



NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 05 2019

RECEIVED

XTO Energy

Eddy County, NM (NAD-27)

Lone Watie 32 State

#168H DD

Wellbore #1

30-015-45772

Plan: PERMIT

Standard Planning Report

26 February, 2019



Project: Eddy County, NM (NAD-27)
Site: LWS Well 32 State
Well: #168H DD
Wellbore: Wellbore #1
Design: PERMIT

PROJECT DETAILS: Eddy County, NM (NAD-27)
Geodetic System: US State Plane 1927 (Edd. edition)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level

DESIGN TARGET DETAILS

Name	MD	LOG	ASL	TVD	+E/W	+N/S	TVD	+E/W	Northing	Eastng	Latitude	Longitude	Shape
#168H: SHL (338' FNU/ 685' FEL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	Point
#168H: LPI/FTP	2500.00	0.00	0.00	0.00	0.00	0.00	10980.00	0.00	397536.50	603345.00	32.092504	-103.998622	Point
#168H: LTP	2500.00	0.00	0.00	0.00	0.00	0.00	11031.45	0.00	397536.50	603345.00	32.092504	-103.998622	Point
#168H: PBHL (200' FSU/ 330' FEL)	11032.36	0.00	0.00	11032.36	-4774.30	-4774.30	11032.36	0.00	397536.50	603345.00	32.092504	-103.998622	Point

WELL DETAILS: #168H DD

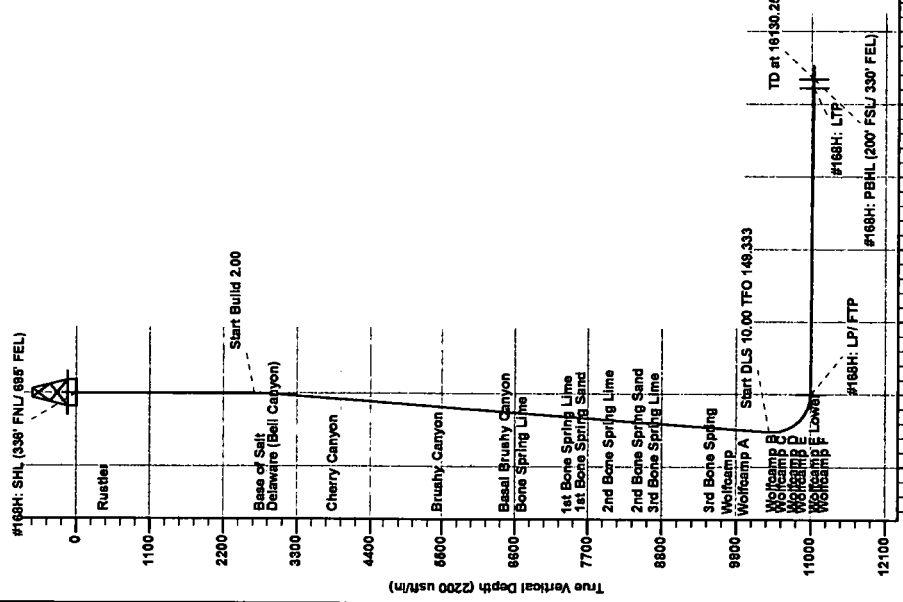
+N/S	+E/W	Northing	Eastng	Latitude	Longitude
0.00	0.00	397536.50	603345.00	32.092504	-103.998622

SECTION DETAILS

Sec	MD	LOG	ASL	TVD	+E/W	+N/S	TVD	+E/W	Northing	Eastng	Latitude	Longitude	VSect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	0.00
2	2500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	0.00
3	2500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	0.00
4	2500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	0.00
5	2500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	0.00
6	2500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	0.00
7	2500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	397536.50	603345.00	32.092504	-103.998622	0.00

FORMATION TOP DETAILS

TVDPath	Formation
526.00	Rustler
2866.00	Base of Salt
3056.00	Delaware (Bell Canyon)
3951.00	Cherry Canyon
5546.00	Brushy Canyon
6562.00	Basal Brushy Canyon
9222.00	1st Bone Spring Lime
9222.00	1st Bone Spring Sand
7703.00	2nd Bone Spring Lime
8123.00	2nd Bone Spring Sand
8562.00	3rd Bone Spring Lime
8601.00	3rd Bone Spring Sand
9623.00	Wolfcamp
9698.00	Wolfcamp A
10128.00	Wolfcamp B
10436.00	Wolfcamp C
10581.00	Wolfcamp D
10581.00	Wolfcamp E
10983.00	Wolfcamp F



Vertical Section at 180.05° (2200 usft/in)

The customer should only rely on this document after independently verifying all paths, depths, coordinates, time and hard time represented. Any errors or omissions are the sole risk and responsibility of the customer.

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: (505) 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

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 30-015-	² Pool Code	³ Pool Name
⁴ Property Code	⁵ Property Name LONE WATIE 32 STATE	⁶ Well Number 168H
⁷ OGRID No. 005380	⁸ Operator Name XTO ENERGY, INC.	⁹ Elevation 2,980'

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
A	32	25 S	29 E		336	NORTH	695	EAST	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
P	32	25 S	29 E		200	SOUTH	330	EAST	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.

	16 SEC. 29 A S.H.L. GRID AZ.=89°19'43" HORIZ. DIST.=365.35' SEC. 32 T26S R29E GRID AZ.=180°02'58" HORIZ. DIST.=4,778.69' C 330' L.T.P. SEC. 5 T26S R29E	SEC. 28 B F.T.P. 330' 695' 330' 330' 200' B.H.L. SEC. 33 D 330' 330' SEC. 4 F	SURFACE LOCATION NAD 27 NME Y= 397,538.5 X= 803,345.0 LAT.= 32.092504°N LONG.= 103.998622°W FIRST TAKE POINT NAD 27 NME Y= 397,540.8 X= 803,710.3 LAT.= 32.092513°N LONG.= 103.998442°W CORNER COORDINATES TABLE NAD 27 NME A - Y= 397,875.5 N, X= 802,718.1 E B - Y= 397,869.2 N, X= 804,040.7 E C - Y= 395,218.7 N, X= 802,710.6 E D - Y= 395,218.1 N, X= 804,037.9 E E - Y= 392,558.1 N, X= 802,703.5 E F - Y= 392,563.5 N, X= 804,035.9 E CORNER COORDINATES TABLE NAD 83 NME A - Y= 397,933.8 N, X= 843,802.8 E B - Y= 397,927.3 N, X= 845,225.4 E C - Y= 395,278.7 N, X= 843,895.4 E D - Y= 395,278.1 N, X= 845,222.7 E E - Y= 392,816.1 N, X= 843,888.3 E F - Y= 392,821.5 N, X= 845,220.8 E SURFACE LOCATION NAD 83 NME Y= 397,594.8 X= 844,529.7 LAT.= 32.092629°N LONG.= 104.000108°W FIRST TAKE POINT NAD 83 NME Y= 397,598.9 X= 844,895.0 LAT.= 32.092637°N LONG.= 103.998928°W	LAST TAKE POINT NAD 27 NME Y= 392,892.2 X= 803,708.2 LAT.= 32.079734°N LONG.= 103.998502°W BOTTOM HOLE LOCATION NAD 27 NME Y= 392,782.2 X= 803,708.2 LAT.= 32.079377°N LONG.= 103.998504°W LAST TAKE POINT NAD 83 NME Y= 392,950.2 X= 844,891.0 LAT.= 32.079859°N LONG.= 103.998987°W BOTTOM HOLE LOCATION NAD 83 NME Y= 392,820.2 X= 844,891.0 LAT.= 32.079501°N LONG.= 103.998989°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. 02-22-2019 Date of Survey Signature and Seal of Professional Surveyor: MARK DILLON HARP 23786 Certificate Number AI 2019010140
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Database: EDM 5000.1 Single User Db
 Company: XTO Energy
 Project: Eddy County, NM (NAD-27)
 Site: Lone Watie 32 State
 Well: #168H DD
 Wellbore: Wellbore #1
 Design: PERMIT

Local Co-ordinate Reference: Well #168H DD
 TVD Reference: GL @ 2980.00usft
 MD Reference: GL @ 2980.00usft
 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	Lone Watie 32 State			
Site Position:		Northing:	397,536.50 usft	Latitude: 32.092504
From:	Map	Easting:	603,345.00 usft	Longitude: -103.999622
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence: 0.177 °

Well	#168H DD			
Well Position	+N/-S	0.00 usft	Northing:	397,536.50 usft
	+E/-W	0.00 usft	Easting:	603,345.00 usft
Position Uncertainty	0.00 usft		Wellhead Elevation:	0.00 usft
			Ground Level:	2,980.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	2/26/2019	6.959	59.852	47,644

Design	PERMIT			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	180.05

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Bulld 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	0.000	
2,660.00	0.00	0.00	2,660.00	0.00	0.00	0.00	0.00	0.00	0.000	
2,909.86	5.00	30.64	2,909.54	9.37	5.55	2.00	2.00	0.00	30.638	
10,412.53	5.00	30.64	10,383.69	571.67	338.60	0.00	0.00	0.00	0.000	
11,351.54	89.60	180.05	10,999.00	4.30	365.30	10.00	9.01	15.91	149.333	#168H: LP/ FTP
16,000.25	89.60	180.05	11,031.45	-4,644.30	361.31	0.00	0.00	0.00	0.000	#168H: LTP
16,130.25	89.60	180.05	11,032.36	-4,774.30	361.20	0.00	0.00	0.00	0.000	#168H: PBHL (200'



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 Site: Lone Watie 32 State
 Well: #168H DD
 Wellbore: Wellbore #1
 Design: PERMIT

Local Co-ordinate Reference: Well #168H DD
 TVD Reference: GL @ 2980.00usft
 MD Reference: GL @ 2980.00usft
 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
#168H: SHL (336' FNL/ 696' FEL)									
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
526.00	0.00	0.00	526.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
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
2,660.00	0.00	0.00	2,660.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.80	30.64	2,700.00	0.24	0.14	-0.24	2.00	2.00	0.00
2,800.00	2.80	30.64	2,799.94	2.94	1.74	-2.94	2.00	2.00	0.00
2,866.18	4.12	30.64	2,866.00	6.38	3.78	-6.38	2.00	2.00	0.00
Base of Salt									
2,909.86	5.00	30.64	2,909.54	9.37	5.55	-9.37	2.00	2.00	0.00
3,000.00	5.00	30.64	2,999.34	16.12	9.55	-16.13	0.00	0.00	0.00
3,056.88	5.00	30.64	3,056.00	20.39	12.08	-20.40	0.00	0.00	0.00
Delaware (Bell Canyon)									
3,100.00	5.00	30.64	3,098.96	23.62	13.99	-23.63	0.00	0.00	0.00
3,200.00	5.00	30.64	3,198.58	31.11	18.43	-31.13	0.00	0.00	0.00
3,300.00	5.00	30.64	3,298.20	38.61	22.87	-38.63	0.00	0.00	0.00
3,400.00	5.00	30.64	3,397.82	46.10	27.31	-46.13	0.00	0.00	0.00
3,500.00	5.00	30.64	3,497.44	53.60	31.75	-53.63	0.00	0.00	0.00
3,600.00	5.00	30.64	3,597.06	61.09	36.19	-61.12	0.00	0.00	0.00
3,700.00	5.00	30.64	3,696.68	68.59	40.62	-68.62	0.00	0.00	0.00
3,800.00	5.00	30.64	3,796.30	76.08	45.06	-76.12	0.00	0.00	0.00
3,900.00	5.00	30.64	3,895.92	83.58	49.50	-83.62	0.00	0.00	0.00
3,955.29	5.00	30.64	3,951.00	87.72	51.96	-87.77	0.00	0.00	0.00
Cherry Canyon									
4,000.00	5.00	30.64	3,995.54	91.07	53.94	-91.12	0.00	0.00	0.00
4,100.00	5.00	30.64	4,095.16	98.57	58.38	-98.62	0.00	0.00	0.00
4,200.00	5.00	30.64	4,194.78	106.06	62.82	-106.12	0.00	0.00	0.00
4,300.00	5.00	30.64	4,294.40	113.56	67.26	-113.61	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)
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Well: #168H DD
Wellbore: Wellbore #1
Design: PERMIT

Local Co-ordinate Reference: Well #168H DD
TVD Reference: GL @ 2980.00usft
MD Reference: GL @ 2980.00usft
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)
4,400.00	5.00	30.64	4,394.02	121.05	71.70	-121.11	0.00	0.00	0.00
4,500.00	5.00	30.64	4,493.64	128.55	76.14	-128.61	0.00	0.00	0.00
4,600.00	5.00	30.64	4,593.26	136.04	80.58	-136.11	0.00	0.00	0.00
4,700.00	5.00	30.64	4,692.88	143.53	85.02	-143.61	0.00	0.00	0.00
4,800.00	5.00	30.64	4,792.50	151.03	89.45	-151.11	0.00	0.00	0.00
4,900.00	5.00	30.64	4,892.12	158.52	93.89	-158.61	0.00	0.00	0.00
5,000.00	5.00	30.64	4,991.74	166.02	98.33	-166.10	0.00	0.00	0.00
5,100.00	5.00	30.64	5,091.36	173.51	102.77	-173.60	0.00	0.00	0.00
5,200.00	5.00	30.64	5,190.98	181.01	107.21	-181.10	0.00	0.00	0.00
5,300.00	5.00	30.64	5,290.60	188.50	111.65	-188.60	0.00	0.00	0.00
5,400.00	5.00	30.64	5,390.22	196.00	116.09	-196.10	0.00	0.00	0.00
5,500.00	5.00	30.64	5,489.84	203.49	120.53	-203.60	0.00	0.00	0.00
5,556.38	5.00	30.64	5,546.00	207.72	123.03	-207.82	0.00	0.00	0.00
Brushy Canyon									
5,600.00	5.00	30.64	5,589.46	210.99	124.97	-211.10	0.00	0.00	0.00
5,700.00	5.00	30.64	5,689.08	218.48	129.41	-218.59	0.00	0.00	0.00
5,800.00	5.00	30.64	5,788.70	225.98	133.84	-226.09	0.00	0.00	0.00
5,900.00	5.00	30.64	5,888.32	233.47	138.28	-233.59	0.00	0.00	0.00
6,000.00	5.00	30.64	5,987.94	240.97	142.72	-241.09	0.00	0.00	0.00
6,100.00	5.00	30.64	6,087.56	248.46	147.16	-248.59	0.00	0.00	0.00
6,200.00	5.00	30.64	6,187.18	255.96	151.60	-256.09	0.00	0.00	0.00
6,300.00	5.00	30.64	6,286.80	263.45	156.04	-263.59	0.00	0.00	0.00
6,400.00	5.00	30.64	6,386.42	270.94	160.48	-271.08	0.00	0.00	0.00
6,500.00	5.00	30.64	6,486.04	278.44	164.92	-278.58	0.00	0.00	0.00
6,576.25	5.00	30.64	6,562.00	284.15	168.30	-284.30	0.00	0.00	0.00
Basal Brushy Canyon									
6,600.00	5.00	30.64	6,585.66	285.93	169.36	-286.08	0.00	0.00	0.00
6,700.00	5.00	30.64	6,685.28	293.43	173.80	-293.58	0.00	0.00	0.00
6,800.00	5.00	30.64	6,784.90	300.92	178.24	-301.08	0.00	0.00	0.00
6,837.24	5.00	30.64	6,822.00	303.71	179.89	-303.87	0.00	0.00	0.00
Bone Spring Lime									
6,900.00	5.00	30.64	6,884.52	308.42	182.67	-308.58	0.00	0.00	0.00
7,000.00	5.00	30.64	6,984.14	315.91	187.11	-316.08	0.00	0.00	0.00
7,100.00	5.00	30.64	7,083.76	323.41	191.55	-323.57	0.00	0.00	0.00
7,200.00	5.00	30.64	7,183.38	330.90	195.99	-331.07	0.00	0.00	0.00
7,300.00	5.00	30.64	7,283.00	338.40	200.43	-338.57	0.00	0.00	0.00
7,400.00	5.00	30.64	7,382.62	345.89	204.87	-346.07	0.00	0.00	0.00
7,500.00	5.00	30.64	7,482.24	353.39	209.31	-353.57	0.00	0.00	0.00
7,600.00	5.00	30.64	7,581.86	360.88	213.75	-361.07	0.00	0.00	0.00
7,676.43	5.00	30.64	7,658.00	366.61	217.14	-366.80	0.00	0.00	0.00
1st Bone Spring Lime									
7,700.00	5.00	30.64	7,681.48	368.38	218.19	-368.57	0.00	0.00	0.00
7,726.63	5.00	30.64	7,708.00	370.37	219.37	-370.56	0.00	0.00	0.00
1st Bone Spring Sand									
7,800.00	5.00	30.64	7,781.10	375.87	222.63	-376.06	0.00	0.00	0.00
7,900.00	5.00	30.64	7,880.72	383.37	227.07	-383.56	0.00	0.00	0.00
8,000.00	5.00	30.64	7,980.34	390.86	231.50	-391.06	0.00	0.00	0.00
8,100.00	5.00	30.64	8,079.96	398.35	235.94	-398.56	0.00	0.00	0.00
8,149.23	5.00	30.64	8,129.00	402.04	238.13	-402.25	0.00	0.00	0.00
2nd Bone Spring Lime									
8,200.00	5.00	30.64	8,179.58	405.85	240.38	-406.06	0.00	0.00	0.00
8,300.00	5.00	30.64	8,279.20	413.34	244.82	-413.56	0.00	0.00	0.00
8,400.00	5.00	30.64	8,378.82	420.84	249.26	-421.06	0.00	0.00	0.00



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Survey Calculation Method: Minimum Curvature

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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)
8,500.00	5.00	30.64	8,478.44	428.33	253.70	-428.55	0.00	0.00	0.00
8,583.88	5.00	30.64	8,562.00	434.62	257.42	-434.84	0.00	0.00	0.00
2nd Bone Spring Sand									
8,600.00	5.00	30.64	8,578.06	435.83	258.14	-436.05	0.00	0.00	0.00
8,700.00	5.00	30.64	8,677.68	443.32	262.58	-443.55	0.00	0.00	0.00
8,800.00	5.00	30.64	8,777.29	450.82	267.02	-451.05	0.00	0.00	0.00
8,823.80	5.00	30.64	8,801.00	452.60	268.07	-452.83	0.00	0.00	0.00
3rd Bone Spring Lime									
8,900.00	5.00	30.64	8,876.91	458.31	271.46	-458.55	0.00	0.00	0.00
9,000.00	5.00	30.64	8,976.53	465.81	275.90	-466.05	0.00	0.00	0.00
9,100.00	5.00	30.64	9,076.15	473.30	280.33	-473.55	0.00	0.00	0.00
9,200.00	5.00	30.64	9,175.77	480.80	284.77	-481.04	0.00	0.00	0.00
9,300.00	5.00	30.64	9,275.39	488.29	289.21	-488.54	0.00	0.00	0.00
9,400.00	5.00	30.64	9,375.01	495.79	293.65	-496.04	0.00	0.00	0.00
9,500.00	5.00	30.64	9,474.63	503.28	298.09	-503.54	0.00	0.00	0.00
9,600.00	5.00	30.64	9,574.25	510.78	302.53	-511.04	0.00	0.00	0.00
9,648.93	5.00	30.64	9,623.00	514.44	304.70	-514.71	0.00	0.00	0.00
3rd Bone Spring									
9,700.00	5.00	30.64	9,673.87	518.27	306.97	-518.54	0.00	0.00	0.00
9,800.00	5.00	30.64	9,773.49	525.76	311.41	-526.04	0.00	0.00	0.00
9,900.00	5.00	30.64	9,873.11	533.26	315.85	-533.53	0.00	0.00	0.00
10,000.00	5.00	30.64	9,972.73	540.75	320.29	-541.03	0.00	0.00	0.00
10,015.32	5.00	30.64	9,988.00	541.90	320.97	-542.18	0.00	0.00	0.00
Wolfcamp									
10,100.00	5.00	30.64	10,072.35	548.25	324.73	-548.53	0.00	0.00	0.00
10,155.86	5.00	30.64	10,128.00	552.44	327.21	-552.72	0.00	0.00	0.00
Wolfcamp A									
10,200.00	5.00	30.64	10,171.97	555.74	329.16	-556.03	0.00	0.00	0.00
10,300.00	5.00	30.64	10,271.59	563.24	333.60	-563.53	0.00	0.00	0.00
10,400.00	5.00	30.64	10,371.21	570.73	338.04	-571.03	0.00	0.00	0.00
10,412.53	5.00	30.64	10,383.69	571.67	338.60	-571.97	0.00	0.00	0.00
10,450.00	2.61	77.79	10,421.09	573.26	340.26	-573.55	10.00	-6.38	125.83
10,464.93	2.71	110.31	10,436.00	573.21	340.93	-573.50	10.00	0.72	217.87
Wolfcamp B									
10,500.00	5.12	150.32	10,470.99	571.56	342.48	-571.86	10.00	6.87	114.08
10,550.00	9.78	165.12	10,520.56	565.51	344.68	-565.81	10.00	9.32	29.58
10,600.00	14.66	170.28	10,569.42	555.16	346.84	-555.46	10.00	9.77	10.33
10,650.00	19.61	172.89	10,617.18	540.59	348.95	-540.89	10.00	9.88	5.23
10,700.00	24.57	174.49	10,663.50	521.91	350.98	-522.21	10.00	9.93	3.18
10,719.40	26.50	174.95	10,681.00	513.58	351.75	-513.89	10.00	9.95	2.39
Wolfcamp C									
10,750.00	29.55	175.57	10,708.01	499.25	352.94	-499.56	10.00	9.96	2.02
10,800.00	34.53	176.36	10,750.38	472.80	354.79	-473.11	10.00	9.96	1.59
10,850.00	39.51	176.98	10,790.29	442.76	356.53	-443.07	10.00	9.97	1.23
10,900.00	44.50	177.47	10,827.43	409.34	358.14	-409.66	10.00	9.98	0.99
10,944.61	48.96	177.85	10,858.00	376.90	359.46	-377.21	10.00	9.98	0.84
Wolfcamp D									
10,950.00	49.49	177.89	10,861.52	372.82	359.62	-373.13	10.00	9.98	0.77
11,000.00	54.49	178.25	10,892.30	333.46	360.94	-333.77	10.00	9.98	0.72
11,050.00	59.48	178.56	10,919.54	291.56	362.10	-291.88	10.00	9.99	0.63
11,100.00	64.47	178.85	10,943.02	247.45	363.09	-247.77	10.00	9.99	0.57
11,150.00	69.47	179.11	10,962.58	201.46	363.91	-201.77	10.00	9.99	0.53
11,200.00	74.46	179.36	10,978.05	153.93	364.54	-154.25	10.00	9.99	0.49



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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)
11,219.69	76.43	179.45	10,983.00	134.88	364.74	-135.20	10.00	9.99	0.47
Wolfcamp E									
11,250.00	79.46	179.59	10,989.33	105.24	364.99	-105.56	10.00	9.99	0.46
11,300.00	84.45	179.82	10,996.33	55.75	365.24	-56.07	10.00	9.99	0.45
11,351.54	89.60	180.05	10,999.00	4.30	365.30	-4.62	10.00	9.99	0.45
#168H: LP/ FTP									
11,400.00	89.60	180.05	10,999.34	-44.16	365.26	43.84	0.00	0.00	0.00
11,500.00	89.60	180.05	11,000.04	-144.16	365.17	143.84	0.00	0.00	0.00
11,600.00	89.60	180.05	11,000.73	-244.16	365.09	243.84	0.00	0.00	0.00
11,700.00	89.60	180.05	11,001.43	-344.16	365.00	343.84	0.00	0.00	0.00
11,800.00	89.60	180.05	11,002.13	-444.15	364.92	443.83	0.00	0.00	0.00
11,900.00	89.60	180.05	11,002.83	-544.15	364.83	543.83	0.00	0.00	0.00
12,000.00	89.60	180.05	11,003.53	-644.15	364.74	643.83	0.00	0.00	0.00
12,100.00	89.60	180.05	11,004.23	-744.15	364.66	743.83	0.00	0.00	0.00
12,200.00	89.60	180.05	11,004.92	-844.14	364.57	843.83	0.00	0.00	0.00
12,300.00	89.60	180.05	11,005.62	-944.14	364.49	943.82	0.00	0.00	0.00
12,400.00	89.60	180.05	11,006.32	-1,044.14	364.40	1,043.82	0.00	0.00	0.00
12,500.00	89.60	180.05	11,007.02	-1,144.14	364.31	1,143.82	0.00	0.00	0.00
12,600.00	89.60	180.05	11,007.72	-1,244.13	364.23	1,243.82	0.00	0.00	0.00
12,700.00	89.60	180.05	11,008.41	-1,344.13	364.14	1,343.81	0.00	0.00	0.00
12,800.00	89.60	180.05	11,009.11	-1,444.13	364.06	1,443.81	0.00	0.00	0.00
12,900.00	89.60	180.05	11,009.81	-1,544.13	363.97	1,543.81	0.00	0.00	0.00
13,000.00	89.60	180.05	11,010.51	-1,644.12	363.89	1,643.81	0.00	0.00	0.00
13,100.00	89.60	180.05	11,011.21	-1,744.12	363.80	1,743.80	0.00	0.00	0.00
13,200.00	89.60	180.05	11,011.90	-1,844.12	363.71	1,843.80	0.00	0.00	0.00
13,300.00	89.60	180.05	11,012.60	-1,944.12	363.63	1,943.80	0.00	0.00	0.00
13,400.00	89.60	180.05	11,013.30	-2,044.11	363.54	2,043.80	0.00	0.00	0.00
13,500.00	89.60	180.05	11,014.00	-2,144.11	363.46	2,143.79	0.00	0.00	0.00
13,600.00	89.60	180.05	11,014.70	-2,244.11	363.37	2,243.79	0.00	0.00	0.00
13,700.00	89.60	180.05	11,015.40	-2,344.11	363.29	2,343.79	0.00	0.00	0.00
13,800.00	89.60	180.05	11,016.09	-2,444.10	363.20	2,443.79	0.00	0.00	0.00
13,900.00	89.60	180.05	11,016.79	-2,544.10	363.11	2,543.78	0.00	0.00	0.00
14,000.00	89.60	180.05	11,017.49	-2,644.10	363.03	2,643.78	0.00	0.00	0.00
14,100.00	89.60	180.05	11,018.19	-2,744.10	362.94	2,743.78	0.00	0.00	0.00
14,200.00	89.60	180.05	11,018.89	-2,844.09	362.86	2,843.78	0.00	0.00	0.00
14,300.00	89.60	180.05	11,019.58	-2,944.09	362.77	2,943.77	0.00	0.00	0.00
14,400.00	89.60	180.05	11,020.28	-3,044.09	362.68	3,043.77	0.00	0.00	0.00
14,500.00	89.60	180.05	11,020.98	-3,144.09	362.60	3,143.77	0.00	0.00	0.00
14,600.00	89.60	180.05	11,021.68	-3,244.08	362.51	3,243.77	0.00	0.00	0.00
14,700.00	89.60	180.05	11,022.38	-3,344.08	362.43	3,343.76	0.00	0.00	0.00
14,800.00	89.60	180.05	11,023.07	-3,444.08	362.34	3,443.76	0.00	0.00	0.00
14,900.00	89.60	180.05	11,023.77	-3,544.08	362.26	3,543.76	0.00	0.00	0.00
15,000.00	89.60	180.05	11,024.47	-3,644.07	362.17	3,643.76	0.00	0.00	0.00
15,100.00	89.60	180.05	11,025.17	-3,744.07	362.08	3,743.75	0.00	0.00	0.00
15,200.00	89.60	180.05	11,025.87	-3,844.07	362.00	3,843.75	0.00	0.00	0.00
15,300.00	89.60	180.05	11,026.57	-3,944.07	361.91	3,943.75	0.00	0.00	0.00
15,400.00	89.60	180.05	11,027.26	-4,044.06	361.83	4,043.75	0.00	0.00	0.00
15,500.00	89.60	180.05	11,027.96	-4,144.06	361.74	4,143.74	0.00	0.00	0.00
15,600.00	89.60	180.05	11,028.66	-4,244.06	361.65	4,243.74	0.00	0.00	0.00
15,700.00	89.60	180.05	11,029.36	-4,344.06	361.57	4,343.74	0.00	0.00	0.00
15,800.00	89.60	180.05	11,030.06	-4,444.05	361.48	4,443.74	0.00	0.00	0.00
15,900.00	89.60	180.05	11,030.75	-4,544.05	361.40	4,543.74	0.00	0.00	0.00
16,000.25	89.60	180.05	11,031.45	-4,644.30	361.31	4,643.98	0.00	0.00	0.00



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 Survey Calculation Method: Minimum Curvature

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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)
#168H: LTP									
16,100.00	89.60	180.05	11,032.15	-4,744.05	361.23	4,743.73	0.00	0.00	0.00
16,130.25	89.60	180.05	11,032.36	-4,774.30	361.20	4,773.98	0.00	0.00	0.00
#168H: PBHL (200' FSL/ 330' FEL)									

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
#168H: SHL (336' FNI) - plan hits target center - Point	0.00	0.00	0.00	0.00	0.00	397,536.50	603,345.00	32.092504	-103.999622
#168H: LP/ FTP - plan hits target center - Point	0.00	0.00	10,999.00	4.30	365.30	397,540.80	603,710.30	32.092513	-103.998443
#168H: LTP - plan misses target center by 0.11usft at 16000.25usft MD (11031.45 TVD, -4644.30 N, 361.31 E) - Point	0.00	0.00	11,031.45	-4,644.30	361.20	392,892.20	603,706.20	32.079734	-103.998502
#168H: PBHL (200' F: - plan hits target center - Point	0.00	0.00	11,032.36	-4,774.30	361.20	392,762.20	603,706.20	32.079377	-103.998504



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Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
526.00	-2,454.00	Rustler			
2,866.18	-114.00	Base of Salt			
1,981.00	0.00	Wolfcamp E Lower			
1,981.00	0.00	Wolfcamp F			
3,056.88	76.00	Delaware (Bell Canyon)			
3,955.29	971.00	Cherry Canyon			
5,556.38	2,566.00	Brushy Canyon			
6,576.25	3,582.00	Basal Brushy Canyon			
6,837.24	3,842.00	Bone Spring Lime			
7,676.43	4,678.00	1st Bone Spring Lime			
7,726.63	4,728.00	1st Bone Spring Sand			
8,149.23	5,149.00	2nd Bone Spring Lime			
8,583.88	5,582.00	2nd Bone Spring Sand			
8,823.80	5,821.00	3rd Bone Spring Lime			
9,648.93	6,643.00	3rd Bone Spring			
10,015.32	7,008.00	Wolfcamp			
10,155.86	7,148.00	Wolfcamp A			
10,464.93	7,456.00	Wolfcamp B			
10,719.40	7,701.00	Wolfcamp C			
10,944.61	7,878.00	Wolfcamp D			
11,219.69	8,003.00	Wolfcamp E			