

District I1625 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 275246

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

1. Operator Name and Address TAP ROCK OPERATING, LLC 602 Park Point Drive Golden, CO 80401		2. OGRID Number 372043
		3. API Number 30-015-46554
4. Property Code 324989	5. Property Name MISO STATE	6. Well No. 164H

7. Surface Location

UL - Lot O	Section 2	Township 26S	Range 25E	Lot Idn	Feet From 263	N/S Line S	Feet From 1446	E/W Line E	County Eddy
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8. Proposed Bottom Hole Location

UL - Lot B	Section 2	Township 26S	Range 25E	Lot Idn B	Feet From 200	N/S Line N	Feet From 1320	E/W Line E	County Eddy
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9. Pool Information

PURPLE SAGE;WOLFCAMP (GAS)	98220
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Additional Well Information

11. Work Type New Well	12. Well Type GAS	13. Cable/Rotary	14. Lease Type State	15. Ground Level Elevation 3611
16. Multiple N	17. Proposed Depth 13188	18. Formation Wolfcamp	19. Contractor	20. Spud Date 2/1/2020
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	350	500	0
Int1	12.25	9.625	40	1780	700	0
Prod	8.75	5.5	20	13188	2300	0

Casing/Cement Program: Additional Comments

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22. Proposed Blowout Prevention Program

Type	Working Pressure	Test Pressure	Manufacturer
Annular	5000	2500	
Blind	10000	5000	
Double Ram	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	Approved By:	Raymond Podany
Title:	Regulatory Manager	Title:	Geologist
Email Address:	ccombs@taprk.com	Approved Date:	12/26/2019
Date:	12/18/2019	Phone:	720-360-4028
		Expiration Date: 12/26/2021	
		Conditions of Approval Attached	

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Phone: (505) 476-3460 Fax: (505) 476-3462

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 MISO STATE			⁶ Well Number 164H
⁷ OGRID No.		⁸ Operator Name TAP ROCK OPERATING, LLC.			⁹ Elevation 3611'

¹⁰Surface Location

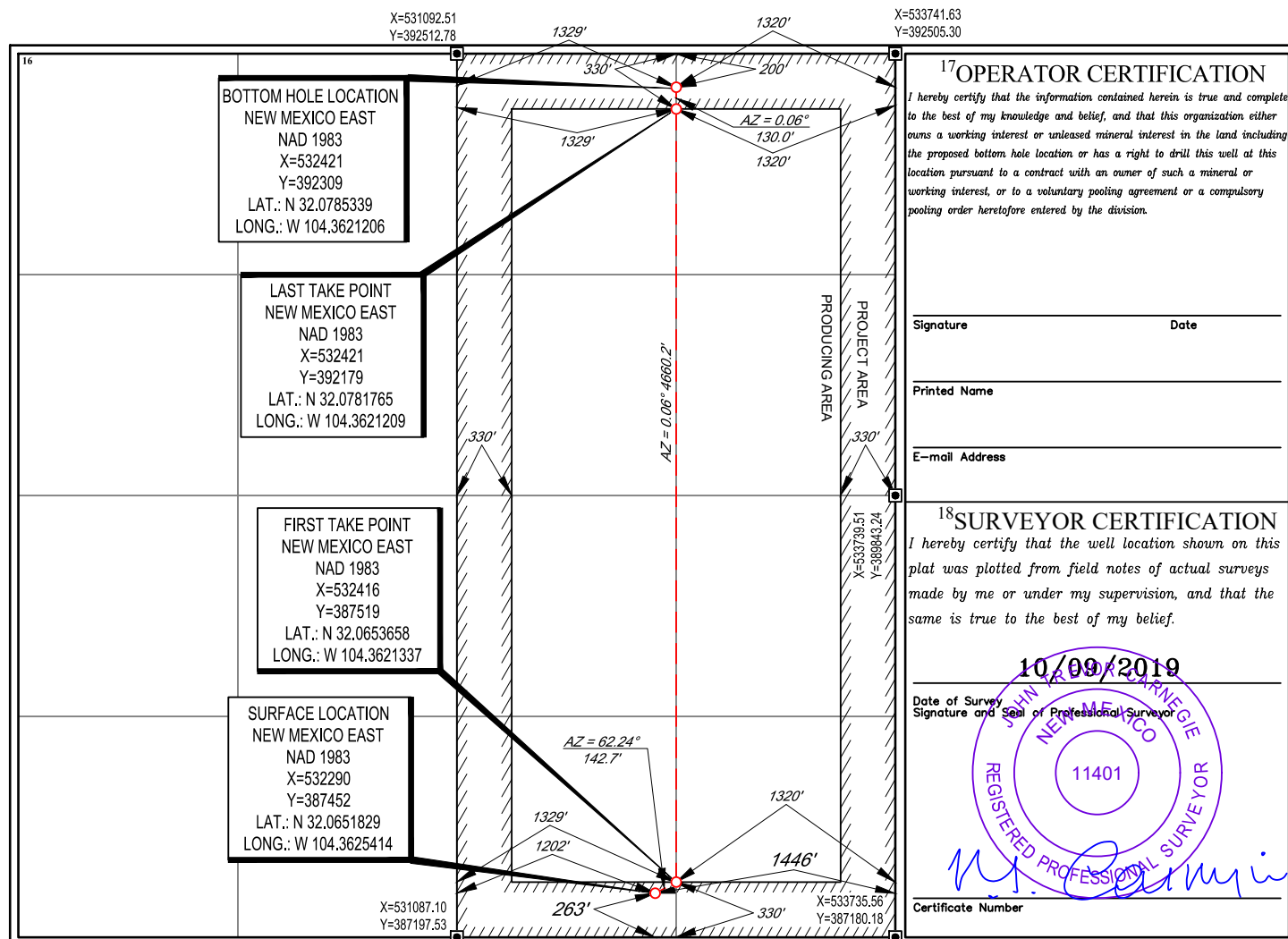
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
0	2	26-S	25-E	-	263'	SOUTH	1446'	EAST	EDDY

¹¹Bottom Hole Location If Different From Surface

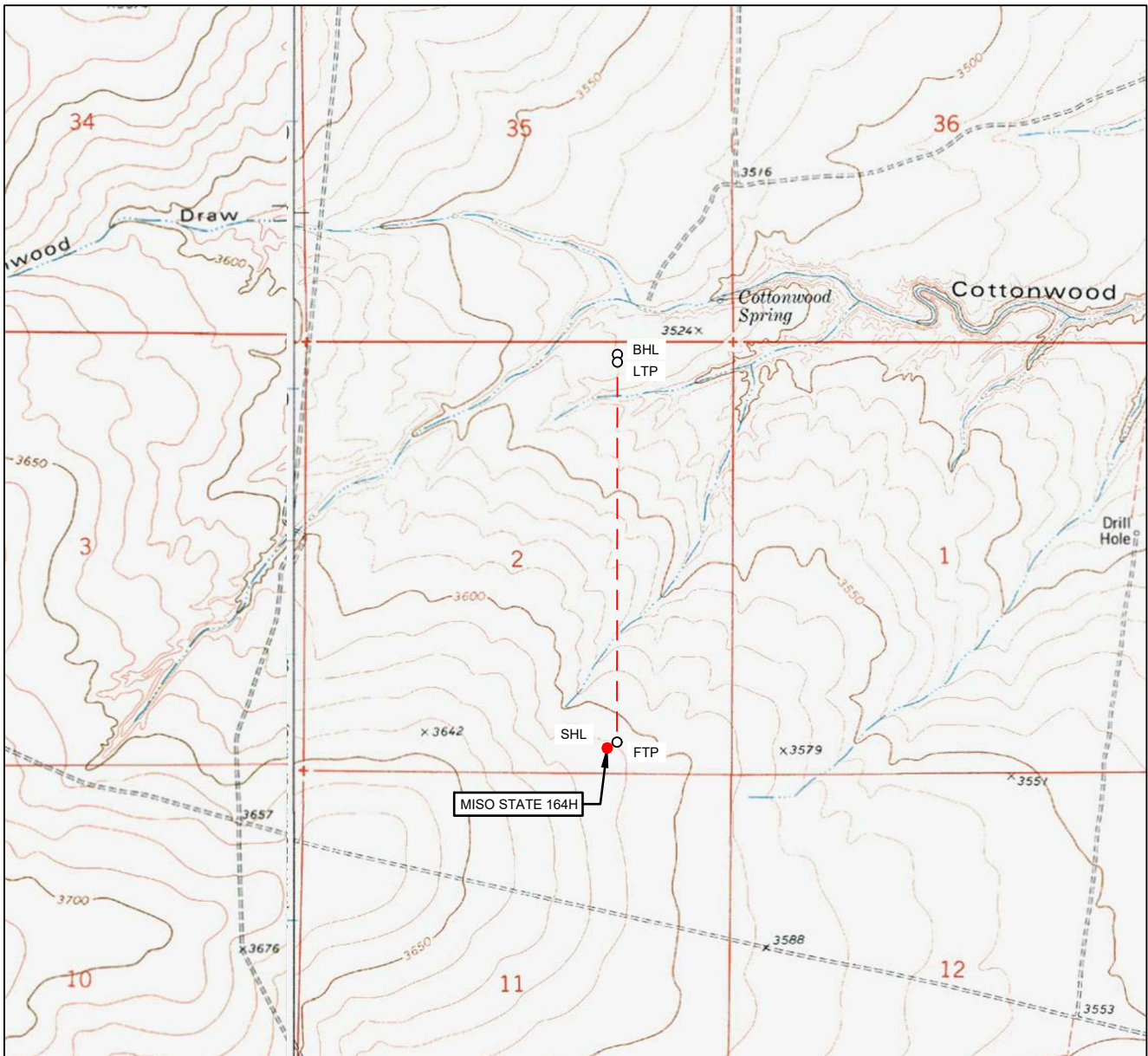
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	2	26-S	25-E	-	200'	NORTH	1320'	EAST	EDDY

¹² Dedicated Acres	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.

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.



LOCATION & ELEVATION VERIFICATION MAP



LEASE NAME & WELL NO.: MISO STATE 164H

SECTION 2 TWP 26-S RGE 25-E SURVEY N.M.P.M.
 COUNTY EDDY STATE NM ELEVATION 3611'
 DESCRIPTION 263' FSL & 1446' FEL

LATITUDE N 32.0651829 LONGITUDE W 104.3625414



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

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

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



TOPOGRAPHIC
 LOYALTY INNOVATION LEGACY

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



FROM INT. OF CR 720 N. & US-180 E, GO SOUTHWEST ON US-180 E
±12.0 MILES, THENCE EAST (LEFT) ON DILLAHUNTY RD. ±4.5 MILES,
THENCE NORTH (LEFT) ON A LEASE RD. ±0.4 MILE, THENCE
NORTHEAST (RIGHT) ON A PROPOSED RD. ±1185 FEET TO A POINT
±407 FEET NORTHWEST OF THE LOCATION.



SCALE: 1" = 10000'



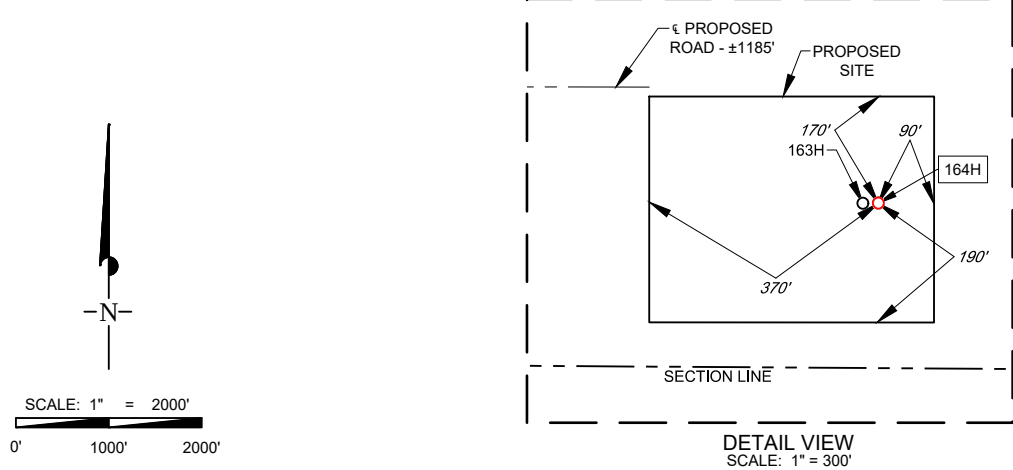
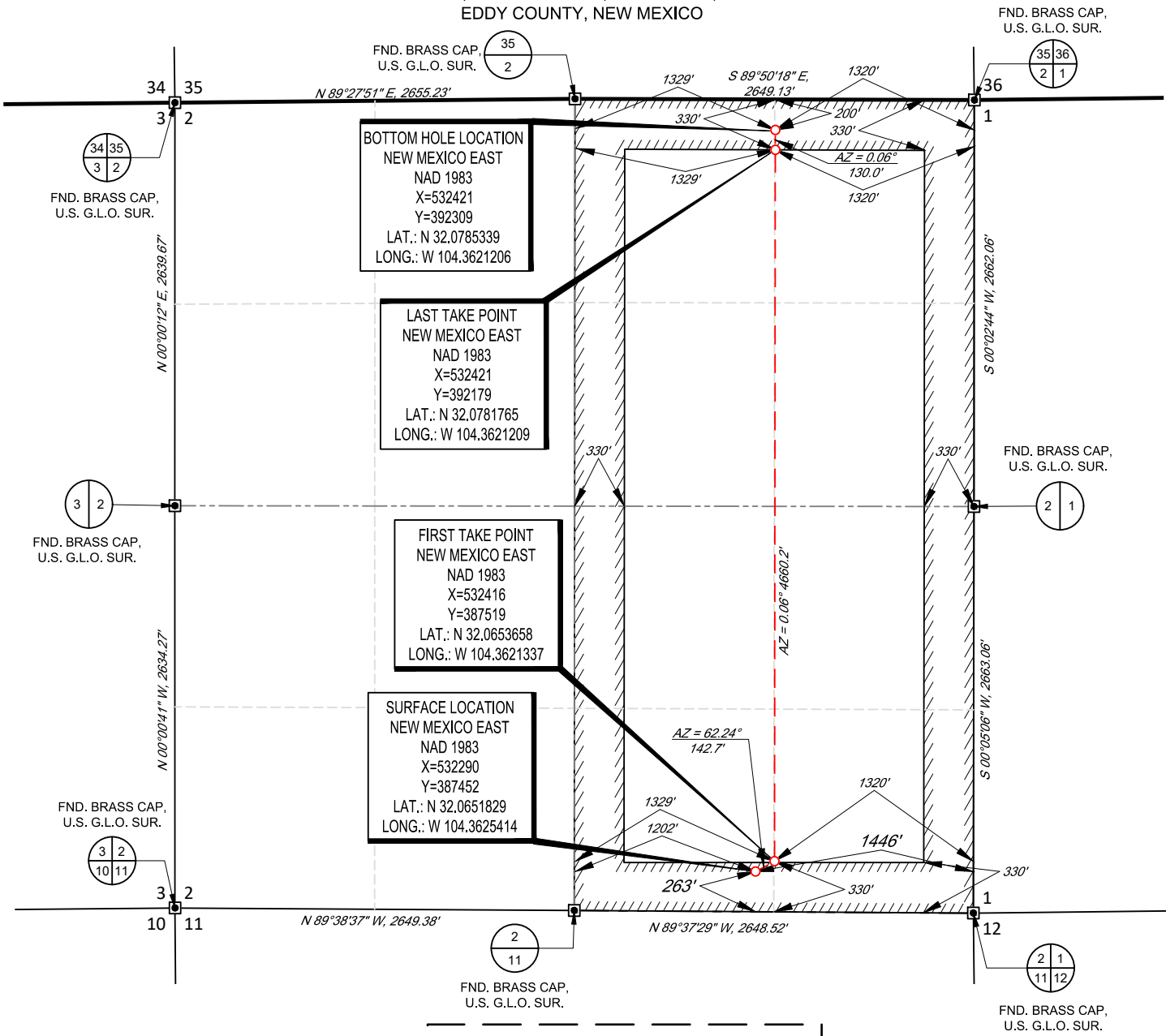
0' 5000' 10000'



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TAP
ROCK
EXHIBIT 2A

SECTION 2, TOWNSHIP 26-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO



LEASE NAME & WELL NO.: MISO STATE 164H

SECTION 2 TWP 26-S RGE 25-E SURVEY N.M.P.M.
COUNTY EDDY STATE NM
DESCRIPTION 263' FSL & 1446' FWL

DISTANCE & DIRECTION
FROM INT. OF CR 720 N. & US-180 E. GO SOUTHWEST ON US-180 E
±12.0 MILES, THENCE EAST (LEFT) ON DILLAHUNTY RD. ±4.5 MILES,
THENCE NORTH (LEFT) ON A LEASE RD. ±0.4 MILE, THENCE
NORTHEAST (RIGHT) ON A PROPOSED RD. ±1185 FEET TO A POINT
±407 FEET NORTHWEST OF THE LOCATION.

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

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



John Trevor Carnegie

John Trevor Carnegie, P.S. No. 11401
OCTOBER 21, 2019



TOPOGRAPHIC
LOYALTY INNOVATION LEGACY

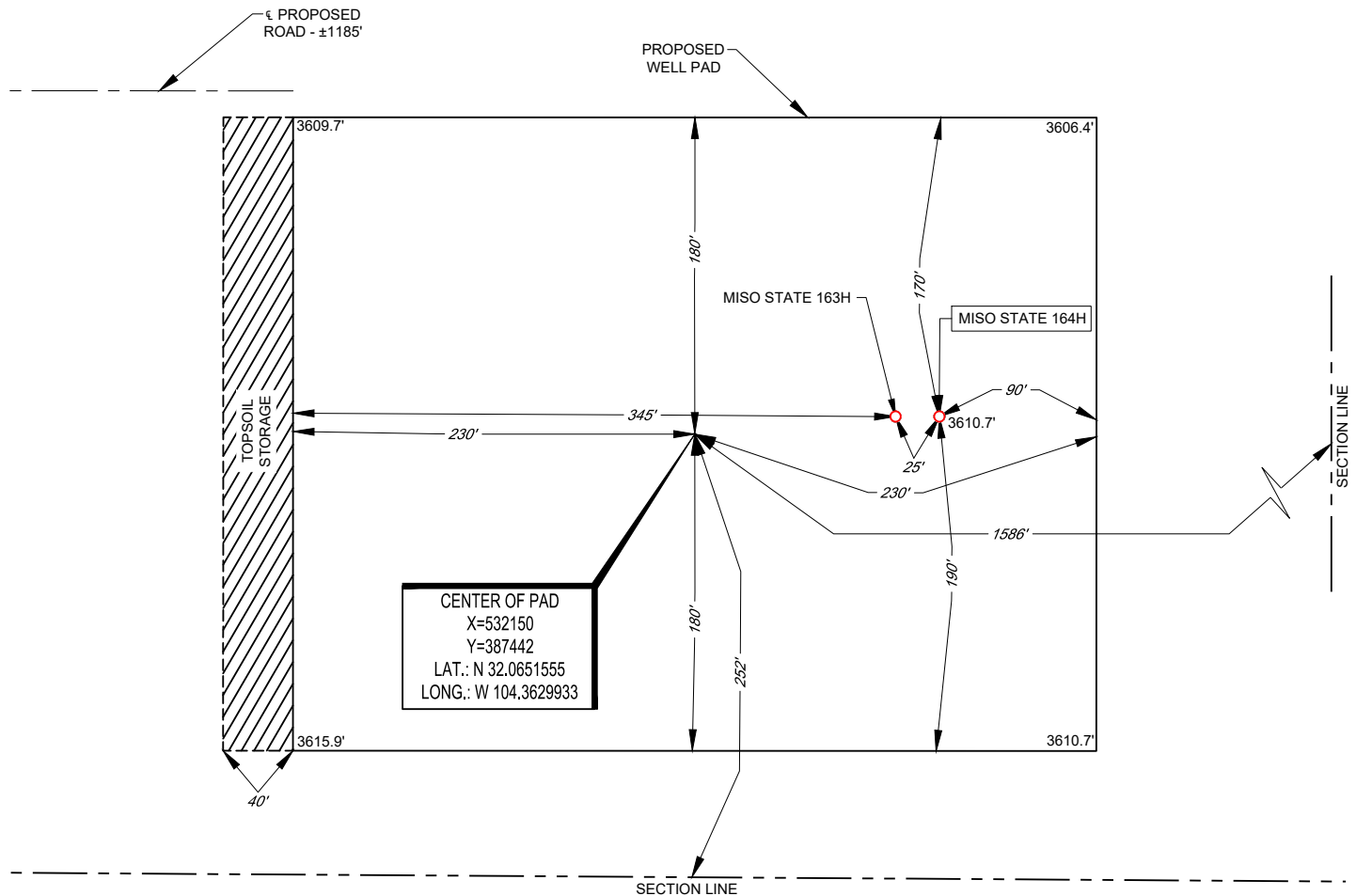
1400 EVERMAN PARKWAY, Ste. 146 • FT. WORTH, TEXAS 76140
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2903 NORTH BIG SPRING • MIDLAND, TEXAS 79705
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EXHIBIT 2B



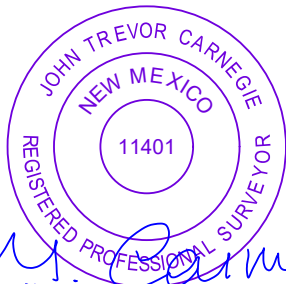
SECTION 2, TOWNSHIP 26-S, RANGE 25-E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

DETAIL VIEW
SCALE: 1" = 100'



LEASE NAME & WELL NO.: MISO STATE 164H
164H LATITUDE N 32.0651829 164H LONGITUDE W 104.3625414

CENTER OF PAD IS 252' FSL & 1586' FEL

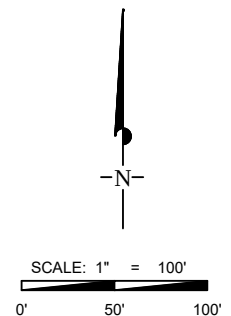


John Trevor Carnegie, P.S. No. 11401

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. ELEVATIONS USED ARE NAVD88, OBTAINED THROUGH AN OPUS SOLUTION.

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

ORIGINAL DOCUMENT SIZE: 8.5" X 11"



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

GAS CAPTURE PLAN

Date: 12/26/2019

☒ 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
MISO STATE #164H	30-015-46554	O-2-26S-25E	0263S 1446E	2	Flared	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 Salt Creek Midstream and will be connected to Salt Creek Midstream high pressure gathering system located in Eddy County, New Mexico. It will require ~500' of pipeline to connect the facility to high pressure gathering system. Tap Rock Operating, LLC provides (periodically) to Salt Creek Energy Group, LLC a

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 ARM Midstream Management, LLC and will be connected to ARM Midstream Management, LLC High Pressure gathering system located in Eddy County, New Mexico. It will require 500' of pipeline to connect the facility to High Pressure gathering system. TAP ROCK OPERATING, LLC provides (periodically) to ARM Midstream Management, 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 ARM Midstream Management, LLC have periodic conference calls to discuss changes to drilling and completion schedules. Gas from these wells will be processed at ARM Midstream Management, LLC Processing Plant located in Sec. 02, Twn. 26S, Rng. 25E, Eddy 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 ARM Midstream Management, 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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State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

Form APD Comments

Permit 275246

PERMIT COMMENTS

Operator Name and Address: TAP ROCK OPERATING, LLC [372043] 602 Park Point Drive Golden, CO 80401		API Number: 30-015-46554
		Well: MISO STATE #164H

Created By	Comment	Comment Date
rpodany	Two different BHL locations list on BHL page. Computer C102 BHL location blank.	12/11/2019
rpodany	Fee Cancellation - resubmit with fee	12/16/2019

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

Form APD Conditions

Permit 275246

PERMIT CONDITIONS OF APPROVAL

Operator Name and Address: TAP ROCK OPERATING, LLC [372043] 602 Park Point Drive Golden, CO 80401		API Number: 30-015-46554
		Well: MISO STATE #164H
OCD Reviewer	Condition	
rpodany	Will require a directional survey with the C-104	
rpodany	Cement is required to circulate on both surface and intermediate1 strings of casing	



Tap Rock Resources, LLC

**Eddy County, NM (NAD 83 NME)
(Miso State) Sec-2_T-26-S_R-25-E
Miso State #164H**

OWB

Plan: Plan #1

Standard Planning Report

11 November, 2019





Intrepid Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Miso State #164H
Company:	Tap Rock Resources, LLC	TVD Reference:	KB @ 3637.0usft
Project:	Eddy County, NM (NAD 83 NME)	MD Reference:	KB @ 3637.0usft
Site:	(Miso State) Sec-2_T-26-S_R-25-E	North Reference:	Grid
Well:	Miso State #164H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Project	Eddy 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		(Miso State) Sec-2_T-26-S_R-25-E			
Site Position:		Northing:	387,500.00 usft	Latitude:	32° 3' 55.133 N
From:	Map	Easting:	533,218.00 usft	Longitude:	104° 21' 34.362 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.01 °

Well		Miso State #164H				
Well Position	+N/-S	-48.0 usft	Northing:	387,452.00 usft	Latitude:	32° 3' 54.655 N
	+E/-W	-928.0 usft	Easting:	532,290.00 usft	Longitude:	104° 21' 45.146 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	3,611.0 usft

Wellbore	OWB
-----------------	-----

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	11/11/19	7.05	59.76	47,511.90731267

Design	Plan #1
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Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	0.06

Plan Survey Tool Program			Date	11/11/19	
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.0	13,188.2	Plan #1 (OWB)	MWD	
				OWSG MWD - Standard	

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	
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,250.0	5.00	142.38	2,249.7	-8.6	6.7	2.00	2.00	0.00	142.38	
4,363.7	5.00	142.38	4,355.3	-154.5	119.1	0.00	0.00	0.00	0.00	
4,613.7	0.00	360.00	4,605.0	-163.2	125.8	2.00	-2.00	0.00	180.00	
7,840.8	0.00	360.00	7,832.1	-163.2	125.8	0.00	0.00	0.00	360.00	
8,735.0	89.42	0.06	8,405.0	404.0	126.4	10.00	10.00	0.01	0.06	
13,188.2	89.42	0.06	8,450.0	4,857.0	131.0	0.00	0.00	0.00	0.00	PBHL (Miso State #



Intrepid Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Miso State #164H
Company:	Tap Rock Resources, LLC	TVD Reference:	KB @ 3637.0usft
Project:	Eddy County, NM (NAD 83 NME)	MD Reference:	KB @ 3637.0usft
Site:	(Miso State) Sec-2_T-26-S_R-25-E	North Reference:	Grid
Well:	Miso State #164H	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
115.0	0.00	0.00	115.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler Anhydrite									
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
490.0	0.00	0.00	490.0	0.0	0.0	0.0	0.00	0.00	0.00
Top Salt									
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
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,525.0	0.00	0.00	1,525.0	0.0	0.0	0.0	0.00	0.00	0.00
Base Salt									
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,730.0	0.00	0.00	1,730.0	0.0	0.0	0.0	0.00	0.00	0.00
Delaware Mountain Gp									
1,735.0	0.00	0.00	1,735.0	0.0	0.0	0.0	0.00	0.00	0.00
Lamar									
1,765.0	0.00	0.00	1,765.0	0.0	0.0	0.0	0.00	0.00	0.00
Bell Canyon									
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,805.0	0.00	0.00	1,805.0	0.0	0.0	0.0	0.00	0.00	0.00
Ramsey Sand									
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
NUDGE - Build 2.00									
2,100.0	2.00	142.38	2,100.0	-1.4	1.1	-1.4	2.00	2.00	0.00
2,200.0	4.00	142.38	2,199.8	-5.5	4.3	-5.5	2.00	2.00	0.00
2,250.0	5.00	142.38	2,249.7	-8.6	6.7	-8.6	2.00	2.00	0.00
HOLD - 2113.7 at 2250.0 MD									
2,300.0	5.00	142.38	2,299.5	-12.1	9.3	-12.1	0.00	0.00	0.00
2,400.0	5.00	142.38	2,399.1	-19.0	14.6	-19.0	0.00	0.00	0.00
2,500.0	5.00	142.38	2,498.7	-25.9	20.0	-25.9	0.00	0.00	0.00
2,600.0	5.00	142.38	2,598.4	-32.8	25.3	-32.8	0.00	0.00	0.00
2,626.8	5.00	142.38	2,625.0	-34.6	26.7	-34.6	0.00	0.00	0.00
Cherry Canyon									
2,700.0	5.00	142.38	2,698.0	-39.7	30.6	-39.7	0.00	0.00	0.00
2,800.0	5.00	142.38	2,797.6	-46.6	35.9	-46.6	0.00	0.00	0.00
2,900.0	5.00	142.38	2,897.2	-53.5	41.2	-53.5	0.00	0.00	0.00
3,000.0	5.00	142.38	2,996.8	-60.4	46.6	-60.4	0.00	0.00	0.00
3,100.0	5.00	142.38	3,096.4	-67.3	51.9	-67.3	0.00	0.00	0.00
3,200.0	5.00	142.38	3,196.1	-74.2	57.2	-74.2	0.00	0.00	0.00
3,300.0	5.00	142.38	3,295.7	-81.1	62.5	-81.0	0.00	0.00	0.00



Intrepid Planning Report



Database:	EDM 5000.15 Single User Db	Local Co-ordinate Reference:	Well Miso State #164H
Company:	Tap Rock Resources, LLC	TVD Reference:	KB @ 3637.0usft
Project:	Eddy County, NM (NAD 83 NME)	MD Reference:	KB @ 3637.0usft
Site:	(Miso State) Sec-2_T-26-S_R-25-E	North Reference:	Grid
Well:	Miso State #164H	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)
3,400.0	5.00	142.38	3,395.3	-88.0	67.8	-87.9	0.00	0.00	0.00
3,500.0	5.00	142.38	3,494.9	-94.9	73.2	-94.8	0.00	0.00	0.00
3,600.0	5.00	142.38	3,594.5	-101.8	78.5	-101.7	0.00	0.00	0.00
3,620.5	5.00	142.38	3,615.0	-103.2	79.6	-103.2	0.00	0.00	0.00
Brushy Canyon									
3,700.0	5.00	142.38	3,694.2	-108.7	83.8	-108.6	0.00	0.00	0.00
3,800.0	5.00	142.38	3,793.8	-115.6	89.1	-115.5	0.00	0.00	0.00
3,900.0	5.00	142.38	3,893.4	-122.5	94.4	-122.4	0.00	0.00	0.00
4,000.0	5.00	142.38	3,993.0	-129.4	99.8	-129.3	0.00	0.00	0.00
4,100.0	5.00	142.38	4,092.6	-136.3	105.1	-136.2	0.00	0.00	0.00
4,200.0	5.00	142.38	4,192.3	-143.2	110.4	-143.1	0.00	0.00	0.00
4,300.0	5.00	142.38	4,291.9	-150.1	115.7	-150.0	0.00	0.00	0.00
4,363.7	5.00	142.38	4,355.3	-154.5	119.1	-154.4	0.00	0.00	0.00
DROP - -2.00									
4,400.0	4.27	142.38	4,391.5	-156.9	120.9	-156.7	2.00	-2.00	0.00
4,500.0	2.27	142.38	4,491.4	-161.4	124.4	-161.3	2.00	-2.00	0.00
4,600.0	0.27	142.38	4,591.3	-163.1	125.7	-163.0	2.00	-2.00	0.00
4,613.7	0.00	360.00	4,605.0	-163.2	125.8	-163.0	2.00	-2.00	0.00
HOLD - 3227.1 at 4613.7 MD									
4,700.0	0.00	0.00	4,691.3	-163.2	125.8	-163.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,791.3	-163.2	125.8	-163.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,891.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,000.0	0.00	0.00	4,991.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,091.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,191.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,243.7	0.00	0.00	5,235.0	-163.2	125.8	-163.0	0.00	0.00	0.00
Bone Spring Lime									
5,300.0	0.00	0.00	5,291.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,323.7	0.00	0.00	5,315.0	-163.2	125.8	-163.0	0.00	0.00	0.00
Upper Avalon									
5,400.0	0.00	0.00	5,391.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,491.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,591.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,673.7	0.00	0.00	5,665.0	-163.2	125.8	-163.0	0.00	0.00	0.00
Middle Avalon									
5,700.0	0.00	0.00	5,691.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,791.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,891.3	-163.2	125.8	-163.0	0.00	0.00	0.00
5,993.7	0.00	0.00	5,985.0	-163.2	125.8	-163.0	0.00	0.00	0.00
Lower Avalon									
6,000.0	0.00	0.00	5,991.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,091.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,128.7	0.00	0.00	6,120.0	-163.2	125.8	-163.0	0.00	0.00	0.00
1st Bone Spring Sand									
6,200.0	0.00	0.00	6,191.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,291.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,333.7	0.00	0.00	6,325.0	-163.2	125.8	-163.0	0.00	0.00	0.00
2nd Bone Spring Carb									
6,400.0	0.00	0.00	6,391.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,491.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,591.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,691.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,708.7	0.00	0.00	6,700.0	-163.2	125.8	-163.0	0.00	0.00	0.00



Intrepid Planning Report



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Site:	(Miso State) Sec-2_T-26-S_R-25-E	North Reference:	Grid
Well:	Miso State #164H	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)
2nd Bone Spring Sand									
6,800.0	0.00	0.00	6,791.3	-163.2	125.8	-163.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,891.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,000.0	0.00	0.00	6,991.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,091.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,138.7	0.00	0.00	7,130.0	-163.2	125.8	-163.0	0.00	0.00	0.00
3rd Bone Spring Carb									
7,200.0	0.00	0.00	7,191.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,291.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,391.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,491.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,591.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,691.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,791.3	-163.2	125.8	-163.0	0.00	0.00	0.00
7,840.8	0.00	0.00	7,832.1	-163.2	125.8	-163.0	0.00	0.00	0.00
KOP - DLS 10.00 TFO 0.06									
7,850.0	0.92	0.06	7,841.3	-163.1	125.8	-163.0	10.00	10.00	0.00
7,900.0	5.92	0.06	7,891.2	-160.1	125.8	-160.0	10.00	10.00	0.00
7,950.0	10.92	0.06	7,940.7	-152.8	125.8	-152.7	10.00	10.00	0.00
7,959.5	11.87	0.06	7,950.0	-150.9	125.8	-150.8	10.00	10.00	0.00
3rd Bone Spring Sand									
8,000.0	15.92	0.06	7,989.3	-141.2	125.8	-141.1	10.00	10.00	0.00
8,050.0	20.92	0.06	8,036.7	-125.4	125.8	-125.3	10.00	10.00	0.00
8,100.0	25.92	0.06	8,082.6	-105.5	125.8	-105.4	10.00	10.00	0.00
8,150.0	30.92	0.06	8,126.5	-81.7	125.8	-81.6	10.00	10.00	0.00
8,200.0	35.92	0.06	8,168.2	-54.2	125.9	-54.1	10.00	10.00	0.00
8,250.0	40.92	0.06	8,207.4	-23.1	125.9	-23.0	10.00	10.00	0.00
8,253.4	41.27	0.06	8,210.0	-20.9	125.9	-20.7	10.00	10.00	0.00
3rd BS W Sand									
8,300.0	45.92	0.06	8,243.7	11.2	125.9	11.3	10.00	10.00	0.00
8,350.0	50.92	0.06	8,276.9	48.6	126.0	48.7	10.00	10.00	0.00
8,379.7	53.89	0.06	8,295.0	72.1	126.0	72.3	10.00	10.00	0.00
Wolfcamp A X Sand									
8,400.0	55.92	0.06	8,306.7	88.7	126.0	88.9	10.00	10.00	0.00
8,450.0	60.92	0.06	8,332.8	131.3	126.1	131.5	10.00	10.00	0.00
8,500.0	65.92	0.06	8,355.2	176.0	126.1	176.2	10.00	10.00	0.00
8,550.0	70.92	0.06	8,373.6	222.5	126.2	222.6	10.00	10.00	0.00
8,570.7	72.99	0.06	8,380.0	242.2	126.2	242.3	10.00	10.00	0.00
Wolfcamp A Y Sand									
8,600.0	75.92	0.06	8,387.8	270.4	126.2	270.6	10.00	10.00	0.00
8,650.0	80.92	0.06	8,397.9	319.4	126.3	319.5	10.00	10.00	0.00
8,700.0	85.92	0.06	8,403.6	369.0	126.3	369.2	10.00	10.00	0.00
8,735.0	89.42	0.06	8,405.0	404.0	126.4	404.1	10.00	10.00	0.00
EOC - 4453.2 hold at 8735.0 MD									
8,800.0	89.42	0.06	8,405.7	469.0	126.4	469.1	0.00	0.00	0.00
8,900.0	89.42	0.06	8,406.7	569.0	126.5	569.1	0.00	0.00	0.00
9,000.0	89.42	0.06	8,407.7	669.0	126.6	669.1	0.00	0.00	0.00
9,100.0	89.42	0.06	8,408.7	769.0	126.7	769.1	0.00	0.00	0.00
9,200.0	89.42	0.06	8,409.7	869.0	126.8	869.1	0.00	0.00	0.00
9,300.0	89.42	0.06	8,410.7	969.0	126.9	969.1	0.00	0.00	0.00
9,400.0	89.42	0.06	8,411.7	1,069.0	127.0	1,069.1	0.00	0.00	0.00
9,500.0	89.42	0.06	8,412.8	1,169.0	127.2	1,169.1	0.00	0.00	0.00
9,600.0	89.42	0.06	8,413.8	1,269.0	127.3	1,269.1	0.00	0.00	0.00



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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)
9,700.0	89.42	0.06	8,414.8	1,369.0	127.4	1,369.1	0.00	0.00	0.00
9,800.0	89.42	0.06	8,415.8	1,469.0	127.5	1,469.1	0.00	0.00	0.00
9,900.0	89.42	0.06	8,416.8	1,568.9	127.6	1,569.1	0.00	0.00	0.00
10,000.0	89.42	0.06	8,417.8	1,668.9	127.7	1,669.1	0.00	0.00	0.00
10,100.0	89.42	0.06	8,418.8	1,768.9	127.8	1,769.1	0.00	0.00	0.00
10,200.0	89.42	0.06	8,419.8	1,868.9	127.9	1,869.1	0.00	0.00	0.00
10,300.0	89.42	0.06	8,420.8	1,968.9	128.0	1,969.1	0.00	0.00	0.00
10,400.0	89.42	0.06	8,421.8	2,068.9	128.1	2,069.1	0.00	0.00	0.00
10,500.0	89.42	0.06	8,422.9	2,168.9	128.2	2,169.1	0.00	0.00	0.00
10,600.0	89.42	0.06	8,423.9	2,268.9	128.3	2,269.0	0.00	0.00	0.00
10,700.0	89.42	0.06	8,424.9	2,368.9	128.4	2,369.0	0.00	0.00	0.00
10,800.0	89.42	0.06	8,425.9	2,468.9	128.5	2,469.0	0.00	0.00	0.00
10,900.0	89.42	0.06	8,426.9	2,568.9	128.6	2,569.0	0.00	0.00	0.00
11,000.0	89.42	0.06	8,427.9	2,668.9	128.7	2,669.0	0.00	0.00	0.00
11,100.0	89.42	0.06	8,428.9	2,768.9	128.8	2,769.0	0.00	0.00	0.00
11,200.0	89.42	0.06	8,429.9	2,868.9	128.9	2,869.0	0.00	0.00	0.00
11,300.0	89.42	0.06	8,430.9	2,968.9	129.0	2,969.0	0.00	0.00	0.00
11,400.0	89.42	0.06	8,431.9	3,068.9	129.1	3,069.0	0.00	0.00	0.00
11,500.0	89.42	0.06	8,433.0	3,168.9	129.2	3,169.0	0.00	0.00	0.00
11,600.0	89.42	0.06	8,434.0	3,268.9	129.3	3,269.0	0.00	0.00	0.00
11,700.0	89.42	0.06	8,435.0	3,368.9	129.4	3,369.0	0.00	0.00	0.00
11,702.9	89.42	0.06	8,435.0	3,371.7	129.4	3,371.9	0.00	0.00	0.00
Wolfcamp A Lower									
11,800.0	89.42	0.06	8,436.0	3,468.9	129.6	3,469.0	0.00	0.00	0.00
11,900.0	89.42	0.06	8,437.0	3,568.8	129.7	3,569.0	0.00	0.00	0.00
12,000.0	89.42	0.06	8,438.0	3,668.8	129.8	3,669.0	0.00	0.00	0.00
12,100.0	89.42	0.06	8,439.0	3,768.8	129.9	3,769.0	0.00	0.00	0.00
12,200.0	89.42	0.06	8,440.0	3,868.8	130.0	3,869.0	0.00	0.00	0.00
12,300.0	89.42	0.06	8,441.0	3,968.8	130.1	3,969.0	0.00	0.00	0.00
12,400.0	89.42	0.06	8,442.0	4,068.8	130.2	4,069.0	0.00	0.00	0.00
12,500.0	89.42	0.06	8,443.0	4,168.8	130.3	4,168.9	0.00	0.00	0.00
12,600.0	89.42	0.06	8,444.1	4,268.8	130.4	4,268.9	0.00	0.00	0.00
12,700.0	89.42	0.06	8,445.1	4,368.8	130.5	4,368.9	0.00	0.00	0.00
12,800.0	89.42	0.06	8,446.1	4,468.8	130.6	4,468.9	0.00	0.00	0.00
12,900.0	89.42	0.06	8,447.1	4,568.8	130.7	4,568.9	0.00	0.00	0.00
13,000.0	89.42	0.06	8,448.1	4,668.8	130.8	4,668.9	0.00	0.00	0.00
13,100.0	89.42	0.06	8,449.1	4,768.8	130.9	4,768.9	0.00	0.00	0.00
13,188.2	89.42	0.06	8,450.0	4,857.0	131.0	4,857.1	0.00	0.00	0.00
TD at 13188.2									



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Site:	(Miso State) Sec-2_T-26-S_R-25-E	North Reference:	Grid
Well:	Miso State #164H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OWB		
Design:	Plan #1		

Design Targets

Target Name

- hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
FTP (Miso State #164 - plan misses target center by 94.7usft at 8433.0usft MD (8324.3 TVD, 116.6 N, 126.1 E) - Point	0.00	360.00	8,405.0	67.0	126.0	387,519.00	532,416.00	32° 3' 55.319 N	104° 21' 43.682 W
PBHL (Miso State #164 - plan hits target center - Rectangle (sides W100.0 H4,790.0 D30.0)	0.58	0.06	8,450.0	4,857.0	131.0	392,309.00	532,421.00	32° 4' 42.722 N	104° 21' 43.639 W
LTP (Miso State #164 - plan misses target center by 1.3usft at 13058.2usft MD (8448.7 TVD, 4727.0 N, 130.9 E) - Point	0.00	360.00	8,450.0	4,727.0	131.0	392,179.00	532,421.00	32° 4' 41.435 N	104° 21' 43.638 W

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
115.0	115.0	Rustler Anhydrite			
490.0	490.0	Top Salt			
1,525.0	1,525.0	Base Salt			
1,730.0	1,730.0	Delaware Mountain Gp			
1,735.0	1,735.0	Lamar			
1,765.0	1,765.0	Bell Canyon			
1,805.0	1,805.0	Ramsey Sand			
2,626.8	2,625.0	Cherry Canyon			
3,620.5	3,615.0	Brushy Canyon			
5,243.7	5,235.0	Bone Spring Lime			
5,323.7	5,315.0	Upper Avalon			
5,673.7	5,665.0	Middle Avalon			
5,993.7	5,985.0	Lower Avalon			
6,128.7	6,120.0	1st Bone Spring Sand			
6,333.7	6,325.0	2nd Bone Spring Carb			
6,708.7	6,700.0	2nd Bone Spring Sand			
7,138.7	7,130.0	3rd Bone Spring Carb			
7,959.5	7,950.0	3rd Bone Spring Sand			
8,253.4	8,210.0	3rd BS W Sand			
8,379.7	8,295.0	Wolfcamp A X Sand			
8,570.7	8,380.0	Wolfcamp A Y Sand			
11,702.9	8,435.0	Wolfcamp A Lower			

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,000.0	2,000.0	0.0	0.0	NUDGE - Build 2.00
2,250.0	2,249.7	-8.6	6.7	HOLD - 2113.7 at 2250.0 MD
4,363.7	4,355.3	-154.5	119.1	DROP - -2.00
4,613.7	4,605.0	-163.2	125.8	HOLD - 3227.1 at 4613.7 MD
7,840.8	7,832.1	-163.2	125.8	KOP - DLS 10.00 TFO 0.06
8,735.0	8,405.0	404.0	126.4	EOC - 4453.2 hold at 8735.0 MD
13,188.2	8,450.0	4,857.0	131.0	TD at 13188.2