.59	-90.24	-202.24	-500.45	629.01	544.53	84.48	7.446		
8,100.00	8,094.22	8,116.52	8,094.22	42.63	44.09	-90.24	-202.24	-500.45	629.01	543.50	85.50	7.357		
8,200.00	8,194.22	8,216.52	8,194.22	43.14	44.60	-90.24	-202.24	-500.45	629.01	542.48	86.53	7.269		
8,300.00	8,294.22	8,316.52	8,294.22	43.65	45.10	-90.24	-202.24	-500.45	629.01	541.45	87.56	7.184		
8,400.00	8,394.22	8,416.52	8,394.22	44.17	45.61	-90.24	-202.24	-500.45	629.01	540.42	88.59	7.101		
8,500.00	8,494.22	8,516.52	8,494.22	44.68	46.11	-90.24	-202.24	-500.45	629.01	539.39	89.62	7.019		
8,600.00	8,594.22	8,616.52	8,594.22	45.20	46.62	-90.24	-202.24	-500.45	629.01	538.36	90.65	6.939		
8,700.00	8,694.22	8,716.52	8,694.22	45.71	47.12	-90.24	-202.24	-500.45	629.01	537.33	91.68	6.861		
8,800.00	8,794.22	8,816.52	8,794.22	46.23	47.63	-90.24	-202.24	-500.45	629.01	536.29	92.71	6.784		
8,900.00	8,894.22	8,916.52	8,894.22	46.75	48.14	-90.24	-202.24	-500.45	629.01	535.26	93.75	6.710		
9,000.00	8,994.22	9,016.52	8,994.22	47.26	48.65	-90.24	-202.24	-500.45	629.01	534.22	94.78	6.636		
9,100.00	9,094.22	9,116.52	9,094.22	47.78	49.16	-90.24	-202.24	-500.45	629.01	533.19	95.82	6.565		
9,200.00	9,194.22	9,216.52	9,194.22	48.30	49.67	-90.24	-202.24	-500.45	629.01	532.15	96.86	6.494		
9,300.00	9,294.22	9,316.52	9,294.22	48.82	50.18	-90.24	-202.24	-500.45	629.01	531.11	97.89	6.425		
9,400.00	9,394.22	9,431.37	9,408.79	49.34	50.75	-89.71	-196.46	-499.48	628.21	529.26	98.94	6.349		
9,500.00	9,494.22	9,546.69	9,520.51	49.86	51.26	-87.19	-169.06	-494.87	624.72	524.78	99.94	6.251		
9,600.00	9,594.22	9,647.61	9,612.02	50.38	51.62	-83.32	-127.40	-487.86	620.88	519.91	100.97	6.149		
9,666.16	9,660.38	9,705.10	9,660.38	50.72	51.80	-80.45	-96.78	-482.71	619.85	518.23	101.62	6.099		
9,700.00	9,694.22	9,731.69	9,681.64	50.90	51.87	-78.97	-81.04	-480.06	620.18	518.27	101.91	6.085		
9,800.00	9,794.22	9,800.06	9,732.69	51.42	52.03	-74.80	-36.26	-472.53	625.91	523.52	102.39	6.113		
9,900.00	9,894.22	9,855.27	9,769.74	51.94	52.13	-71.08	4.08	-465.74	640.45	538.42	102.02	6.277		
10,000.00	9,994.22	9,900.00	9,796.76	52.46	52.19	-67.91	39.22	-459.83	665.00	564.34	100.65	6.607		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at:	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Section 32-T26S-R29E - Money Graham Fed Com Well No. 214 H - Original Hole - rev0													Offset Site Error: 0.00 ft
Survey Program: 0-MWD													Offset Well Error: 0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface	Offset Wellbore Centre	Distance	Minimum Separation	Separation Factor	Warning	
				(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)		
10,100.00	10,093.79	9,940.71	9,818.87	52.97	52.24	-62.76		72.92	-454.16	696.60	598.12	98.48	7.073
10,200.00	10,190.47	9,982.75	9,839.09	53.43	52.28	-57.25		109.25	-448.05	729.67	633.81	95.86	7.612
10,300.00	10,281.34	10,025.74	9,856.92	53.85	52.30	-52.35		147.82	-441.56	761.90	668.85	93.04	8.189
10,400.00	10,363.63	10,069.41	9,871.98	54.22	52.34	-48.18		188.23	-434.76	791.43	701.18	90.24	8.770
10,500.00	10,434.84	10,113.58	9,884.00	54.58	52.43	-44.79		230.14	-427.71	816.83	729.18	87.65	9.319
10,600.00	10,492.81	10,150.00	9,891.42	54.94	52.57	-42.35		265.30	-421.79	837.09	751.79	85.29	9.814
10,700.00	10,535.78	10,200.00	9,897.88	55.34	52.78	-40.27		314.17	-413.57	851.14	767.50	83.64	10.177
10,800.00	10,562.45	10,249.49	9,900.02	55.76	53.00	-38.92		362.91	-405.37	858.61	776.09	82.52	10.405
10,900.00	10,571.99	10,332.36	9,900.51	56.20	53.42	-38.11		444.84	-392.91	856.73	774.54	82.19	10.423
11,000.00	10,572.58	10,416.31	9,901.01	56.71	53.91	-37.62		528.16	-382.70	849.79	767.41	82.37	10.316
11,100.00	10,573.16	10,500.74	9,901.51	57.32	54.48	-37.24		612.22	-374.91	844.70	761.90	82.80	10.202
11,200.00	10,573.75	10,585.51	9,902.01	58.04	55.13	-36.99		696.82	-369.58	841.44	757.96	83.48	10.079
11,300.00	10,574.34	10,670.48	9,902.51	58.84	55.85	-36.88		781.74	-366.75	839.98	755.56	84.42	9.950
11,332.67	10,574.53	10,698.30	9,902.68	59.13	56.09	-36.87		809.56	-366.37	839.88	755.11	84.78	9.907
11,400.00	10,574.93	10,765.63	9,903.07	59.74	56.73	-36.88		876.89	-365.77	839.89	754.27	85.62	9.810
11,500.00	10,575.51	10,865.63	9,903.66	60.72	57.75	-36.88		976.89	-364.88	839.89	752.94	86.96	9.659
11,600.00	10,576.10	10,965.63	9,904.25	61.79	58.85	-36.88		1,076.88	-363.99	839.90	751.50	88.40	9.501
11,700.00	10,576.69	11,065.63	9,904.84	62.94	60.03	-36.88		1,176.87	-363.10	839.91	749.96	89.95	9.338
11,800.00	10,577.28	11,165.63	9,905.43	64.16	61.29	-36.88		1,276.87	-362.21	839.91	748.32	91.59	9.170
11,900.00	10,577.86	11,265.63	9,906.02	65.45	62.62	-36.88		1,376.86	-361.32	839.92	746.60	93.32	9.000
12,000.00	10,578.45	11,365.63	9,906.60	66.80	64.02	-36.88		1,476.86	-360.43	839.93	744.78	95.14	8.828
12,100.00	10,579.04	11,465.63	9,907.19	68.22	65.48	-36.88		1,576.85	-359.55	839.93	742.89	97.04	8.656
12,200.00	10,579.63	11,565.63	9,907.78	69.70	67.00	-36.88		1,676.85	-358.66	839.94	740.93	99.01	8.484
12,300.00	10,580.22	11,665.63	9,908.37	71.24	68.58	-36.88		1,776.84	-357.77	839.95	738.90	101.05	8.312
12,400.00	10,580.80	11,765.63	9,908.96	72.82	70.20	-36.88		1,876.83	-356.88	839.95	736.80	103.15	8.143
12,500.00	10,581.39	11,865.63	9,909.55	74.46	71.88	-36.88		1,976.83	-355.99	839.96	734.65	105.31	7.976
12,600.00	10,581.98	11,965.63	9,910.14	76.13	73.60	-36.88		2,076.82	-355.10	839.96	732.44	107.53	7.812
12,700.00	10,582.57	12,065.63	9,910.72	77.86	75.36	-36.88		2,176.82	-354.21	839.97	730.17	109.80	7.650
12,800.00	10,583.15	12,165.63	9,911.31	79.62	77.16	-36.88		2,276.81	-353.32	839.98	727.86	112.11	7.492
12,900.00	10,583.74	12,265.63	9,911.90	81.41	78.99	-36.89		2,376.81	-352.44	839.98	725.51	114.48	7.338
13,000.00	10,584.33	12,365.63	9,912.49	83.25	80.86	-36.89		2,476.80	-351.55	839.99	723.11	116.88	7.187
13,100.00	10,584.92	12,465.63	9,913.08	85.11	82.76	-36.89		2,576.79	-350.66	840.00	720.68	119.32	7.040
13,200.00	10,585.50	12,565.63	9,913.67	87.01	84.69	-36.89		2,676.79	-349.77	840.00	718.21	121.79	6.897
13,300.00	10,586.09	12,665.63	9,914.26	88.93	86.65	-36.89		2,776.78	-348.88	840.01	715.71	124.30	6.758
13,400.00	10,586.68	12,765.63	9,914.84	90.88	88.63	-36.89		2,876.78	-347.99	840.01	713.18	126.84	6.623
13,500.00	10,587.27	12,865.63	9,915.43	92.85	90.64	-36.89		2,976.77	-347.10	840.02	710.62	129.40	6.492
13,600.00	10,587.85	12,965.63	9,916.02	94.85	92.67	-36.89		3,076.77	-346.21	840.03	708.04	131.99	6.364
13,700.00	10,588.44	13,065.63	9,916.61	96.87	94.72	-36.89		3,176.76	-345.33	840.03	705.43	134.61	6.241
13,800.00	10,589.03	13,165.63	9,917.20	98.91	96.79	-36.89		3,276.75	-344.44	840.04	702.80	137.24	6.121
13,900.00	10,589.62	13,265.63	9,917.79	100.97	98.88	-36.89		3,376.75	-343.55	840.05	700.15	139.90	6.005
14,000.00	10,590.20	13,365.63	9,918.37	103.05	100.99	-36.89		3,476.74	-342.66	840.05	697.48	142.57	5.892
14,100.00	10,590.79	13,465.63	9,918.96	105.14	103.11	-36.89		3,576.74	-341.77	840.06	694.80	145.26	5.783
14,200.00	10,591.38	13,565.63	9,919.55	107.25	105.25	-36.89		3,676.73	-340.88	840.07	692.10	147.97	5.677
14,300.00	10,591.97	13,665.63	9,920.14	109.38	107.40	-36.89		3,776.73	-339.99	840.07	689.38	150.69	5.575
14,400.00	10,592.55	13,765.63	9,920.73	111.52	109.57	-36.90		3,876.72	-339.10	840.08	686.66	153.42	5.476
14,500.00	10,593.14	13,865.63	9,921.32	113.67	111.74	-36.90		3,976.71	-338.21	840.08	683.92	156.17	5.379
14,600.00	10,593.73	13,965.63	9,921.91	115.84	113.93	-36.90		4,076.71	-337.33	840.09	681.17	158.92	5.286
14,700.00	10,594.32	14,065.63	9,922.49	118.02	116.14	-36.90		4,176.70	-336.44	840.10	678.41	161.69	5.196
14,800.00	10,594.90	14,165.63	9,923.08	120.21	118.35	-36.90		4,276.70	-335.55	840.10	675.64	164.46	5.108
14,900.00	10,595.49	14,265.63	9,923.67	122.41	120.57	-36.90		4,376.69	-334.66	840.11	672.86	167.25	5.023
15,000.00	10,596.08	14,365.63	9,924.26	124.62	122.80	-36.90		4,476.69	-333.77	840.12	670.08	170.04	4.941

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 32-T26S-R29E - Money Graham Fed Com Well No. 214 H - Original Hole - rev0													Offset Well Error:	0.00 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
15,100.00	10,596.67	14,465.63	9,924.85	126.84	125.04	-36.90	4,575.68	-332.88	840.12	667.29	172.84	4.861		
15,200.00	10,597.25	14,565.63	9,925.44	129.07	127.29	-36.90	4,676.67	-331.99	840.13	664.49	175.64	4.783		
15,300.00	10,597.84	14,665.63	9,926.03	131.30	129.55	-36.90	4,776.67	-331.10	840.13	661.69	178.45	4.708		
15,400.00	10,598.43	14,765.63	9,926.61	133.55	131.81	-36.90	4,876.66	-330.22	840.14	658.88	181.26	4.635		
15,500.00	10,599.02	14,865.63	9,927.20	135.80	134.09	-36.90	4,976.66	-329.33	840.15	656.07	184.08	4.564		
15,600.00	10,599.60	14,965.63	9,927.79	138.07	136.36	-36.90	5,076.65	-328.44	840.15	653.25	186.90	4.495		
15,700.00	10,600.19	15,065.63	9,928.38	140.33	138.65	-36.90	5,176.65	-327.55	840.16	650.43	189.73	4.428		
15,800.00	10,600.78	15,165.63	9,928.97	142.61	140.94	-36.91	5,276.64	-326.66	840.17	647.61	192.56	4.363		
15,900.00	10,601.37	15,265.63	9,929.56	144.89	143.24	-36.91	5,376.64	-325.77	840.17	644.79	195.39	4.300		
16,000.00	10,601.95	15,365.63	9,930.15	147.18	145.54	-36.91	5,476.63	-324.88	840.18	641.96	198.22	4.239		
16,100.00	10,602.54	15,465.63	9,930.73	149.47	147.85	-36.91	5,576.62	-323.99	840.19	639.13	201.05	4.179		
16,200.00	10,603.13	15,565.63	9,931.32	151.77	150.17	-36.91	5,676.62	-323.11	840.19	636.30	203.89	4.121		
16,300.00	10,603.72	15,665.63	9,931.91	154.08	152.49	-36.91	5,776.61	-322.22	840.20	633.47	206.72	4.064		
16,400.00	10,604.30	15,765.63	9,932.50	156.39	154.81	-36.91	5,876.61	-321.33	840.20	630.64	209.56	4.009		
16,500.00	10,604.89	15,865.63	9,933.09	158.70	157.14	-36.91	5,976.60	-320.44	840.21	627.81	212.40	3.956		
16,600.00	10,605.48	15,965.63	9,933.68	161.02	159.47	-36.91	6,076.60	-319.55	840.22	624.98	215.24	3.904		
16,700.00	10,606.07	16,065.63	9,934.27	163.34	161.81	-36.91	6,176.59	-318.66	840.22	622.15	218.08	3.853		
16,800.00	10,606.65	16,165.63	9,934.85	165.67	164.15	-36.91	6,276.58	-317.77	840.23	619.32	220.91	3.803		
16,900.00	10,607.24	16,265.63	9,935.44	168.00	166.50	-36.91	6,376.58	-316.88	840.24	616.48	223.75	3.755		
17,000.00	10,607.83	16,365.63	9,936.03	170.34	168.84	-36.91	6,476.57	-316.00	840.24	613.65	226.59	3.708		
17,100.00	10,608.42	16,465.63	9,936.62	172.68	171.20	-36.91	6,576.57	-315.11	840.25	610.82	229.43	3.662		
17,200.00	10,609.00	16,565.63	9,937.21	175.02	173.55	-36.91	6,676.56	-314.22	840.26	607.99	232.26	3.618		
17,300.00	10,609.59	16,665.63	9,937.80	177.37	175.91	-36.92	6,776.56	-313.33	840.26	605.17	235.09	3.574		
17,400.00	10,610.18	16,765.63	9,938.38	179.72	178.27	-36.92	6,876.55	-312.44	840.27	602.34	237.93	3.532		
17,500.00	10,610.77	16,865.63	9,938.97	182.07	180.63	-36.92	6,976.54	-311.55	840.27	599.52	240.76	3.490		
17,600.00	10,611.35	16,965.63	9,939.56	184.43	183.00	-36.92	7,076.54	-310.66	840.28	596.69	243.59	3.450		
17,600.02	10,611.35	16,965.65	9,939.56	184.43	183.00	-36.92	7,076.56	-310.66	840.28	596.69	243.59	3.450		
17,700.00	10,611.94	17,040.11	9,940.00	186.79	184.77	-36.92	7,151.01	-310.00	840.67	594.36	246.31	3.413		
17,709.92	10,612.00	17,040.11	9,940.00	187.03	184.77	-36.92	7,151.01	-310.00	841.03	594.54	246.49	3.412 SF		



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Section 32-T26S-R29E - Money Graham Fed Com Well No. 218 H - Original Hole - rev0		Offset Site Error:	0.00 ft
Survey Program: 0-MWD															Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning		
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor				
0.00	0.00	0.00	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	62.829				
200.00	200.00	200.00	200.00	0.74	0.74	90.00	0.00	25.00	25.00	23.53	1.47	16.969				
300.00	300.00	300.00	300.00	1.27	1.27	90.00	0.00	25.00	25.00	22.45	2.55	9.809				
400.00	400.00	400.00	400.00	1.81	1.81	90.00	0.00	25.00	25.00	21.38	3.62	6.898				
500.00	500.00	500.00	500.00	2.35	2.35	90.00	0.00	25.00	25.00	20.30	4.70	5.320				
600.00	600.00	600.00	600.00	2.89	2.89	90.00	0.00	25.00	25.00	19.23	5.77	4.329				
700.00	700.00	700.00	700.00	3.43	3.43	90.00	0.00	25.00	25.00	18.15	6.85	3.649				
800.00	800.00	800.00	800.00	3.96	3.96	90.00	0.00	25.00	25.00	17.07	7.93	3.154				
900.00	900.00	900.00	900.00	4.50	4.50	90.00	0.00	25.00	25.00	16.00	9.00	2.777				
1,000.00	1,000.00	1,000.00	1,000.00	5.04	5.04	90.00	0.00	25.00	25.00	14.92	10.08	2.481				
1,100.00	1,100.00	1,100.00	1,100.00	5.58	5.58	90.00	0.00	25.00	25.00	13.85	11.15	2.242				
1,200.00	1,200.00	1,200.00	1,200.00	6.11	6.11	90.00	0.00	25.00	25.00	12.77	12.23	2.045 CC, ES				
1,300.00	1,300.00	1,299.43	1,299.42	6.65	6.63	91.51	-0.69	26.09	26.11	12.83	13.28	1.967 Level 3<2.00, SF				
1,400.00	1,400.00	1,398.72	1,398.63	7.19	7.13	95.36	-2.75	29.37	29.53	15.24	14.30	2.066				
1,500.00	1,499.99	1,502.11	1,497.59	7.70	7.66	-48.68	-6.18	34.82	34.57	19.26	15.31	2.258				
1,600.00	1,599.91	1,602.21	1,597.21	8.20	8.18	-48.48	-10.21	41.22	38.93	22.61	16.31	2.386				
1,700.00	1,699.79	1,702.28	1,696.85	8.70	8.70	-49.38	-14.25	47.62	42.62	25.29	17.33	2.459				
1,800.00	1,799.67	1,802.35	1,796.49	9.20	9.23	-50.14	-18.28	54.03	46.31	27.96	18.35	2.523				
1,900.00	1,899.54	1,902.42	1,896.14	9.71	9.77	-50.78	-22.31	60.43	50.02	30.63	19.39	2.580				
2,000.00	1,999.42	2,002.49	1,995.78	10.23	10.31	-51.34	-26.35	66.83	53.73	33.30	20.43	2.630				
2,100.00	2,099.30	2,102.56	2,095.42	10.75	10.85	-51.82	-30.38	73.24	57.44	35.97	21.48	2.675				
2,200.00	2,199.18	2,202.63	2,195.06	11.27	11.39	-52.25	-34.41	79.64	61.16	38.63	22.53	2.715				
2,300.00	2,299.06	2,302.70	2,294.71	11.79	11.94	-52.63	-38.44	86.04	64.88	41.30	23.58	2.751				
2,400.00	2,398.94	2,402.77	2,394.35	12.32	12.49	-52.96	-42.48	92.45	68.61	43.96	24.64	2.784				
2,500.00	2,498.82	2,497.16	2,493.99	12.85	13.01	-53.26	-46.51	98.85	72.33	46.66	25.68	2.817				
2,600.00	2,598.69	2,602.91	2,593.64	13.38	13.59	-53.53	-50.54	105.25	76.06	49.29	26.77	2.841				
2,700.00	2,698.57	2,702.98	2,693.28	13.91	14.14	-53.78	-54.58	111.66	79.79	51.94	27.84	2.866				
2,800.00	2,798.45	2,803.05	2,792.92	14.45	14.70	-54.01	-58.61	118.06	83.52	54.60	28.92	2.888				
2,900.00	2,898.33	2,903.12	2,892.56	14.98	15.25	-54.21	-62.64	124.46	87.25	57.26	29.99	2.909				
3,000.00	2,898.21	3,003.19	2,992.21	15.52	15.81	-54.40	-66.68	130.87	90.98	59.92	31.07	2.929				
3,100.00	3,098.09	3,103.26	3,091.85	16.06	16.37	-54.57	-70.71	137.27	94.72	62.57	32.14	2.947				
3,200.00	3,197.97	3,203.33	3,191.49	16.60	16.93	-54.73	-74.74	143.67	98.45	65.23	33.22	2.963				
3,300.00	3,297.84	3,303.40	3,291.14	17.13	17.48	-54.88	-78.77	150.08	102.19	67.88	34.31	2.979				
3,400.00	3,397.72	3,403.47	3,390.78	17.67	18.04	-55.02	-82.81	156.48	105.92	70.54	35.39	2.993				
3,500.00	3,497.60	3,503.54	3,490.42	18.22	18.60	-55.15	-86.84	162.89	109.66	73.19	36.47	3.007				
3,600.00	3,597.48	3,603.61	3,590.06	18.76	19.16	-55.27	-90.87	169.29	113.40	75.84	37.56	3.019				
3,700.00	3,697.36	3,703.68	3,689.71	19.30	19.73	-55.38	-94.91	175.69	117.13	78.49	38.64	3.031				
3,800.00	3,797.24	3,803.75	3,789.35	19.84	20.29	-55.49	-98.94	182.10	120.87	81.14	39.73	3.043				
3,900.00	3,897.11	3,903.82	3,888.99	20.39	20.85	-55.59	-102.97	188.50	124.61	83.79	40.82	3.053				
4,000.00	3,996.99	4,003.89	3,988.64	20.93	21.41	-55.68	-107.01	194.90	128.35	86.45	41.90	3.063				
4,100.00	4,096.87	4,096.04	4,088.28	21.47	21.93	-55.77	-111.04	201.31	132.09	89.14	42.95	3.075				
4,200.00	4,196.75	4,204.03	4,187.92	22.02	22.54	-55.85	-115.07	207.71	135.83	91.74	44.08	3.081				
4,300.00	4,296.63	4,304.10	4,287.57	22.56	23.10	-55.93	-119.10	214.11	139.57	94.39	45.17	3.090				
4,400.00	4,396.51	4,395.83	4,387.21	23.11	23.62	-56.01	-123.14	220.52	143.31	97.09	46.22	3.101				
4,500.00	4,496.39	4,504.24	4,486.85	23.65	24.23	-56.08	-127.17	226.92	147.04	99.69	47.35	3.105				
4,600.00	4,596.26	4,604.31	4,586.49	24.20	24.79	-56.14	-131.20	233.32	150.79	102.34	48.45	3.112				
4,700.00	4,696.14	4,704.38	4,686.14	24.75	25.36	-56.21	-135.24	239.73	154.53	104.99	49.54	3.119				
4,800.00	4,796.02	4,804.45	4,785.78	25.29	25.92	-56.27	-139.27	246.13	158.27	107.64	50.63	3.126				
4,900.00	4,895.90	4,904.52	4,885.42	25.84	26.49	-56.33	-143.30	252.53	162.01	110.28	51.72	3.132				
5,000.00	4,995.78	5,004.59	4,985.07	26.39	27.05	-56.38	-147.33	258.94	165.75	112.93	52.82	3.138				

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 32-T26S-R29E - Money Graham Fed Com Well No. 218 H - Original Hole - rev0													Offset Well Error:	0.00 ft
Survey Program: 0-MWD														
Reference			Offset			Semi Major Axis			Distance					
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.00	5,095.66	5,104.66	5,084.71	26.93	27.62	-56.44	-151.37	265.34	169.49	115.58	53.91	3.144		
5,200.00	5,195.53	5,204.73	5,184.35	27.48	28.18	-56.49	-155.40	271.75	173.23	118.22	55.01	3.149		
5,300.00	5,295.41	5,304.80	5,283.99	28.03	28.75	-56.54	-159.43	278.15	176.97	120.87	56.10	3.155		
5,400.00	5,395.29	5,404.87	5,383.64	28.57	29.31	-56.58	-163.47	284.55	180.71	123.52	57.19	3.160		
5,500.00	5,495.17	5,504.94	5,483.28	29.12	29.88	-56.63	-167.50	290.96	184.45	126.16	58.29	3.164		
5,600.00	5,595.05	5,605.01	5,582.92	29.67	30.44	-56.67	-171.53	297.36	188.19	128.81	59.39	3.169		
5,700.00	5,694.93	5,705.08	5,682.57	30.22	31.01	-56.71	-175.57	303.76	191.94	131.46	60.48	3.174		
5,800.00	5,794.81	5,805.15	5,782.21	30.77	31.57	-56.75	-179.60	310.17	195.68	134.10	61.58	3.178		
5,900.00	5,894.68	5,894.78	5,881.85	31.32	32.08	-56.79	-183.63	316.57	199.42	136.80	62.62	3.185		
6,000.00	5,994.56	6,005.29	5,981.49	31.86	32.71	-56.83	-187.66	322.97	203.16	139.39	63.77	3.186		
6,100.00	6,094.44	6,094.64	6,081.14	32.41	33.21	-56.86	-191.70	329.38	206.90	142.10	64.81	3.193		
6,200.00	6,194.32	6,198.01	6,184.26	32.96	33.79	-57.00	-195.49	335.40	210.07	144.13	65.95	3.186		
6,300.00	6,294.24	6,302.89	6,289.04	33.51	34.36	-57.33	-197.88	339.20	211.50	144.44	67.06	3.154		
6,400.00	6,394.22	6,407.80	6,393.94	34.02	34.92	-57.46	-198.74	340.56	212.01	143.91	68.10	3.113		
6,500.00	6,494.22	6,508.09	6,494.22	34.52	35.41	89.76	-198.74	340.56	212.01	142.91	69.10	3.068		
6,600.00	6,594.22	6,608.09	6,594.22	35.02	35.91	89.76	-198.74	340.56	212.01	141.91	70.10	3.024		
6,700.00	6,694.22	6,708.09	6,694.22	35.52	36.40	89.76	-198.74	340.56	212.01	140.90	71.11	2.982		
6,800.00	6,794.22	6,808.09	6,794.22	36.03	36.90	89.76	-198.74	340.56	212.01	139.90	72.11	2.940		
6,900.00	6,894.22	6,908.09	6,894.22	36.53	37.39	89.76	-198.74	340.56	212.01	138.89	73.12	2.899		
7,000.00	6,994.22	7,008.09	6,994.22	37.03	37.89	89.76	-198.74	340.56	212.01	137.88	74.13	2.860		
7,100.00	7,094.22	7,108.09	7,094.22	37.54	38.39	89.76	-198.74	340.56	212.01	136.87	75.14	2.821		
7,200.00	7,194.22	7,208.09	7,194.22	38.04	38.89	89.76	-198.74	340.56	212.01	135.86	76.16	2.784		
7,300.00	7,294.22	7,308.09	7,294.22	38.55	39.39	89.76	-198.74	340.56	212.01	134.84	77.17	2.747		
7,400.00	7,394.22	7,408.09	7,394.22	39.06	39.90	89.76	-198.74	340.56	212.01	133.83	78.19	2.712		
7,500.00	7,494.22	7,508.09	7,494.22	39.56	40.40	89.76	-198.74	340.56	212.01	132.81	79.20	2.677		
7,600.00	7,594.22	7,608.09	7,594.22	40.07	40.90	89.76	-198.74	340.56	212.01	131.79	80.22	2.643		
7,700.00	7,694.22	7,708.09	7,694.22	40.58	41.41	89.76	-198.74	340.56	212.01	130.77	81.24	2.610		
7,800.00	7,794.22	7,808.09	7,794.22	41.09	41.91	89.76	-198.74	340.56	212.01	129.75	82.27	2.577		
7,900.00	7,894.22	7,908.09	7,894.22	41.60	42.42	89.76	-198.74	340.56	212.01	128.72	83.29	2.545		
8,000.00	7,994.22	8,008.09	7,994.22	42.12	42.93	89.76	-198.74	340.56	212.01	127.70	84.32	2.515		
8,100.00	8,094.22	8,108.09	8,094.22	42.63	43.44	89.76	-198.74	340.56	212.01	126.67	85.34	2.484		
8,200.00	8,194.22	8,208.09	8,194.22	43.14	43.95	89.76	-198.74	340.56	212.01	125.64	86.37	2.455		
8,300.00	8,294.22	8,308.09	8,294.22	43.65	44.46	89.76	-198.74	340.56	212.01	124.61	87.40	2.426		
8,400.00	8,394.22	8,408.09	8,394.22	44.17	44.97	89.76	-198.74	340.56	212.01	123.59	88.43	2.398		
8,500.00	8,494.22	8,508.09	8,494.22	44.68	45.48	89.76	-198.74	340.56	212.01	122.55	89.46	2.370		
8,600.00	8,594.22	8,608.09	8,594.22	45.20	45.99	89.76	-198.74	340.56	212.01	121.52	90.49	2.343		
8,700.00	8,694.22	8,708.09	8,694.22	45.71	46.50	89.76	-198.74	340.56	212.01	120.49	91.52	2.317		
8,800.00	8,794.22	8,808.09	8,794.22	46.23	47.01	89.76	-198.74	340.56	212.01	119.46	92.56	2.291		
8,900.00	8,894.22	8,908.09	8,894.22	46.75	47.53	89.76	-198.74	340.56	212.01	118.42	93.59	2.265		
9,000.00	8,994.22	9,008.09	8,994.22	47.26	48.04	89.76	-198.74	340.56	212.01	117.39	94.63	2.241		
9,100.00	9,094.22	9,108.09	9,094.22	47.78	48.55	89.76	-198.74	340.56	212.01	116.35	95.66	2.216		
9,200.00	9,194.22	9,208.09	9,194.22	48.30	49.07	89.76	-198.74	340.56	212.01	115.31	96.70	2.192		
9,300.00	9,294.22	9,308.09	9,294.22	48.82	49.58	89.76	-198.74	340.56	212.01	114.27	97.74	2.169		
9,400.00	9,394.22	9,410.51	9,396.54	49.34	50.10	88.93	-195.67	340.18	211.68	112.92	98.76	2.143		
9,500.00	9,494.22	9,511.05	9,495.11	49.86	50.57	83.74	-176.68	337.81	210.52	110.65	99.87	2.108		
9,511.31	9,505.53	9,521.92	9,505.53	49.92	50.62	82.90	-173.60	337.43	210.49	110.49	100.00	2.105		
9,600.00	9,594.22	9,602.47	9,580.60	50.38	50.95	75.05	-144.82	333.84	212.92	112.07	100.85	2.111		
9,700.00	9,694.22	9,682.05	9,650.05	50.90	51.23	65.07	-106.40	329.06	225.49	125.34	100.14	2.252		
9,800.00	9,794.22	9,750.00	9,704.64	51.42	51.44	55.71	-66.30	324.06	253.03	156.34	96.69	2.617		
9,900.00	9,894.22	9,805.66	9,745.68	51.94	51.58	48.15	-28.72	319.38	296.12	204.61	91.51	3.236		
10,000.00	9,994.22	9,850.00	9,775.37	52.46	51.68	42.58	3.66	315.35	352.30	266.17	86.13	4.090		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at:	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Section 32-T26S-R29E - Money Graham Fed Com Well No. 218 H - Original Hole - rev0													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,100.00	10,093.79	9,900.00	9,805.87	52.97	51.79	32.63	42.97	310.45	413.58	331.20	82.38	5.021		
10,200.00	10,190.47	9,939.83	9,827.61	53.43	51.87	26.50	76.07	306.33	471.28	393.27	78.01	6.041		
10,300.00	10,281.34	9,984.40	9,849.13	53.85	51.98	21.90	114.79	301.51	523.55	449.16	74.40	7.037		
10,400.00	10,363.63	10,029.45	9,867.74	54.22	52.12	18.59	155.49	296.44	569.16	498.03	71.14	8.001		
10,500.00	10,434.84	10,074.83	9,883.16	54.58	52.29	16.18	197.83	291.17	607.30	539.02	68.28	8.894		
10,600.00	10,492.81	10,120.45	9,895.22	54.94	52.48	14.41	241.48	285.73	637.38	571.46	65.92	9.669		
10,700.00	10,535.78	10,166.24	9,903.76	55.34	52.69	13.11	286.11	280.17	658.99	594.84	64.15	10.273		
10,800.00	10,562.45	10,212.14	9,908.70	55.76	52.90	12.18	331.38	274.53	671.84	608.78	63.06	10.654		
10,900.00	10,571.99	10,269.30	9,910.13	56.20	53.19	11.42	388.08	267.55	675.55	612.82	62.73	10.769		
11,000.00	10,572.58	10,364.40	9,910.69	56.71	53.74	10.56	482.70	258.09	673.46	610.80	62.86	10.713		
11,100.00	10,573.16	10,460.09	9,911.26	57.32	54.38	9.95	578.17	251.74	672.11	608.90	63.21	10.634		
11,200.00	10,573.75	10,556.16	9,911.82	58.04	55.11	9.62	674.18	248.57	671.39	607.64	63.75	10.531		
11,271.88	10,574.17	10,632.05	9,912.23	58.61	55.74	9.54	743.22	248.28	671.24	606.94	64.29	10.440		
11,300.00	10,574.34	10,653.31	9,912.39	58.84	55.94	9.54	771.33	248.54	671.24	606.75	64.49	10.409		
11,400.00	10,574.93	10,753.31	9,912.98	59.74	56.89	9.54	871.32	249.45	671.24	605.89	65.35	10.272		
11,500.00	10,575.51	10,853.31	9,913.57	60.72	57.92	9.54	971.32	250.36	671.24	604.96	66.28	10.127		
11,600.00	10,576.10	10,953.31	9,914.15	61.79	59.05	9.54	1,071.31	251.27	671.25	603.96	67.29	9.975		
11,700.00	10,576.69	11,053.31	9,914.74	62.94	60.25	9.54	1,171.31	252.19	671.25	602.88	68.37	9.818		
11,800.00	10,577.28	11,153.31	9,915.33	64.16	61.52	9.54	1,271.30	253.10	671.25	601.74	69.52	9.656		
11,900.00	10,577.86	11,253.31	9,915.91	65.45	62.87	9.54	1,371.30	254.01	671.26	600.53	70.73	9.491		
12,000.00	10,578.45	11,353.31	9,916.50	66.80	64.29	9.55	1,471.29	254.92	671.26	599.26	72.00	9.323		
12,100.00	10,579.04	11,453.31	9,917.09	68.22	65.76	9.55	1,571.28	255.83	671.26	597.94	73.33	9.155		
12,200.00	10,579.63	11,553.31	9,917.67	69.70	67.30	9.55	1,671.28	256.74	671.26	596.56	74.71	8.985		
12,300.00	10,580.22	11,653.31	9,918.26	71.24	68.89	9.55	1,771.27	257.66	671.27	595.13	76.14	8.816		
12,400.00	10,580.80	11,753.31	9,918.84	72.82	70.53	9.55	1,871.27	258.57	671.27	593.65	77.62	8.648		
12,500.00	10,581.39	11,853.31	9,919.43	74.46	72.22	9.55	1,971.26	259.48	671.27	592.12	79.15	8.481		
12,600.00	10,581.98	11,953.31	9,920.02	76.13	73.95	9.55	2,071.25	260.39	671.28	590.55	80.72	8.316		
12,700.00	10,582.57	12,053.31	9,920.60	77.86	75.72	9.55	2,171.25	261.30	671.28	588.95	82.33	8.153		
12,800.00	10,583.15	12,153.31	9,921.19	79.62	77.53	9.55	2,271.24	262.21	671.28	587.30	83.98	7.993		
12,900.00	10,583.74	12,253.31	9,921.78	81.41	79.38	9.55	2,371.24	263.13	671.29	585.62	85.67	7.836		
13,000.00	10,584.33	12,353.31	9,922.36	83.25	81.26	9.55	2,471.23	264.04	671.29	583.90	87.39	7.682		
13,100.00	10,584.92	12,453.31	9,922.95	85.11	83.17	9.56	2,571.22	264.95	671.29	582.15	89.14	7.531		
13,200.00	10,585.50	12,553.31	9,923.54	87.01	85.11	9.56	2,671.22	265.86	671.29	580.38	90.92	7.384		
13,300.00	10,586.09	12,653.31	9,924.12	88.93	87.07	9.56	2,771.21	266.77	671.30	578.57	92.73	7.240		
13,400.00	10,586.68	12,753.31	9,924.71	90.88	89.06	9.56	2,871.21	267.68	671.30	576.74	94.56	7.099		
13,500.00	10,587.27	12,853.31	9,925.29	92.85	91.08	9.56	2,971.20	268.59	671.30	574.89	96.42	6.962		
13,600.00	10,587.85	12,953.31	9,925.88	94.85	93.12	9.56	3,071.20	269.51	671.31	573.01	98.30	6.829		
13,700.00	10,588.44	13,053.31	9,926.47	96.87	95.17	9.56	3,171.19	270.42	671.31	571.10	100.20	6.699		
13,800.00	10,589.03	13,153.31	9,927.05	98.91	97.25	9.56	3,271.18	271.33	671.31	569.18	102.13	6.573		
13,900.00	10,589.62	13,253.31	9,927.64	100.97	99.35	9.56	3,371.18	272.24	671.31	567.24	104.07	6.451		
14,000.00	10,590.20	13,353.31	9,928.23	103.05	101.46	9.56	3,471.17	273.15	671.32	565.28	106.03	6.331		
14,100.00	10,590.79	13,453.31	9,928.81	105.14	103.59	9.56	3,571.17	274.06	671.32	563.31	108.02	6.215		
14,200.00	10,591.38	13,553.31	9,929.40	107.25	105.73	9.57	3,671.16	274.98	671.32	561.31	110.01	6.102		
14,300.00	10,591.97	13,653.31	9,929.99	109.38	107.89	9.57	3,771.15	275.89	671.33	559.30	112.02	5.993		
14,400.00	10,592.55	13,753.31	9,930.57	111.52	110.06	9.57	3,871.15	276.80	671.33	557.28	114.05	5.886		
14,500.00	10,593.14	13,853.31	9,931.16	113.67	112.24	9.57	3,971.14	277.71	671.33	555.24	116.09	5.783		
14,600.00	10,593.73	13,953.31	9,931.75	115.84	114.43	9.57	4,071.14	278.62	671.34	553.19	118.14	5.682		
14,700.00	10,594.32	14,053.31	9,932.33	118.02	116.64	9.57	4,171.13	279.53	671.34	551.13	120.21	5.585		
14,800.00	10,594.90	14,153.31	9,932.92	120.21	118.85	9.57	4,271.13	280.45	671.34	549.06	122.29	5.490		
14,900.00	10,595.49	14,253.31	9,933.50	122.41	121.08	9.57	4,371.12	281.36	671.34	546.97	124.37	5.398		
15,000.00	10,596.08	14,353.31	9,934.09	124.62	123.31	9.57	4,471.11	282.27	671.35	544.88	126.47	5.308		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design: Section 32-T26S-R29E - Money Graham Fed Com Well No. 218 H - Original Hole - rev0													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
15,100.00	10,596.67	14,453.31	9,934.68	126.84	125.56	9.57	4,571.11	283.18	671.35	542.77	128.58	5.221		
15,200.00	10,597.25	14,553.31	9,935.26	129.07	127.81	9.57	4,671.10	284.09	671.35	540.65	130.70	5.137		
15,300.00	10,597.84	14,653.31	9,935.85	131.30	130.07	9.58	4,771.10	285.00	671.36	538.53	132.83	5.054		
15,400.00	10,598.43	14,753.31	9,936.44	133.55	132.34	9.58	4,871.09	285.92	671.36	536.40	134.96	4.974		
15,500.00	10,599.02	14,853.31	9,937.02	135.80	134.61	9.58	4,971.08	286.83	671.36	534.26	137.11	4.897		
15,600.00	10,599.60	14,953.31	9,937.61	138.07	136.90	9.58	5,071.08	287.74	671.36	532.11	139.26	4.821		
15,700.00	10,600.19	15,053.31	9,938.20	140.33	139.18	9.58	5,171.07	288.65	671.37	529.95	141.42	4.747		
15,800.00	10,600.78	15,153.31	9,938.78	142.61	141.48	9.58	5,271.07	289.56	671.37	527.79	143.58	4.676		
15,900.00	10,601.37	15,253.31	9,939.37	144.89	143.78	9.58	5,371.06	290.47	671.37	525.62	145.76	4.606		
16,000.00	10,601.95	15,353.31	9,939.95	147.18	146.08	9.58	5,471.05	291.38	671.38	523.44	147.93	4.538		
16,100.00	10,602.54	15,453.31	9,940.54	149.47	148.40	9.58	5,571.05	292.30	671.38	521.26	150.12	4.472		
16,200.00	10,603.13	15,553.31	9,941.13	151.77	150.71	9.58	5,671.04	293.21	671.38	519.07	152.31	4.408		
16,300.00	10,603.72	15,653.31	9,941.71	154.08	153.03	9.58	5,771.04	294.12	671.39	516.88	154.51	4.345		
16,400.00	10,604.30	15,753.31	9,942.30	156.39	155.36	9.59	5,871.03	295.03	671.39	514.68	156.71	4.284		
16,500.00	10,604.89	15,853.31	9,942.89	158.70	157.69	9.59	5,971.03	295.94	671.39	512.47	158.92	4.225		
16,600.00	10,605.48	15,953.31	9,943.47	161.02	160.02	9.59	6,071.02	296.85	671.39	510.27	161.13	4.167		
16,700.00	10,606.07	16,053.31	9,944.06	163.34	162.36	9.59	6,171.01	297.77	671.40	508.05	163.34	4.110		
16,800.00	10,606.65	16,153.31	9,944.65	165.67	164.71	9.59	6,271.01	298.68	671.40	505.83	165.57	4.055		
16,900.00	10,607.24	16,253.31	9,945.23	168.00	167.05	9.59	6,371.00	299.59	671.40	503.61	167.79	4.001		
17,000.00	10,607.83	16,353.31	9,945.82	170.34	169.40	9.59	6,471.00	300.50	671.41	501.39	170.02	3.949		
17,100.00	10,608.42	16,453.31	9,946.41	172.68	171.75	9.59	6,570.99	301.41	671.41	499.16	172.25	3.898		
17,200.00	10,609.00	16,553.31	9,946.99	175.02	174.11	9.59	6,670.98	302.32	671.41	496.92	174.49	3.848		
17,300.00	10,609.59	16,653.31	9,947.58	177.37	176.47	9.59	6,770.98	303.24	671.41	494.69	176.73	3.799		
17,400.00	10,610.18	16,753.31	9,948.16	179.72	178.83	9.59	6,870.97	304.15	671.42	492.45	178.97	3.752		
17,500.00	10,610.77	16,853.31	9,948.75	182.07	181.20	9.60	6,970.97	305.06	671.42	490.20	181.22	3.705		
17,600.00	10,611.35	16,953.31	9,949.34	184.43	183.57	9.60	7,070.96	305.97	671.42	487.95	183.47	3.660		
17,700.00	10,611.94	17,053.31	9,949.92	186.79	185.94	9.60	7,170.95	306.88	671.43	485.70	185.72	3.615		
17,709.92	10,612.00	17,063.23	9,949.98	187.03	186.17	9.60	7,180.88	306.97	671.43	485.48	185.95	3.611		



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 32-T26S-R29E - Money Graham Fed Com Well No. 246 H - Original Hole - rev0													Offset Well Error:	0.00 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance			Minimum Separation		Separation Factor		Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	(ft)			
0.00	0.00	0.00	0.00	0.00	0.00	-91.15	-1.00	-50.00	50.01					
100.00	100.00	100.00	100.00	0.20	0.20	-91.15	-1.00	-50.00	50.01	49.61	0.40	125.684		
200.00	200.00	200.00	200.00	0.74	0.74	-91.15	-1.00	-50.00	50.01	48.54	1.47	33.944		
300.00	300.00	300.00	300.00	1.27	1.27	-91.15	-1.00	-50.00	50.01	47.46	2.55	19.622		
400.00	400.00	400.00	400.00	1.81	1.81	-91.15	-1.00	-50.00	50.01	46.39	3.62	13.799		
500.00	500.00	500.00	500.00	2.35	2.35	-91.15	-1.00	-50.00	50.01	45.31	4.70	10.641		
600.00	600.00	600.00	600.00	2.89	2.89	-91.15	-1.00	-50.00	50.01	44.24	5.77	8.660		
700.00	700.00	700.00	700.00	3.43	3.43	-91.15	-1.00	-50.00	50.01	43.16	6.85	7.300		
800.00	800.00	800.00	800.00	3.96	3.96	-91.15	-1.00	-50.00	50.01	42.08	7.93	6.310		
900.00	900.00	900.00	900.00	4.50	4.50	-91.15	-1.00	-50.00	50.01	41.01	9.00	5.556		
1,000.00	1,000.00	1,000.00	1,000.00	5.04	5.04	-91.15	-1.00	-50.00	50.01	39.93	10.08	4.963		
1,100.00	1,100.00	1,100.00	1,100.00	5.58	5.58	-91.15	-1.00	-50.00	50.01	38.86	11.15	4.484		
1,200.00	1,200.00	1,200.00	1,200.00	6.11	6.11	-91.15	-1.00	-50.00	50.01	37.78	12.23	4.090		
1,300.00	1,300.00	1,300.00	1,300.00	6.65	6.65	-91.15	-1.00	-50.00	50.01	36.71	13.30	3.759		
1,400.00	1,400.00	1,400.00	1,400.00	7.19	7.19	-91.15	-1.00	-50.00	50.01	35.63	14.38	3.478 CC, ES		
1,500.00	1,499.99	1,498.96	1,498.95	7.70	7.70	121.95	-1.82	-50.99	51.71	36.31	15.40	3.358		
1,600.00	1,599.91	1,597.74	1,597.65	8.20	8.19	122.77	-4.27	-53.94	56.81	40.43	16.37	3.469		
1,700.00	1,699.79	1,703.18	1,696.54	8.70	8.73	122.93	-8.19	-58.67	64.25	46.85	17.39	3.694		
1,800.00	1,799.67	1,803.48	1,796.02	9.20	9.24	122.85	-12.39	-63.73	71.98	53.58	18.41	3.911		
1,900.00	1,899.54	1,903.78	1,895.51	9.71	9.76	122.79	-16.59	-68.79	79.72	60.29	19.43	4.103		
2,000.00	1,999.42	2,004.08	1,994.99	10.23	10.28	122.74	-20.79	-73.85	87.46	67.00	20.46	4.275		
2,100.00	2,099.30	2,104.38	2,094.47	10.75	10.81	122.70	-24.99	-78.91	95.20	73.70	21.50	4.428		
2,200.00	2,199.18	2,204.68	2,193.96	11.27	11.34	122.66	-29.19	-83.96	102.93	80.39	22.54	4.567		
2,300.00	2,299.06	2,304.98	2,293.44	11.79	11.88	122.63	-33.38	-89.02	110.67	87.08	23.59	4.692		
2,400.00	2,398.94	2,405.28	2,392.92	12.32	12.42	122.60	-37.58	-94.08	118.41	93.77	24.64	4.805		
2,500.00	2,498.82	2,505.58	2,492.40	12.85	12.95	122.58	-41.78	-99.14	126.15	100.45	25.70	4.908		
2,600.00	2,598.69	2,605.88	2,591.89	13.38	13.50	122.56	-45.98	-104.20	133.88	107.12	26.76	5.003		
2,700.00	2,698.57	2,693.82	2,691.37	13.91	13.97	122.54	-50.18	-109.26	141.62	113.86	27.76	5.102		
2,800.00	2,798.45	2,806.48	2,790.85	14.45	14.58	122.53	-54.38	-114.32	149.36	120.47	28.89	5.170		
2,900.00	2,898.33	2,906.78	2,890.34	14.98	15.13	122.51	-58.58	-119.38	157.10	127.14	29.96	5.244		
3,000.00	2,998.21	3,007.08	2,989.82	15.52	15.68	122.50	-62.77	-124.44	164.83	133.80	31.03	5.312		
3,100.00	3,098.09	3,107.38	3,089.30	16.06	16.23	122.48	-66.97	-129.50	172.57	140.47	32.11	5.375		
3,200.00	3,197.97	3,207.68	3,188.79	16.60	16.78	122.47	-71.17	-134.56	180.31	147.13	33.18	5.434		
3,300.00	3,297.84	3,307.98	3,288.27	17.13	17.33	122.46	-75.37	-139.62	188.05	153.79	34.26	5.489		
3,400.00	3,397.72	3,408.28	3,387.75	17.67	17.88	122.45	-79.57	-144.68	195.79	160.45	35.34	5.541		
3,500.00	3,497.60	3,508.58	3,487.24	18.22	18.43	122.44	-83.77	-149.73	203.52	167.11	36.42	5.589		
3,600.00	3,597.48	3,608.88	3,586.72	18.76	18.98	122.44	-87.96	-154.79	211.26	173.77	37.50	5.634		
3,700.00	3,697.36	3,709.18	3,686.20	19.30	19.54	122.43	-92.16	-159.85	219.00	180.42	38.58	5.677		
3,800.00	3,797.24	3,809.48	3,785.69	19.84	20.09	122.42	-96.36	-164.91	226.74	187.08	39.66	5.717		
3,900.00	3,897.11	3,909.78	3,885.17	20.39	20.65	122.41	-100.56	-169.97	234.48	193.73	40.75	5.755		
4,000.00	3,996.99	3,989.92	3,984.65	20.93	21.09	122.41	-104.76	-175.03	242.21	200.49	41.72	5.806		
4,100.00	4,096.87	4,089.62	4,084.14	21.47	21.64	122.40	-108.96	-180.09	249.95	207.15	42.80	5.840		
4,200.00	4,196.75	4,189.32	4,183.62	22.02	22.19	122.40	-113.15	-185.15	257.69	213.80	43.89	5.872		
4,300.00	4,296.63	4,289.02	4,283.10	22.56	22.75	122.39	-117.35	-190.21	265.43	220.46	44.97	5.902		
4,400.00	4,396.51	4,388.72	4,382.59	23.11	23.30	122.39	-121.55	-195.27	273.16	227.11	46.05	5.931		
4,500.00	4,496.39	4,488.42	4,482.07	23.65	23.85	122.38	-125.75	-200.33	280.90	233.76	47.14	5.959		
4,600.00	4,596.26	4,588.12	4,581.55	24.20	24.41	122.38	-129.95	-205.39	288.64	240.41	48.23	5.985		
4,700.00	4,696.14	4,687.82	4,681.03	24.75	24.96	122.37	-134.15	-210.44	296.38	247.07	49.31	6.010		
4,800.00	4,796.02	4,787.53	4,780.52	25.29	25.52	122.37	-138.35	-215.50	304.12	253.72	50.40	6.034		
4,900.00	4,895.90	4,887.23	4,880.00	25.84	26.07	122.37	-142.54	-220.56	311.85	260.37	51.49	6.057		
5,000.00	4,995.78	4,986.93	4,979.48	26.39	26.63	122.36	-146.74	-225.62	319.59	267.02	52.57	6.079		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.00 ft
Section 32-T26S-R29E - Money Graham Fed Com Well No. 246 H - Original Hole - rev0													Offset Well Error:	0.00 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,100.00	5,095.66	5,086.63	5,078.97	26.93	27.18	122.36	-150.94	-230.68	327.33	273.67	53.66	6.100		
5,200.00	5,195.53	5,186.33	5,178.45	27.48	27.74	122.36	-155.14	-235.74	335.07	280.32	54.75	6.120		
5,300.00	5,295.41	5,286.03	5,277.93	28.03	28.29	122.35	-159.34	-240.80	342.81	286.97	55.84	6.139		
5,400.00	5,395.29	5,385.73	5,377.42	28.57	28.85	122.35	-163.54	-245.86	350.54	293.61	56.93	6.158		
5,500.00	5,495.17	5,485.43	5,476.90	29.12	29.40	122.35	-167.73	-250.92	358.28	300.26	58.02	6.175		
5,600.00	5,595.05	5,585.13	5,576.38	29.67	29.96	122.34	-171.93	-255.98	366.02	306.91	59.11	6.192		
5,700.00	5,694.93	5,684.83	5,675.87	30.22	30.52	122.34	-176.13	-261.04	373.76	313.56	60.20	6.209		
5,800.00	5,794.81	5,784.53	5,775.35	30.77	31.07	122.34	-180.33	-266.10	381.49	320.21	61.29	6.224		
5,900.00	5,894.68	5,884.23	5,874.83	31.32	31.63	122.34	-184.53	-271.15	389.23	326.85	62.38	6.240		
6,000.00	5,994.56	5,983.93	5,974.32	31.86	32.19	122.34	-188.73	-276.21	396.97	333.50	63.47	6.254		
6,100.00	6,094.44	6,083.63	6,073.80	32.41	32.74	122.33	-192.92	-281.27	404.71	340.15	64.56	6.268		
6,200.00	6,194.32	6,185.63	6,175.58	32.96	33.31	122.34	-197.16	-286.37	412.38	346.70	65.68	6.279		
6,300.00	6,294.24	6,284.62	6,274.47	33.51	33.91	122.48	-200.25	-290.11	417.98	351.13	66.85	6.253		
6,400.00	6,394.22	6,403.86	6,393.69	34.02	34.49	122.54	-201.37	-291.45	420.00	352.05	67.95	6.181		
6,500.00	6,494.22	6,504.40	6,494.22	34.52	34.99	-90.24	-201.37	-291.45	420.00	351.05	68.96	6.091		
6,600.00	6,594.22	6,604.40	6,594.22	35.02	35.49	-90.24	-201.37	-291.45	420.00	350.04	69.96	6.003		
6,700.00	6,694.22	6,704.40	6,694.22	35.52	35.98	-90.24	-201.37	-291.45	420.00	349.04	70.96	5.918		
6,800.00	6,794.22	6,804.40	6,794.22	36.03	36.48	-90.24	-201.37	-291.45	420.00	348.03	71.97	5.836		
6,900.00	6,894.22	6,904.40	6,894.22	36.53	36.99	-90.24	-201.37	-291.45	420.00	347.02	72.98	5.755		
7,000.00	6,994.22	7,004.40	6,994.22	37.03	37.49	-90.24	-201.37	-291.45	420.00	346.01	73.99	5.676		
7,100.00	7,094.22	7,104.40	7,094.22	37.54	37.99	-90.24	-201.37	-291.45	420.00	345.00	75.00	5.600		
7,200.00	7,194.22	7,204.40	7,194.22	38.04	38.49	-90.24	-201.37	-291.45	420.00	343.99	76.02	5.525		
7,300.00	7,294.22	7,304.40	7,294.22	38.55	39.00	-90.24	-201.37	-291.45	420.00	342.97	77.03	5.452		
7,400.00	7,394.22	7,404.40	7,394.22	39.06	39.50	-90.24	-201.37	-291.45	420.00	341.95	78.05	5.381		
7,500.00	7,494.22	7,504.40	7,494.22	39.56	40.01	-90.24	-201.37	-291.45	420.00	340.94	79.07	5.312		
7,600.00	7,594.22	7,604.40	7,594.22	40.07	40.52	-90.24	-201.37	-291.45	420.00	339.92	80.09	5.244		
7,700.00	7,694.22	7,704.40	7,694.22	40.58	41.03	-90.24	-201.37	-291.45	420.00	338.89	81.11	5.178		
7,800.00	7,794.22	7,804.40	7,794.22	41.09	41.53	-90.24	-201.37	-291.45	420.00	337.87	82.13	5.114		
7,900.00	7,894.22	7,904.40	7,894.22	41.60	42.04	-90.24	-201.37	-291.45	420.00	336.85	83.16	5.051		
8,000.00	7,994.22	8,004.40	7,994.22	42.12	42.55	-90.24	-201.37	-291.45	420.00	335.82	84.18	4.989		
8,100.00	8,094.22	8,104.40	8,094.22	42.63	43.06	-90.24	-201.37	-291.45	420.00	334.79	85.21	4.929		
8,200.00	8,194.22	8,204.40	8,194.22	43.14	43.58	-90.24	-201.37	-291.45	420.00	333.76	86.24	4.870		
8,300.00	8,294.22	8,304.40	8,294.22	43.65	44.09	-90.24	-201.37	-291.45	420.00	332.74	87.27	4.813		
8,400.00	8,394.22	8,404.40	8,394.22	44.17	44.60	-90.24	-201.37	-291.45	420.00	331.71	88.30	4.757		
8,500.00	8,494.22	8,504.40	8,494.22	44.68	45.11	-90.24	-201.37	-291.45	420.00	330.67	89.33	4.702		
8,600.00	8,594.22	8,604.40	8,594.22	45.20	45.63	-90.24	-201.37	-291.45	420.00	329.64	90.36	4.648		
8,700.00	8,694.22	8,704.40	8,694.22	45.71	46.14	-90.24	-201.37	-291.45	420.00	328.61	91.40	4.595		
8,800.00	8,794.22	8,804.40	8,794.22	46.23	46.66	-90.24	-201.37	-291.45	420.00	327.57	92.43	4.544		
8,900.00	8,894.22	8,904.40	8,894.22	46.75	47.17	-90.24	-201.37	-291.45	420.00	326.54	93.47	4.494		
9,000.00	8,994.22	9,004.40	8,994.22	47.26	47.69	-90.24	-201.37	-291.45	420.00	325.50	94.50	4.444		
9,100.00	9,094.22	9,104.40	9,094.22	47.78	48.21	-90.24	-201.37	-291.45	420.00	324.46	95.54	4.396		
9,200.00	9,194.22	9,204.40	9,194.22	48.30	48.72	-90.24	-201.37	-291.45	420.00	323.43	96.58	4.349		
9,300.00	9,294.22	9,304.40	9,294.22	48.82	49.24	-90.24	-201.37	-291.45	420.00	322.39	97.62	4.303		
9,400.00	9,394.22	9,404.40	9,394.22	49.34	49.76	-90.24	-201.37	-291.45	420.00	321.35	98.66	4.257		
9,500.00	9,494.22	9,504.40	9,494.22	49.86	50.28	-90.24	-201.37	-291.45	420.00	320.31	99.70	4.213		
9,600.00	9,594.22	9,604.40	9,594.22	50.38	50.79	-90.24	-201.37	-291.45	420.00	319.27	100.74	4.169		
9,700.00	9,694.22	9,704.40	9,694.22	50.90	51.31	-90.24	-201.37	-291.45	420.00	318.23	101.78	4.127		
9,800.00	9,794.22	9,804.40	9,794.22	51.42	51.83	-90.24	-201.37	-291.45	420.00	317.18	102.82	4.085		
9,900.00	9,894.22	9,904.40	9,894.22	51.94	52.35	-90.24	-201.37	-291.45	420.00	316.14	103.86	4.044		
10,000.00	9,994.22	10,004.40	9,994.22	52.46	52.87	-90.24	-201.37	-291.45	420.00	315.10	104.91	4.004		
10,100.00	10,093.79	10,103.96	10,093.79	52.97	53.39	-91.80	-201.37	-291.45	420.18	314.25	105.93	3.967		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at:	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Section 32-T26S-R29E - Money Graham Fed Com Well No. 246 H - Original Hole - rev0													Offset Site Error:	0.00 ft
Survey Program: 0-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance			Minimum			Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Tooface (")	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Separation (ft)	Separation Factor		
10,200.00	10,190.47	10,200.64	10,190.47	53.43	53.89	-94.93	-201.37	-291.45	421.72	314.83	106.89	3.945		
10,300.00	10,281.34	10,304.22	10,293.59	53.85	54.42	-99.26	-193.18	-291.38	426.22	318.46	107.76	3.955		
10,400.00	10,363.63	10,416.10	10,401.33	54.22	54.93	-103.42	-163.72	-291.12	433.09	324.78	108.31	3.999		
10,500.00	10,434.84	10,536.99	10,508.91	54.58	55.40	-107.26	-109.06	-290.63	441.49	333.30	108.19	4.081		
10,600.00	10,492.81	10,667.68	10,609.52	54.94	55.79	-110.58	-26.10	-289.89	450.20	342.97	107.23	4.199		
10,700.00	10,535.78	10,807.94	10,693.60	55.34	56.16	-113.16	85.71	-288.90	457.79	352.07	105.72	4.330		
10,800.00	10,562.45	10,955.98	10,750.16	55.76	56.72	-114.77	222.08	-287.68	462.85	358.32	104.53	4.428		
10,900.00	10,571.99	11,108.23	10,770.01	56.20	57.37	-115.24	372.57	-286.34	464.37	359.66	104.71	4.435		
10,981.97	10,572.59	11,188.69	10,770.50	56.62	57.78	-115.23	453.02	-285.63	464.33	358.90	105.43	4.404		
11,000.00	10,572.58	11,206.71	10,770.60	56.71	57.87	-115.24	471.05	-285.47	464.38	358.90	105.59	4.398		
11,100.00	10,573.16	11,306.71	10,771.19	57.32	58.47	-115.24	571.04	-284.58	464.39	357.75	106.64	4.355		
11,200.00	10,573.75	11,406.71	10,771.78	58.04	59.17	-115.24	671.04	-283.69	464.40	356.52	107.88	4.305		
11,300.00	10,574.34	11,506.71	10,772.37	58.84	59.96	-115.24	771.03	-282.80	464.42	355.13	109.29	4.249		
11,400.00	10,574.93	11,606.71	10,772.96	59.74	60.83	-115.24	871.03	-281.91	464.43	353.58	110.85	4.190		
11,500.00	10,575.51	11,706.71	10,773.55	60.72	61.80	-115.24	971.02	-281.02	464.44	351.87	112.57	4.126		
11,600.00	10,576.10	11,806.71	10,774.14	61.79	62.85	-115.24	1,071.02	-280.13	464.45	350.01	114.44	4.058		
11,700.00	10,576.69	11,906.71	10,774.73	62.94	63.96	-115.24	1,171.01	-279.24	464.46	348.02	116.44	3.989		
11,800.00	10,577.28	12,006.71	10,775.32	64.16	65.17	-115.24	1,271.00	-278.35	464.47	345.89	118.58	3.917		
11,900.00	10,577.86	12,106.71	10,775.91	65.45	66.43	-115.24	1,371.00	-277.46	464.48	343.64	120.84	3.844		
12,000.00	10,578.45	12,206.71	10,776.50	66.80	67.76	-115.24	1,470.99	-276.57	464.49	341.28	123.21	3.770		
12,100.00	10,579.04	12,306.71	10,777.09	68.22	69.16	-115.24	1,570.99	-275.68	464.50	338.80	125.70	3.695		
12,200.00	10,579.63	12,406.71	10,777.68	69.70	70.62	-115.24	1,670.98	-274.79	464.51	336.23	128.28	3.621		
12,300.00	10,580.22	12,506.71	10,778.27	71.24	72.12	-115.24	1,770.98	-273.90	464.52	333.56	130.96	3.547		
12,400.00	10,580.80	12,606.71	10,778.86	72.82	73.69	-115.24	1,870.97	-273.01	464.53	330.80	133.73	3.474		
12,500.00	10,581.39	12,706.71	10,779.44	74.46	75.29	-115.24	1,970.96	-272.12	464.54	327.96	136.58	3.401		
12,600.00	10,581.98	12,806.71	10,780.03	76.13	76.95	-115.24	2,070.96	-271.23	464.55	325.05	139.51	3.330		
12,700.00	10,582.57	12,906.71	10,780.62	77.86	78.65	-115.24	2,170.95	-270.34	464.57	322.06	142.50	3.260		
12,800.00	10,583.15	13,006.71	10,781.21	79.62	80.39	-115.24	2,270.95	-269.45	464.58	319.01	145.57	3.191		
12,900.00	10,583.74	13,106.71	10,781.80	81.41	82.16	-115.23	2,370.94	-268.56	464.59	315.90	148.69	3.125		
13,000.00	10,584.33	13,206.71	10,782.39	83.25	83.98	-115.23	2,470.94	-267.67	464.60	312.73	151.87	3.059		
13,100.00	10,584.92	13,306.71	10,782.98	85.11	85.82	-115.23	2,570.93	-266.79	464.61	309.51	155.10	2.996		
13,200.00	10,585.50	13,406.71	10,783.57	87.01	87.70	-115.23	2,670.93	-265.90	464.62	306.24	158.38	2.934		
13,300.00	10,586.09	13,506.71	10,784.16	88.93	89.60	-115.23	2,770.92	-265.01	464.63	302.93	161.70	2.873		
13,400.00	10,586.68	13,606.71	10,784.75	90.88	91.53	-115.23	2,870.91	-264.12	464.64	299.58	165.06	2.815		
13,500.00	10,587.27	13,706.71	10,785.34	92.85	93.49	-115.23	2,970.91	-263.23	464.65	296.19	168.46	2.758		
13,600.00	10,587.85	13,806.71	10,785.93	94.85	95.47	-115.23	3,070.90	-262.34	464.66	292.77	171.89	2.703		
13,700.00	10,588.44	13,906.71	10,786.52	96.87	97.47	-115.23	3,170.90	-261.45	464.67	289.32	175.35	2.650		
13,800.00	10,589.03	14,006.71	10,787.11	98.91	99.50	-115.23	3,270.89	-260.56	464.68	285.84	178.85	2.598		
13,900.00	10,589.62	14,106.71	10,787.70	100.97	101.54	-115.23	3,370.89	-259.67	464.69	282.33	182.36	2.548		
14,000.00	10,590.20	14,206.71	10,788.29	103.05	103.60	-115.23	3,470.88	-258.78	464.70	278.80	185.90	2.500		
14,100.00	10,590.79	14,306.71	10,788.87	105.14	105.68	-115.23	3,570.87	-257.89	464.72	275.25	189.47	2.453		
14,200.00	10,591.38	14,406.71	10,789.46	107.25	107.78	-115.23	3,670.87	-257.00	464.73	271.68	193.05	2.407		
14,300.00	10,591.97	14,506.71	10,790.05	109.38	109.89	-115.23	3,770.86	-256.11	464.74	268.09	196.64	2.363		
14,400.00	10,592.55	14,606.71	10,790.64	111.52	112.02	-115.23	3,870.86	-255.22	464.75	264.49	200.26	2.321		
14,500.00	10,593.14	14,706.71	10,791.23	113.67	114.16	-115.23	3,970.85	-254.33	464.76	260.88	203.88	2.280		
14,600.00	10,593.73	14,806.71	10,791.82	115.84	116.31	-115.23	4,070.85	-253.44	464.77	257.25	207.52	2.240		
14,700.00	10,594.32	14,906.71	10,792.41	118.02	118.48	-115.23	4,170.84	-252.55	464.78	253.61	211.17	2.201		
14,800.00	10,594.90	15,006.71	10,793.00	120.21	120.66	-115.23	4,270.83	-251.66	464.79	249.97	214.82	2.164		
14,900.00	10,595.49	15,106.71	10,793.59	122.41	122.84	-115.23	4,370.83	-250.77	464.80	246.31	218.49	2.127		
15,000.00	10,596.08	15,206.71	10,794.18	124.62	125.04	-115.23	4,470.82	-249.88	464.81	242.66	222.16	2.092		
15,100.00	10,596.67	15,306.71	10,794.77	126.84	127.25	-115.23	4,570.82	-248.99	464.82	238.99	225.83	2.058		

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



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Offset Design													Section 32-T26S-R29E - Money Graham Fed Com Well No. 246 H - Original Hole - rev0		Offset Site Error:	0.00 ft
Survey Program: 0-MWD															Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning			
15,200.00	10,597.25	15,406.71	10,795.36	129.07	129.47	-115.23	4,670.81	-248.10	464.83	235.32	229.51	2.025				
15,300.00	10,597.84	15,506.71	10,795.95	131.30	131.70	-115.23	4,770.81	-247.21	464.84	231.65	233.19	1.993	Level 3<2.00			
15,400.00	10,598.43	15,606.71	10,796.54	133.55	133.94	-115.23	4,870.80	-246.32	464.85	227.98	236.87	1.962	Level 3<2.00			
15,500.00	10,599.02	15,706.71	10,797.13	135.80	136.18	-115.23	4,970.79	-245.43	464.87	224.31	240.56	1.932	Level 3<2.00			
15,600.00	10,599.60	15,806.71	10,797.72	138.07	138.43	-115.22	5,070.79	-244.54	464.88	220.64	244.24	1.903	Level 3<2.00			
15,700.00	10,600.19	15,906.71	10,798.31	140.33	140.69	-115.22	5,170.78	-243.65	464.89	216.97	247.92	1.875	Level 3<2.00			
15,800.00	10,600.78	16,006.71	10,798.89	142.61	142.96	-115.22	5,270.78	-242.76	464.90	213.30	251.60	1.848	Level 3<2.00			
15,900.00	10,601.37	16,106.71	10,799.48	144.89	145.23	-115.22	5,370.77	-241.87	464.91	209.63	255.27	1.821	Level 3<2.00			
16,000.00	10,601.95	16,206.71	10,800.07	147.18	147.51	-115.22	5,470.77	-240.99	464.92	205.97	258.95	1.795	Level 3<2.00			
16,100.00	10,602.54	16,306.71	10,800.66	149.47	149.80	-115.22	5,570.76	-240.10	464.93	202.32	262.61	1.770	Level 3<2.00			
16,200.00	10,603.13	16,406.71	10,801.25	151.77	152.09	-115.22	5,670.75	-239.21	464.94	198.67	266.28	1.746	Level 3<2.00			
16,300.00	10,603.72	16,506.71	10,801.84	154.08	154.39	-115.22	5,770.75	-238.32	464.95	195.02	269.93	1.722	Level 3<2.00			
16,400.00	10,604.30	16,606.71	10,802.43	156.39	156.69	-115.22	5,870.74	-237.43	464.96	191.38	273.58	1.700	Level 3<2.00			
16,500.00	10,604.89	16,706.71	10,803.02	158.70	159.00	-115.22	5,970.74	-236.54	464.97	187.75	277.22	1.677	Level 3<2.00			
16,600.00	10,605.48	16,806.71	10,803.61	161.02	161.31	-115.22	6,070.73	-235.65	464.98	184.12	280.86	1.656	Level 3<2.00			
16,700.00	10,606.07	16,906.71	10,804.20	163.34	163.63	-115.22	6,170.73	-234.76	464.99	180.51	284.49	1.635	Level 3<2.00			
16,800.00	10,606.65	17,006.71	10,804.79	165.67	165.95	-115.22	6,270.72	-233.87	465.01	176.90	288.10	1.614	Level 3<2.00			
16,900.00	10,607.24	17,106.71	10,805.38	168.00	168.28	-115.22	6,370.71	-232.98	465.02	173.30	291.71	1.594	Level 3<2.00			
17,000.00	10,607.83	17,206.71	10,805.97	170.34	170.61	-115.22	6,470.71	-232.09	465.03	169.71	295.31	1.575	Level 3<2.00			
17,100.00	10,608.42	17,306.71	10,806.56	172.68	172.94	-115.22	6,570.70	-231.20	465.04	166.13	298.90	1.556	Level 3<2.00			
17,200.00	10,609.00	17,406.71	10,807.15	175.02	175.28	-115.22	6,670.70	-230.31	465.05	162.57	302.48	1.537	Level 3<2.00			
17,300.00	10,609.59	17,506.71	10,807.74	177.37	177.62	-115.22	6,770.69	-229.42	465.06	159.01	306.05	1.520	Level 3<2.00			
17,400.00	10,610.18	17,606.71	10,808.32	179.72	179.97	-115.22	6,870.69	-228.53	465.07	155.46	309.61	1.502	Level 3<2.00			
17,500.00	10,610.77	17,706.71	10,808.91	182.07	182.31	-115.22	6,970.68	-227.64	465.08	151.93	313.15	1.485	Level 2<1.50			
17,600.00	10,611.35	17,806.71	10,809.50	184.43	184.67	-115.22	7,070.67	-226.75	465.09	148.40	316.69	1.469	Level 2<1.50			
17,604.71	10,611.38	17,811.43	10,809.53	184.54	184.78	-115.22	7,075.39	-226.71	465.09	148.24	316.85	1.468	Level 2<1.50			
17,700.00	10,611.94	17,891.06	10,810.00	186.79	186.65	-115.22	7,155.01	-226.00	465.37	146.15	319.22	1.458	Level 2<1.50, SF			
17,709.92	10,612.00	17,891.06	10,810.00	187.03	186.65	-115.22	7,155.01	-226.00	465.81	147.23	318.57	1.462	Level 2<1.50			



Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Section 32-T26S-R29E - Sidewinder #1H - Original Hole - Surveys Original Hole													Offset Site Error:	0.00 ft
Survey Program: 673-GYRO-NS, 6162-MWD													Offset Well Error:	0.00 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
5,000.00	4,995.78	10,652.01	6,903.39	26.39	149.04	-151.69	89.05	119.52	1,907.24	1,844.55	62.69	30.422		
5,100.00	5,095.66	10,654.76	6,903.37	26.93	149.14	-151.19	88.91	122.27	1,808.67	1,745.30	63.37	28.541		
5,200.00	5,195.53	10,657.42	6,903.35	27.48	149.23	-150.70	88.78	124.92	1,710.27	1,646.15	64.12	26.674		
5,300.00	5,295.41	10,659.99	6,903.32	28.03	149.32	-150.23	88.66	127.49	1,612.06	1,547.10	64.95	24.818		
5,400.00	5,395.29	10,662.48	6,903.30	28.57	149.41	-149.78	88.53	129.97	1,514.08	1,448.18	65.90	22.977		
5,500.00	5,495.17	10,664.88	6,903.28	29.12	149.50	-149.34	88.42	132.38	1,416.38	1,349.41	66.97	21.149		
5,600.00	5,595.05	10,667.21	6,903.26	29.67	149.58	-148.92	88.30	134.70	1,319.02	1,250.80	68.21	19.336		
5,700.00	5,694.93	10,669.47	6,903.24	30.22	149.66	-148.50	88.19	136.96	1,222.08	1,152.41	69.67	17.541		
5,800.00	5,794.81	10,671.66	6,903.21	30.77	149.74	-148.10	88.09	139.14	1,125.68	1,054.27	71.41	15.764		
5,900.00	5,894.68	10,673.78	6,903.19	31.32	149.82	-147.71	87.98	141.26	1,029.96	956.44	73.52	14.010		
6,000.00	5,994.56	10,675.84	6,903.17	31.86	149.89	-147.33	87.88	143.32	935.13	859.00	76.13	12.284		
6,100.00	6,094.44	10,677.83	6,903.15	32.41	149.96	-146.97	87.78	145.31	841.49	762.07	79.42	10.595		
6,200.00	6,194.32	10,679.78	6,903.13	32.96	150.03	-146.61	87.69	147.25	749.50	665.80	83.70	8.955		
6,300.00	6,294.24	10,681.10	6,903.11	33.51	150.08	-144.94	87.62	148.57	659.49	570.22	89.27	7.387		
6,400.00	6,394.22	10,680.78	6,903.11	34.02	150.07	-143.38	87.64	148.25	571.69	475.18	96.52	5.923		
6,500.00	6,494.22	10,679.58	6,903.13	34.52	150.02	3.68	87.70	147.05	487.91	381.42	106.49	4.582		
6,600.00	6,594.22	10,678.40	6,903.14	35.02	149.98	3.45	87.76	145.88	411.43	290.40	121.03	3.400		
6,700.00	6,694.22	10,677.26	6,903.15	35.52	149.94	3.22	87.81	144.74	347.12	204.82	142.30	2.439		
6,800.00	6,794.22	10,676.15	6,903.17	36.03	149.90	3.00	87.87	143.63	302.82	132.88	169.95	1.782 Level 3<2.00		
6,893.96	6,888.18	10,675.13	6,903.18	36.50	149.86	2.80	87.92	142.61	287.88	101.98	185.90	1.549 Level 3<2.00, CC, ES, SF		
6,900.00	6,894.22	10,675.07	6,903.18	36.53	149.86	2.79	87.92	142.55	287.94	102.13	185.82	1.550 Level 3<2.00		
7,000.00	6,994.22	10,674.01	6,903.19	37.03	149.82	2.58	87.97	141.50	306.79	139.98	166.81	1.839 Level 3<2.00		
7,100.00	7,094.22	10,672.99	6,903.20	37.54	149.79	2.37	88.02	140.47	354.01	213.91	140.10	2.527		
7,200.00	7,194.22	10,671.99	6,903.21	38.04	149.75	2.17	88.07	139.47	420.15	299.76	120.39	3.490		
7,300.00	7,294.22	10,671.01	6,903.22	38.55	149.72	1.98	88.12	138.50	497.72	390.54	107.19	4.643		
7,400.00	7,394.22	10,670.06	6,903.23	39.06	149.68	1.79	88.16	137.54	582.18	483.86	98.32	5.921		
7,500.00	7,494.22	10,669.13	6,903.24	39.56	149.65	1.61	88.21	136.62	670.91	578.70	92.21	7.276		
7,600.00	7,594.22	10,668.22	6,903.25	40.07	149.62	1.42	88.25	135.71	762.44	674.55	87.90	8.674		
7,700.00	7,694.22	10,667.34	6,903.26	40.58	149.59	1.25	88.30	134.83	855.87	771.08	84.79	10.094		
7,800.00	7,794.22	10,666.47	6,903.26	41.09	149.55	1.08	88.34	133.96	950.64	868.13	82.50	11.522		
7,900.00	7,894.22	10,665.63	6,903.27	41.60	149.52	0.91	88.38	133.12	1,046.37	965.57	80.81	12.949		
8,000.00	7,994.22	10,664.80	6,903.28	42.12	149.49	0.75	88.42	132.30	1,142.84	1,063.30	79.54	14.368		
8,100.00	8,094.22	10,664.00	6,903.29	42.63	149.47	0.59	88.46	131.49	1,239.87	1,161.27	78.59	15.775		
8,200.00	8,194.22	10,663.21	6,903.30	43.14	149.44	0.43	88.50	130.70	1,337.33	1,259.44	77.89	17.169		
8,300.00	8,294.22	10,662.44	6,903.30	43.65	149.41	0.28	88.54	129.94	1,435.15	1,357.77	77.38	18.547		
8,400.00	8,394.22	10,661.68	6,903.31	44.17	149.38	0.13	88.57	129.18	1,533.24	1,456.23	77.02	19.908		
8,500.00	8,494.22	10,660.95	6,903.32	44.68	149.36	-0.02	88.61	128.45	1,631.57	1,554.79	76.77	21.252		
8,600.00	8,594.22	10,660.23	6,903.32	45.20	149.33	-0.16	88.64	127.73	1,730.08	1,653.46	76.63	22.578		
8,700.00	8,694.22	10,659.52	6,903.33	45.71	149.31	-0.30	88.68	127.02	1,828.76	1,752.20	76.56	23.886		
8,800.00	8,794.22	10,658.83	6,903.33	46.23	149.28	-0.44	88.71	126.33	1,927.58	1,851.01	76.56	25.177		

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



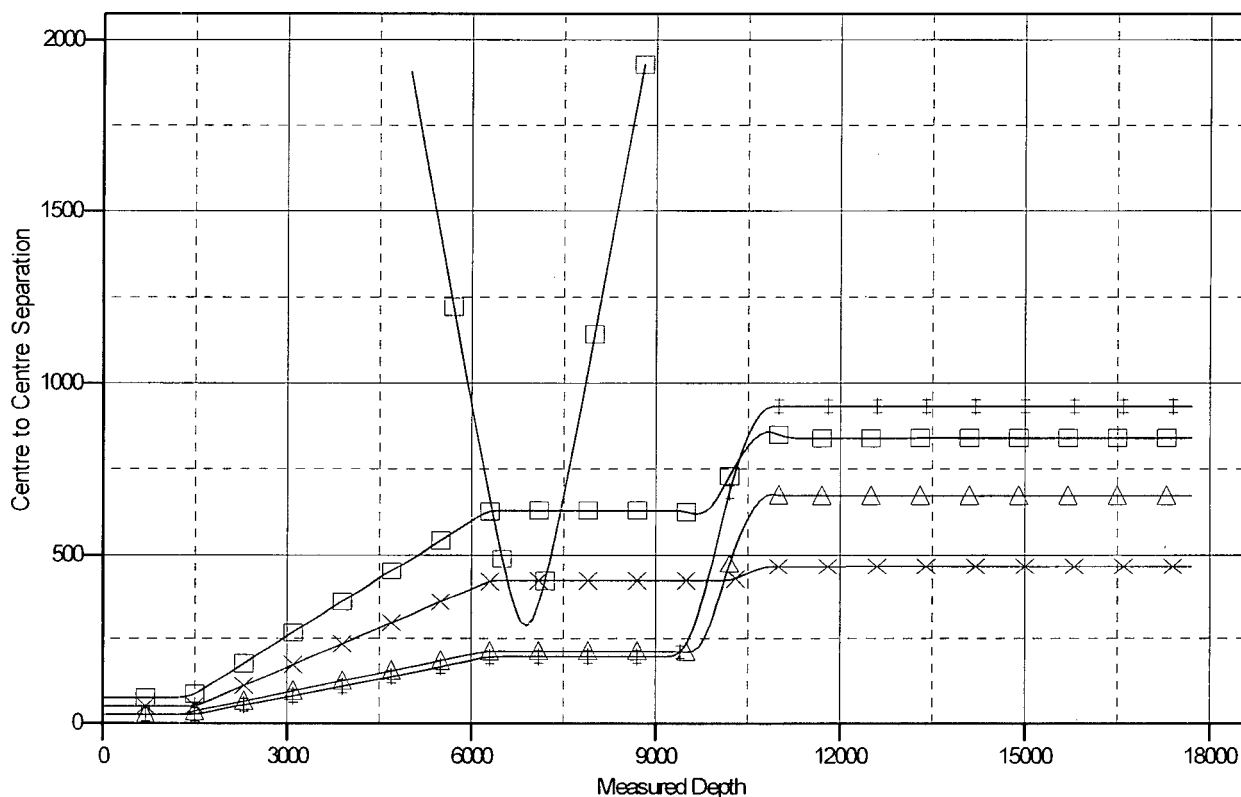
Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at	3.00 sigma
Reference Wellbore	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB=2866+26 @ 2892.00ft
 Offset Depths are relative to Offset Datum
 Central Meridian is -104.33333334

Coordinates are relative to: Money Graham Fed Com Well No. 238 H
 Coordinate System is US State Plane 1983, New Mexico Eastern Zone
 Grid Convergence at Surface is: 0.18°

Ladder Plot



LEGEND

Money Graham Fed Com Well No. 246 H, Original Hole, rev0 V0
 Money Graham Fed Com Well No. 204 H, Original Hole, rev0 V0
 Money Graham Fed Com Well No. 218 H, Original Hole, rev0 V0
 Sidewinder #111, Original Hole, Survey vs Original Hole V0
 Money Graham Fed Com Well No. 214 H, Original Hole, rev0 V0



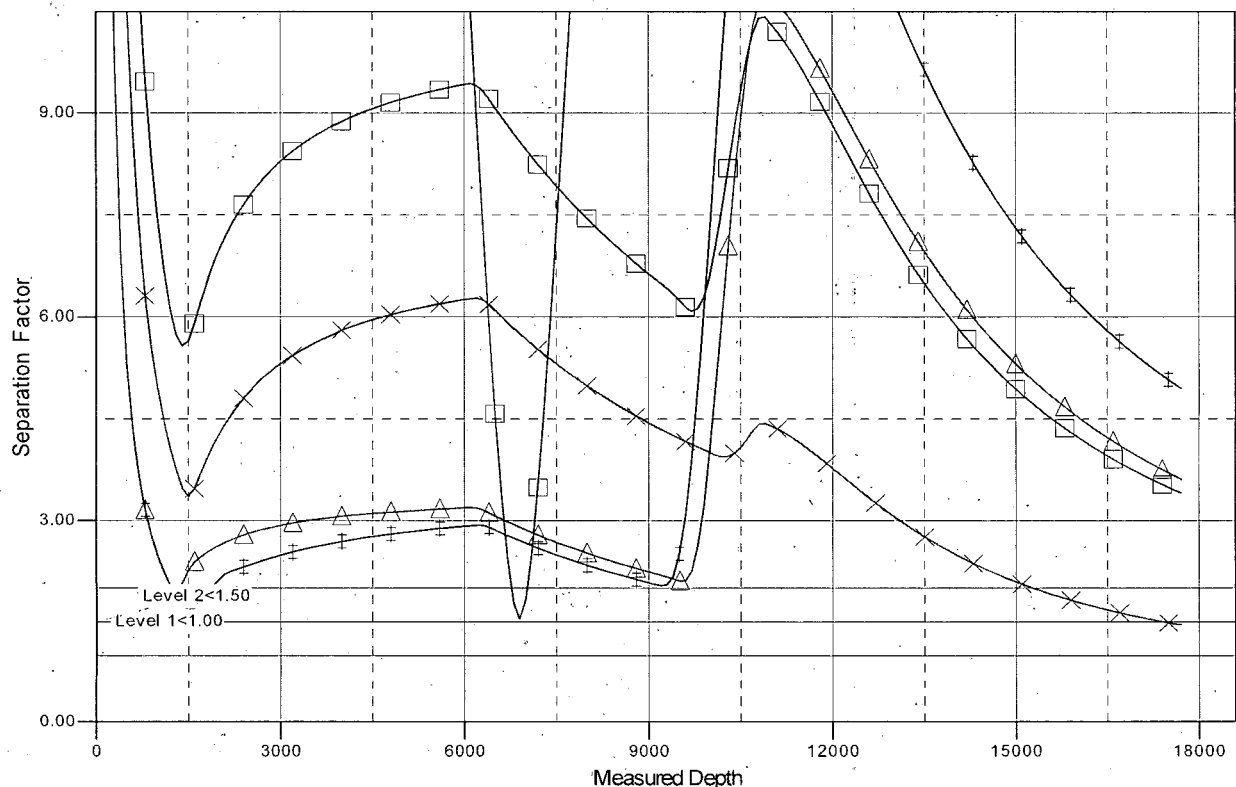
Anticollision Report

Company:	Tap Rock Operating LLC	Local Co-ordinate Reference:	Well Money Graham Fed Com Well No. 238 H
Project:	Eddy County, New Mexico NAD83 NM east	TVD Reference:	RKB=2866+26 @ 2892.00ft
Reference Site:	Section 32-T26S-R29E	MD Reference:	RKB=2866+26 @ 2892.00ft
Site Error:	0.00 ft	North Reference:	Grid
Reference Well:	Money Graham Fed Com Well No. 238 H	Survey Calculation Method:	Minimum Curvature
Well Error:	0.00 ft	Output errors are at:	3.00 sigma
Reference Wellbore:	Original Hole	Database:	DB_Jul2216dt_v14
Reference Design:	rev0	Offset TVD Reference:	Offset Datum

Reference Depths are relative to RKB=2866+26 @ 2892.00ft
Offset Depths are relative to Offset Datum
Central Meridian is -104.33333334

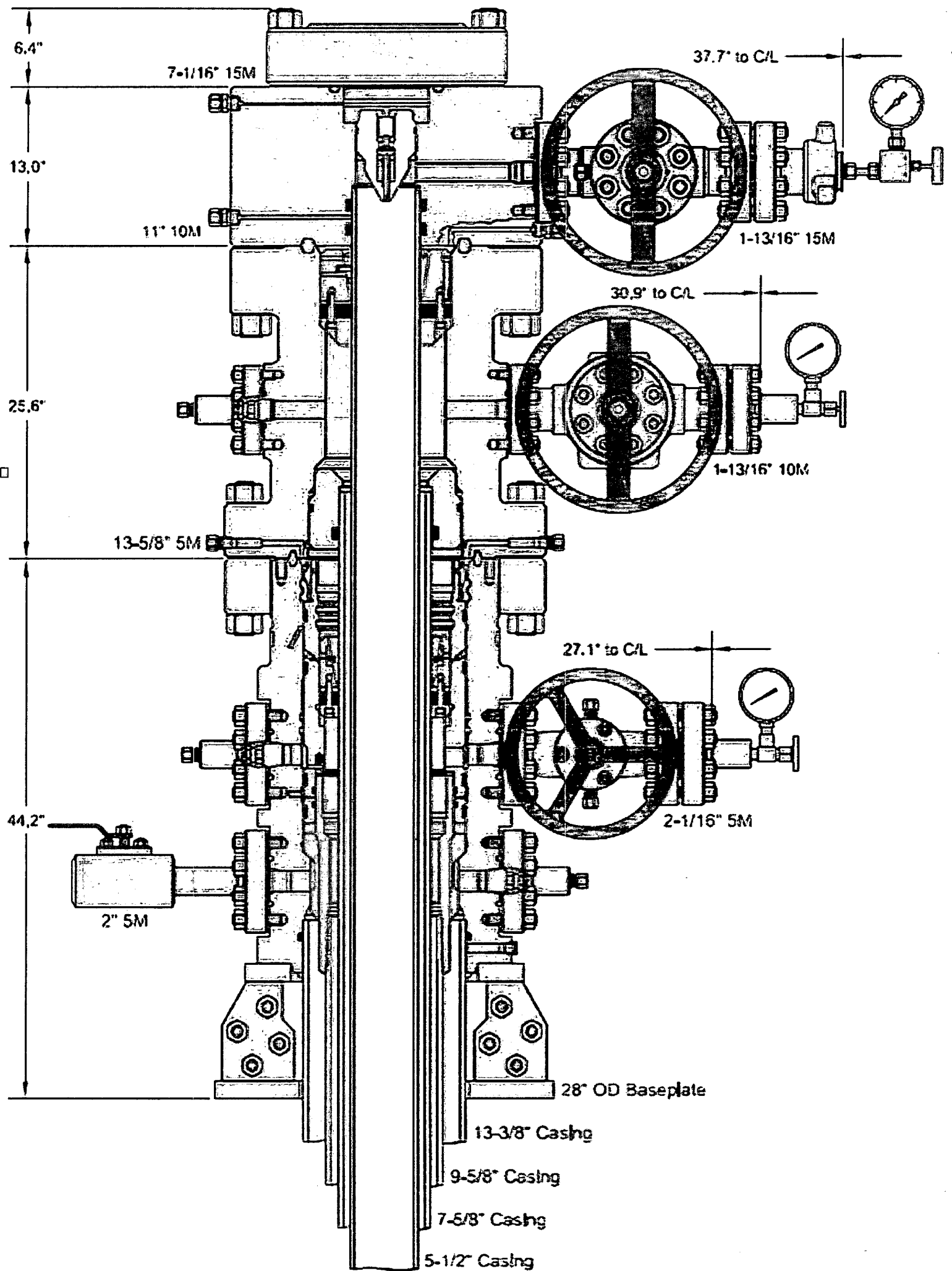
Coordinates are relative to: Money Graham Fed Com Well No. 238 H
Coordinate System is US State Plane 1983, New Mexico Eastern Zone
Grid Convergence at Surface is: 0.18°

Separation Factor Plot



LEGEND

- Money Graham Fed Com Well No. 246 H, Original Hole, rev0 V0
- Money Graham Fed Com Well No. 218 H, Original Hole, rev0 V0
- Money Graham Fed Com Well No. 214 H, Original Hole, rev0 V0
- Money Graham Fed Com Well No. 204 H, Original Hole, rev0 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
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PERFORMANCE

Steel Grade	J55	Minimum Yield	55,000 psi	Minimum Ultimate	75,000 psi
Joint Strength	909,000 lbs	Internal Pressure Resistance	2,730 psi		

Tenaris Hydril Premium Connections

[Print](#)

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Ver 8.6



Tenaris

Casing and Tubing Performance Data

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

Size Wall Grade Connection Unit

Pipe Body Data

GEOMETRY

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

PERFORMANCE

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

Connection Data

GEOMETRY

Regular OD	10.625 in	Threads Per Inch	5	Make-Up Thread Turns	1
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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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Ver 8.6



Casing and Tubing Performance Data

PIPE BODY DATA

GEOMETRY

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

PERFORMANCE

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

CONNECTION DATA

TYPE: BTC

GEOMETRY

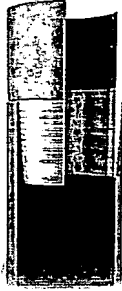
Coupling Reg OD	8.500 in	Threads per in	5	Thread turns make up	1
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PERFORMANCE

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

Wedge 513®

Printed on: 01/30/2018



Outside Diameter	7.625 in.	Min. Wall Thickness	87.5%	(*) Grade P110	
Wall Thickness	0.375 in.	Connection OD Option	REGULAR	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

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Casing and Tubing Performance Data

PIPE BODY DATA

GEOMETRY

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

PERFORMANCE

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

CONNECTION DATA

TYPE: BTC

GEOMETRY

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

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

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

TXP® BTC

SHARE EXPORT DATA PRINT



Outside Diameter	5.500 in	Min. Wall Thickness	37.5%	▼	Clear Filters
Wall Thickness	0.361 in	Drift	API Standard	▼	Compare
Grade	P110	Type	Casing	▼	Request Info
		Connection OD Option	REGULAR	▼	CONNECTION INFORMATION
					> Blanking Dimensions
					> Connection's Page
					> Brochure
					> Datasheet Manual

PIPE BODY DATA

GEOMETRY

Nominal OD	5.580 in	Nominal Weight	20 lbs/ft	Drift	4.653 in.
Nominal ID	4.778 in.	Wall Thickness	0.361 in	Plain End Weight	19.83 lbs/ft
OD Tolerance	API				

PERFORMANCE

Body Yield Strength	641 x 1000 lbs	Internal Yield	12640 psi	SMYS	110000 psi
Collapse	11100 psi				

CONNECTION DATA

GEOMETRY

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

PERFORMANCE

Tension Efficiency	100.0 %	Joint Yield Strength	641.000 x 1000 lbs	Internal Pressure Capacity (1)	12640.000 psi
Compression Efficiency	100 %	Compression Strength	641.000 x 1000 lbs	Max. Allowable Bending	92 °/100 ft
External Pressure Capacity	11100.000 psi				

MAKE-UP TORQUES

Minimum	11270 ft-lbs	Optimum	12520 ft-lbs	Maximum	13770 ft-lbs
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OPERATION LIMIT TORQUES

Operating Torque	21500 ft-lbs	Yield Torque	23900 ft-lbs		
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Casing and Tubing Performance Data

PIPE BODY DATA

GEOMETRY

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

PERFORMANCE

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

CONNECTION DATA

TYPE: BTC

GEOMETRY

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

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

Hydrostatic Test Certificate



ContiTech

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

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	53831	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	60887	10,000 psi	15,000 psi	60

Certificate of Conformity

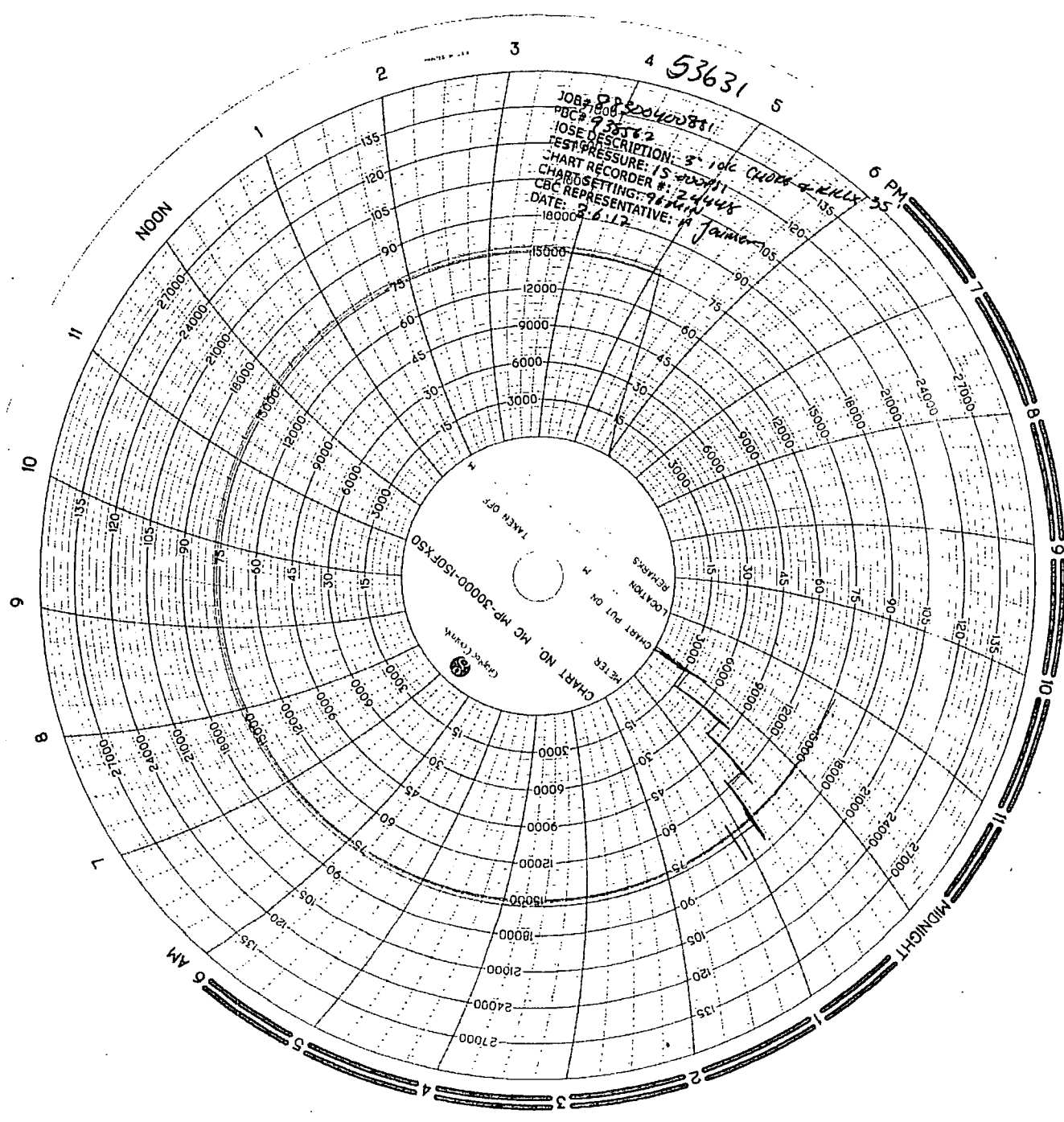


ContiTech

Certificate Number 938562	COM Order Reference 938562	Customer Name & Address HELMERICH & PAYNE DRILLING CO 1434 SOUTH BOULDER AVE TULSA, OK 74119 USA
Customer Purchase Order No: 740043386		
Project: HOW		
Test Center Address ContiTech Oil & Marine Corp. 11535 Brittmoore Park Drive Houston, TX 77041 USA	Accepted by COM Inspection Signed: Date: 8/13/17	Accepted by Client Inspection

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

Item	Part No.	Description	Qty	Serial Number	Specifications
20		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	53831	ContiTech Standard
30		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	54500	ContiTech Standard
40		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	56838	ContiTech Standard
50		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	56489	ContiTech Standard
60		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	61475	ContiTech Standard
80		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	60197	ContiTech Standard
90		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	39474	ContiTech Standard
100		RECERTIFICATION - 3" ID 10K Choke and Kill Hose x 35 ft OAL	1	60887	ContiTech Standard



JOB # 882040081
PBC # 23582
TEST DESCRIPTION: 3-1dc CHART & JULY 35
CHART RECORDER: 15-40001
CHART SETTING: 98448
CBC REPRESENTATIVE: A Janner
DATE: 2-6-12

CHART NO. MC MP-3000-150FX50
TAKEN OFF
REMARKS
LOCATION PUT ON
METERS

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

Connections

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

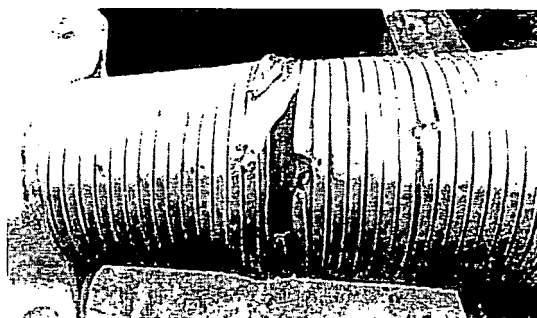
Conclusion: Hose #53631 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #53631 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. ~~Hose #53631 is suitable for continued service.~~

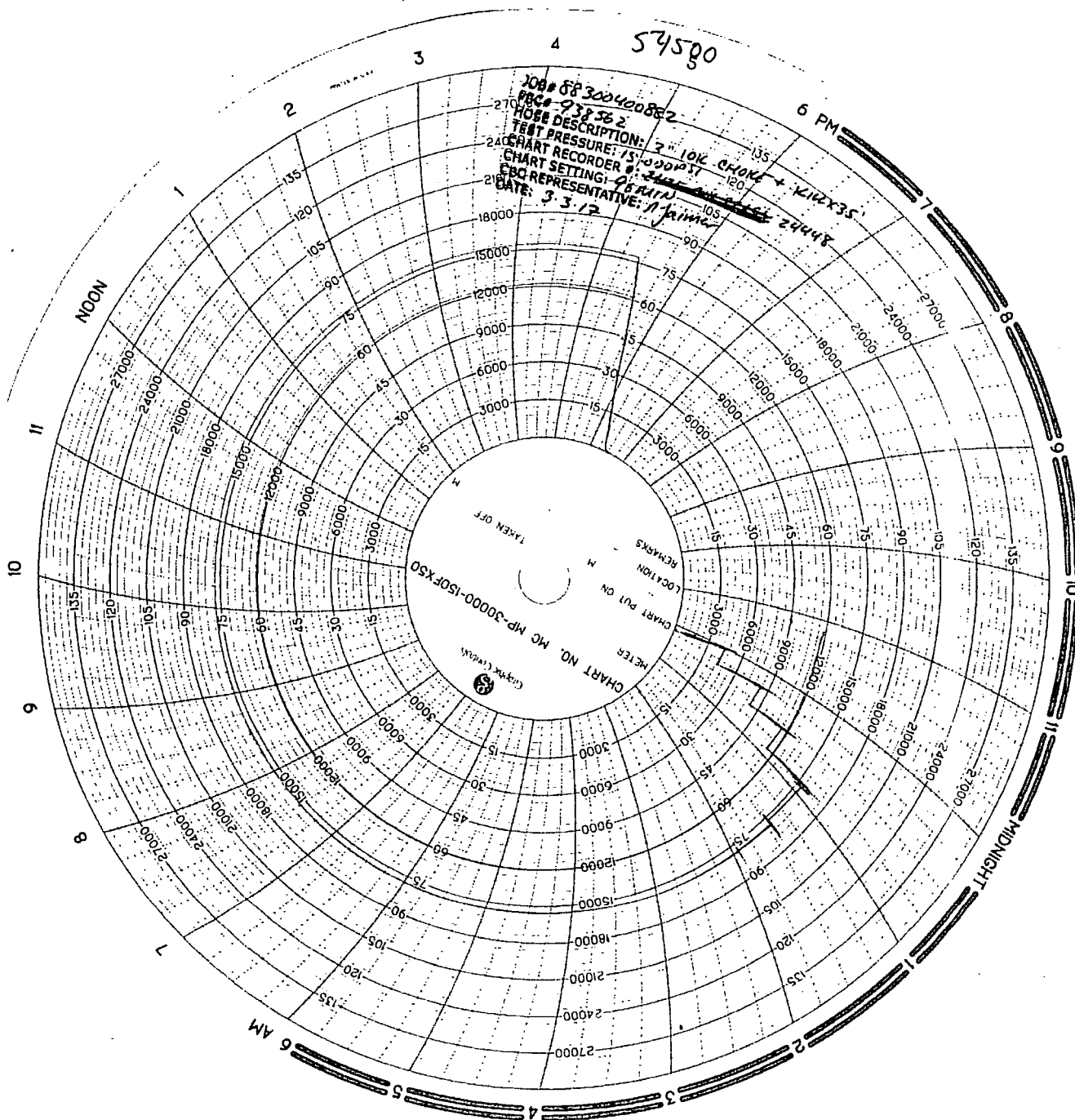
Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

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

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

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





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

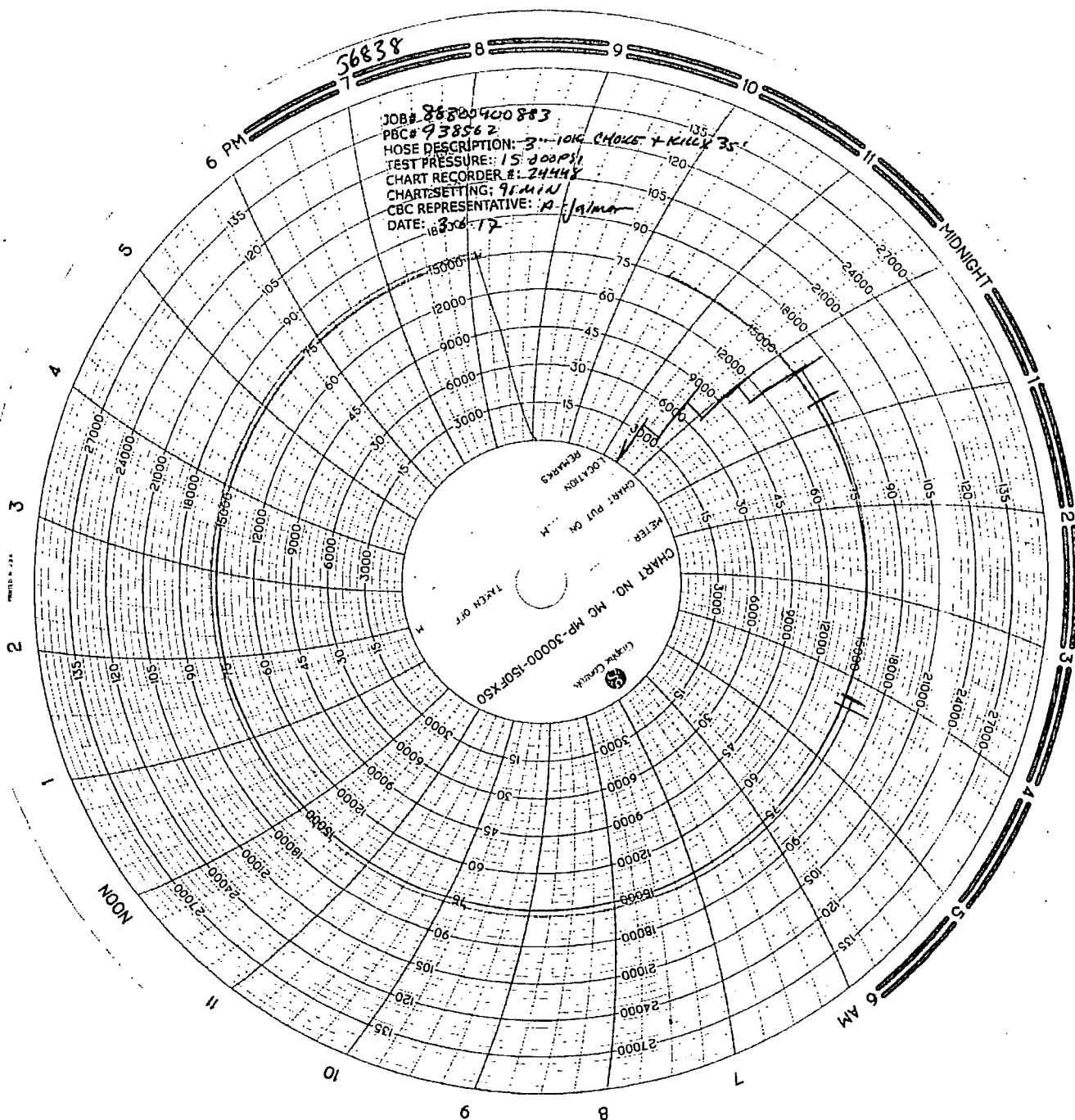
End A: 3.1/8" 5Kpsi API Spec 6A Type 6BX Flange	End B: 3.1/8" 5Kpsi API Spec 6A Type 6BX Flange
• No damage	• No damage
Material: Carbon Steel	Material: Carbon Steel
Seal Face: BX155	Seal Face: BX155
Length Before Hydro Test: 35'	Length After Hydro test: 35'

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

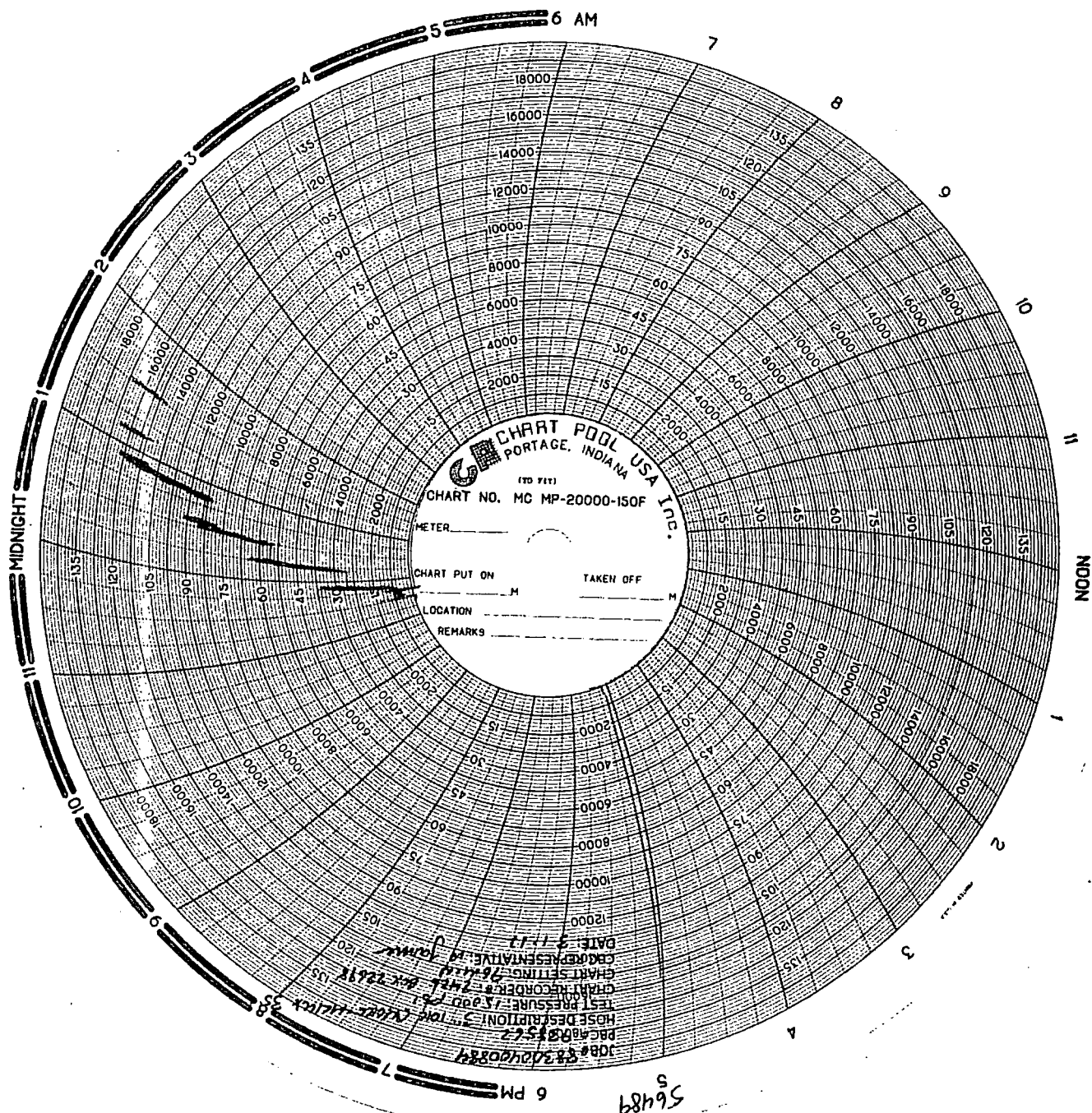
End A: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange	End B: 4.1/16" 10Kpsi API Spec 6A Type 6BX Flange
• No damage	• No damage
Material: Carbon Steel	Material: Carbon Steel
Seal Face: BX155	Seal Face: BX155
Length Before Hydro Test: 35'	Length After Hydro test: 35'

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.



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.

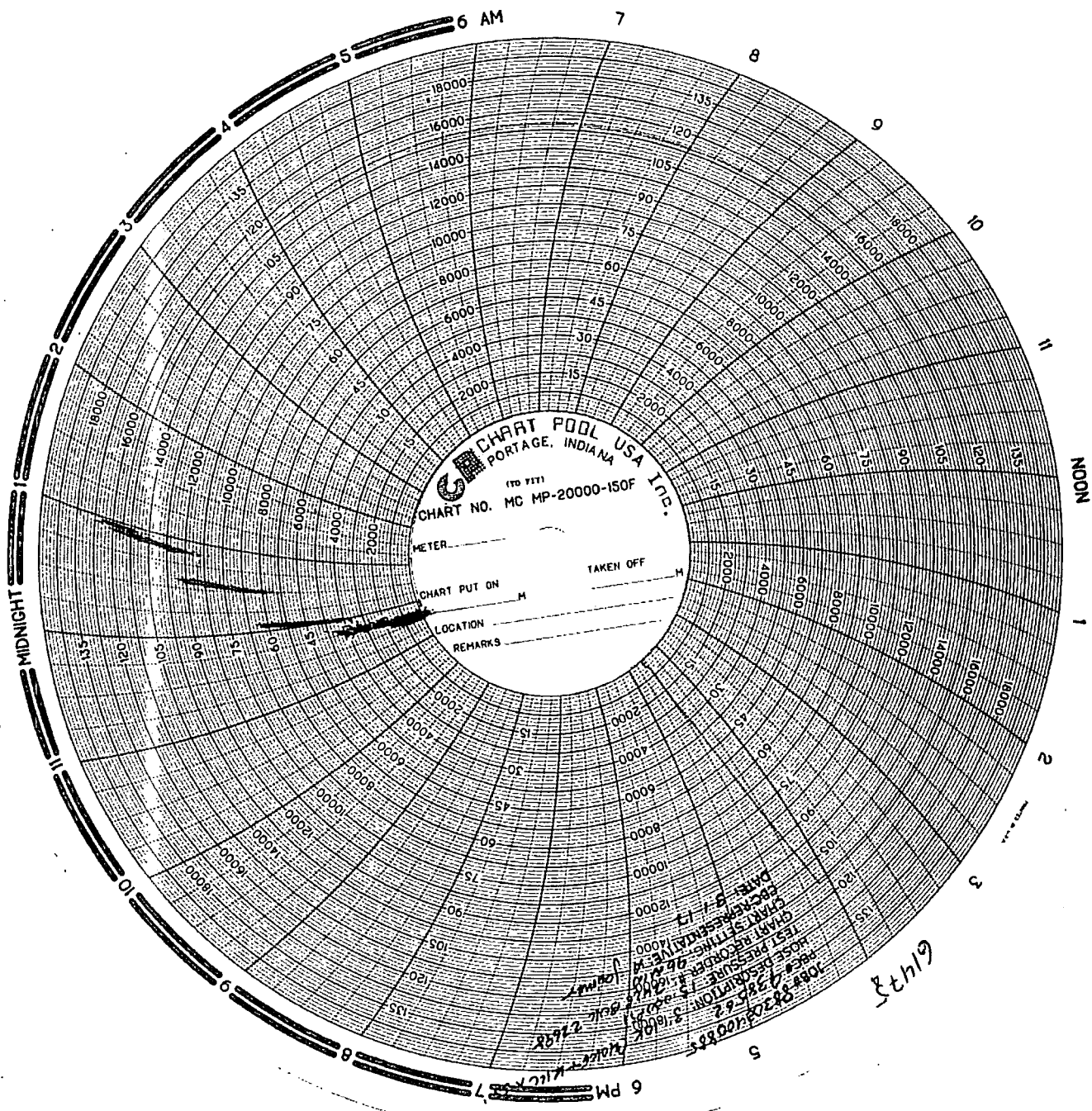


CHART POOL USA INC.
PORTAGE, INDIANA
(707 717)
CHART NO. MC MP-20000-150F

METER _____
TAKEN OFF _____
CHART PUT ON _____
LOCATION _____
REMARKS _____

DATE 3-1-17
CHART SETTING 10000
TEST PRESSURE 15.000
MOUSE PRESSURE 15.000
RECORDING 15.000
JOURNAL 15.000
2168

61473

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.

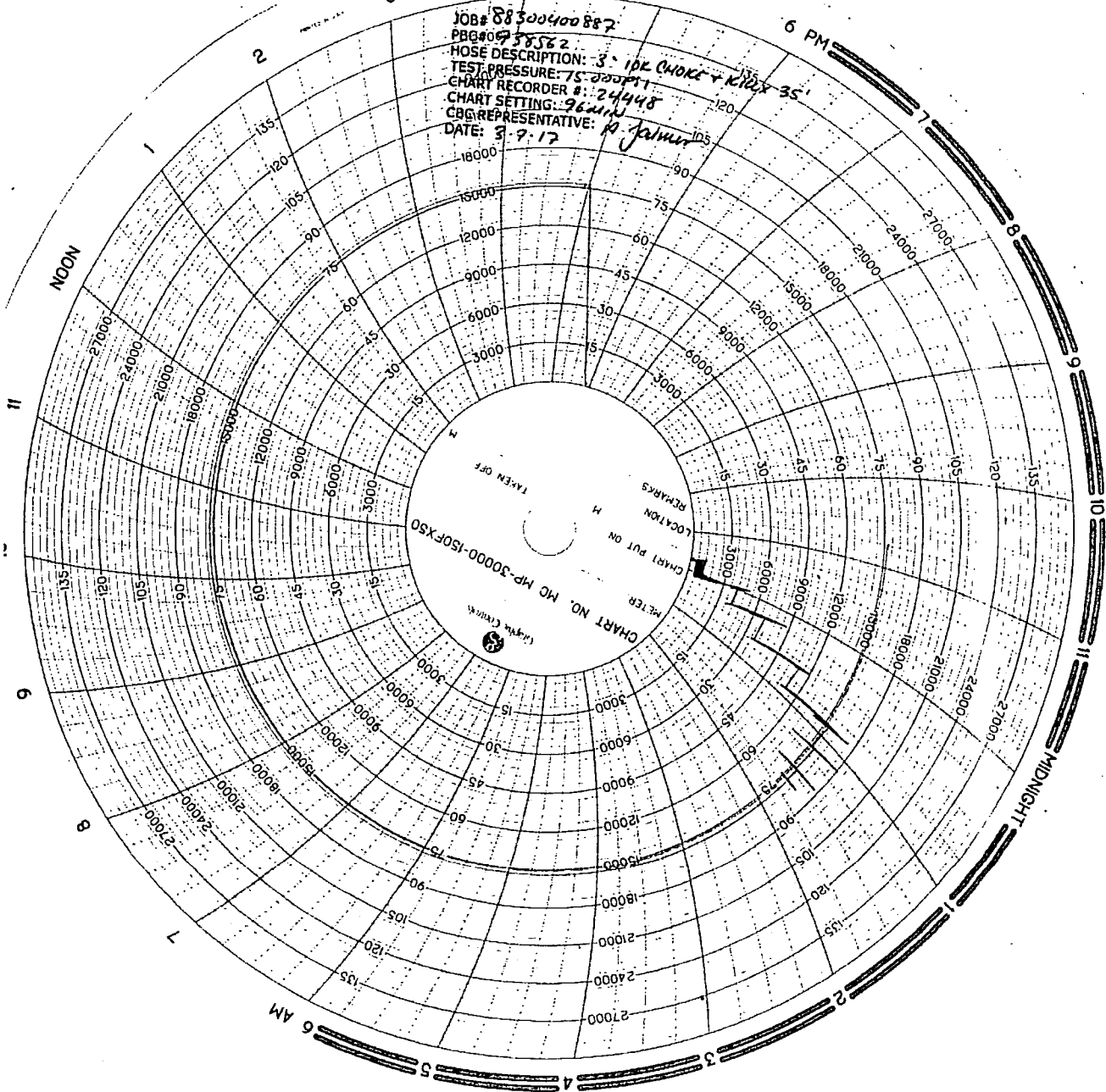
Recommendations: In general the hose should be inspected on a regular on-going basis. The frequency and degree of the inspection should as a minimum follow these guidelines:

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
PRQ# 09758562
HOSE DESCRIPTION: 3" 10K CHOKER + K102X 35'
TEST PRESSURE: 75.0000 PSI
CHART RECORDER #: 24448
CHART SETTING: 96 MIN
CBO REPRESENTATIVE: R. J. JAMES
DATE: 3-9-17



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 Hydrotest: 35'

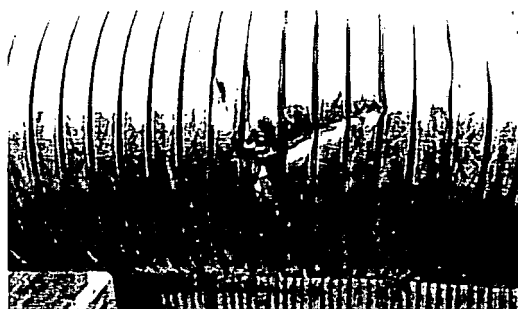
Conclusion: Hose #60197 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #60197 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. Hose #60197 is suitable for continued service.

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

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

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

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

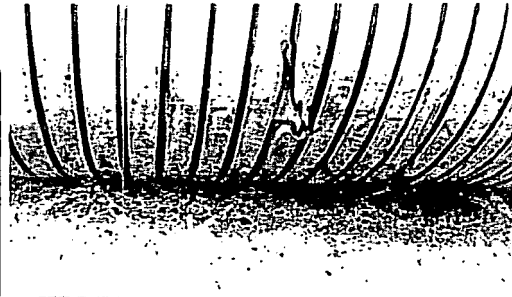


Hose Inspection Report

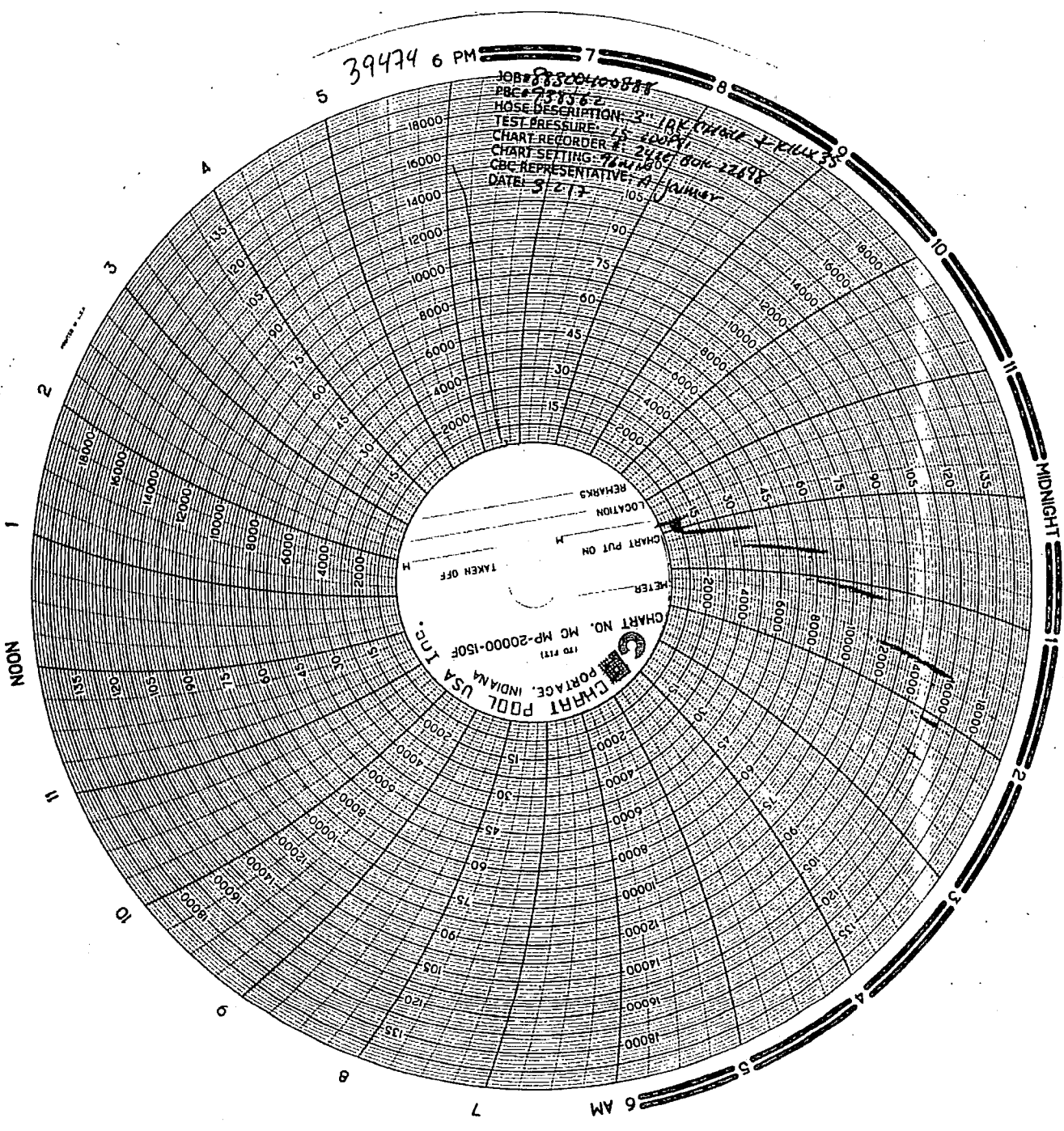
ContiTech Oil & Marine

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

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



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'

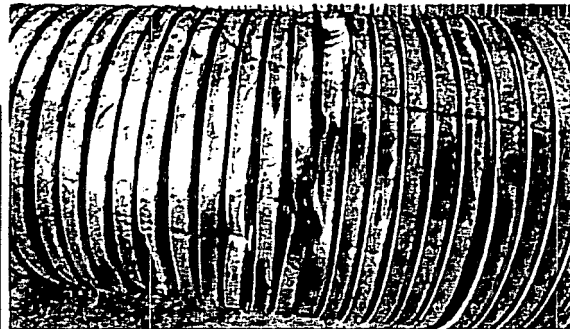
Conclusion: Hose #39474 passed the external inspection with minor damage to the hose armor. Internal borescope showed no damage to the liner. Hose #39474 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. Hose #39474 is suitable for continued service.

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)

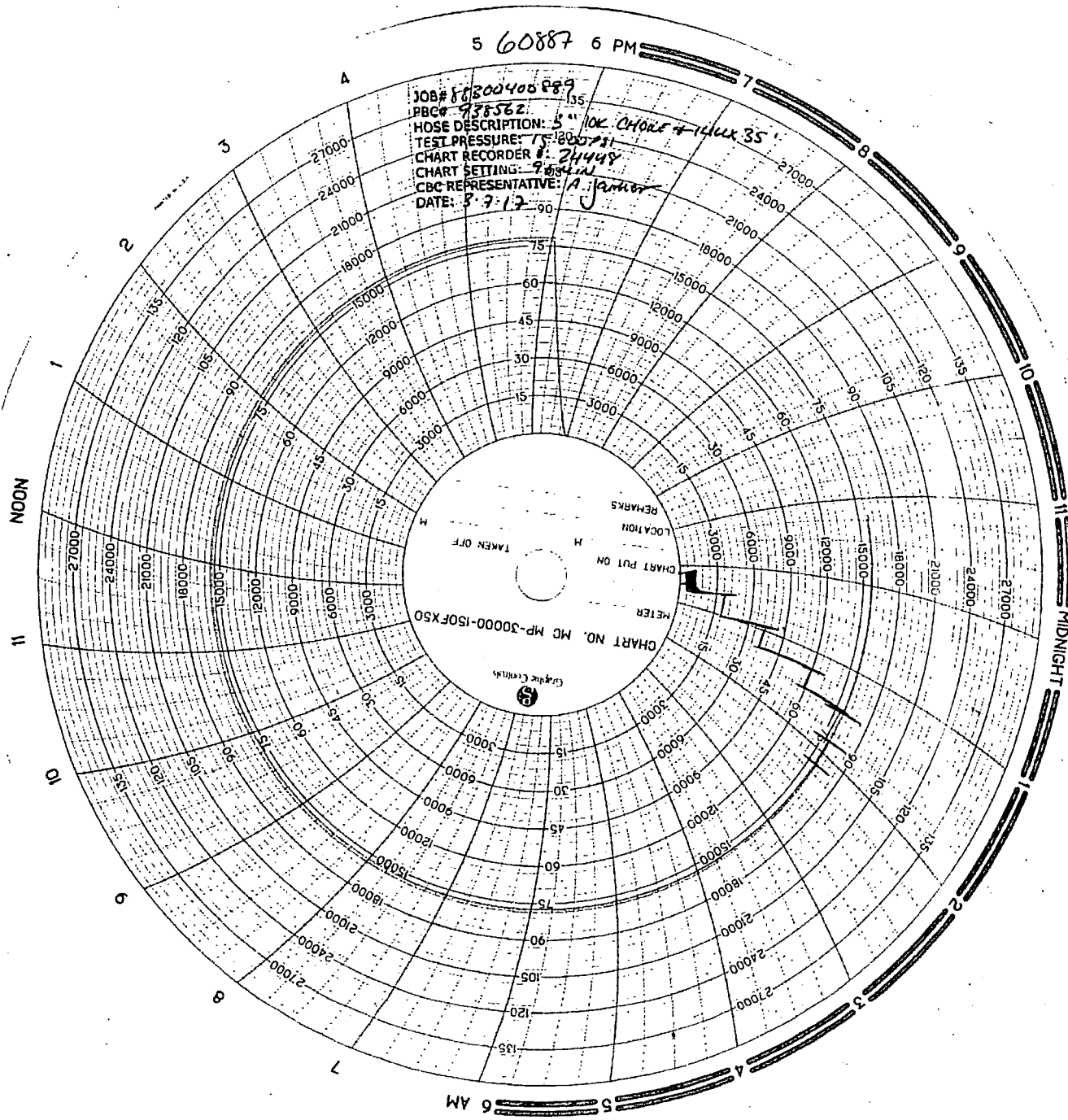
****NOTE:** There are a number of critical elements in the hose that cannot be thoroughly checked through standard inspection techniques. Away from dissecting the hose body, the best way to evaluate the condition of the hose is through review of the operating conditions recorded during the hose service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

External Damage 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# 86800408889
PBC# 938562
HOSE DESCRIPTION: 5" 10K CHOKE #144435
TEST PRESSURE: 15,000 PSI
CHART RECORDER #: 24448
CHART SETTING: 7.54 in
CBC REPRESENTATIVE: A. Janner
DATE: 8-7-17



6 AM

Hose Inspection Report

ContiTech Oil & Marine

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

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

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

Connections

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

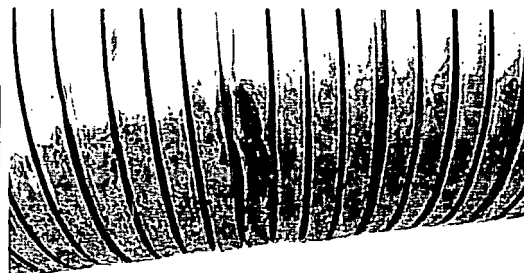
Conclusion: Hose #60887 passed the external inspection with minimal damage to the hose armor. Internal borescope showed no damage to the liner. Hose #60887 passed the hydrostatic pressure test by holding a pressure of 15,000PSI for 60 minutes. Hose #60887 is suitable for continued service.

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

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

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

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

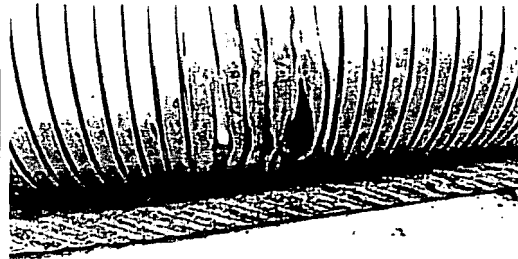


Hose Inspection Report

ContiTech Oil & Marine

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

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



PASS

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
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OPERATION LIMIT TORQUES

Operating Torque	47000 ft-lbs	Yield Torque	70000 ft-lbs
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Notes

This connection is fully interchangeable with:

Wedge 523® - 7.625 in. - 29.7 lbs/ft

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

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

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Tap Rock Operating, LLC
MONEY GRAHAM FED COM #238H
SHL 250' FSL & 879' FEL, Sec. 32
BHL 200' FNL & 750' FEL, Sec. 29
T. 26S., R. 29E., Eddy County, NM

DRILL PLAN PAGE 1

DRILLING PROGRAM

1. ESTIMATED TOPS

Formation Name	MD'	TVD'	Bearing
Quaternary caliche	0	0	water/salt
Rustler anhydrite	507	507	salt
Salado salt (top salt)	682	682	salt
Base salt	2,393	2,392	salt
Bell Canyon	2,848	2,847	hydrocarbons
Brushy Canyon	4,840	4,837	hydrocarbons
Bone Spring Lime	6,432	6,427	hydrocarbons
1 st Bone Spring Sand	7,357	7,352	hydrocarbons
2 nd Bone Spring Sand	7,937	7,932	hydrocarbons
3 rd Bone Spring Sand	9,189	9,184	hydrocarbons
3 rd Bone Spring W Sand	9,447	9,441	hydrocarbons
Wolfcamp A	9,537	9,532	hydrocarbons
Wolfcamp A Y Sand	9,647	9,641	hydrocarbons
Wolfcamp A Fat	9,777	9,771	hydrocarbons
(KOP	10,005	9,999	hydrocarbons)
Wolfcamp B	10,037	10,031	hydrocarbons
Wolfcamp B2 (Goal)	10,722	10,543	hydrocarbons
TD	18,012	10,612	--

2. NOTABLE ZONES

Wolfcamp B2 is the goal. Depth to water was not reported but OSE estimated ground water depth is 45'.

3. PRESSURE CONTROL

A 13,000' 10,000-psi BOP stack consisting of 3 rams with 2 pipe rams, 1 blind ram, and 1 annular preventer will be used below surface casing to TD. The BOP will be utilized below surface casing to TD. See attachments for BOP and choke manifold diagrams. 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.

Tap Rock Operating, LLC
MONEY GRAHAM FED COM #238H
SHL 250' FSL & 879' FEL, Sec. 32
BHL 200' FNL & 750' FEL, Sec. 29
T. 26S., R. 29E., Eddy County, NM

DRILL PLAN PAGE 2

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. D.	Set MD'	Set TVD'	Casing O. D.	Weight (lb/ft)	Grade	Joint	Collapse	Burst	Tension
17.5"	0 - 580	0 - 580	13.375" surface	54.5	J-55	BTC	1.13	1.15	1.51
12.25"	0 - 2900	0 - 2898	9.625" inter. 1	40.0	J-55	BTC	1.13	1.15	1.51
8.75"	0 - 2700	0 - 2699	7.625" inter. 2 top	29.7	P-110	BTC	1.13	1.15	1.51
8.75"	2700 - 9872	2699 - 9866	7.625" inter. 2 bottom	29.7	P-110	W-513	1.13	1.15	1.51
6.75"	0 - 9672	0 - 9666	5.5" product. top	20.0	P-110	BTC	1.13	1.15	1.51
6.75"	9672 - 18012	9666 - 10612	5" product. bottom	18.0	P-110	W-521	1.13	1.15	1.51

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.

Tap Rock Operating, LLC
MONEY GRAHAM FED COM #238H
SHL 250' FSL & 879' FEL, Sec. 32
BHL 200' FNL & 750' FEL, Sec. 29
T. 26S., R. 29E., Eddy County, NM

DRILL PLAN PAGE 3

Name	Type	Sacks	Yield	Cu. Ft.	Weight	Blend
Surface	Tail	584	1.38	765	14.8	Class C + 5% NaCl + LCM
TOC = GL		100% Excess			Centralizers per Onshore Order 2 III. B. 1f	
Intermediate 1	Lead	803	1.81	1453	13.5	Class C + bentonite + 1% CaCl ₂ + 8% NaCl + LCM
	Tail	263	1.38	363	14.8	Class C + 5% NaCl + LCM
TOC = GL		100% Excess			2 on btm jt, 1 on 2nd jt, 1 every 4th jt to GL	
Intermediate 2	Lead	346	2.35	813	11.5	TXI + fluid loss + dispersant + retarder + LCM
	Tail	193	1.39	268	13.2	TXI + fluid loss + dispersant + retarder + LCM
TOC = 1900		35% Excess			2 on btm jt, 1 on 2nd jt, 1 every other jt to top of tail cement (500' above TOC)	
Production	Tail	950	1.17	1112	15.8	Class H + fluid loss + dispersant + retarder + LCM
TOC = 8872'		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)	lb/gal	Viscosity	Fluid Loss
Surface	17.5"	FW spud mud	0-580	8.3	28	NC
Inter. 1	12.25"	Brine water	580 - 2900	10.0	30-32	NC
Inter. 2	8.75"	FW & cut brine	2900 - 9872	9.0	30-32	NC
Production	6.75"	OBM	9872 - 18012	12.50	15-20	<10

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.

**Tap Rock Operating, LLC
MONEY GRAHAM FED COM #238H
SHL 250' FSL & 879' FEL, Sec. 32
BHL 200' FNL & 750' FEL, Sec. 29
T. 26S., R. 29E., Eddy County, NM**

DRILL PLAN PAGE 4

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 H₂S from the surface to the Wolfcamp formations to meet the BLM's minimum requirements for the submission of an "H₂S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H₂S safety package on all wells, attached is an "H₂S 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: 6,400 psi
Estimated BHT: 145°

8. OTHER INFORMATION

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

Money Graham 208H Casing Variance Request

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.



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

SUPO Data Report

08/12/2019

APD ID: 10400038212

Submission Date: 01/24/2019

Highlighted data
reflects the most
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

[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:

Money_238H_Fee_Fee_Fed_20190118110304.docx

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? NO

Attach Well map:

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Existing Wells description: Fee Fee Fed - SUPO not required

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

Submit or defer a Proposed Production Facilities plan? DEFER

Estimated Production Facilities description: Fee Fee Fed - SUPO not required

Section 5 - Location and Types of Water Supply

Water Source Table

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

Describe type:

Source latitude:

Source datum:

Water source permit type: OTHER

Source land ownership: OTHER

Water source transport method: TRUCKING

Source transportation land ownership: OTHER

Water source volume (barrels): 0

Source volume (gal): 0

Water source type: OTHER

Source longitude:

Describe land ownership: Fee Fee Fed - No SUPO re

Describe transportation land ownership: Fee Fee Fe

Source volume (acre-feet): 0

Water source and transportation map:

Money_238H_Fee_Fee_Fed_20190118110440.docx

Water source comments:

New water well? NO

New Water Well Info

Well latitude:

Well Longitude:

Well datum:

Well target aquifer:

Est. depth to top of aquifer(ft):

Est thickness of aquifer:

Aquifer comments:

Aquifer documentation:

Well depth (ft):

Well casing type:

Well casing outside diameter (in.):

Well casing inside diameter (in.):

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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

Using any construction materials: NO

Construction Materials description: Fee Fee Fed - SUPO not required

Construction Materials source location attachment:

Section 7 - Methods for Handling Waste

Waste type: DRILLING

Waste content description: Fee Fee Fed - SUPO not required

Amount of waste: 1000 barrels

Waste disposal frequency : Daily

Safe containment description: Fee Fee Fed - SUPO not required

Safe containmant attachment:

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

Disposal type description:

Disposal location description: Fee Fee Fed - SUPO not required

Reserve Pit

Reserve Pit being used? NO

Temporary disposal of produced water into reserve pit?

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

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

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

Reserve pit liner

Reserve pit liner specifications and installation description

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Cuttings Area

Cuttings Area being used? NO

Are you storing cuttings on location? NO

Description of cuttings location Fee Fee Fed - SUPO not required

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:

Money_238H_Well_Site_Layout_20190430144419.pdf

Comments:

Section 10 - Plans for Surface Reclamation

Type of disturbance: New Surface Disturbance

Multiple Well Pad Name: MONEY GRAHAM EAST PAD

Multiple Well Pad Number: 1

Recontouring attachment:

Drainage/Erosion control construction: Fee Fee Fed - SUPO not required

Drainage/Erosion control reclamation: Fee Fee Fed - SUPO not required

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Wellpad long term disturbance (acres): 0

Access road long term disturbance (acres): 0

Pipeline long term disturbance (acres): 0

Other long term disturbance (acres): 0

Total long term disturbance: 0

Wellpad short term disturbance (acres): 0

Access road short term disturbance (acres): 0

Pipeline short term disturbance (acres): 0

Other short term disturbance (acres): 0

Total short term disturbance: 0

Disturbance Comments:

Reconstruction method: Fee Fee Fed - SUPO not required

Topsoil redistribution: Fee Fee Fed - SUPO not required

Soil treatment: Fee Fee Fed - SUPO not required

Existing Vegetation at the well pad:

Existing Vegetation at the well pad attachment:

Existing Vegetation Community at the road:

Existing Vegetation Community at the road attachment:

Existing Vegetation Community at the pipeline:

Existing Vegetation Community at the pipeline attachment:

Existing Vegetation Community at other disturbances:

Existing Vegetation Community at other disturbances attachment:

Non native seed used? NO

Non native seed description:

Seedling transplant description:

Will seedlings be transplanted for this project? NO

Seedling transplant description attachment:

Will seed be harvested for use in site reclamation? NO

Seed harvest description:

Seed harvest description attachment:

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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:

Weed treatment plan description: Fee Fee Fed - SUPO not required

Weed treatment plan attachment:

Monitoring plan description: Fee Fee Fed - SUPO not required

Monitoring plan attachment:

Success standards: Fee Fee Fed - SUPO not required

Pit closure description: Fee Fee Fed - SUPO not required

Pit closure attachment:

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Section 11 - Surface Ownership

Disturbance type: WELL PAD

Describe:

Surface Owner: PRIVATE OWNERSHIP

Other surface owner description:

BIA Local Office:

BOR Local Office:

COE Local Office:

DOD Local Office:

NPS Local Office:

State Local Office:

Military Local Office:

USFWS Local Office:

Other Local Office:

USFS Region:

USFS Forest/Grassland:

USFS Ranger District:

Section 12 - Other Information

Right of Way needed? NO

Use APD as ROW?

ROW Type(s):

ROW Applications

SUPO Additional Information: Fee Fee Fed - SUPO not required

Use a previously conducted onsite? NO

Previous Onsite information:

Other SUPO Attachment

Tap Rock Operating Money Graham Fed Com 238H

Fee Fee Fed – SUPO not required

Tap Rock Operating Money Graham Fed Com 238H

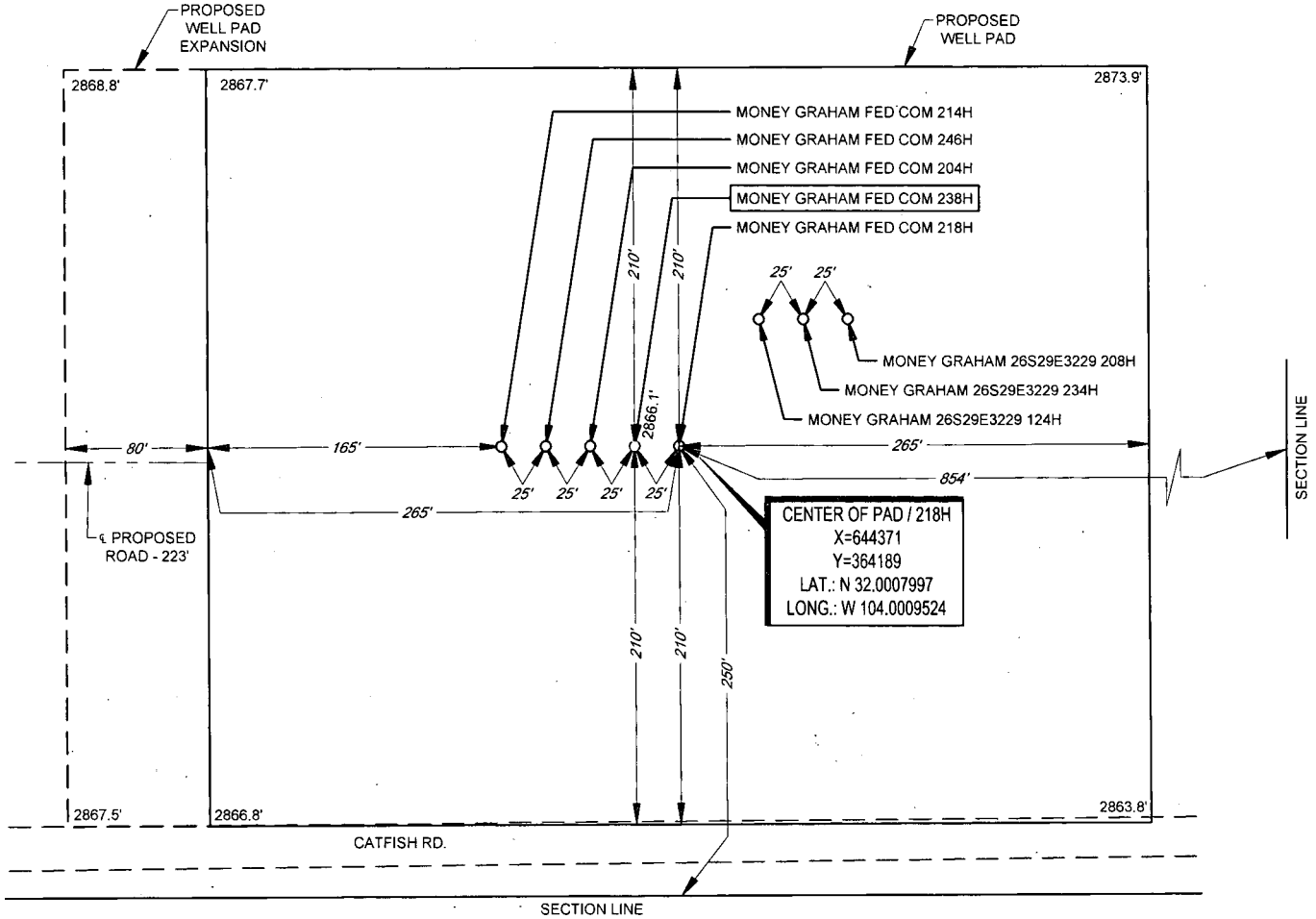
Fee Fee Fed – SUPO not required

EXHIBIT 2B



SECTION 32, TOWNSHIP 26-S, RANGE 29-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: MONEY GRAHAM FED COM 238H
238H LATITUDE N 32.0007996 238H LONGITUDE W 104.0010330

CENTER OF PAD IS 250' FSL & 854' FEL

SCALE: 1" = 100'

0' 50' 100'

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

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

TOPOGRAPHIC
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TELEPHONE: (432) 682-1653 OR (800) 767-1653 • FAX (432) 682-1743
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U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

PWD Data Report

08/12/2019

APD ID: 10400038212

Submission Date: 01/24/2019

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

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:

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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 disturbance (acres):

PWD surface owner:

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?

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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):

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

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

08/12/2019

APD ID: 10400038212

Submission Date: 01/24/2019

Highlighted data
reflects the most
recent changes

Operator Name: TAP ROCK OPERATING LLC

Well Name: MONEY GRAHAM FED COM

Well Number: 238H

[Show Final Text](#)

Well Type: CONVENTIONAL GAS WELL

Well Work Type: Drill

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: