



NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 09 2018

RECEIVED

XTO Energy

Eddy County, NM (NAD-27)

Remuda North 31 State

#164H

30-015-45310

OH

Plan: PERMIT Rev1

Standard Planning Report

04 October, 2018

WELL DETAILS: #184H

Rq. Name:	RKB = 30 @ 3245.00usft	3215.00usft
Ground Level:		
Easting	627383.40	
Northing	459327.90	
+E-W	0.00	
+N-S	0.00	

DESIGN TARGET DETAILS

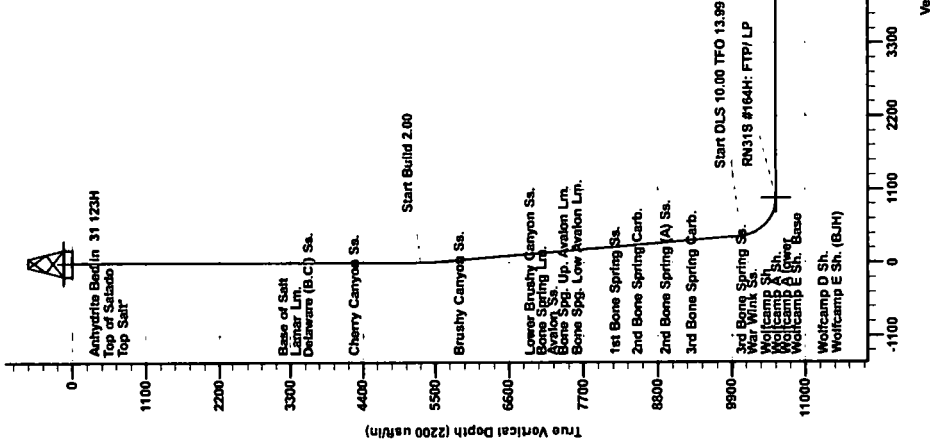
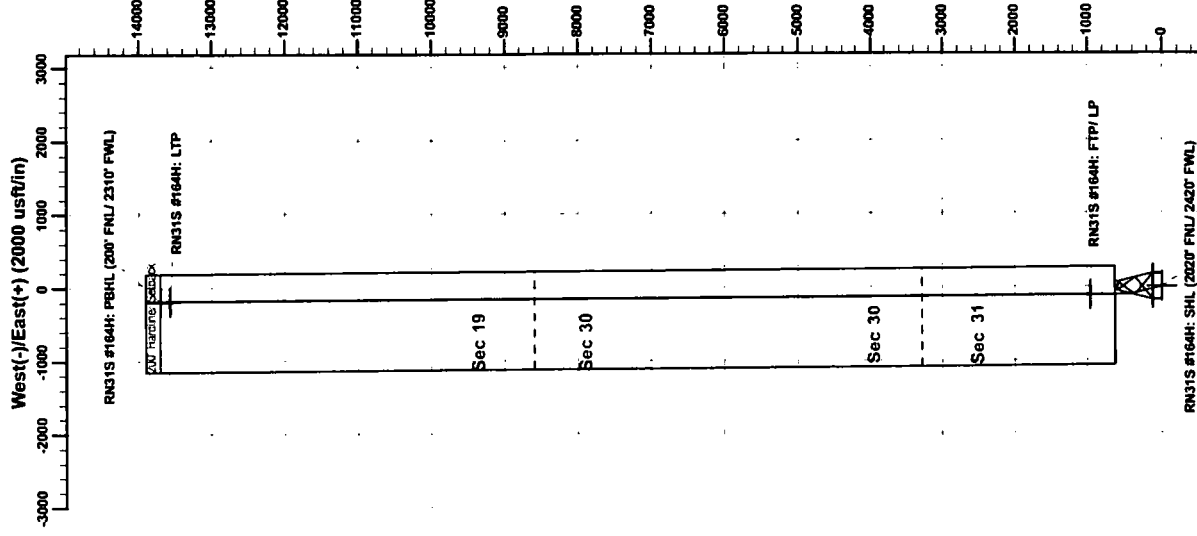
Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude	Shape
RN15 #164H: SHL (200' FNU/ 2420' FWL)	0.00	0.00	0.00	458237.90	627383.40	32.529388	-103.921249	Point
RN15 #164H: PBHL (200' FNU/ 2310' FWL)	10555.00	13703.20	-168.50	472031.10	627186.90	32.527059	-103.921683	Point
RN15 #164H: LTP (LP)	1555.07	13573.70	-185.60	471901.10	627197.80	32.296702	-103.927681	Point
RN15 #164H: FTPI (P)	10542.00	964.00	-114.20	455291.90	627269.20	32.262039	-103.921607	Point

SECTION DETAILS

Sec	MD	Inc	Azi	TWD	N/LS	E/J-W	Dleg	TFace	VSec
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5275.00	0.00	0.00	5275.00	0.00	0.00	0.00	0.00	0.00
3	15524.76	2.00	345.73	15524.76	10.00	0.00	0.00	340.00	100.00
4	15524.76	2.00	345.73	15524.76	39.35	-92.81	0.00	340.00	333.43
5	12929.94	90.03	359.67	10562.80	984.00	114.20	0.00	13.99	984.84
6	231616.34	90.03	359.67	10555.07	13573.70	-185.76	0.00	0.00	13574.04
7	232946.35	90.03	359.67	10555.00	13703.20	-186.50	0.00	0.00	13704.05

FORMATION TOP DETAILS

TVP Path	Formation
450.00	Arthritia Bed in 3123H
500.00	Top of Salt
574.00	Top Salt
3303.00	Base of Salt
3516.00	Lamar Lm.
3545.00	Delaware (B.C.) Ss.
4377.00	Cherry Canyon Ss.
5981.00	Brushy Canyon Ss.
7021.00	Lower Brushy Canyon Ss.
7334.00	Bone Spring Lm.
7397.00	Bone Spring Ss.
7446.00	Bone Spig. Up. Avalon Lm.
7719.00	Bone Spig. Low Avalon Lm.
8284.00	1st Bone Spring Ss.
8611.00	2nd Bone Spring Carb.
9029.00	2nd Bone Spring (A) Ss.
9417.00	3rd Bone Spring Carb.
10185.00	3rd Bone Spring Ss.
10400.00	Wetmore Lm.
10467.00	Red Lm. Ss. Low
10550.00	Wetmore Sh.

South(-)/North(+) (2000 usft/in)

NM OIL CONSERVATION
ARTESIA DISTRICT

OCT 09 2018

Form C-102

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 Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 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

Revised August 1, 2011
Submit one copy to appropriate
District Office

RECEIVED

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number	² Pool Code	³ Pool Name
⁴ Property Code	⁵ Property Name REMUDA NORTH 31 STATE	⁶ Well Number 164H
⁷ OGRID No.	⁸ Operator Name XTO ENERGY, INC.	⁹ Elevation 3,215

¹⁰ Surface Location

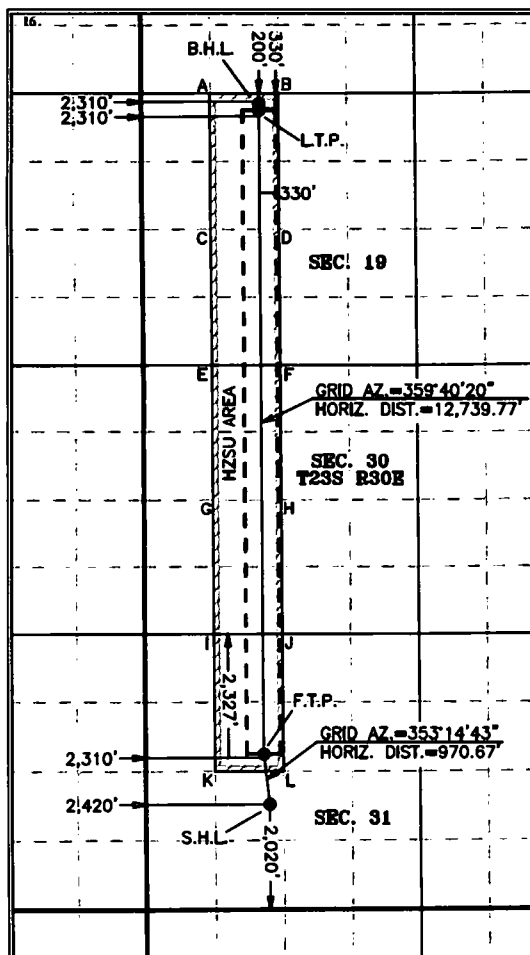
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	31	23 S	30 E		2,020	SOUTH	2,420	WEST	EDDY

¹¹ Bottom 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	19	23 S	30 E		200	NORTH	2,310	WEST	EDDY

¹² Dedicated Acres	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.



GEODETIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y= 458,327.9
X= 627,383.4
LAT.= 32.259388°N
LONG.= 103.921249°W

GEODETIC COORDINATES
NAD 83 NME
SURFACE LOCATION
Y= 458,387.2
X= 668,568.6
LAT.= 32.259511°N
LONG.= 103.921739°W

FIRST TAKE POINT
NAD 27 NME
Y= 459,291.9
X= 627,269.2
LAT.= 32.262039°N
LONG.= 103.921607°W

FIRST TAKE POINT
NAD 83 NME
Y= 459,351.2
X= 668,452.4
LAT.= 32.262182°N
LONG.= 103.922097°W

CORNER COORDINATES TABLE

NAD 27 NME

A - Y= 472,229.0 N, X= 626,232.7 E
B - Y= 472,231.9 N, X= 627,570.8 E
C - Y= 469,572.6 N, X= 626,250.7 E
D - Y= 469,577.0 N, X= 627,589.8 E
E - Y= 466,922.6 N, X= 626,269.9 E
F - Y= 466,925.8 N, X= 627,608.8 E
G - Y= 464,264.1 N, X= 626,285.9 E
H - Y= 464,269.8 N, X= 627,623.9 E
I - Y= 461,615.5 N, X= 626,302.6 E
J - Y= 461,620.3 N, X= 627,639.0 E
K - Y= 458,957.2 N, X= 626,320.6 E
L - Y= 458,963.8 N, X= 627,657.9 E

CORNER COORDINATES TABLE

NAD 83 NME

A - Y= 472,288.8 N, X= 667,415.4 E
B - Y= 472,291.5 N, X= 668,753.5 E
C - Y= 469,632.1 N, X= 667,433.5 E
D - Y= 469,636.5 N, X= 668,772.6 E
E - Y= 466,982.1 N, X= 667,452.8 E
F - Y= 466,985.3 N, X= 668,791.7 E
G - Y= 464,323.5 N, X= 667,468.9 E
H - Y= 464,329.2 N, X= 668,806.9 E
I - Y= 461,674.8 N, X= 667,485.7 E
J - Y= 461,679.8 N, X= 668,822.1 E
K - Y= 459,018.5 N, X= 667,503.8 E
L - Y= 459,023.1 N, X= 668,841.1 E

LAST TAKE POINT
NAD 27 NME
Y= 471,901.1
X= 627,197.8
LAT.= 32.296702°N
LONG.= 103.921881°W

LAST TAKE POINT
NAD 83 NME
Y= 471,960.7
X= 668,380.5
LAT.= 32.296824°N
LONG.= 103.922173°W

BOTTOM HOLE LOCATION
NAD 27 NME
Y= 472,031.1
X= 627,198.9
LAT.= 32.297099°N
LONG.= 103.921883°W

BOTTOM HOLE LOCATION
NAD 83 NME
Y= 472,090.7
X= 668,379.6
LAT.= 32.297181°N
LONG.= 103.922174°W

¹⁷ OPERATOR 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.

Signature _____ Date _____

Printed Name _____

E-mail Address _____

¹⁸ SURVEYOR 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 and correct to the best of my belief.

08-08-2018

Date of Survey

Signature and Seal of Professional Surveyor:

MARK DILLON HARP 23786
Certificate Number



AW 2018081896



www.prototypewellplanning.com
Planning Report

Database: EDM 5000.1 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: Remuda North 31 State
Well: #164H
Wellbore: OH
Design: PERMIT Rev1

Local Co-ordinate Reference: Well #164H
TVD Reference: RKB = 30' @ 3245.00usft
MD Reference: RKB = 30' @ 3245.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Eddy County, NM (NAD-27)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Remuda North 31 State				
Site Position:		Northing:	458,327.90 usft	Latitude:	32.259388
From:	Map	Easting:	627,383.40 usft	Longitude:	-103.921250
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.22 °

Well	#164H					
Well Position	+N/-S	0.00 usft	Northing:	458,327.90 usft	Latitude:	32.259388
	+E/-W	0.00 usft	Easting:	627,383.40 usft	Longitude:	-103.921250
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	3,215.00 usft	

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	9/25/2018	6.98	60.02	47,793

Design	PERMIT Rev1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	359.67	

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5,275.00	0.00	0.01	5,275.00	0.00	0.00	0.00	0.00	0.00	0.01	
5,524.76	5.00	345.73	5,524.45	10.55	-2.68	2.00	2.00	0.00	345.73	
10,055.10	5.00	345.73	10,037.58	392.85	-99.91	0.00	0.00	0.00	0.00	
10,906.94	90.03	359.67	10,562.00	964.00	-114.20	10.00	9.98	1.64	13.99	RN31S #164H: FTF
23,516.34	90.03	359.67	10,555.07	13,573.20	-185.76	0.00	0.00	0.00	0.00	RN31S #164H: LTF
23,646.35	90.03	359.67	10,555.00	13,703.20	-186.50	0.00	0.00	0.00	0.00	RN31S #164H: PBI



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Site: Remuda North 31 State
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Wellbore: OH
Design: PERMIT Rev1

Local Co-ordinate Reference: Well #164H
TVD Reference: RKB = 30' @ 3245.00usft
MD Reference: RKB = 30' @ 3245.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
0.00	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
450.00	0.00	0.00	450.00	0.00	0.00	0.00	0.00	0.00	0.00
Anhydrite Bed in 31 123H									
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
506.00	0.00	0.00	506.00	0.00	0.00	0.00	0.00	0.00	0.00
Top of Salado									
574.00	0.00	0.00	574.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt*									
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,303.00	0.00	0.00	3,303.00	0.00	0.00	0.00	0.00	0.00	0.00
Base of Salt									
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
3,516.00	0.00	0.00	3,516.00	0.00	0.00	0.00	0.00	0.00	0.00
Lamar Lm.									
3,545.00	0.00	0.00	3,545.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware (B.C.) Ss.									
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,800.00	0.00	0.00	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,900.00	0.00	0.00	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00



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 Project: Eddy County, NM (NAD-27)
 Site: Remuda North 31 State
 Well: #164H
 Wellbore: OH
 Design: PERMIT Rev1

Local Co-ordinate Reference: Well #164H
 TVD Reference: RKB = 30' @ 3245.00usft
 MD Reference: RKB = 30' @ 3245.00usft
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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)
4,100.00	0.00	0.00	4,100.00	0.00	0.00	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,200.00	0.00	0.00	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,300.00	0.00	0.00	0.00	0.00	0.00	0.00
4,377.00	0.00	0.00	4,377.00	0.00	0.00	0.00	0.00	0.00	0.00
Cherry Canyon Ss.									
4,400.00	0.00	0.00	4,400.00	0.00	0.00	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,500.00	0.00	0.00	0.00	0.00	0.00	0.00
4,600.00	0.00	0.00	4,600.00	0.00	0.00	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,700.00	0.00	0.00	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,800.00	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	5,000.00	0.00	0.00	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,100.00	0.00	0.00	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,200.00	0.00	0.00	0.00	0.00	0.00	0.00
5,275.00	0.00	0.01	5,275.00	0.00	0.00	0.00	0.00	0.00	0.00
5,300.00	0.50	345.73	5,300.00	0.11	-0.03	0.11	2.00	2.00	0.00
5,400.00	2.50	345.73	5,399.96	2.64	-0.67	2.65	2.00	2.00	0.00
5,500.00	4.50	345.73	5,499.77	8.56	-2.18	8.57	2.00	2.00	0.00
5,524.76	5.00	345.73	5,524.45	10.55	-2.68	10.56	2.00	2.00	0.00
5,600.00	5.00	345.73	5,599.40	16.89	-4.30	16.92	0.00	0.00	0.00
5,700.00	5.00	345.73	5,699.02	25.33	-6.44	25.37	0.00	0.00	0.00
5,800.00	5.00	345.73	5,798.64	33.77	-8.59	33.82	0.00	0.00	0.00
5,900.00	5.00	345.73	5,898.26	42.21	-10.73	42.27	0.00	0.00	0.00
5,983.06	5.00	345.73	5,981.00	49.22	-12.52	49.29	0.00	0.00	0.00
Brushy Canyon Ss.									
6,000.00	5.00	345.73	5,997.88	50.65	-12.88	50.72	0.00	0.00	0.00
6,100.00	5.00	345.73	6,097.50	59.09	-15.03	59.17	0.00	0.00	0.00
6,200.00	5.00	345.73	6,197.12	67.53	-17.17	67.62	0.00	0.00	0.00
6,300.00	5.00	345.73	6,296.74	75.97	-19.32	76.08	0.00	0.00	0.00
6,400.00	5.00	345.73	6,396.36	84.40	-21.47	84.53	0.00	0.00	0.00
6,500.00	5.00	345.73	6,495.98	92.84	-23.61	92.98	0.00	0.00	0.00
6,600.00	5.00	345.73	6,595.60	101.28	-25.76	101.43	0.00	0.00	0.00
6,700.00	5.00	345.73	6,695.22	109.72	-27.90	109.88	0.00	0.00	0.00
6,800.00	5.00	345.73	6,794.84	118.16	-30.05	118.33	0.00	0.00	0.00
6,900.00	5.00	345.73	6,894.46	126.60	-32.20	126.78	0.00	0.00	0.00
7,000.00	5.00	345.73	6,994.08	135.04	-34.34	135.23	0.00	0.00	0.00
7,027.02	5.00	345.73	7,021.00	137.32	-34.92	137.52	0.00	0.00	0.00
Lower Brushy Canyon Ss.									
7,100.00	5.00	345.73	7,093.70	143.48	-36.49	143.68	0.00	0.00	0.00
7,200.00	5.00	345.73	7,193.32	151.91	-38.63	152.13	0.00	0.00	0.00
7,270.95	5.00	345.73	7,264.00	157.90	-40.16	158.13	0.00	0.00	0.00
Bone Spring Lm.									
7,300.00	5.00	345.73	7,292.94	160.35	-40.78	160.59	0.00	0.00	0.00
7,344.23	5.00	345.73	7,337.00	164.09	-41.73	164.32	0.00	0.00	0.00
Avalon Ss.									
7,400.00	5.00	345.73	7,392.56	168.79	-42.93	169.04	0.00	0.00	0.00
7,453.64	5.00	345.73	7,446.00	173.32	-44.08	173.57	0.00	0.00	0.00
Bone Spg. Up. Avalon Lm.									
7,500.00	5.00	345.73	7,492.18	177.23	-45.07	177.49	0.00	0.00	0.00
7,600.00	5.00	345.73	7,591.80	185.67	-47.22	185.94	0.00	0.00	0.00
7,700.00	5.00	345.73	7,691.42	194.11	-49.36	194.39	0.00	0.00	0.00
7,727.68	5.00	345.73	7,719.00	196.44	-49.96	196.73	0.00	0.00	0.00
Bone Spg. Low Avalon Lm.									



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Wellbore: OH
Design: PERMIT Rev1

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Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,800.00	5.00	345.73	7,791.04	202.55	-51.51	202.84	0.00	0.00	0.00
7,900.00	5.00	345.73	7,890.66	210.99	-53.66	211.29	0.00	0.00	0.00
8,000.00	5.00	345.73	7,990.28	219.42	-55.80	219.74	0.00	0.00	0.00
8,100.00	5.00	345.73	8,089.90	227.86	-57.95	228.19	0.00	0.00	0.00
8,200.00	5.00	345.73	8,189.52	236.30	-60.09	236.64	0.00	0.00	0.00
8,294.84	5.00	345.73	8,284.00	244.30	-62.13	244.66	0.00	0.00	0.00
1st Bone Spring Ss.									
8,300.00	5.00	345.73	8,289.14	244.74	-62.24	245.09	0.00	0.00	0.00
8,400.00	5.00	345.73	8,388.76	253.18	-64.39	253.55	0.00	0.00	0.00
8,500.00	5.00	345.73	8,488.38	261.62	-66.53	262.00	0.00	0.00	0.00
8,600.00	5.00	345.73	8,588.00	270.06	-68.68	270.45	0.00	0.00	0.00
8,623.08	5.00	345.73	8,611.00	272.00	-69.17	272.40	0.00	0.00	0.00
2nd Bone Spring Carb.									
8,700.00	5.00	345.73	8,687.62	278.50	-70.83	278.90	0.00	0.00	0.00
8,800.00	5.00	345.73	8,787.24	286.93	-72.97	287.35	0.00	0.00	0.00
8,900.00	5.00	345.73	8,886.86	295.37	-75.12	295.80	0.00	0.00	0.00
9,000.00	5.00	345.73	8,986.48	303.81	-77.26	304.25	0.00	0.00	0.00
9,042.68	5.00	345.73	9,029.00	307.41	-78.18	307.86	0.00	0.00	0.00
2nd Bone Spring (A) Ss.									
9,100.00	5.00	345.73	9,086.10	312.25	-79.41	312.70	0.00	0.00	0.00
9,200.00	5.00	345.73	9,185.72	320.69	-81.56	321.15	0.00	0.00	0.00
9,300.00	5.00	345.73	9,285.35	329.13	-83.70	329.60	0.00	0.00	0.00
9,400.00	5.00	345.73	9,384.97	337.57	-85.85	338.06	0.00	0.00	0.00
9,432.16	5.00	345.73	9,417.00	340.28	-86.54	340.77	0.00	0.00	0.00
3rd Bone Spring Carb.									
9,500.00	5.00	345.73	9,484.59	346.01	-87.99	346.51	0.00	0.00	0.00
9,600.00	5.00	345.73	9,584.21	354.44	-90.14	354.96	0.00	0.00	0.00
9,700.00	5.00	345.73	9,683.83	362.88	-92.29	363.41	0.00	0.00	0.00
9,800.00	5.00	345.73	9,783.45	371.32	-94.43	371.86	0.00	0.00	0.00
9,900.00	5.00	345.73	9,883.07	379.76	-96.58	380.31	0.00	0.00	0.00
10,000.00	5.00	345.73	9,982.69	388.20	-98.72	388.76	0.00	0.00	0.00
10,055.10	5.00	345.73	10,037.58	392.85	-99.91	393.42	0.00	0.00	0.00
10,100.00	9.41	352.38	10,082.11	398.39	-100.88	398.96	10.00	9.84	14.80
10,150.00	14.39	354.96	10,131.02	408.63	-101.96	409.21	10.00	9.95	5.18
10,200.00	19.37	356.24	10,178.85	423.11	-103.05	423.69	10.00	9.97	2.55
10,206.53	20.03	356.36	10,185.00	425.30	-103.20	425.89	10.00	9.98	1.85
3rd Bone Spring Ss.									
10,250.00	24.37	357.01	10,225.24	441.69	-104.14	442.29	10.00	9.98	1.49
10,300.00	29.36	357.53	10,269.83	464.25	-105.20	464.85	10.00	9.99	1.04
10,350.00	34.36	357.91	10,312.29	490.62	-106.25	491.22	10.00	9.99	0.76
10,400.00	39.35	358.20	10,352.28	520.58	-107.26	521.19	10.00	9.99	0.59
10,450.00	44.35	358.44	10,389.51	553.91	-108.24	554.53	10.00	10.00	0.47
10,482.36	47.59	358.57	10,412.00	577.17	-108.84	577.78	10.00	10.00	0.41
War Wink Ss.									
10,500.00	49.35	358.64	10,423.70	590.37	-109.16	590.99	10.00	10.00	0.38
10,550.00	54.35	358.81	10,454.58	629.66	-110.04	630.29	10.00	10.00	0.34
10,600.00	59.35	358.96	10,481.91	671.50	-110.85	672.13	10.00	10.00	0.30
10,631.03	62.45	359.04	10,497.00	698.60	-111.32	699.23	10.00	10.00	0.28
Red Hills Ss. Low									
10,650.00	64.34	359.09	10,505.50	715.57	-111.60	716.20	10.00	10.00	0.26
10,700.00	69.34	359.22	10,525.15	761.52	-112.27	762.15	10.00	10.00	0.25
10,750.00	74.34	359.34	10,540.73	809.01	-112.87	809.65	10.00	10.00	0.23
10,789.14	78.25	359.42	10,550.00	847.03	-113.28	847.66	10.00	10.00	0.22



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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)
Wolfcamp Sh									
10,800.00	79.34	359.45	10,552.11	857.68	-113.39	858.32	10.00	10.00	0.22
10,850.00	84.34	359.55	10,559.21	907.15	-113.82	907.80	10.00	10.00	0.22
10,900.00	89.34	359.66	10,561.96	957.06	-114.16	957.70	10.00	10.00	0.21
10,906.94	90.03	359.67	10,562.00	964.00	-114.20	964.64	10.00	10.00	0.21
11,000.00	90.03	359.67	10,561.95	1,057.06	-114.73	1,057.70	0.00	0.00	0.00
11,100.00	90.03	359.67	10,561.89	1,157.06	-115.30	1,157.70	0.00	0.00	0.00
11,200.00	90.03	359.67	10,561.84	1,257.06	-115.86	1,257.70	0.00	0.00	0.00
11,300.00	90.03	359.67	10,561.78	1,357.05	-116.43	1,357.70	0.00	0.00	0.00
11,400.00	90.03	359.67	10,561.73	1,457.05	-117.00	1,457.70	0.00	0.00	0.00
11,500.00	90.03	359.67	10,561.67	1,557.05	-117.57	1,557.70	0.00	0.00	0.00
11,600.00	90.03	359.67	10,561.62	1,657.05	-118.13	1,657.70	0.00	0.00	0.00
11,700.00	90.03	359.67	10,561.56	1,757.05	-118.70	1,757.70	0.00	0.00	0.00
11,800.00	90.03	359.67	10,561.51	1,857.05	-119.27	1,857.70	0.00	0.00	0.00
11,900.00	90.03	359.67	10,561.45	1,957.05	-119.84	1,957.70	0.00	0.00	0.00
12,000.00	90.03	359.67	10,561.40	2,057.04	-120.40	2,057.70	0.00	0.00	0.00
12,100.00	90.03	359.67	10,561.34	2,157.04	-120.97	2,157.70	0.00	0.00	0.00
12,200.00	90.03	359.67	10,561.29	2,257.04	-121.54	2,257.70	0.00	0.00	0.00
12,300.00	90.03	359.67	10,561.23	2,357.04	-122.11	2,357.70	0.00	0.00	0.00
12,400.00	90.03	359.67	10,561.18	2,457.04	-122.67	2,457.70	0.00	0.00	0.00
12,500.00	90.03	359.67	10,561.12	2,557.04	-123.24	2,557.70	0.00	0.00	0.00
12,600.00	90.03	359.67	10,561.07	2,657.03	-123.81	2,657.70	0.00	0.00	0.00
12,700.00	90.03	359.67	10,561.01	2,757.03	-124.38	2,757.70	0.00	0.00	0.00
12,800.00	90.03	359.67	10,560.96	2,857.03	-124.94	2,857.70	0.00	0.00	0.00
12,900.00	90.03	359.67	10,560.91	2,957.03	-125.51	2,957.70	0.00	0.00	0.00
13,000.00	90.03	359.67	10,560.85	3,057.03	-126.08	3,057.70	0.00	0.00	0.00
13,100.00	90.03	359.67	10,560.80	3,157.03	-126.65	3,157.70	0.00	0.00	0.00
13,200.00	90.03	359.67	10,560.74	3,257.02	-127.21	3,257.70	0.00	0.00	0.00
13,300.00	90.03	359.67	10,560.69	3,357.02	-127.78	3,357.70	0.00	0.00	0.00
13,400.00	90.03	359.67	10,560.63	3,457.02	-128.35	3,457.70	0.00	0.00	0.00
13,500.00	90.03	359.67	10,560.58	3,557.02	-128.92	3,557.70	0.00	0.00	0.00
13,600.00	90.03	359.67	10,560.52	3,657.02	-129.48	3,657.70	0.00	0.00	0.00
13,700.00	90.03	359.67	10,560.47	3,757.02	-130.05	3,757.70	0.00	0.00	0.00
13,800.00	90.03	359.67	10,560.41	3,857.01	-130.62	3,857.70	0.00	0.00	0.00
13,900.00	90.03	359.67	10,560.36	3,957.01	-131.19	3,957.70	0.00	0.00	0.00
14,000.00	90.03	359.67	10,560.30	4,057.01	-131.75	4,057.70	0.00	0.00	0.00
14,100.00	90.03	359.67	10,560.25	4,157.01	-132.32	4,157.70	0.00	0.00	0.00
14,200.00	90.03	359.67	10,560.19	4,257.01	-132.89	4,257.70	0.00	0.00	0.00
14,300.00	90.03	359.67	10,560.14	4,357.01	-133.46	4,357.70	0.00	0.00	0.00
14,400.00	90.03	359.67	10,560.08	4,457.00	-134.02	4,457.70	0.00	0.00	0.00
14,500.00	90.03	359.67	10,560.03	4,557.00	-134.59	4,557.70	0.00	0.00	0.00
14,600.00	90.03	359.67	10,559.97	4,657.00	-135.16	4,657.70	0.00	0.00	0.00
14,700.00	90.03	359.67	10,559.92	4,757.00	-135.73	4,757.70	0.00	0.00	0.00
14,800.00	90.03	359.67	10,559.86	4,857.00	-136.29	4,857.70	0.00	0.00	0.00
14,900.00	90.03	359.67	10,559.81	4,957.00	-136.86	4,957.70	0.00	0.00	0.00
15,000.00	90.03	359.67	10,559.75	5,056.99	-137.43	5,057.70	0.00	0.00	0.00
15,100.00	90.03	359.67	10,559.70	5,156.99	-138.00	5,157.70	0.00	0.00	0.00
15,200.00	90.03	359.67	10,559.64	5,256.99	-138.56	5,257.70	0.00	0.00	0.00
15,300.00	90.03	359.67	10,559.59	5,356.99	-139.13	5,357.70	0.00	0.00	0.00
15,400.00	90.03	359.67	10,559.53	5,456.99	-139.70	5,457.70	0.00	0.00	0.00
15,500.00	90.03	359.67	10,559.48	5,556.99	-140.27	5,557.70	0.00	0.00	0.00
15,600.00	90.03	359.67	10,559.42	5,656.99	-140.83	5,657.70	0.00	0.00	0.00
15,700.00	90.03	359.67	10,559.37	5,756.98	-141.40	5,757.70	0.00	0.00	0.00



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15,800.00	90.03	359.67	10,559.31	5,856.98	-141.97	5,857.70	0.00	0.00	0.00
15,900.00	90.03	359.67	10,559.26	5,956.98	-142.54	5,957.70	0.00	0.00	0.00
16,000.00	90.03	359.67	10,559.20	6,056.98	-143.10	6,057.70	0.00	0.00	0.00
16,100.00	90.03	359.67	10,559.15	6,156.98	-143.67	6,157.70	0.00	0.00	0.00
16,200.00	90.03	359.67	10,559.09	6,256.98	-144.24	6,257.70	0.00	0.00	0.00
16,300.00	90.03	359.67	10,559.04	6,356.97	-144.81	6,357.70	0.00	0.00	0.00
16,400.00	90.03	359.67	10,558.98	6,456.97	-145.37	6,457.70	0.00	0.00	0.00
16,500.00	90.03	359.67	10,558.93	6,556.97	-145.94	6,557.70	0.00	0.00	0.00
16,600.00	90.03	359.67	10,558.87	6,656.97	-146.51	6,657.70	0.00	0.00	0.00
16,700.00	90.03	359.67	10,558.82	6,756.97	-147.08	6,757.70	0.00	0.00	0.00
16,800.00	90.03	359.67	10,558.76	6,856.97	-147.64	6,857.70	0.00	0.00	0.00
16,900.00	90.03	359.67	10,558.71	6,956.96	-148.21	6,957.70	0.00	0.00	0.00
17,000.00	90.03	359.67	10,558.65	7,056.96	-148.78	7,057.70	0.00	0.00	0.00
17,100.00	90.03	359.67	10,558.60	7,156.96	-149.35	7,157.70	0.00	0.00	0.00
17,200.00	90.03	359.67	10,558.54	7,256.96	-149.92	7,257.70	0.00	0.00	0.00
17,300.00	90.03	359.67	10,558.49	7,356.96	-150.48	7,357.70	0.00	0.00	0.00
17,400.00	90.03	359.67	10,558.43	7,456.96	-151.05	7,457.70	0.00	0.00	0.00
17,500.00	90.03	359.67	10,558.38	7,556.95	-151.62	7,557.70	0.00	0.00	0.00
17,600.00	90.03	359.67	10,558.32	7,656.95	-152.19	7,657.70	0.00	0.00	0.00
17,700.00	90.03	359.67	10,558.27	7,756.95	-152.75	7,757.70	0.00	0.00	0.00
17,800.00	90.03	359.67	10,558.21	7,856.95	-153.32	7,857.70	0.00	0.00	0.00
17,900.00	90.03	359.67	10,558.16	7,956.95	-153.89	7,957.70	0.00	0.00	0.00
18,000.00	90.03	359.67	10,558.10	8,056.95	-154.46	8,057.70	0.00	0.00	0.00
18,100.00	90.03	359.67	10,558.05	8,156.94	-155.02	8,157.70	0.00	0.00	0.00
18,200.00	90.03	359.67	10,557.99	8,256.94	-155.59	8,257.70	0.00	0.00	0.00
18,300.00	90.03	359.67	10,557.94	8,356.94	-156.16	8,357.70	0.00	0.00	0.00
18,400.00	90.03	359.67	10,557.88	8,456.94	-156.73	8,457.70	0.00	0.00	0.00
18,500.00	90.03	359.67	10,557.83	8,556.94	-157.29	8,557.70	0.00	0.00	0.00
18,600.00	90.03	359.67	10,557.77	8,656.94	-157.86	8,657.70	0.00	0.00	0.00
18,700.00	90.03	359.67	10,557.72	8,756.93	-158.43	8,757.70	0.00	0.00	0.00
18,800.00	90.03	359.67	10,557.66	8,856.93	-159.00	8,857.70	0.00	0.00	0.00
18,900.00	90.03	359.67	10,557.61	8,956.93	-159.56	8,957.70	0.00	0.00	0.00
19,000.00	90.03	359.67	10,557.55	9,056.93	-160.13	9,057.70	0.00	0.00	0.00
19,100.00	90.03	359.67	10,557.50	9,156.93	-160.70	9,157.70	0.00	0.00	0.00
19,200.00	90.03	359.67	10,557.44	9,256.93	-161.27	9,257.70	0.00	0.00	0.00
19,300.00	90.03	359.67	10,557.39	9,356.93	-161.83	9,357.70	0.00	0.00	0.00
19,400.00	90.03	359.67	10,557.33	9,456.92	-162.40	9,457.70	0.00	0.00	0.00
19,500.00	90.03	359.67	10,557.28	9,556.92	-162.97	9,557.70	0.00	0.00	0.00
19,600.00	90.03	359.67	10,557.22	9,656.92	-163.54	9,657.70	0.00	0.00	0.00
19,700.00	90.03	359.67	10,557.17	9,756.92	-164.10	9,757.70	0.00	0.00	0.00
19,800.00	90.03	359.67	10,557.11	9,856.92	-164.67	9,857.70	0.00	0.00	0.00
19,900.00	90.03	359.67	10,557.06	9,956.92	-165.24	9,957.70	0.00	0.00	0.00
20,000.00	90.03	359.67	10,557.00	10,056.91	-165.81	10,057.70	0.00	0.00	0.00
20,100.00	90.03	359.67	10,556.95	10,156.91	-166.37	10,157.70	0.00	0.00	0.00
20,200.00	90.03	359.67	10,556.89	10,256.91	-166.94	10,257.70	0.00	0.00	0.00
20,300.00	90.03	359.67	10,556.84	10,356.91	-167.51	10,357.70	0.00	0.00	0.00
20,400.00	90.03	359.67	10,556.78	10,456.91	-168.08	10,457.70	0.00	0.00	0.00
20,500.00	90.03	359.67	10,556.73	10,556.91	-168.64	10,557.70	0.00	0.00	0.00
20,600.00	90.03	359.67	10,556.67	10,656.90	-169.21	10,657.70	0.00	0.00	0.00
20,700.00	90.03	359.67	10,556.62	10,756.90	-169.78	10,757.70	0.00	0.00	0.00
20,800.00	90.03	359.67	10,556.56	10,856.90	-170.35	10,857.70	0.00	0.00	0.00
20,900.00	90.03	359.67	10,556.51	10,956.90	-170.91	10,957.70	0.00	0.00	0.00
21,000.00	90.03	359.67	10,556.45	11,056.90	-171.48	11,057.70	0.00	0.00	0.00
21,100.00	90.03	359.67	10,556.40	11,156.90	-172.05	11,157.70	0.00	0.00	0.00



www.prototypewellplanning.com
Planning Report

Database: EDM 5000.1 Single User Db
Company: XTO Energy
Project: Eddy County, NM (NAD-27)
Site: Remuda North 31 State
Well: #164H
Wellbore: OH
Design: PERMIT Rev1

Local Co-ordinate Reference: Well #164H
TVD Reference: RKB = 30' @ 3245.00usft
MD Reference: RKB = 30' @ 3245.00usft
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
21,200.00	90.03	359.67	10,556.34	11,256.89	-172.62	11,257.70	0.00	0.00	0.00
21,300.00	90.03	359.67	10,556.29	11,356.89	-173.18	11,357.70	0.00	0.00	0.00
21,400.00	90.03	359.67	10,556.23	11,456.89	-173.75	11,457.70	0.00	0.00	0.00
21,500.00	90.03	359.67	10,556.18	11,556.89	-174.32	11,557.70	0.00	0.00	0.00
21,600.00	90.03	359.67	10,556.12	11,656.89	-174.89	11,657.70	0.00	0.00	0.00
21,700.00	90.03	359.67	10,556.07	11,756.89	-175.45	11,757.70	0.00	0.00	0.00
21,800.00	90.03	359.67	10,556.01	11,856.88	-176.02	11,857.70	0.00	0.00	0.00
21,900.00	90.03	359.67	10,555.96	11,956.88	-176.59	11,957.70	0.00	0.00	0.00
22,000.00	90.03	359.67	10,555.90	12,056.88	-177.16	12,057.70	0.00	0.00	0.00
22,100.00	90.03	359.67	10,555.85	12,156.88	-177.72	12,157.70	0.00	0.00	0.00
22,200.00	90.03	359.67	10,555.79	12,256.88	-178.29	12,257.70	0.00	0.00	0.00
22,300.00	90.03	359.67	10,555.74	12,356.88	-178.86	12,357.70	0.00	0.00	0.00
22,400.00	90.03	359.67	10,555.69	12,456.87	-179.43	12,457.70	0.00	0.00	0.00
22,500.00	90.03	359.67	10,555.63	12,556.87	-179.99	12,557.70	0.00	0.00	0.00
22,600.00	90.03	359.67	10,555.58	12,656.87	-180.56	12,657.70	0.00	0.00	0.00
22,700.00	90.03	359.67	10,555.52	12,756.87	-181.13	12,757.70	0.00	0.00	0.00
22,800.00	90.03	359.67	10,555.47	12,856.87	-181.70	12,857.70	0.00	0.00	0.00
22,900.00	90.03	359.67	10,555.41	12,956.87	-182.26	12,957.70	0.00	0.00	0.00
23,000.00	90.03	359.67	10,555.36	13,056.87	-182.83	13,057.70	0.00	0.00	0.00
23,100.00	90.03	359.67	10,555.30	13,156.86	-183.40	13,157.70	0.00	0.00	0.00
23,200.00	90.03	359.67	10,555.25	13,256.86	-183.97	13,257.70	0.00	0.00	0.00
23,300.00	90.03	359.67	10,555.19	13,356.86	-184.53	13,357.70	0.00	0.00	0.00
23,400.00	90.03	359.67	10,555.14	13,456.86	-185.10	13,457.70	0.00	0.00	0.00
23,500.00	90.03	359.67	10,555.08	13,556.86	-185.67	13,557.70	0.00	0.00	0.00
23,516.34	90.03	359.67	10,555.07	13,573.20	-185.76	13,574.04	0.00	0.00	0.00
23,600.00	90.03	359.67	10,555.03	13,656.86	-186.24	13,657.70	0.00	0.00	0.00
23,646.35	90.03	359.67	10,555.00	13,703.20	-186.50	13,704.05	0.00	0.00	0.00

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
RN31S #164H: SHL (;	0.00	0.01	0.00	0.00	0.00	458,327.90	627,383.40	32.259388	-103.921250
- plan hits target center									
- Point									
RN31S #164H: PBHL	0.00	0.01	10,555.00	13,703.20	-186.50	472,031.10	627,196.90	32.297059	-103.921683
- plan hits target center									
- Point									
RN31S #164H: LTP	0.00	0.01	10,555.07	13,573.20	-185.60	471,901.10	627,197.80	32.296702	-103.921682
- plan misses target center by 0.16usft at 23516.34usft MD (10555.07 TVD, 13573.20 N, -185.76 E)									
- Point									
RN31S #164H: FTP/ I	0.00	0.01	10,562.00	964.00	-114.20	459,291.90	627,269.20	32.262039	-103.921607
- plan hits target center									
- Point									



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North Reference: Grid
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
450.00	450.00	Anhydrite Bed in 31 123H			
506.00	506.00	Top of Salado			
574.00	574.00	Top Salt*			
3,303.00	3,303.00	Base of Salt			
3,516.00	3,516.00	Lamar Lm.			
3,545.00	3,545.00	Delaware (B.C.) Ss.			
4,377.00	4,377.00	Cherry Canyon Ss.			
5,983.06	5,981.00	Brushy Canyon Ss.			
7,027.02	7,021.00	Lower Brushy Canyon Ss.			
7,270.95	7,264.00	Bone Spring Lm.			
7,344.23	7,337.00	Avalon Ss.			
7,453.64	7,446.00	Bone Spg. Up. Avalon Lm.			
7,727.68	7,719.00	Bone Spg. Low Avalon Lm.			
8,294.84	8,284.00	1st Bone Spring Ss.			
8,623.08	8,611.00	2nd Bone Spring Carb.			
9,042.68	9,029.00	2nd Bone Spring (A) Ss.			
9,432.16	9,417.00	3rd Bone Spring Carb.			
10,206.53	10,185.00	3rd Bone Spring Ss.			
10,482.36	10,412.00	War Wink Ss.			
10,631.03	10,497.00	Red Hills Ss. Low			
10,789.14	10,550.00	Wolfcamp Sh			