



NorAm Drilling Company

A GLOBAL RIG COMPANY ASA

HOBBS OCD

30-025-42557

DEC 10 2015

RECEIVED

Operator: XTO Energy

Well & Lease Number: PERLA NEGRA FED COM 2H

County: Lea

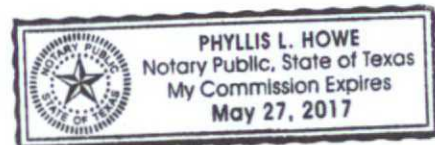
State of New Mexico

Deviation Report Rig#25

Footage	Degree
300	0.26
600	0.30
900	0.41
1200	0.29
1500	0.20
1800	0.31
2100	0.61
2400	0.52
2900	1.62
3400	2.18
3900	1.28
4400	1.63
4900	0.95
5400	0.52
5900	0.44
6400	0.73
6900	0.55
7400	0.62
7900	1.01
8400	0.58
8900	0.72
9400	1.70
9900	1.94
10090	1.86

Completed by: Will Luker

Will Luker, Safety Director
NorAm Drilling Company



Appeared before me on: 12/1/15

Notary Public: Phyllis L. Howe

8400 N. Sam Houston Parkway West • Suite 120 • Houston, TX 77064 USA • Phone: (281) 598-9200 • Fax (281) 598-9220

1804 Rotary Drive • Humble, TX 77338 USA • Phone: (281) 540-7070 • Fax (281) 540-7071

www.noramdrilling.com

DEC 15 2015

XTOENERGY

XTO Energy Inc

Lea County, NM (NAD27)
Perla Negra Federal Com
2H

OH / Job# 1514019

Survey: Phoenix MWD Surveys

Standard Survey Report

28 August, 2015

30-025-42557
HOBBS OCD
DEC 10 2015
RECEIVED



Phoenix Technology Services LP

Survey Report



XTO ENERGY

Company:	XTO Energy Inc	Local Co-ordinate Reference:	Well 2H
Project:	Lea County, NM (NAD27)	TVD Reference:	RKB @ 3812.00usft (Noram 25)
Site:	Perla Negra Federal Com	MD Reference:	RKB @ 3812.00usft (Noram 25)
Well:	2H	North Reference:	Grid
Wellbore:	OH / Job# 1514019	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Noram 25)	Database:	Compass 5000 GCR

Project	Lea County, NM (NAD27)		
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	Perla Negra Federal Com		
Site Position:		Northing:	597,390.80 usft
From:	Map	Easting:	751,854.80 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 38' 22.78876 N
		Longitude:	103° 30' 54.59550 W
		Grid Convergence:	0.44 °

Well	2H		
Well Position	+N/-S	0.00 usft	Northing: 597,390.80 usft
	+E/-W	0.00 usft	Easting: 751,854.80 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	32° 38' 22.78876 N
		Longitude:	103° 30' 54.59550 W
		Ground Level:	3,787.00 usft

Wellbore	OH / Job# 1514019		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	8/16/2015	6.88
			Dip Angle (°) 60.68
			Field Strength (nT) 48,509

Design	Surveys (Noram 25)		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)
	0.00	0.00	0.00
			Direction (°) 357.40

Survey Program	Date 8/28/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name
100.00	10,090.00	Phoenix Gyro Survey (OH / Job# 1514019)	PHX_SPT_GTD
10,178.00	15,275.00	Phoenix MWD Surveys (OH / Job# 151401)	PHX+MWD+HDGM
			Description
			PHX Continuous north-seeking gyro
			PHX+OWSG MWD + HDGM

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)	
10,090.00	1.86	161.45	10,088.31	-7.52	24.97	-8.64	0.00	0.00	0.00	
Tie in to Phoenix Gyro Surveys										
10,178.00	2.60	4.40	10,176.29	-6.88	25.58	-8.03	4.97	0.84	-178.47	
First Phoenix MWD Survey										
10,210.00	3.00	9.50	10,208.25	-5.33	25.77	-6.49	1.47	1.25	15.94	
10,241.00	3.80	10.20	10,239.19	-3.52	26.09	-4.70	2.58	2.58	2.26	
10,273.00	5.80	4.30	10,271.08	-0.86	26.40	-2.06	6.43	6.25	-18.44	
10,304.00	8.50	4.10	10,301.84	2.98	26.68	1.77	8.71	8.71	-0.65	
10,336.00	12.10	2.30	10,333.31	8.70	26.98	7.46	11.29	11.25	-5.63	

Phoenix Technology Services LP

Survey Report



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Site:	Perla Negra Federal Com	MD Reference:	RKB @ 3812.00usft (Noram 25)
Well:	2H	North Reference:	Grid
Wellbore:	OH / Job# 1514019	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Noram 25)	Database:	Compass 5000 GCR

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)
10,367.00	15.70	1.60	10,363.40	16.14	27.23	14.89	11.63	11.61	-2.26
10,399.00	19.60	2.10	10,393.89	25.83	27.55	24.56	12.20	12.19	1.56
10,430.00	22.80	3.60	10,422.79	37.03	28.12	35.71	10.47	10.32	4.84
10,462.00	25.70	3.90	10,451.96	50.14	28.98	48.77	9.07	9.06	0.94
10,493.00	28.40	3.40	10,479.57	64.21	29.87	62.79	8.74	8.71	-1.61
10,525.00	29.90	1.80	10,507.51	79.78	30.57	78.31	5.28	4.69	-5.00
10,556.00	31.10	0.70	10,534.22	95.51	30.92	94.01	4.27	3.87	-3.55
10,588.00	32.30	0.60	10,561.45	112.32	31.11	110.79	3.75	3.75	-0.31
10,619.00	33.20	1.10	10,587.52	129.09	31.36	127.53	3.03	2.90	1.61
10,651.00	33.70	1.30	10,614.22	146.72	31.72	145.13	1.60	1.56	0.63
10,683.00	33.60	359.90	10,640.86	164.45	31.91	162.84	2.44	-0.31	-4.38
10,714.00	33.70	358.60	10,666.67	181.63	31.69	180.00	2.35	0.32	-4.19
10,746.00	33.40	357.60	10,693.34	199.30	31.10	197.69	1.97	-0.94	-3.13
10,777.00	34.60	356.00	10,719.04	216.61	30.13	215.02	4.83	3.87	-5.16
10,809.00	36.80	355.10	10,745.02	235.22	28.68	233.68	7.07	6.88	-2.81
10,840.00	39.20	353.80	10,769.45	254.22	26.82	252.74	8.16	7.74	-4.19
10,871.00	44.00	353.20	10,792.62	274.66	24.49	273.27	15.54	15.48	-1.94
10,903.00	50.00	352.40	10,814.44	297.87	21.55	296.58	18.84	18.75	-2.50
10,935.00	56.30	351.70	10,833.62	323.21	18.00	322.06	19.76	19.69	-2.19
10,966.00	63.20	351.10	10,849.23	349.67	14.00	348.68	22.32	22.26	-1.94
10,997.00	69.80	351.20	10,861.58	377.75	9.63	376.92	21.29	21.29	0.32
11,029.00	76.80	352.40	10,870.77	408.07	5.26	407.41	22.17	21.88	3.75
11,061.00	81.10	352.60	10,876.90	439.20	1.17	438.69	13.45	13.44	0.63
11,092.00	82.10	352.80	10,881.43	469.62	-2.73	469.26	3.29	3.23	0.65
11,123.00	82.70	353.20	10,885.53	500.12	-6.48	499.89	2.32	1.94	1.29
11,155.00	84.00	353.80	10,889.24	531.70	-10.07	531.61	4.47	4.06	1.88
11,186.00	85.70	354.70	10,892.02	562.41	-13.17	562.43	6.20	5.48	2.90
11,218.00	86.00	354.60	10,894.34	594.19	-16.14	594.31	0.99	0.94	-0.31
11,312.00	91.20	355.50	10,896.63	687.78	-24.25	688.17	5.61	5.53	0.96
11,407.00	94.70	355.50	10,891.74	782.35	-31.69	782.98	3.68	3.68	0.00
11,501.00	96.20	355.50	10,882.82	875.63	-39.03	876.50	1.60	1.60	0.00
11,596.00	94.80	355.90	10,873.71	969.92	-46.12	971.02	1.53	-1.47	0.42
11,659.00	94.00	356.00	10,868.88	1,032.58	-50.56	1,033.81	1.28	-1.27	0.16
11,690.00	92.80	355.40	10,867.04	1,063.44	-52.88	1,064.74	4.33	-3.87	-1.94
11,722.00	91.40	355.50	10,865.87	1,095.32	-55.41	1,096.70	4.39	-4.38	0.31
11,785.00	88.60	356.30	10,865.87	1,158.15	-59.92	1,159.67	4.62	-4.44	1.27
11,879.00	89.30	356.80	10,867.59	1,251.96	-65.57	1,253.65	0.92	0.74	0.53
11,974.00	90.70	356.50	10,867.59	1,346.80	-71.12	1,348.64	1.51	1.47	-0.32
12,068.00	90.20	356.10	10,866.85	1,440.60	-77.19	1,442.61	0.68	-0.53	-0.43
12,162.00	88.00	356.70	10,868.33	1,534.39	-83.09	1,536.58	2.43	-2.34	0.64
12,257.00	88.40	356.20	10,871.31	1,629.16	-88.97	1,631.52	0.67	0.42	-0.53
12,350.00	90.40	357.30	10,872.28	1,722.00	-94.24	1,724.51	2.45	2.15	1.18
12,445.00	90.90	357.20	10,871.21	1,816.89	-98.80	1,819.50	0.54	0.53	-0.11

Phoenix Technology Services LP

Survey Report



XTO ENERGY

Company:	XTO Energy Inc	Local Co-ordinate Reference:	Well 2H
Project:	Lea County, NM (NAD27)	TVD Reference:	RKB @ 3812.00usft (Noram 25)
Site:	Perla Negra Federal Com	MD Reference:	RKB @ 3812.00usft (Noram 25)
Well:	2H	North Reference:	Grid
Wellbore:	OH / Job# 1514019	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Noram 25)	Database:	Compass 5000 GCR

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)
12,540.00	90.20	358.70	10,870.29	1,911.82	-102.20	1,914.49	1.74	-0.74	1.58
12,634.00	90.30	359.20	10,869.88	2,005.80	-103.92	2,008.45	0.54	0.11	0.53
12,729.00	91.40	359.40	10,868.48	2,100.78	-105.08	2,103.39	1.18	1.16	0.21
12,823.00	91.20	0.50	10,866.34	2,194.76	-105.16	2,197.27	1.19	-0.21	1.17
12,918.00	91.00	1.40	10,864.52	2,289.72	-103.59	2,292.07	0.97	-0.21	0.95
13,012.00	90.40	1.80	10,863.37	2,383.68	-100.96	2,385.81	0.77	-0.64	0.43
13,107.00	90.00	1.50	10,863.04	2,478.64	-98.23	2,480.54	0.53	-0.42	-0.32
13,201.00	90.70	0.60	10,862.46	2,572.62	-96.51	2,574.35	1.21	0.74	-0.96
13,295.00	90.90	359.40	10,861.15	2,666.61	-96.51	2,668.24	1.29	0.21	-1.28
13,390.00	91.70	358.40	10,859.00	2,761.57	-98.33	2,763.18	1.35	0.84	-1.05
13,484.00	90.90	358.80	10,856.86	2,855.51	-100.63	2,857.14	0.95	-0.85	0.43
13,578.00	90.80	358.00	10,855.47	2,949.47	-103.25	2,951.11	0.86	-0.11	-0.85
13,673.00	91.60	358.20	10,853.48	3,044.39	-106.40	3,046.08	0.87	0.84	0.21
13,767.00	92.30	357.70	10,850.28	3,138.28	-109.76	3,140.02	0.91	0.74	-0.53
13,862.00	91.40	358.40	10,847.21	3,233.17	-112.99	3,234.97	1.20	-0.95	0.74
13,956.00	91.40	356.70	10,844.92	3,327.05	-117.01	3,328.94	1.81	0.00	-1.81
14,051.00	90.20	355.40	10,843.59	3,421.81	-123.55	3,423.90	1.86	-1.26	-1.37
14,145.00	91.70	355.20	10,842.03	3,515.48	-131.25	3,517.82	1.61	1.60	-0.21
14,239.00	90.80	355.60	10,839.98	3,609.16	-138.79	3,611.74	1.05	-0.96	0.43
14,334.00	90.80	356.10	10,838.66	3,703.90	-145.66	3,706.69	0.53	0.00	0.53
14,428.00	90.40	356.60	10,837.67	3,797.70	-151.65	3,800.67	0.68	-0.43	0.53
14,523.00	90.10	357.10	10,837.26	3,892.56	-156.87	3,895.67	0.61	-0.32	0.53
14,618.00	91.20	356.10	10,836.18	3,987.38	-162.50	3,990.65	1.56	1.16	-1.05
14,712.00	90.60	356.20	10,834.70	4,081.16	-168.81	4,084.61	0.65	-0.64	0.11
14,807.00	90.10	356.90	10,834.12	4,175.98	-174.53	4,179.60	0.91	-0.53	0.74
14,901.00	89.10	357.20	10,834.78	4,269.85	-179.36	4,273.59	1.11	-1.06	0.32
14,996.00	90.60	356.20	10,835.03	4,364.69	-184.83	4,368.58	1.90	1.58	-1.05
15,090.00	90.10	356.20	10,834.45	4,458.48	-191.06	4,462.56	0.53	-0.53	0.00
15,145.00	90.10	356.20	10,834.36	4,513.36	-194.71	4,517.55	0.00	0.00	0.00
330' Hardline crossing									
15,185.00	90.10	356.20	10,834.29	4,553.27	-197.36	4,557.54	0.00	0.00	0.00
15,218.00	90.00	356.30	10,834.26	4,586.20	-199.52	4,590.53	0.43	-0.30	0.30
Last Phoenix MWD Survey									
15,275.00	90.00	356.30	10,834.26	4,643.08	-203.20	4,647.52	0.00	0.00	0.00
Projection to TD									

Phoenix Technology Services LP
Survey Report



XTOENERGY

Company:	XTO Energy Inc	Local Co-ordinate Reference:	Well 2H
Project:	Lea County, NM (NAD27)	TVD Reference:	RKB @ 3812.00usft (Noram 25)
Site:	Perla Negra Federal Com	MD Reference:	RKB @ 3812.00usft (Noram 25)
Well:	2H	North Reference:	Grid
Wellbore:	OH / Job# 1514019	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Noram 25)	Database:	Compass 5000 GCR

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,090.00	10,088.31	-7.52	24.97	Tie In to Phoenix Gyro Surveys
10,178.00	10,176.29	-6.88	25.58	First Phoenix MWD Survey
15,145.00	10,834.36	4,513.36	-194.71	330' Hardline crossing
15,218.00	10,834.26	4,586.20	-199.52	Last Phoenix MWD Survey
15,275.00	10,834.26	4,643.08	-203.20	Projection to TD

Checked By: _____ Approved By: _____ Date: _____