



Company: XTO Energy
Site: Espejo Federal Com
Well: 3H
Project: Lea County, New Mexico (NAD 27)
Rig: Noram 25



Azimuths to Grid North
True North: -0.43°
Magnetic North: 6.63°
Magnetic Field
Strength: 48343.9snT
Dip Angle: 60.49°
Date: 9/22/2016
Model: BGGM2016

ANNOTATIONS

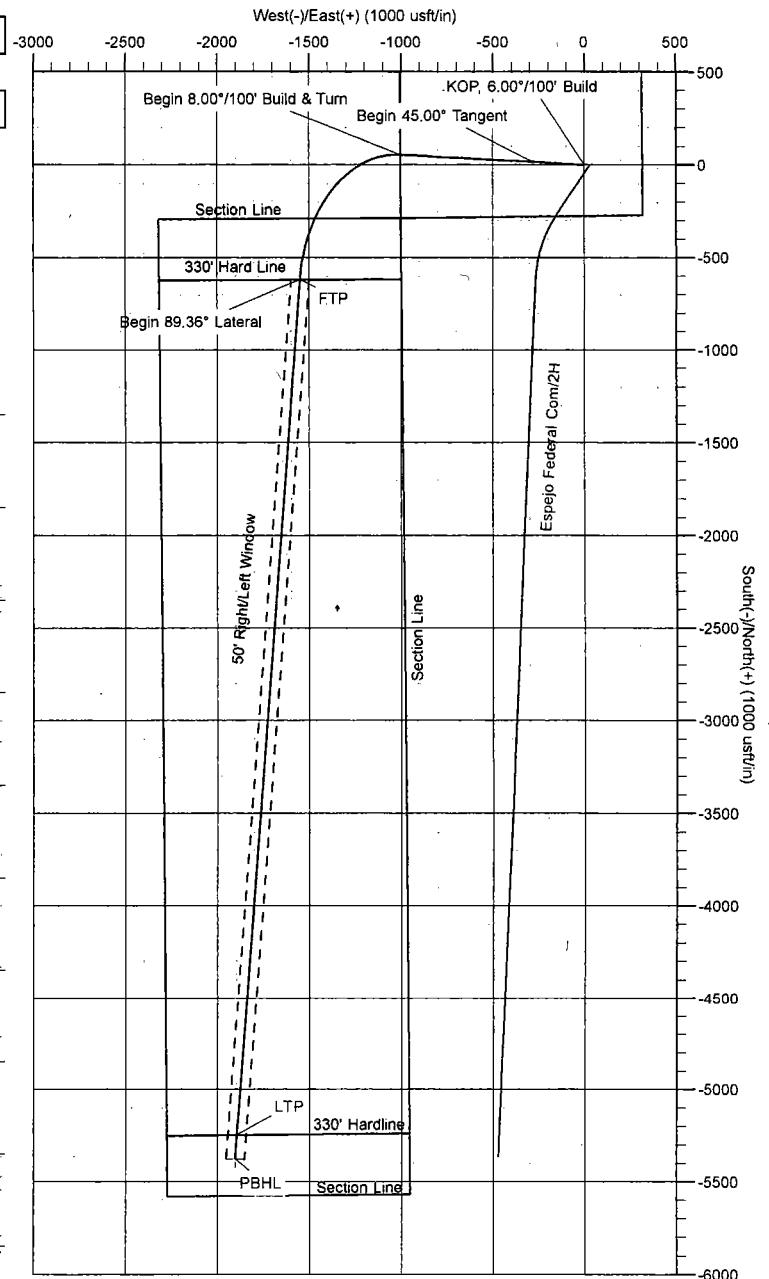
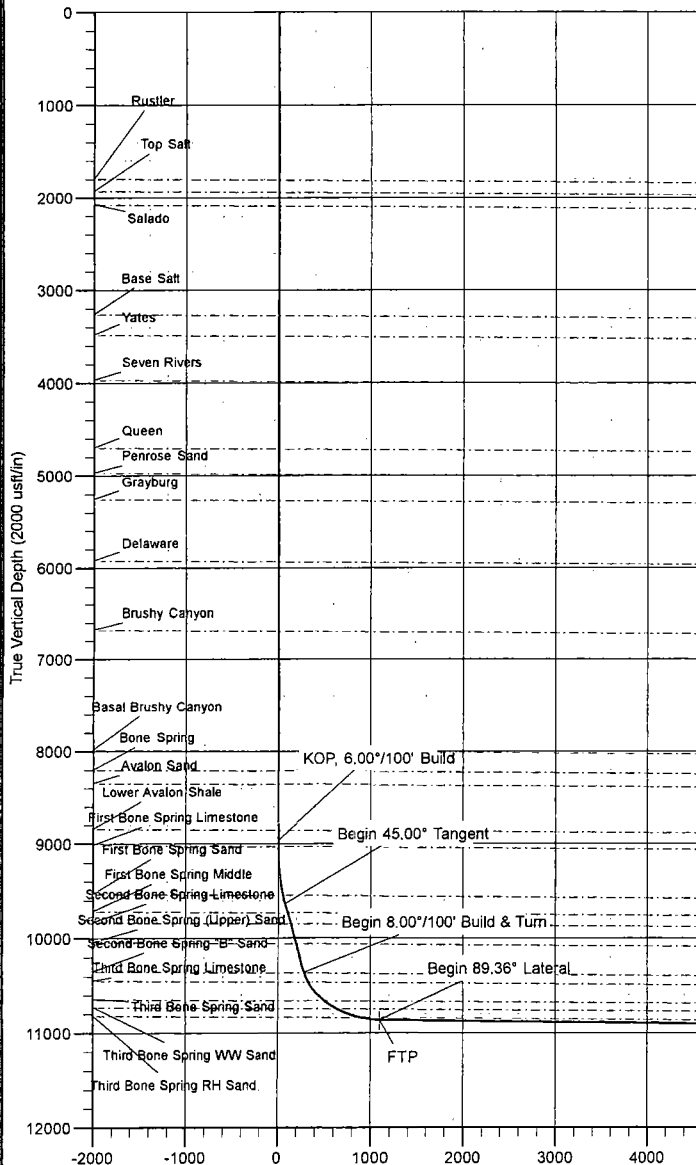
MD	Inc	Azi	TVD	+N/-S	+E/-W	V Sct	Departure	Annotation
8960.00	0.00	0.00	8960.00	0.00	0.00	0.00	0.00	KOP, 6.00°/100' Build
9710.05	45.00	273.14	9635.27	15.30	-279.31	78.88	279.73	Begin 45.00° Tangent
10734.67	45.00	273.14	10359.75	54.94	-1002.78	283.20	1004.28	Begin 8.00°/100' Build & Turn
11844.03	89.36	184.27	10863.00	-616.70	-1549.70	1098.95	1957.38	Begin 89.36° Lateral
16615.46	89.36	184.27	10916.00	-5374.60	-1904.80	5702.16	6728.52	PBHL

US State Plane 1927 (Exact solution)
New Mexico East 3001

Created By: VLS
Date: 10/24, September 23 2016
Plan: Design #2

Landing Point
X: 746607.5 Y: 596572

PBHL
X: 746252.4 Y: 591814.1



The customer should only rely on this document after independently verifying all paths, targets, coordinates, lease and hard lines represented.

Any decisions made or wells drilled utilizing this or any other information supplied by MS Energy are at the sole risk and responsibility of the customer. MS Energy is not responsible for the accuracy of this schematic or the information contained herein.



XTO Energy

Lea County, New Mexico (NAD 27)

Espejo Federal Com

3H

Wellbore #1

Plan: Deisgn #2

Standard Planning Report

23 September, 2016



MS Energy Services Planning Report



Database: Conroe Server
Company: XTO Energy
Project: Lea County, New Mexico (NAD 27)
Site: Espejo Federal Com
Well: 3H
Wellbore: Wellbore #1
Design: Deisgn #2

Local Co-ordinate Reference: Well 3H
TVD Reference: Rig @ 3800.00usft (Noram 25)
MD Reference: Rig @ 3800.00usft (Noram 25)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Project	Lea County, New Mexico (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		

Well 3H

Well Position	+N/-S	597,188.70 usft	Northing:	597,188.70 usft	Latitude:	32° 38' 21.069 N
	+E/-W	748,157.20 usft	Easting:	748,157.20 usft	Longitude:	103° 31' 37.853 W
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,775.00 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2016	9/22/2016	7.06	60.49	48,344

Design Deisgn #2

Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	0.00
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Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	199.51

Plan Survey Tool Program		Date 9/23/2016			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	16,615.46	Deisgn #2 (Wellbore #1)	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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
8,960.00	0.00	0.00	8,960.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,710.05	45.00	273.14	9,635.27	15.30	-279.31	6.00	6.00	0.00	273.14	
10,734.67	45.00	273.14	10,359.75	54.94	-1,002.78	0.00	0.00	0.00	0.00	
11,844.03	89.36	184.27	10,863.00	-616.70	-1,549.70	8.00	4.00	-8.01	-89.65	FTP v2 - Espejo Fe
16,615.46	89.36	184.27	10,916.00	-5,374.60	-1,904.80	0.00	0.00	0.00	0.00	PBHL v2 - Espejo F



MS Energy Services
Planning Report



Database:	Conroe Server	Local Co-ordinate Reference:	Well 3H
Company:	XTO Energy	TVD Reference:	Rig @ 3800.00usft (Noram 25)
Project:	Lea County, New Mexico (NAD 27)	MD Reference:	Rig @ 3800.00usft (Noram 25)
Site:	Espejo Federal Com	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Deisgn #2		

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
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
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
1,805.00	0.00	0.00	1,805.00	0.00	0.00	0.00	0.00	0.00	0.00
Rustler									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,935.00	0.00	0.00	1,935.00	0.00	0.00	0.00	0.00	0.00	0.00
Top Salt									
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00
2,085.00	0.00	0.00	2,085.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado									
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
3,270.00	0.00	0.00	3,270.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Salt									
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00
3,490.00	0.00	0.00	3,490.00	0.00	0.00	0.00	0.00	0.00	0.00
Yates									
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00
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
3,975.00	0.00	0.00	3,975.00	0.00	0.00	0.00	0.00	0.00	0.00
Seven Rivers									
4,000.00	0.00	0.00	4,000.00	0.00	0.00	0.00	0.00	0.00	0.00



MS Energy Services
Planning Report



Database:	Conroe Server	Local Co-ordinate Reference:	Well 3H
Company:	XTO Energy	TVD Reference:	Rig @ 3800.00usft (Noram 25)
Project:	Lea County, New Mexico (NAD 27)	MD Reference:	Rig @ 3800.00usft (Noram 25)
Site:	Espejo Federal Com	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Deisgn #2		

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
4,400.00	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
4,710.00	0.00	0.00	4,710.00	0.00	0.00	0.00	0.00	0.00	0.00
Queen									
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
4,980.00	0.00	0.00	4,980.00	0.00	0.00	0.00	0.00	0.00	0.00
Penrose Sand									
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
5,265.00	0.00	0.00	5,265.00	0.00	0.00	0.00	0.00	0.00	0.00
Grayburg									
5,300.00	0.00	0.00	5,300.00	0.00	0.00	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,400.00	0.00	0.00	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,500.00	0.00	0.00	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,600.00	0.00	0.00	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,700.00	0.00	0.00	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,800.00	0.00	0.00	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,900.00	0.00	0.00	0.00	0.00	0.00	0.00
5,930.00	0.00	0.00	5,930.00	0.00	0.00	0.00	0.00	0.00	0.00
Delaware									
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,100.00	0.00	0.00	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,200.00	0.00	0.00	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,300.00	0.00	0.00	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,400.00	0.00	0.00	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,500.00	0.00	0.00	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,600.00	0.00	0.00	0.00	0.00	0.00	0.00
6,690.00	0.00	0.00	6,690.00	0.00	0.00	0.00	0.00	0.00	0.00
Brushy Canyon									
6,700.00	0.00	0.00	6,700.00	0.00	0.00	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,800.00	0.00	0.00	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	7,000.00	0.00	0.00	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,100.00	0.00	0.00	0.00	0.00	0.00	0.00
7,200.00	0.00	0.00	7,200.00	0.00	0.00	0.00	0.00	0.00	0.00
7,300.00	0.00	0.00	7,300.00	0.00	0.00	0.00	0.00	0.00	0.00
7,400.00	0.00	0.00	7,400.00	0.00	0.00	0.00	0.00	0.00	0.00
7,500.00	0.00	0.00	7,500.00	0.00	0.00	0.00	0.00	0.00	0.00
7,600.00	0.00	0.00	7,600.00	0.00	0.00	0.00	0.00	0.00	0.00
7,700.00	0.00	0.00	7,700.00	0.00	0.00	0.00	0.00	0.00	0.00
7,800.00	0.00	0.00	7,800.00	0.00	0.00	0.00	0.00	0.00	0.00
7,900.00	0.00	0.00	7,900.00	0.00	0.00	0.00	0.00	0.00	0.00
7,995.00	0.00	0.00	7,995.00	0.00	0.00	0.00	0.00	0.00	0.00
Basal Brushy Canyon									
8,000.00	0.00	0.00	8,000.00	0.00	0.00	0.00	0.00	0.00	0.00
8,100.00	0.00	0.00	8,100.00	0.00	0.00	0.00	0.00	0.00	0.00



MS Energy Services
Planning Report



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Design:	Deisgn #2		

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)
8,200.00	0.00	0.00	8,200.00	0.00	0.00	0.00	0.00	0.00	0.00
8,210.00	0.00	0.00	8,210.00	0.00	0.00	0.00	0.00	0.00	0.00
Bone Spring									
8,300.00	0.00	0.00	8,300.00	0.00	0.00	0.00	0.00	0.00	0.00
8,350.00	0.00	0.00	8,350.00	0.00	0.00	0.00	0.00	0.00	0.00
Avalon Sand									
8,400.00	0.00	0.00	8,400.00	0.00	0.00	0.00	0.00	0.00	0.00
8,500.00	0.00	0.00	8,500.00	0.00	0.00	0.00	0.00	0.00	0.00
8,600.00	0.00	0.00	8,600.00	0.00	0.00	0.00	0.00	0.00	0.00
8,700.00	0.00	0.00	8,700.00	0.00	0.00	0.00	0.00	0.00	0.00
8,800.00	0.00	0.00	8,800.00	0.00	0.00	0.00	0.00	0.00	0.00
8,850.00	0.00	0.00	8,850.00	0.00	0.00	0.00	0.00	0.00	0.00
Lower Avalon Shale									
8,900.00	0.00	0.00	8,900.00	0.00	0.00	0.00	0.00	0.00	0.00
8,960.00	0.00	0.00	8,960.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP, 6.00°/100' Build									
9,000.00	2.40	273.14	8,999.99	0.05	-0.84	0.24	6.00	6.00	0.00
9,025.05	3.90	273.14	9,025.00	0.12	-2.21	0.62	6.00	6.00	0.00
First Bone Spring Limestone									
9,050.00	5.40	273.14	9,049.87	0.23	-4.23	1.20	6.00	6.00	0.00
9,100.00	8.40	273.14	9,099.50	0.56	-10.23	2.89	6.00	6.00	0.00
9,150.00	11.40	273.14	9,148.75	1.03	-18.81	5.31	6.00	6.00	0.00
9,200.00	14.40	273.14	9,197.48	1.64	-29.96	8.46	6.00	6.00	0.00
9,250.00	17.40	273.14	9,245.56	2.39	-43.63	12.32	6.00	6.00	0.00
9,300.00	20.40	273.14	9,292.86	3.28	-59.80	16.89	6.00	6.00	0.00
9,350.00	23.40	273.14	9,339.25	4.30	-78.42	22.15	6.00	6.00	0.00
9,400.00	26.40	273.14	9,384.60	5.45	-99.44	28.08	6.00	6.00	0.00
9,450.00	29.40	273.14	9,428.78	6.73	-122.80	34.68	6.00	6.00	0.00
9,500.00	32.40	273.14	9,471.68	8.13	-148.43	41.92	6.00	6.00	0.00
9,550.00	35.40	273.14	9,513.17	9.66	-176.28	49.78	6.00	6.00	0.00
9,583.82	37.43	273.14	9,540.39	10.76	-196.32	55.44	6.00	6.00	0.00
First Bone Spring Sand									
9,600.00	38.40	273.14	9,553.15	11.30	-206.25	58.25	6.00	6.00	0.00
9,650.00	41.40	273.14	9,591.51	13.05	-238.27	67.29	6.00	6.00	0.00
9,700.00	44.40	273.14	9,628.13	14.91	-272.25	76.89	6.00	6.00	0.00
9,710.05	45.00	273.14	9,635.27	15.30	-279.31	78.88	6.00	6.00	0.00
Begin 45.00° Tangent									
9,800.00	45.00	273.14	9,698.87	18.78	-342.82	96.82	0.00	0.00	0.00
9,837.98	45.00	273.14	9,725.73	20.25	-369.64	104.39	0.00	0.00	0.00
First Bone Spring Middle									
9,900.00	45.00	273.14	9,769.58	22.65	-413.43	116.76	0.00	0.00	0.00
10,000.00	45.00	273.14	9,840.29	26.52	-484.04	136.70	0.00	0.00	0.00
10,008.03	45.00	273.14	9,845.97	26.83	-489.71	138.30	0.00	0.00	0.00
Second Bone Spring Limestone									
10,100.00	45.00	273.14	9,911.00	30.39	-554.65	156.64	0.00	0.00	0.00
10,200.00	45.00	273.14	9,981.70	34.25	-625.25	176.58	0.00	0.00	0.00
10,298.53	45.00	273.14	10,051.37	38.07	-694.83	196.23	0.00	0.00	0.00
Second Bone Spring (Upper) Sand									
10,300.00	45.00	273.14	10,052.41	38.12	-695.86	196.52	0.00	0.00	0.00
10,400.00	45.00	273.14	10,123.12	41.99	-766.47	216.46	0.00	0.00	0.00
10,500.00	45.00	273.14	10,193.82	45.86	-837.08	236.40	0.00	0.00	0.00
10,600.00	45.00	273.14	10,264.53	49.73	-907.69	256.34	0.00	0.00	0.00



MS Energy Services Planning Report



Database: Conroe Server
Company: XTO Energy
Project: Lea County, New Mexico (NAD 27)
Site: Espejo Federal Corn
Well: 3H
Wellbore: Wellbore #1
Design: Design #2

Local Co-ordinate Reference: Well 3H
TVD Reference: Rig @ 3800.00usft (Noram 25)
MD Reference: Rig @ 3800.00usft (Noram 25)
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)
10,700.00	45.00	273.14	10,335.24	53.59	-978.30	276.28	0.00	0.00	0.00
10,734.67	45.00	273.14	10,359.75	54.94	-1,002.78	283.20	0.00	0.00	0.00
Begin 8.00°/100' Build & Turn									
10,737.82	45.01	272.78	10,361.98	55.05	-1,005.00	283.83	8.00	0.07	-11.31
Second Bone Spring "B" Sand									
10,750.00	45.02	271.40	10,370.59	55.37	-1,013.61	286.41	8.00	0.15	-11.31
10,800.00	45.27	265.77	10,405.87	54.49	-1,049.02	299.07	8.00	0.50	-11.27
10,850.00	45.79	260.21	10,440.91	50.13	-1,084.40	315.00	8.00	1.04	-11.12
10,876.42	46.18	257.32	10,459.27	46.43	-1,103.04	324.71	8.00	1.45	-10.94
Third Bone Spring Limestone									
10,900.00	46.58	254.78	10,475.53	42.31	-1,119.60	334.12	8.00	1.71	-10.80
10,950.00	47.62	249.50	10,509.58	31.07	-1,154.43	356.35	8.00	2.07	-10.55
11,000.00	48.89	244.42	10,542.89	16.46	-1,188.73	381.58	8.00	2.54	-10.17
11,050.00	50.37	239.54	10,575.28	-1.44	-1,222.33	409.68	8.00	2.97	-9.75
11,100.00	52.05	234.88	10,606.61	-22.55	-1,255.07	440.51	8.00	3.36	-9.32
11,150.00	53.91	230.44	10,636.73	-46.77	-1,286.78	473.93	8.00	3.71	-8.88
11,185.85	55.33	227.39	10,657.49	-65.98	-1,308.80	499.39	8.00	3.98	-8.51
Third Bone Spring Sand									
11,200.00	55.92	226.21	10,665.48	-73.97	-1,317.32	509.77	8.00	4.13	-8.30
11,250.00	58.07	222.19	10,692.72	-104.03	-1,346.53	547.86	8.00	4.30	-8.05
11,300.00	60.34	218.35	10,718.33	-136.80	-1,374.27	588.01	8.00	4.54	-7.67
11,350.00	62.71	214.69	10,742.17	-172.12	-1,400.40	630.03	8.00	4.75	-7.32
11,354.94	62.95	214.34	10,744.43	-175.74	-1,402.89	634.28	8.00	4.85	-7.15
Third Bone Spring WW Sand									
11,400.00	65.18	211.19	10,764.14	-209.81	-1,424.81	673.71	8.00	4.94	-7.00
11,450.00	67.72	207.82	10,784.12	-249.70	-1,447.36	718.84	8.00	5.09	-6.73
11,500.00	70.33	204.57	10,802.02	-291.58	-1,467.96	765.20	8.00	5.22	-6.49
11,550.00	73.00	201.43	10,817.75	-335.27	-1,486.49	812.57	8.00	5.34	-6.28
11,600.00	75.72	198.38	10,831.23	-380.53	-1,502.88	860.70	8.00	5.43	-6.10
11,625.31	77.10	196.87	10,837.18	-403.98	-1,510.32	885.29	8.00	5.49	-5.99
Third Bone Spring RH Sand									
11,650.00	78.47	195.41	10,842.40	-427.15	-1,517.03	909.38	8.00	5.52	-5.92
11,700.00	81.25	192.49	10,851.21	-474.91	-1,528.88	958.35	8.00	5.56	-5.84
11,750.00	84.06	189.61	10,857.60	-523.57	-1,538.38	1,007.39	8.00	5.61	-5.75
11,800.00	86.87	186.76	10,861.56	-572.90	-1,545.47	1,056.25	8.00	5.64	-5.69
11,844.03	89.36	184.27	10,863.00	-616.70	-1,549.70	1,098.95	8.00	5.65	-5.66
Begin 89.36° Lateral									
11,900.00	89.36	184.27	10,863.62	-672.51	-1,553.87	1,152.94	0.00	0.00	0.00
12,000.00	89.36	184.27	10,864.73	-772.22	-1,561.31	1,249.42	0.00	0.00	0.00
12,100.00	89.36	184.27	10,865.84	-871.94	-1,568.75	1,345.89	0.00	0.00	0.00
12,200.00	89.36	184.27	10,866.95	-971.66	-1,576.19	1,442.37	0.00	0.00	0.00
12,300.00	89.36	184.27	10,868.07	-1,071.37	-1,583.63	1,538.84	0.00	0.00	0.00
12,400.00	89.36	184.27	10,869.18	-1,171.09	-1,591.08	1,635.32	0.00	0.00	0.00
12,500.00	89.36	184.27	10,870.29	-1,270.81	-1,598.52	1,731.79	0.00	0.00	0.00
12,600.00	89.36	184.27	10,871.40	-1,370.52	-1,605.96	1,828.26	0.00	0.00	0.00
12,700.00	89.36	184.27	10,872.51	-1,470.24	-1,613.40	1,924.74	0.00	0.00	0.00
12,800.00	89.36	184.27	10,873.62	-1,569.96	-1,620.85	2,021.21	0.00	0.00	0.00
12,900.00	89.36	184.27	10,874.73	-1,669.67	-1,628.29	2,117.69	0.00	0.00	0.00
13,000.00	89.36	184.27	10,875.84	-1,769.39	-1,635.73	2,214.16	0.00	0.00	0.00
13,100.00	89.36	184.27	10,876.95	-1,869.11	-1,643.17	2,310.64	0.00	0.00	0.00
13,200.00	89.36	184.27	10,878.06	-1,968.82	-1,650.61	2,407.11	0.00	0.00	0.00
13,300.00	89.36	184.27	10,879.17	-2,068.54	-1,658.06	2,503.59	0.00	0.00	0.00
13,400.00	89.36	184.27	10,880.28	-2,168.26	-1,665.50	2,600.06	0.00	0.00	0.00



MS Energy Services Planning Report



Database:	Conroe Server	Local Co-ordinate Reference:	Well 3H
Company:	XTO Energy	TVD Reference:	Rig @ 3800.00usft (Noram 25)
Project:	Lea County, New Mexico (NAD 27)	MD Reference:	Rig @ 3800.00usft (Noram 25)
Site:	Espejo Federal Com	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Deisgn #2		

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)	
13,500.00	89.36	184.27	10,881.39	-2,267.97	-1,672.94	2,696.53	0.00	0.00	0.00	
13,600.00	89.36	184.27	10,882.51	-2,367.69	-1,680.38	2,793.01	0.00	0.00	0.00	
13,700.00	89.36	184.27	10,883.62	-2,467.40	-1,687.83	2,889.48	0.00	0.00	0.00	
13,800.00	89.36	184.27	10,884.73	-2,567.12	-1,695.27	2,985.96	0.00	0.00	0.00	
13,900.00	89.36	184.27	10,885.84	-2,666.84	-1,702.71	3,082.43	0.00	0.00	0.00	
14,000.00	89.36	184.27	10,886.95	-2,766.55	-1,710.15	3,178.91	0.00	0.00	0.00	
14,100.00	89.36	184.27	10,888.06	-2,866.27	-1,717.59	3,275.38	0.00	0.00	0.00	
14,200.00	89.36	184.27	10,889.17	-2,965.99	-1,725.04	3,371.85	0.00	0.00	0.00	
14,300.00	89.36	184.27	10,890.28	-3,065.70	-1,732.48	3,468.33	0.00	0.00	0.00	
14,400.00	89.36	184.27	10,891.39	-3,165.42	-1,739.92	3,564.80	0.00	0.00	0.00	
14,500.00	89.36	184.27	10,892.50	-3,265.14	-1,747.36	3,661.28	0.00	0.00	0.00	
14,600.00	89.36	184.27	10,893.61	-3,364.85	-1,754.81	3,757.75	0.00	0.00	0.00	
14,700.00	89.36	184.27	10,894.72	-3,464.57	-1,762.25	3,854.23	0.00	0.00	0.00	
14,800.00	89.36	184.27	10,895.83	-3,564.29	-1,769.69	3,950.70	0.00	0.00	0.00	
14,900.00	89.36	184.27	10,896.95	-3,664.00	-1,777.13	4,047.18	0.00	0.00	0.00	
15,000.00	89.36	184.27	10,898.06	-3,763.72	-1,784.57	4,143.65	0.00	0.00	0.00	
15,100.00	89.36	184.27	10,899.17	-3,863.44	-1,792.02	4,240.12	0.00	0.00	0.00	
15,200.00	89.36	184.27	10,900.28	-3,963.15	-1,799.46	4,336.60	0.00	0.00	0.00	
15,300.00	89.36	184.27	10,901.39	-4,062.87	-1,806.90	4,433.07	0.00	0.00	0.00	
15,400.00	89.36	184.27	10,902.50	-4,162.59	-1,814.34	4,529.55	0.00	0.00	0.00	
15,500.00	89.36	184.27	10,903.61	-4,262.30	-1,821.79	4,626.02	0.00	0.00	0.00	
15,600.00	89.36	184.27	10,904.72	-4,362.02	-1,829.23	4,722.50	0.00	0.00	0.00	
15,700.00	89.36	184.27	10,905.83	-4,461.73	-1,836.67	4,818.97	0.00	0.00	0.00	
15,800.00	89.36	184.27	10,906.94	-4,561.45	-1,844.11	4,915.45	0.00	0.00	0.00	
15,900.00	89.36	184.27	10,908.05	-4,661.17	-1,851.55	5,011.92	0.00	0.00	0.00	
16,000.00	89.36	184.27	10,909.16	-4,760.88	-1,859.00	5,108.39	0.00	0.00	0.00	
16,100.00	89.36	184.27	10,910.27	-4,860.60	-1,866.44	5,204.87	0.00	0.00	0.00	
16,200.00	89.36	184.27	10,911.39	-4,960.32	-1,873.88	5,301.34	0.00	0.00	0.00	
16,300.00	89.36	184.27	10,912.50	-5,060.03	-1,881.32	5,397.82	0.00	0.00	0.00	
16,400.00	89.36	184.27	10,913.61	-5,159.75	-1,888.76	5,494.29	0.00	0.00	0.00	
16,500.00	89.36	184.27	10,914.72	-5,259.47	-1,896.21	5,590.77	0.00	0.00	0.00	
16,600.00	89.36	184.27	10,915.83	-5,359.18	-1,903.65	5,687.24	0.00	0.00	0.00	
16,615.46	89.36	184.27	10,916.00	-5,374.60	-1,904.80	5,702.16	0.00	0.00	0.00	
PBHL										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
FTP v2 - Espejo Fedr - plan hits target center - Point	0.00	0.01	10,863.00	-616.70	-1,549.70	596,572.00	746,607.50	32° 38' 15.083 N	103° 31' 56.029 W	
LTP v2 - Espejo Fede - plan misses target center by 0.01usft at 16484.99usft MD (10914.55 TVD, -5244.50 N, -1895.09 E) - Point	0.00	0.01	10,914.55	-5,244.50	-1,895.10	591,944.20	746,262.10	32° 37' 29.317 N	103° 32' 0.475 W	
PBHL v2 - Espejo Fec - plan hits target center - Point	0.00	0.00	10,916.00	-5,374.60	-1,904.80	591,814.10	746,252.40	32° 37' 28.031 N	103° 32' 0.600 W	



MS Energy Services
Planning Report



Database:	Conroe Server	Local Co-ordinate Reference:	Well 3H
Company:	XTO Energy	TVD Reference:	Rig @ 3800.00usft (Noram 25)
Project:	Lea County, New Mexico (NAD 27)	MD Reference:	Rig @ 3800.00usft (Noram 25)
Site:	Espejo Federal Com	North Reference:	Grid
Well:	3H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Deisgn #2		

Formations

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,805.00	1,805.00	Rustler		0.40	199.51
1,935.00	1,935.00	Top Salt		0.40	199.51
2,085.00	2,085.00	Salado		0.40	199.51
3,270.00	3,270.00	Base Salt		0.40	199.51
3,490.00	3,490.00	Yates		0.40	199.51
3,975.00	3,975.00	Seven Rivers		0.40	199.51
4,710.00	4,710.00	Queen		0.40	199.51
4,980.00	4,980.00	Penrose Sand		0.40	199.51
5,265.00	5,265.00	Grayburg		0.40	199.51
5,930.00	5,930.00	Delaware		0.40	199.51
6,690.00	6,690.00	Brushy Canyon		0.40	199.51
7,995.00	7,995.00	Basal Brushy Canyon		0.40	199.51
8,210.00	8,210.00	Bone Spring		0.40	199.51
8,350.00	8,350.00	Avalon Sand		0.40	199.51
8,850.00	8,850.00	Lower Avalon Shale		0.40	199.51
9,025.05	9,025.00	First Bone Spring Limestone		0.40	199.51
9,583.82	9,540.39	First Bone Spring Sand		0.40	199.51
9,837.98	9,725.73	First Bone Spring Middle		0.40	199.51
10,008.03	9,845.97	Second Bone Spring Limestone		0.40	199.51
10,298.53	10,051.37	Second Bone Spring (Upper) Sand		0.40	199.51
10,737.82	10,361.98	Second Bone Spring "B" Sand		0.40	199.51
10,876.42	10,459.27	Third Bone Spring Limestone		0.40	199.51
11,185.85	10,657.49	Third Bone Spring Sand		0.40	199.51
11,354.94	10,744.43	Third Bone Spring WW Sand		0.40	199.51
11,625.31	10,837.18	Third Bone Spring RH Sand		0.40	199.51

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,960.00	8,960.00	0.00	0.00	KOP, 6.00°/100' Build
9,710.05	9,635.27	15.30	-279.31	Begin 45.00° Tangent
10,734.67	10,359.75	54.94	-1,002.78	Begin 8.00°/100' Build & Turn
11,844.03	10,863.00	-616.70	-1,549.70	Begin 89.36° Lateral
16,615.46	10,916.00	-5,374.60	-1,904.80	PBHL