

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170

District IV

1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

Form C-101
August 1, 2011

Permit 289847

APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE

1. Operator Name and Address TAP ROCK OPERATING, LLC 523 Park Point Drive Golden, CO 80401		2. OGRID Number 372043
		3. API Number 30-025-48279
4. Property Code 329919	5. Property Name MANDELBAUM FEE	6. Well No. 137H

7. Surface Location

UL - Lot N	Section 11	Township 24S	Range 34E	Lot Idn N	Feet From 1030	N/S Line S	Feet From 2635	E/W Line W	County Lea
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8. Proposed Bottom Hole Location

UL - Lot C	Section 10	Township 24S	Range 34E	Lot Idn C	Feet From 5	N/S Line N	Feet From 2640	E/W Line W	County Lea
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9. Pool Information

RED HILLS;BONE SPRING, NORTH	96434
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Additional Well Information

11. Work Type New Well	12. Well Type OIL	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3486
16. Multiple N	17. Proposed Depth 17050	18. Formation Wolfcamp	19. Contractor	20. Spud Date 1/15/2021
Depth to Ground water		Distance from nearest fresh water well		Distance to nearest surface water

☒ We will be using a closed-loop system in lieu of lined pits

21. Proposed Casing and Cement Program

Type	Hole Size	Casing Size	Casing Weight/ft	Setting Depth	Sacks of Cement	Estimated TOC
Surf	17.5	13.375	54.5	1120	1150	0
Int1	9.875	7.625	29.7	8500	0	0
Int1	8.75	7.625	29.7	11380	2000	0
Prod	6.75	5.5	20	17050	750	10800

Casing/Cement Program: Additional Comments

Tap Rock will use Direct Emulsion mud for the 1st intermediate section. The pull depth of the 9.875" may vary and the cement volumes will be adjusted accordingly. Tap Rock requests the option to utilize a DVT/Packer combination on the 1st intermediate cement job. The DVT set depth will be set between 7,000'-8,500'. Tap Rock will adjust cement volumes accordingly.

22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	5000	2500	
Blind	10000	5000	
Blind	10000	5000	

23. I hereby certify that the information given above is true and complete to the best of my knowledge and belief.
I further certify I have complied with 19.15.14.9 (A) NMAC ☒ and/or 19.15.14.9 (B) NMAC ☒ if applicable.

OIL CONSERVATION DIVISION

Signature:

Printed Name: Electronically filed by Christian Combs

Title: Regulatory Manager

Email Address: ccombs@taprk.com

Date: 12/18/2020

Phone: 720-360-4028

Approved By: Paul F Kautz

Title: Geologist

Approved Date: 12/30/2020

Conditions of Approval Attached

Expiration Date: 12/30/2022

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

FORM C-102

Revised August 1, 2011

Submit one copy to appropriate

District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code	³ Pool Name
⁴ Property Code	⁵ Property Name MANDELBAUM FEE	⁶ Well Number 137H
⁷ OGRID No. #372043	⁸ Operator Name TAP ROCK OPERATING, LLC.	⁹ Elevation 3486'

¹⁰Surface Location

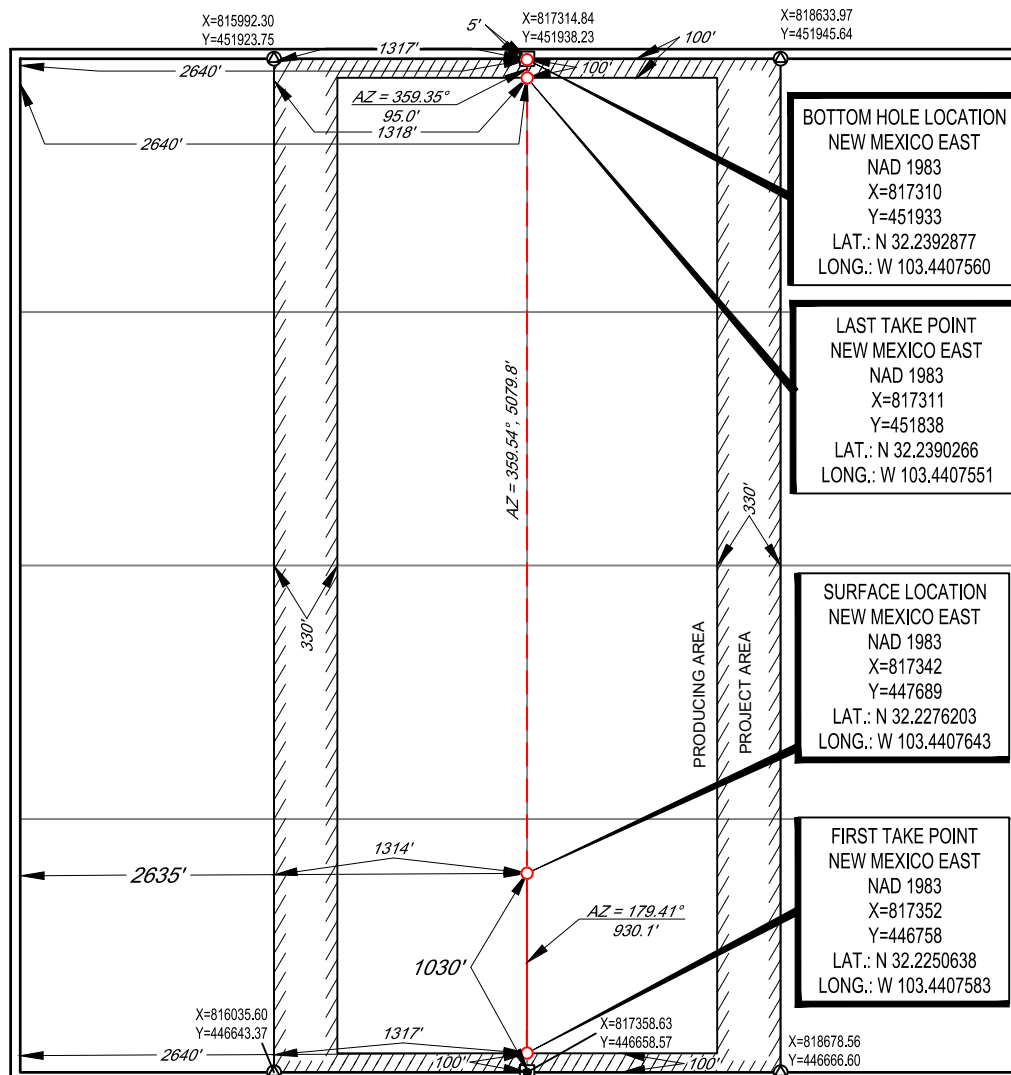
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	11	24-S	34-E	-	1030'	SOUTH	2635'	WEST	LEA

¹¹Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	11	24-S	34-E	-	5'	NORTH	2640'	WEST	LEA

¹² Dedicated Acres 320	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

¹⁷OPERATOR CERTIFICATION

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

CCC **12/12/20**
Signature Date

Christian Combs
Printed Name

ccombs@taprk.com
E-mail Address

¹⁸SURVEYOR CERTIFICATION

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

11/18/2020
Date of Survey
Signature and Seal of Professional Surveyor

ANGEL M. BAEZA
25116
PROFESSIONAL SURVEYOR
Certificate Number

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GAS CAPTURE PLAN

Date: 12/30/2020

☒ Original

Operator & OGRID No.: [372043] TAP ROCK OPERATING, LLC

☐ Amended - Reason for
Amendment: _____

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

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

Well(s)/Production Facility – Name of facility

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

Well Name	API	Well Location (ULSTR)	Footages	Expected MCF/D	Flared or Vented	Comments
MANDELBAUM FEE #137H	30-025-48279	N-11-24S-34E	1030S 2635W	3000	Flared	

Gathering System and Pipeline Notification

Well(s) will be connected to a production facility after flowback operations are complete, if gas transporter system is in place. The gas produced from production facility is dedicated to LUCID ENERGY DELAWARE, LLC and will be connected to LUCID ENERGY DELAWARE, LLC High/Low Pressure gathering system located in Lea County, New Mexico. It will require 2500' of pipeline to connect the facility to High/Low Pressure gathering system. TAP ROCK OPERATING, LLC provides (periodically) to LUCID ENERGY DELAWARE, LLC a drilling, completion and estimated first production date for wells that are scheduled to be drilled in the foreseeable future. In addition, TAP ROCK OPERATING, LLC and LUCID ENERGY DELAWARE, LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at LUCID ENERGY DELAWARE, LLC Processing Plant located in Sec. 15, Twn. 24S, Rng. 33E, Lea County, New Mexico. The actual flow of the gas will be based on compression operating parameters and gathering system pressures.

Flowback Strategy

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

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

Alternatives to Reduce Flaring

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

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

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Form APD Comments

Permit 289847

PERMIT COMMENTS

Operator Name and Address: TAP ROCK OPERATING, LLC [372043] 523 Park Point Drive Golden, CO 80401		API Number: 30-025-48279
		Well: MANDELBAUM FEE #137H
Created By	Comment	Comment Date

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Form APD Conditions

Permit 289847

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: TAP ROCK OPERATING, LLC [372043] 523 Park Point Drive Golden, CO 80401	API Number: 30-025-48279
	Well: MANDELBAUM FEE #137H

OCD Reviewer	Condition
pkautz	Notify OCD 24 hours prior to casing & cement
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104
pkautz	1) SURFACE & INTERMEDIATE CASING - Cement must circulate to surface -- 2) PRODUCTION CASING - Cement must tie back into intermediate casing --
pkautz	If cement does not circulate to surface, must run temperature survey or other log to determine top of cement
pkautz	Surface casing must be set 25' below top of Rustler Anhydrite in order to seal off protectable water
pkautz	1)- The Operator is to notify NMOCD by sundry (Form C-103) within ten (10) days of the well being spud 2)- Drilling Sundries Form C-103 (Casing and Cement test are to be submitted within 10 days 3)- Completion Reports & Logs are to be submitted within 45 days 4)- Deviation / Directional Drill Survey are to be filed with or prior to C-104
pkautz	It is the operator's responsibility to monitor cancellation dates of approved APDs. APD's are good for 2 years and may be extended for one year. Only one 1 year extension will be granted if submitted by C-103 before expiration date. After expiration date or after a 1 year extension must submit new APD. If an APD expires and if site construction has occurred, site remediation is required.
pkautz	Stage Tool 1) Must notify OCD Hobbs Office prior to running Stage Tool at 5753703186 2) If using Stage Tool on Surface casing, Stage Tool must be set greater than 350' from surface and a minimum of 200 feet above surface shoe. 3) When using a Stage Tool on Intermediate or Production Casing Stage must be a minimum of 50 feet below previous casing shoe.



Tap Rock Resources, LLC

**Lea County, NM (NAD 83 NME)
(Mandelbaum Fee) Sec-11_T-24-S_R-34-E
Mandelbaum Fee #137H**

OWB

Plan: Plan #1

Standard Planning Report

04 December, 2020





Intrepid Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Mandelbaum Fee #137H
Company:	Tap Rock Resources, LLC	TVD Reference:	KB @ 3512.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3512.0usft
Site:	(Mandelbaum Fee) Sec-11_T-24-S_R-34-E	North Reference:	Grid
Well:	Mandelbaum Fee #137H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Project	Lea County, NM (NAD 83 NME)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	(Mandelbaum Fee) Sec-11_T-24-S_R-34-E		
Site Position:		Northing:	447,689.00 usft
From:	Map	Easting:	817,367.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 13' 39.436 N
		Longitude:	103° 26' 26.465 W
		Grid Convergence:	0.48 °

Well	Mandelbaum Fee #137H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	-25.0 usft	Easting:
Position Uncertainty	0.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore	OWB		
Magnetics	Model Name	Sample Date	Declination (°)
	IGRF2015	12/03/20	6.51
			Dip Angle (°)
			60.04
			Field Strength (nT)
			47,597.08055446

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.0	0.0	0.0
			Direction (°)
			359.57

Plan Survey Tool Program	Date	12/04/20		
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks
1	0.0	17,053.4	Plan #1 (OWB)	MWD
			OWSG MWD - Standard	



Intrepid Planning Report



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Company:	Tap Rock Resources, LLC	TVD Reference:	KB @ 3512.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3512.0usft
Site:	(Mandelbaum Fee) Sec-11_T-24-S_R-34-E	North Reference:	Grid
Well:	Mandelbaum Fee #137H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,133.3	2.00	174.17	1,133.3	-2.3	0.2	1.50	1.50	0.00	174.17	
1,300.0	2.00	174.17	1,299.9	-8.1	0.8	0.00	0.00	0.00	0.00	
1,566.7	6.00	174.17	1,565.8	-26.6	2.7	1.50	1.50	0.00	0.01	
5,200.0	6.00	174.17	5,179.3	-404.4	41.3	0.00	0.00	0.00	0.00	
5,400.2	10.00	174.17	5,377.5	-432.2	44.1	2.00	2.00	0.00	0.00	
8,319.4	10.00	174.17	8,252.3	-936.7	95.6	0.00	0.00	0.00	0.00	
8,819.7	0.00	0.00	8,750.0	-980.0	100.0	2.00	-2.00	0.00	180.00	
11,479.0	0.00	0.00	11,409.3	-980.0	100.0	0.00	0.00	0.00	0.00	
12,429.6	95.06	352.95	11,980.0	-361.2	23.5	10.00	10.00	0.00	352.95	
12,758.0	95.06	359.54	11,951.0	-35.0	2.1	2.00	0.00	2.01	89.69	
17,053.8	95.06	359.54	11,572.0	4,244.0	-32.0	0.00	0.00	0.00	0.00	PBHL (Mandelbaun



Intrepid Planning Report



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Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3512.0usft
Site:	(Mandelbaum Fee) Sec-11_T-24-S_R-34-E	North Reference:	Grid
Well:	Mandelbaum Fee #137H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
NUDGE - Build 1.50									
1,030.0	0.45	174.17	1,030.0	-0.1	0.0	-0.1	1.50	1.50	0.00
Rustler Anhydrite									
1,100.0	1.50	174.17	1,100.0	-1.3	0.1	-1.3	1.50	1.50	0.00
1,133.3	2.00	174.17	1,133.3	-2.3	0.2	-2.3	1.50	1.50	0.00
HOLD - 166.7 at 1133.3 MD									
1,200.0	2.00	174.17	1,199.9	-4.6	0.5	-4.6	0.00	0.00	0.00
1,220.1	2.00	174.17	1,220.0	-5.3	0.5	-5.3	0.00	0.00	0.00
Top Salt									
1,300.0	2.00	174.17	1,299.9	-8.1	0.8	-8.1	0.00	0.00	0.00
BLD - DLS 1.50 TFO 0.01									
1,400.0	3.50	174.17	1,399.8	-12.9	1.3	-12.9	1.50	1.50	0.00
1,500.0	5.00	174.17	1,499.5	-20.2	2.1	-20.3	1.50	1.50	0.00
1,566.7	6.00	174.17	1,565.8	-26.6	2.7	-26.6	1.50	1.50	0.00
HOLD - 3633.3 at 1566.7 MD									
1,600.0	6.00	174.17	1,599.0	-30.1	3.1	-30.1	0.00	0.00	0.00
1,700.0	6.00	174.17	1,698.4	-40.5	4.1	-40.5	0.00	0.00	0.00
1,800.0	6.00	174.17	1,797.9	-50.9	5.2	-50.9	0.00	0.00	0.00
1,900.0	6.00	174.17	1,897.3	-61.3	6.3	-61.3	0.00	0.00	0.00
2,000.0	6.00	174.17	1,996.8	-71.7	7.3	-71.7	0.00	0.00	0.00
2,100.0	6.00	174.17	2,096.2	-82.1	8.4	-82.1	0.00	0.00	0.00
2,200.0	6.00	174.17	2,195.7	-92.5	9.4	-92.5	0.00	0.00	0.00
2,300.0	6.00	174.17	2,295.2	-102.9	10.5	-102.9	0.00	0.00	0.00
2,400.0	6.00	174.17	2,394.6	-113.3	11.6	-113.3	0.00	0.00	0.00
2,500.0	6.00	174.17	2,494.1	-123.7	12.6	-123.8	0.00	0.00	0.00
2,600.0	6.00	174.17	2,593.5	-134.1	13.7	-134.2	0.00	0.00	0.00
2,700.0	6.00	174.17	2,693.0	-144.5	14.7	-144.6	0.00	0.00	0.00
2,800.0	6.00	174.17	2,792.4	-154.9	15.8	-155.0	0.00	0.00	0.00
2,900.0	6.00	174.17	2,891.9	-165.3	16.9	-165.4	0.00	0.00	0.00
3,000.0	6.00	174.17	2,991.3	-175.7	17.9	-175.8	0.00	0.00	0.00
3,100.0	6.00	174.17	3,090.8	-186.1	19.0	-186.2	0.00	0.00	0.00
3,200.0	6.00	174.17	3,190.2	-196.5	20.0	-196.6	0.00	0.00	0.00
3,300.0	6.00	174.17	3,289.7	-206.8	21.1	-207.0	0.00	0.00	0.00
3,400.0	6.00	174.17	3,389.1	-217.2	22.2	-217.4	0.00	0.00	0.00
3,500.0	6.00	174.17	3,488.6	-227.6	23.2	-227.8	0.00	0.00	0.00
3,600.0	6.00	174.17	3,588.0	-238.0	24.3	-238.2	0.00	0.00	0.00
3,700.0	6.00	174.17	3,687.5	-248.4	25.4	-248.6	0.00	0.00	0.00
3,800.0	6.00	174.17	3,786.9	-258.8	26.4	-259.0	0.00	0.00	0.00
3,900.0	6.00	174.17	3,886.4	-269.2	27.5	-269.4	0.00	0.00	0.00
4,000.0	6.00	174.17	3,985.8	-279.6	28.5	-279.8	0.00	0.00	0.00
4,100.0	6.00	174.17	4,085.3	-290.0	29.6	-290.3	0.00	0.00	0.00
4,200.0	6.00	174.17	4,184.7	-300.4	30.7	-300.7	0.00	0.00	0.00



Intrepid Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Mandelbaum Fee #137H
Company:	Tap Rock Resources, LLC	TVD Reference:	KB @ 3512.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3512.0usft
Site:	(Mandelbaum Fee) Sec-11_T-24-S_R-34-E	North Reference:	Grid
Well:	Mandelbaum Fee #137H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,300.0	6.00	174.17	4,284.2	-310.8	31.7	-311.1	0.00	0.00	0.00
4,400.0	6.00	174.17	4,383.6	-321.2	32.8	-321.5	0.00	0.00	0.00
4,500.0	6.00	174.17	4,483.1	-331.6	33.8	-331.9	0.00	0.00	0.00
4,600.0	6.00	174.17	4,582.6	-342.0	34.9	-342.3	0.00	0.00	0.00
4,700.0	6.00	174.17	4,682.0	-352.4	36.0	-352.7	0.00	0.00	0.00
4,800.0	6.00	174.17	4,781.5	-362.8	37.0	-363.1	0.00	0.00	0.00
4,900.0	6.00	174.17	4,880.9	-373.2	38.1	-373.5	0.00	0.00	0.00
5,000.0	6.00	174.17	4,980.4	-383.6	39.1	-383.9	0.00	0.00	0.00
5,070.0	6.00	174.17	5,050.0	-390.9	39.9	-391.2	0.00	0.00	0.00
Base Salt									
5,100.0	6.00	174.17	5,079.8	-394.0	40.2	-394.3	0.00	0.00	0.00
5,200.0	6.00	174.17	5,179.3	-404.4	41.3	-404.7	0.00	0.00	0.00
BLD - DLS 2.00 TFO 0.00									
5,300.0	8.00	174.17	5,278.5	-416.6	42.5	-416.9	2.00	2.00	0.00
5,400.2	10.00	174.17	5,377.5	-432.2	44.1	-432.5	2.00	2.00	0.00
HOLD - 2919.2 at 5400.2 MD									
5,433.2	10.00	174.17	5,410.0	-437.9	44.7	-438.2	0.00	0.00	0.00
Delaware Mountain Gp									
5,443.4	10.00	174.17	5,420.0	-439.6	44.9	-439.9	0.00	0.00	0.00
Lamar									
5,463.7	10.00	174.17	5,440.0	-443.1	45.2	-443.4	0.00	0.00	0.00
Ramsey Sand									
5,489.1	10.00	174.17	5,465.0	-447.5	45.7	-447.8	0.00	0.00	0.00
Bell Canyon									
5,500.0	10.00	174.17	5,475.8	-449.4	45.9	-449.7	0.00	0.00	0.00
5,600.0	10.00	174.17	5,574.2	-466.7	47.6	-467.0	0.00	0.00	0.00
5,700.0	10.00	174.17	5,672.7	-484.0	49.4	-484.3	0.00	0.00	0.00
5,800.0	10.00	174.17	5,771.2	-501.2	51.1	-501.6	0.00	0.00	0.00
5,900.0	10.00	174.17	5,869.7	-518.5	52.9	-518.9	0.00	0.00	0.00
6,000.0	10.00	174.17	5,968.2	-535.8	54.7	-536.2	0.00	0.00	0.00
6,100.0	10.00	174.17	6,066.6	-553.1	56.4	-553.5	0.00	0.00	0.00
6,200.0	10.00	174.17	6,165.1	-570.4	58.2	-570.8	0.00	0.00	0.00
6,300.0	10.00	174.17	6,263.6	-587.7	60.0	-588.1	0.00	0.00	0.00
6,362.4	10.00	174.17	6,325.0	-598.4	61.1	-598.9	0.00	0.00	0.00
Cherry Canyon									
6,400.0	10.00	174.17	6,362.1	-604.9	61.7	-605.4	0.00	0.00	0.00
6,500.0	10.00	174.17	6,460.6	-622.2	63.5	-622.7	0.00	0.00	0.00
6,600.0	10.00	174.17	6,559.0	-639.5	65.3	-640.0	0.00	0.00	0.00
6,700.0	10.00	174.17	6,657.5	-656.8	67.0	-657.3	0.00	0.00	0.00
6,800.0	10.00	174.17	6,756.0	-674.1	68.8	-674.6	0.00	0.00	0.00
6,900.0	10.00	174.17	6,854.5	-691.4	70.5	-691.9	0.00	0.00	0.00
7,000.0	10.00	174.17	6,952.9	-708.6	72.3	-709.2	0.00	0.00	0.00
7,100.0	10.00	174.17	7,051.4	-725.9	74.1	-726.5	0.00	0.00	0.00
7,200.0	10.00	174.17	7,149.9	-743.2	75.8	-743.7	0.00	0.00	0.00
7,300.0	10.00	174.17	7,248.4	-760.5	77.6	-761.0	0.00	0.00	0.00
7,400.0	10.00	174.17	7,346.9	-777.8	79.4	-778.3	0.00	0.00	0.00
7,500.0	10.00	174.17	7,445.3	-795.0	81.1	-795.6	0.00	0.00	0.00
7,600.0	10.00	174.17	7,543.8	-812.3	82.9	-812.9	0.00	0.00	0.00
7,700.0	10.00	174.17	7,642.3	-829.6	84.7	-830.2	0.00	0.00	0.00
7,800.0	10.00	174.17	7,740.8	-846.9	86.4	-847.5	0.00	0.00	0.00
7,819.5	10.00	174.17	7,760.0	-850.3	86.8	-850.9	0.00	0.00	0.00
Brushy Canyon									
7,900.0	10.00	174.17	7,839.3	-864.2	88.2	-864.8	0.00	0.00	0.00



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Well:	Mandelbaum Fee #137H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,000.0	10.00	174.17	7,937.7	-881.5	89.9	-882.1	0.00	0.00	0.00
8,100.0	10.00	174.17	8,036.2	-898.7	91.7	-899.4	0.00	0.00	0.00
8,200.0	10.00	174.17	8,134.7	-916.0	93.5	-916.7	0.00	0.00	0.00
8,300.0	10.00	174.17	8,233.2	-933.3	95.2	-934.0	0.00	0.00	0.00
8,319.4	10.00	174.17	8,252.3	-936.7	95.6	-937.4	0.00	0.00	0.00
DROP - -2.00									
8,400.0	8.39	174.17	8,331.8	-949.5	96.9	-950.2	2.00	-2.00	0.00
8,500.0	6.39	174.17	8,431.0	-962.3	98.2	-963.0	2.00	-2.00	0.00
8,600.0	4.39	174.17	8,530.6	-971.6	99.1	-972.3	2.00	-2.00	0.00
8,700.0	2.39	174.17	8,630.4	-977.5	99.7	-978.2	2.00	-2.00	0.00
8,800.0	0.39	174.17	8,730.3	-979.9	100.0	-980.7	2.00	-2.00	0.00
8,819.7	0.00	0.00	8,750.0	-980.0	100.0	-980.7	2.00	-2.00	0.00
HOLD - 2659.3 at 8819.7 MD									
8,900.0	0.00	0.00	8,830.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,000.0	0.00	0.00	8,930.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,100.0	0.00	0.00	9,030.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,200.0	0.00	0.00	9,130.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,209.7	0.00	0.00	9,140.0	-980.0	100.0	-980.7	0.00	0.00	0.00
Bone Spring Lime									
9,234.7	0.00	0.00	9,165.0	-980.0	100.0	-980.7	0.00	0.00	0.00
Upper Avalon									
9,300.0	0.00	0.00	9,230.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,400.0	0.00	0.00	9,330.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,484.7	0.00	0.00	9,415.0	-980.0	100.0	-980.7	0.00	0.00	0.00
Middle Avalon									
9,500.0	0.00	0.00	9,430.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,600.0	0.00	0.00	9,530.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,700.0	0.00	0.00	9,630.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,800.0	0.00	0.00	9,730.3	-980.0	100.0	-980.7	0.00	0.00	0.00
9,894.7	0.00	0.00	9,825.0	-980.0	100.0	-980.7	0.00	0.00	0.00
Lower Avalon									
9,900.0	0.00	0.00	9,830.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,000.0	0.00	0.00	9,930.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,100.0	0.00	0.00	10,030.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,200.0	0.00	0.00	10,130.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,239.7	0.00	0.00	10,170.0	-980.0	100.0	-980.7	0.00	0.00	0.00
1st Bone Spring Sand									
10,300.0	0.00	0.00	10,230.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,400.0	0.00	0.00	10,330.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,500.0	0.00	0.00	10,430.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,600.0	0.00	0.00	10,530.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,609.7	0.00	0.00	10,540.0	-980.0	100.0	-980.7	0.00	0.00	0.00
2nd Bone Spring Carb									
10,700.0	0.00	0.00	10,630.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,800.0	0.00	0.00	10,730.3	-980.0	100.0	-980.7	0.00	0.00	0.00
10,814.7	0.00	0.00	10,745.0	-980.0	100.0	-980.7	0.00	0.00	0.00
2nd Bone Spring Sand									
10,900.0	0.00	0.00	10,830.3	-980.0	100.0	-980.7	0.00	0.00	0.00
11,000.0	0.00	0.00	10,930.3	-980.0	100.0	-980.7	0.00	0.00	0.00
11,100.0	0.00	0.00	11,030.3	-980.0	100.0	-980.7	0.00	0.00	0.00
11,199.7	0.00	0.00	11,130.0	-980.0	100.0	-980.7	0.00	0.00	0.00
3rd Bone Spring Carb									
11,200.0	0.00	0.00	11,130.3	-980.0	100.0	-980.7	0.00	0.00	0.00



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Site:	(Mandelbaum Fee) Sec-11_T-24-S_R-34-E	North Reference:	Grid
Well:	Mandelbaum Fee #137H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,300.0	0.00	0.00	11,230.3	-980.0	100.0	-980.7	0.00	0.00	0.00
11,400.0	0.00	0.00	11,330.3	-980.0	100.0	-980.7	0.00	0.00	0.00
11,479.0	0.00	0.00	11,409.3	-980.0	100.0	-980.7	0.00	0.00	0.00
KOP - Build 10.00									
11,500.0	2.10	352.95	11,430.3	-979.6	100.0	-980.3	10.00	10.00	0.00
11,550.0	7.10	352.95	11,480.2	-975.6	99.5	-976.4	10.00	10.00	0.00
11,600.0	12.10	352.95	11,529.4	-967.4	98.4	-968.1	10.00	10.00	0.00
11,650.0	17.10	352.95	11,577.8	-954.8	96.9	-955.6	10.00	10.00	0.00
11,700.0	22.10	352.95	11,624.9	-938.2	94.8	-938.9	10.00	10.00	0.00
11,727.4	24.84	352.95	11,650.0	-927.4	93.5	-928.1	10.00	10.00	0.00
3rd Bone Spring Sand									
11,750.0	27.10	352.95	11,670.4	-917.6	92.3	-918.2	10.00	10.00	0.00
11,800.0	32.10	352.95	11,713.8	-893.0	89.2	-893.7	10.00	10.00	0.00
11,850.0	37.10	352.95	11,755.0	-864.9	85.8	-865.5	10.00	10.00	0.00
11,900.0	42.10	352.95	11,793.5	-833.2	81.9	-833.8	10.00	10.00	0.00
11,950.0	47.10	352.95	11,829.0	-798.4	77.5	-799.0	10.00	10.00	0.00
12,000.0	52.10	352.95	11,861.4	-760.6	72.9	-761.2	10.00	10.00	0.00
12,050.0	57.10	352.95	11,890.4	-720.2	67.9	-720.7	10.00	10.00	0.00
12,088.1	60.91	352.95	11,910.0	-687.8	63.9	-688.3	10.00	10.00	0.00
3rd BS W Sand									
12,100.0	62.10	352.95	11,915.7	-677.4	62.6	-677.9	10.00	10.00	0.00
12,150.0	67.10	352.95	11,937.1	-632.6	57.0	-633.0	10.00	10.00	0.00
12,200.0	72.10	352.95	11,954.5	-586.1	51.3	-586.5	10.00	10.00	0.00
12,250.0	77.10	352.95	11,967.8	-538.3	45.4	-538.6	10.00	10.00	0.00
12,300.0	82.10	352.95	11,976.8	-489.5	39.3	-489.8	10.00	10.00	0.00
12,350.0	87.10	352.95	11,981.5	-440.1	33.2	-440.3	10.00	10.00	0.00
12,400.0	92.10	352.95	11,981.9	-390.5	27.1	-390.7	10.00	10.00	0.00
12,429.6	95.06	352.95	11,980.0	-361.2	23.5	-361.4	10.00	10.00	0.00
EOC/TRN - DLS 2.00 TFO 89.69									
12,500.0	95.07	354.36	11,973.8	-291.5	15.7	-291.6	2.00	0.01	2.01
12,600.0	95.07	356.37	11,965.0	-192.2	7.7	-192.3	2.00	0.00	2.01
12,700.0	95.07	358.38	11,956.1	-92.7	3.1	-92.7	2.00	0.00	2.01
12,758.0	95.06	359.54	11,951.0	-35.0	2.1	-35.0	2.00	-0.01	2.01
Start 4295.9 hold at 12758.0 MD									
12,800.0	95.06	359.54	11,947.3	6.9	1.7	6.9	0.00	0.00	0.00
12,900.0	95.06	359.54	11,938.5	106.5	0.9	106.5	0.00	0.00	0.00
13,000.0	95.06	359.54	11,929.7	206.1	0.2	206.1	0.00	0.00	0.00
13,100.0	95.06	359.54	11,920.8	305.7	-0.6	305.7	0.00	0.00	0.00
13,200.0	95.06	359.54	11,912.0	405.3	-1.4	405.3	0.00	0.00	0.00
13,300.0	95.06	359.54	11,903.2	504.9	-2.2	504.9	0.00	0.00	0.00
13,400.0	95.06	359.54	11,894.4	604.5	-3.0	604.5	0.00	0.00	0.00
13,500.0	95.06	359.54	11,885.6	704.1	-3.8	704.2	0.00	0.00	0.00
13,600.0	95.06	359.54	11,876.7	803.8	-4.6	803.8	0.00	0.00	0.00
13,700.0	95.06	359.54	11,867.9	903.4	-5.4	903.4	0.00	0.00	0.00
13,800.0	95.06	359.54	11,859.1	1,003.0	-6.2	1,003.0	0.00	0.00	0.00
13,900.0	95.06	359.54	11,850.3	1,102.6	-7.0	1,102.6	0.00	0.00	0.00
14,000.0	95.06	359.54	11,841.4	1,202.2	-7.8	1,202.2	0.00	0.00	0.00
14,100.0	95.06	359.54	11,832.6	1,301.8	-8.6	1,301.8	0.00	0.00	0.00
14,200.0	95.06	359.54	11,823.8	1,401.4	-9.4	1,401.4	0.00	0.00	0.00
14,300.0	95.06	359.54	11,815.0	1,501.0	-10.2	1,501.0	0.00	0.00	0.00
14,400.0	95.06	359.54	11,806.1	1,600.6	-10.9	1,600.6	0.00	0.00	0.00
14,500.0	95.06	359.54	11,797.3	1,700.2	-11.7	1,700.3	0.00	0.00	0.00
14,600.0	95.06	359.54	11,788.5	1,799.8	-12.5	1,799.9	0.00	0.00	0.00



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14,700.0	95.06	359.54	11,779.7	1,899.4	-13.3	1,899.5	0.00	0.00	0.00	
14,800.0	95.06	359.54	11,770.9	1,999.0	-14.1	1,999.1	0.00	0.00	0.00	
14,900.0	95.06	359.54	11,762.0	2,098.6	-14.9	2,098.7	0.00	0.00	0.00	
15,000.0	95.06	359.54	11,753.2	2,198.2	-15.7	2,198.3	0.00	0.00	0.00	
15,100.0	95.06	359.54	11,744.4	2,297.9	-16.5	2,297.9	0.00	0.00	0.00	
15,200.0	95.06	359.54	11,735.6	2,397.5	-17.3	2,397.5	0.00	0.00	0.00	
15,300.0	95.06	359.54	11,726.7	2,497.1	-18.1	2,497.1	0.00	0.00	0.00	
15,400.0	95.06	359.54	11,717.9	2,596.7	-18.9	2,596.7	0.00	0.00	0.00	
15,500.0	95.06	359.54	11,709.1	2,696.3	-19.7	2,696.4	0.00	0.00	0.00	
15,600.0	95.06	359.54	11,700.3	2,795.9	-20.5	2,796.0	0.00	0.00	0.00	
15,700.0	95.06	359.54	11,691.4	2,895.5	-21.3	2,895.6	0.00	0.00	0.00	
15,800.0	95.06	359.54	11,682.6	2,995.1	-22.1	2,995.2	0.00	0.00	0.00	
15,900.0	95.06	359.54	11,673.8	3,094.7	-22.8	3,094.8	0.00	0.00	0.00	
16,000.0	95.06	359.54	11,665.0	3,194.3	-23.6	3,194.4	0.00	0.00	0.00	
16,100.0	95.06	359.54	11,656.2	3,293.9	-24.4	3,294.0	0.00	0.00	0.00	
16,200.0	95.06	359.54	11,647.3	3,393.5	-25.2	3,393.6	0.00	0.00	0.00	
16,300.0	95.06	359.54	11,638.5	3,493.1	-26.0	3,493.2	0.00	0.00	0.00	
16,400.0	95.06	359.54	11,629.7	3,592.7	-26.8	3,592.8	0.00	0.00	0.00	
16,500.0	95.06	359.54	11,620.9	3,692.4	-27.6	3,692.5	0.00	0.00	0.00	
16,600.0	95.06	359.54	11,612.0	3,792.0	-28.4	3,792.1	0.00	0.00	0.00	
16,700.0	95.06	359.54	11,603.2	3,891.6	-29.2	3,891.7	0.00	0.00	0.00	
16,800.0	95.06	359.54	11,594.4	3,991.2	-30.0	3,991.3	0.00	0.00	0.00	
16,900.0	95.06	359.54	11,585.6	4,090.8	-30.8	4,090.9	0.00	0.00	0.00	
17,000.0	95.06	359.54	11,576.7	4,190.4	-31.6	4,190.5	0.00	0.00	0.00	
17,053.8	95.06	359.54	11,572.0	4,244.0	-32.0	4,244.1	0.00	0.00	0.00	
TD at 17053.8										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PBHL (Mandelbaum F - hit/miss target - Shape - Rectangle (sides W100.0 H5,175.0 D30.0))	-5.06	359.54	11,572.0	4,244.0	-32.0	451,933.00	817,310.00	32° 14' 21.434 N	103° 26' 26.718 W	
LTP (Mandelbaum Fe - plan misses target center by 8.4usft at 16959.2usft MD (11580.3 TVD, 4149.7 N, -31.2 E) - Point	0.00	0.00	11,572.0	4,149.0	-31.0	451,838.00	817,311.00	32° 14' 20.494 N	103° 26' 26.715 W	
FTP (Mandelbaum Fe - plan misses target center by 211.8usft at 11953.9usft MD (11831.7 TVD, -795.6 N, 77.2 E) - Point	0.00	0.00	11,980.0	-931.0	10.0	446,758.00	817,352.00	32° 13' 30.225 N	103° 26' 26.729 W	



Intrepid Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Mandelbaum Fee #137H
Company:	Tap Rock Resources, LLC	TVD Reference:	KB @ 3512.0usft
Project:	Lea County, NM (NAD 83 NME)	MD Reference:	KB @ 3512.0usft
Site:	(Mandelbaum Fee) Sec-11_T-24-S_R-34-E	North Reference:	Grid
Well:	Mandelbaum Fee #137H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,030.0	1,030.0	Rustler Anhydrite			
1,220.1	1,220.0	Top Salt			
5,070.0	5,050.0	Base Salt			
5,433.2	5,410.0	Delaware Mountain Gp			
5,443.4	5,420.0	Lamar			
5,463.7	5,440.0	Ramsey Sand			
5,489.1	5,465.0	Bell Canyon			
6,362.4	6,325.0	Cherry Canyon			
7,819.5	7,760.0	Brushy Canyon			
9,209.7	9,140.0	Bone Spring Lime			
9,234.7	9,165.0	Upper Avalon			
9,484.7	9,415.0	Middle Avalon			
9,894.7	9,825.0	Lower Avalon			
10,239.7	10,170.0	1st Bone Spring Sand			
10,609.7	10,540.0	2nd Bone Spring Carb			
10,814.7	10,745.0	2nd Bone Spring Sand			
11,199.7	11,130.0	3rd Bone Spring Carb			
11,727.4	11,650.0	3rd Bone Spring Sand			
12,088.1	11,910.0	3rd BS W Sand			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,000.0	1,000.0	0.0	0.0	NUDGE - Build 1.50
1,133.3	1,133.3	-2.3	0.2	HOLD - 166.7 at 1133.3 MD
1,300.0	1,299.9	-8.1	0.8	BLD - DLS 1.50 TFO 0.01
1,566.7	1,565.8	-26.6	2.7	HOLD - 3633.3 at 1566.7 MD
5,200.0	5,179.3	-404.4	41.3	BLD - DLS 2.00 TFO 0.00
5,400.2	5,377.5	-432.2	44.1	HOLD - 2919.2 at 5400.2 MD
8,319.4	8,252.3	-936.7	95.6	DROP - -2.00
8,819.7	8,750.0	-980.0	100.0	HOLD - 2659.3 at 8819.7 MD
11,479.0	11,409.3	-980.0	100.0	KOP - Build 10.00
12,429.6	11,980.0	-361.2	23.5	EOC/TRN - DLS 2.00 TFO 89.69
12,758.0	11,951.0	-35.0	2.1	Start 4295.9 hold at 12758.0 MD
17,053.8	11,572.0	4,244.0	-32.0	TD at 17053.8