

SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

Job #	60550	Wellbore Name	Client: Extraction Oil and Gas
Well Name:	Mickey 1	OH	API#: 05-23-43849
County/State:	Weld, CO		Direction: 75.46
Latitude:	40° 30' 59.054N		Longitude: 104° 54' 51.127W
1/4-1/4 Section-Township-Range-Footages:			

TIE IN DATA

MD	TVD	INC	AZM	N-S	E-W	DATA SOURCE
1553.00	1500.84	27.10	329.20	272.10	-163.74	MWD
Data Source Company:						NEWSCO

FIRST SURVEY

DATE	DEPTH	INC	AZM
28-Nov-16	1580.00	25.81	324.44

LAST SURVEY

DATE	DEPTH	INC	AZM
4-Dec-16	17881.00	88.26	86.74

STRAIGHT LINE PROJECTION TO TD

DATE	DEPTH	INC	AZM
4-Dec-16	17948.00	88.26	86.74

DEPTH DATUM

KELLY BUSHING	GROUND LEVEL
25.00	4881.00

MWD 1: Kevin Hursh	DD 1: Colby Hansen	TOTAL CORRECTION: 8.45
MWD 2: Brian Murphy	DD 2: Scott Sanford	DECLINATION OR GRID: DEC
MWD 3: Justin Schram	DD 3:	MWD TYPE: Velocity UTX

PRINT YOUR NAME

Justin Schram

SIGN YOUR NAME

Justin Schram

DATE

4-Dec-16

PRINT WELL PLANNER

Travis Kniss

SIGN WELL PLANNER

Travis Kniss

DATE

21-Feb-17

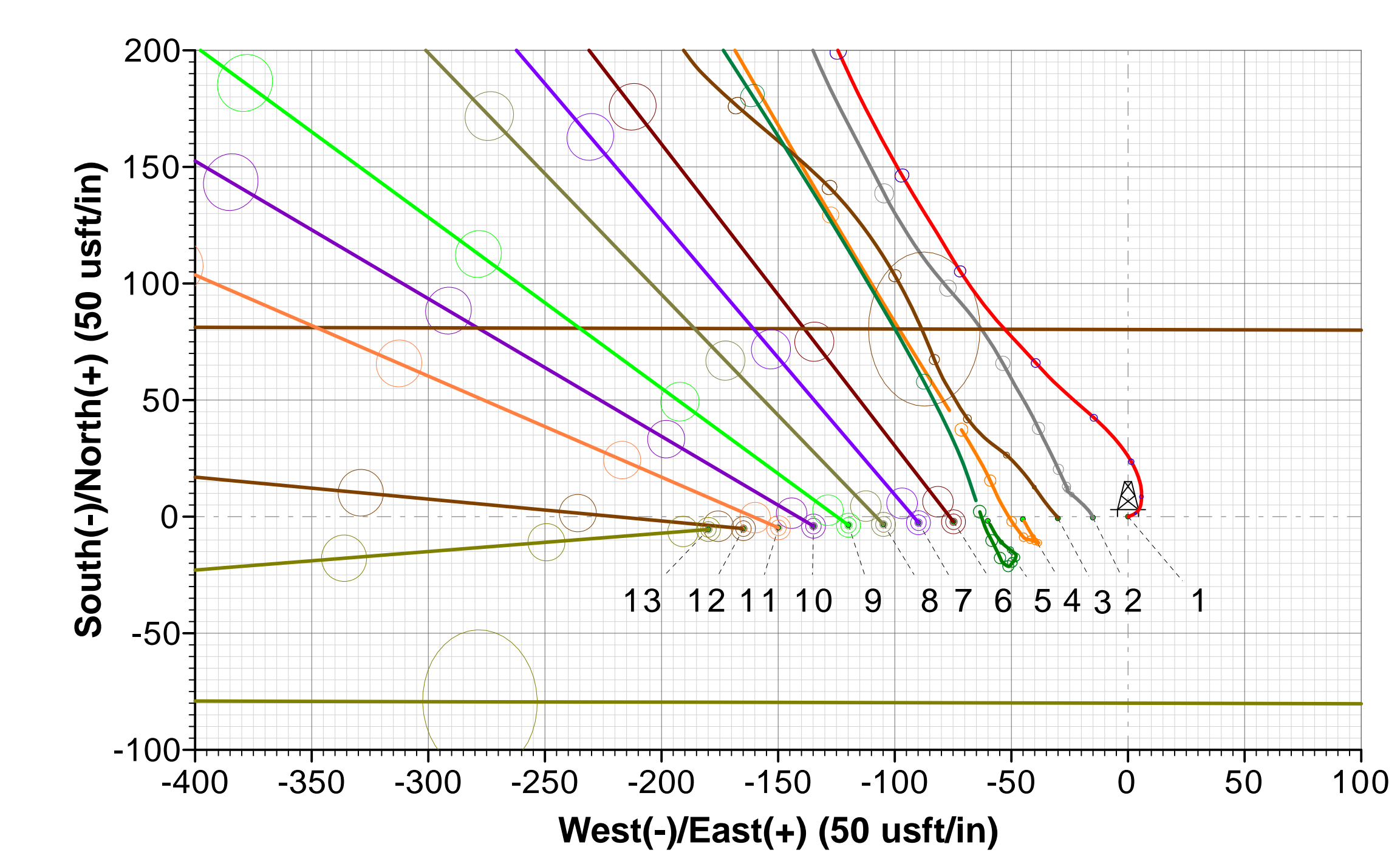
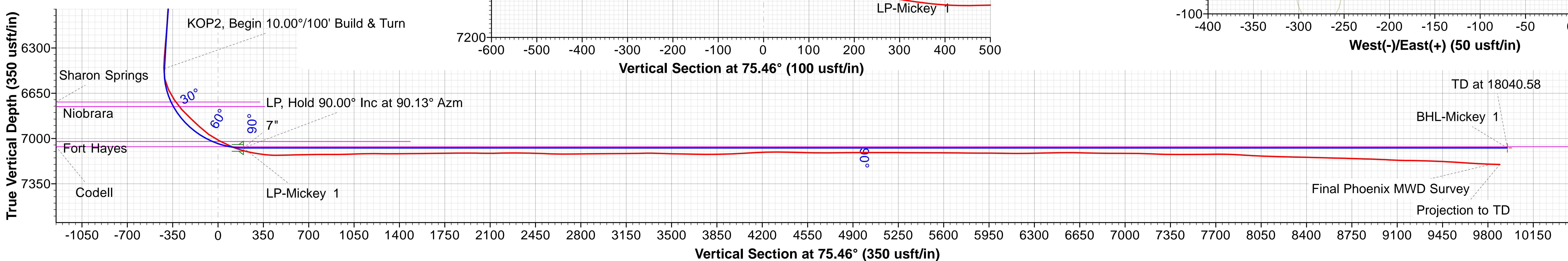
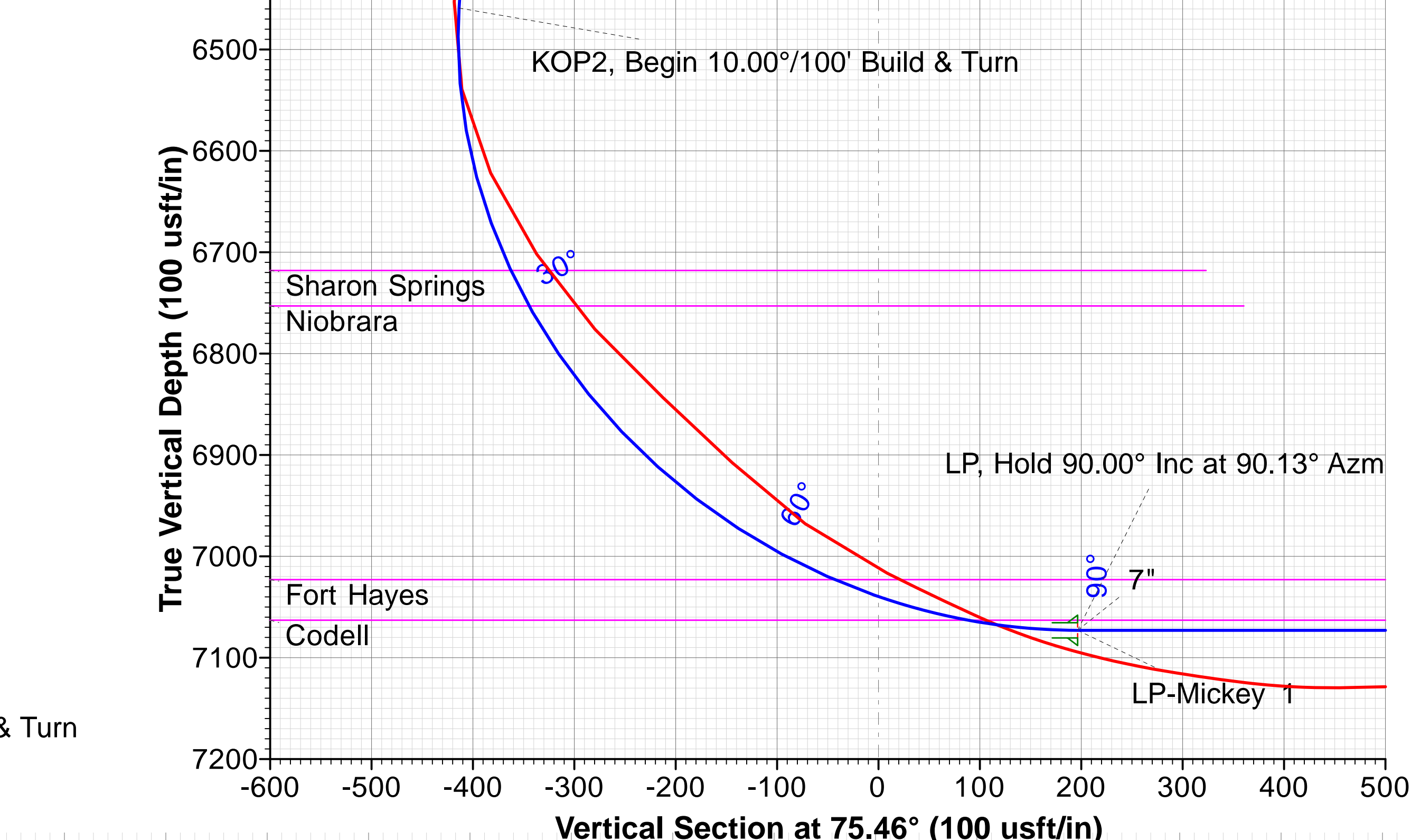
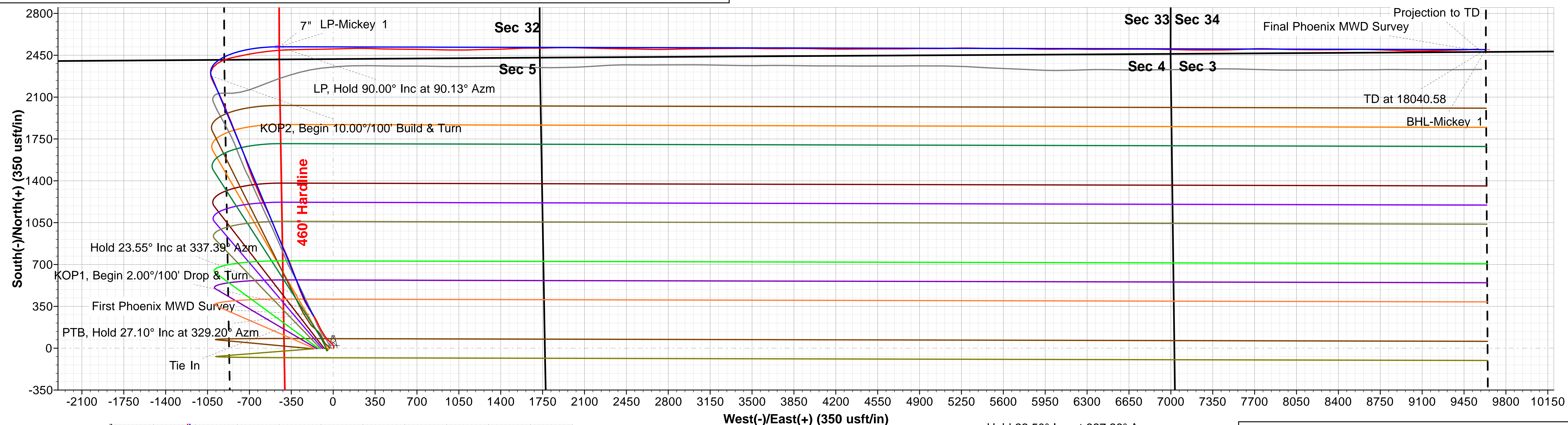
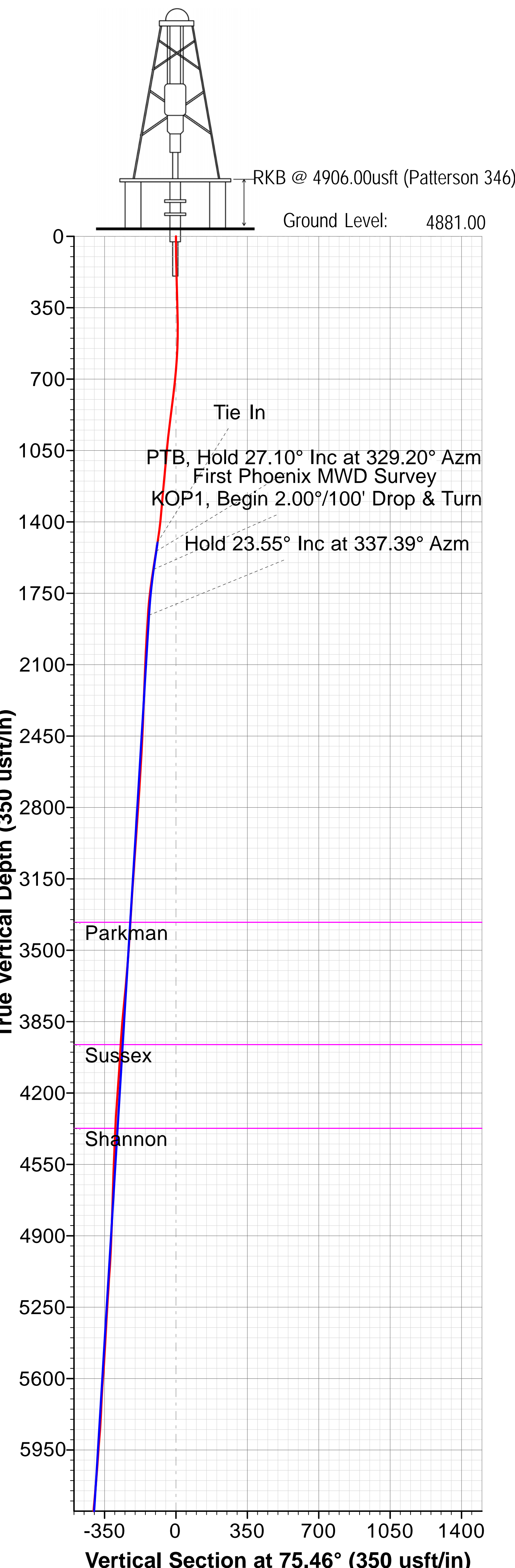
The data and calculations for this survey have been checked by me and conform to the calibration standards and operational procedures set forth by Phoenix Technology Services USA INC. I am authorized and qualified to review the data, calculations, and this report, and that the report represents a true and correct Directional Survey of this well based on the original data corrected to True North and obtained at the well site. Wellbore coordinates are calculated using Minimum curvature or other method.

WELL DETAILS							
+N/-S	+E/-W	Northing	Ground Level:	4881.00	Latitude	Longitude	
0.00	0.00	1431504.55	Easting	3162869.48	40° 30' 59.054 N	104° 54' 51.127 W	

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	Annotation
1	1553.00	27.10	329.20	1500.84	272.10	-163.74	0.00	0.00	-90.19		Tie In
2	1601.00	27.10	329.20	1543.57	290.88	-174.94	0.00	0.00	-96.32		PTB, Hold 27.10° Inc at 329.20° Azm
3	1701.00	27.10	329.20	1632.59	330.01	-198.26	0.00	0.00	-109.07		KOP1, Begin 2.00°/100' Drop & Turn
4	1950.00	23.55	337.39	1857.70	424.70	-246.46	2.00	139.05	-131.95		Hold 23.55° Inc at 337.39° Azm
5	6969.59	23.55	337.39	6459.25	2276.02	-1017.58	0.00	0.00	-413.63		KOP2, Begin 10.00°/100' Build & Turn
6	7958.46	90.00	90.13	7073.00	2521.37	-450.92	10.00	111.02	196.47	LP-Mickey 1	LP, Hold 90.00° Inc at 90.13° Azm
7	18040.58	90.00	90.13	7073.00	2497.75	9631.17	0.00	0.00	9949.78	BHL-Mickey 1	TD at 18040.58

FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
3363.00	3592.05	Parkman	0.00	75.46
3963.00	4246.56	Sussex	0.00	75.46
4373.00	4693.81	Shannon	0.00	75.46
6718.00	7252.50	Sharon Springs	0.00	75.46
6753.00	7293.03	Niobrara	0.00	75.46
7023.00	7707.97	Fort Hayes	0.00	75.46
7063.00	7847.15	Codell	0.00	75.46

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
BHL-Mickey 1	7073.00	2497.75	9631.17	1434065.87	3172483.94	40° 31' 23.718 N	104° 52' 46.409 W	Point	
LP-Mickey 1	7073.00	2521.37	-450.92	1434022.89	3162401.92	40° 31' 23.970 N	104° 54' 56.966 W	Point	



LEGEND

- 4, OH / Job #60553, Surveys (Patterson 346) V0
- 4, OH / Job #60553, Plan 2 11-21-16 V0
- 10, OH / Job #60559, Plan 1 11-15-16 V0
- 2, OH / Job #60551, Surveys (Patterson 346) V0
- 6, OH / Job #60555, Plan 1 11-15-16 V0
- 12, OH / Job #60561, Plan 1 11-15-16 V0
- 7, OH / Job #60556, Plan 1 11-15-16 V0
- 3, OH / Job #60552, Surveys (Patterson 346) V0
- 3, OH / Job #60552, Plan 2 11-21-16 V0
- 11, OH / Job #60560, Plan 1 11-15-16 V0
- 5, OH / Job #60554, Plan 2 11-21-16 V0
- 5, OH / Job #60554, Surveys (Patterson 346) V0
- 9, OH / Job #60558, Plan 1 11-15-16 V0
- 8, OH / Job #60557, Plan 1 11-15-16 V0
- 13, OH / Job #60562, Plan 1 11-15-16 V0
- 1, OH / Job #60550, Surveys (Patterson 346) V0
- Plan 2 11-21-16



Extraction Oil & Gas

Weld County, CO (NAD83)

Mickey

1

OH / Job #60550

Survey: Phoenix MWD Surveys

Standard Survey Report

05 December, 2016





Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 1
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4906.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4906.00usft (Patterson 346)
Well:	1	North Reference:	True
Wellbore:	OH / Job #60550	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 346)	Database:	Compass 5000 RMR

Project	Weld County, CO (NAD83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Mickey				
Site Position:		Northing:	1,431,504.55 usft	Latitude:	40° 30' 59.054 N
From:	Lat/Long	Easting:	3,162,869.49 usft	Longitude:	104° 54' 51.127 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well	1					
Well Position	+N/-S	0.00 usft	Northing:	1,431,504.55 usft	Latitude:	40° 30' 59.054 N
	+E/-W	0.00 usft	Easting:	3,162,869.49 usft	Longitude:	104° 54' 51.127 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,881.00 usft

Wellbore	OH / Job #60550				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/20/2016	8.45	66.95	52,520

Design	Surveys (Patterson 346)				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	75.46	

Survey Program	Date	12/5/2016			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
94.00	1,601.00	Surface Surveys (OH / Surface)	NS-GYRO-MS	North sensing gyrocompassing m/s	
1,553.00	17,948.00	Phoenix MWD Surveys (OH / Job #60550)	MWD+HDGM	OWSG Rev.2 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)	
1,553.00	27.10	329.20	1,500.84	272.10	-163.74	-90.19	0.00	0.00	0.00	
Tie In										
1,580.00	25.81	324.44	1,525.02	282.16	-170.31	-94.02	9.19	-4.78	-17.63	
First Phoenix MWD Survey										
1,674.00	27.28	327.60	1,609.11	317.00	-193.76	-107.97	2.17	1.56	3.36	
1,769.00	26.46	329.85	1,693.85	353.69	-216.05	-120.34	1.37	-0.86	2.37	
1,863.00	24.71	331.86	1,778.64	389.12	-235.84	-130.59	2.08	-1.86	2.14	
1,958.00	23.51	337.93	1,865.36	424.20	-252.33	-137.75	2.90	-1.26	6.39	
2,052.00	23.04	336.56	1,951.71	458.45	-266.69	-143.05	0.76	-0.50	-1.46	



Phoenix Technology Services LP
Survey Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 1
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4906.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4906.00usft (Patterson 346)
Well:	1	North Reference:	True
Wellbore:	OH / Job #60550	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 346)	Database:	Compass 5000 RMR

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)	
2,147.00	22.78	339.30	2,039.22	492.71	-280.58	-147.90	1.16	-0.27	2.88	
2,241.00	23.25	339.96	2,125.74	527.17	-293.38	-151.63	0.57	0.50	0.70	
2,335.00	23.64	340.24	2,211.98	562.33	-306.10	-155.12	0.43	0.41	0.30	
2,430.00	22.89	340.64	2,299.25	597.69	-318.67	-158.41	0.81	-0.79	0.42	
2,524.00	24.39	339.62	2,385.36	633.13	-331.49	-161.92	1.65	1.60	-1.09	
2,617.00	24.04	339.45	2,470.18	668.87	-344.83	-165.86	0.38	-0.38	-0.18	
2,712.00	22.96	338.38	2,557.30	704.22	-358.45	-170.17	1.22	-1.14	-1.13	
2,807.00	23.53	337.08	2,644.59	738.91	-372.66	-175.22	0.81	0.60	-1.37	
2,901.00	22.90	336.20	2,730.97	772.92	-387.35	-180.89	0.77	-0.67	-0.94	
2,996.00	23.40	337.10	2,818.33	807.21	-402.15	-186.61	0.64	0.53	0.95	
3,090.00	23.09	335.16	2,904.70	841.14	-417.15	-192.62	0.88	-0.33	-2.06	
3,185.00	22.80	336.12	2,992.18	874.87	-432.43	-198.94	0.50	-0.31	1.01	
3,279.00	23.67	336.50	3,078.56	908.83	-447.33	-204.83	0.94	0.93	0.40	
3,374.00	23.13	336.07	3,165.74	943.37	-462.50	-210.85	0.60	-0.57	-0.45	
3,468.00	23.62	336.66	3,252.03	977.54	-477.45	-216.74	0.58	0.52	0.63	
3,563.00	23.49	338.61	3,339.11	1,012.64	-491.89	-221.91	0.83	-0.14	2.05	
3,657.00	24.31	336.99	3,425.05	1,047.90	-506.29	-226.99	1.12	0.87	-1.72	
3,752.00	24.73	336.43	3,511.48	1,084.11	-521.88	-232.99	0.51	0.44	-0.59	
3,846.00	25.32	335.71	3,596.66	1,120.45	-538.01	-239.48	0.71	0.63	-0.77	
3,940.00	25.69	334.34	3,681.50	1,157.14	-555.10	-246.82	0.74	0.39	-1.46	
4,035.00	25.41	333.81	3,767.21	1,193.99	-573.02	-254.90	0.38	-0.29	-0.56	
4,129.00	23.36	333.39	3,852.82	1,228.75	-590.27	-262.87	2.19	-2.18	-0.45	
4,223.00	23.03	336.56	3,939.23	1,262.29	-605.93	-269.62	1.37	-0.35	3.37	
4,318.00	23.43	337.98	4,026.52	1,296.85	-620.40	-274.95	0.72	0.42	1.49	
4,413.00	24.47	337.15	4,113.34	1,332.49	-635.12	-280.25	1.15	1.09	-0.87	
4,507.00	23.87	336.03	4,199.10	1,367.81	-650.41	-286.18	0.80	-0.64	-1.19	
4,601.00	22.63	335.91	4,285.47	1,401.70	-665.52	-292.30	1.32	-1.32	-0.13	
4,696.00	23.64	339.57	4,372.83	1,436.23	-679.63	-297.29	1.85	1.06	3.85	
4,791.00	22.04	339.52	4,460.38	1,470.78	-692.51	-301.09	1.68	-1.68	-0.05	
4,886.00	23.17	340.80	4,548.08	1,505.13	-704.90	-304.45	1.30	1.19	1.35	
4,980.00	22.17	339.71	4,634.82	1,539.23	-717.13	-307.73	1.15	-1.06	-1.16	
5,074.00	23.11	341.80	4,721.57	1,573.39	-729.04	-310.68	1.32	1.00	2.22	
5,168.00	20.40	341.52	4,808.87	1,606.46	-740.00	-312.99	2.89	-2.88	-0.30	
5,262.00	20.44	337.91	4,896.97	1,637.21	-751.36	-316.27	1.34	0.04	-3.84	
5,357.00	22.82	339.11	4,985.27	1,669.80	-764.17	-320.49	2.55	2.51	1.26	
5,451.00	26.29	337.40	5,070.76	1,706.06	-778.68	-325.42	3.77	3.69	-1.82	
5,546.00	24.80	338.10	5,156.47	1,743.97	-794.20	-330.93	1.60	-1.57	0.74	
5,640.00	24.17	337.20	5,242.02	1,780.00	-809.01	-336.22	0.78	-0.67	-0.96	
5,735.00	25.02	337.75	5,328.40	1,816.52	-824.15	-341.71	0.93	0.89	0.58	
5,830.00	25.65	340.04	5,414.26	1,854.45	-838.78	-346.34	1.23	0.66	2.41	
5,924.00	26.48	338.24	5,498.70	1,893.03	-853.49	-350.90	1.22	0.88	-1.91	
6,019.00	26.55	336.83	5,583.71	1,932.22	-869.70	-356.75	0.67	0.07	-1.48	
6,113.00	22.21	336.86	5,669.31	1,967.89	-884.95	-362.56	4.62	-4.62	0.03	

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Site:	Mickey	MD Reference:	RKB @ 4906.00usft (Patterson 346)
Well:	1	North Reference:	True
Wellbore:	OH / Job #60550	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 346)	Database:	Compass 5000 RMR

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)	
6,208.00	22.42	340.79	5,757.20	2,001.51	-897.97	-366.72	1.59	0.22	4.14	
6,302.00	22.85	335.04	5,843.97	2,034.99	-911.57	-371.48	2.40	0.46	-6.12	
6,397.00	23.62	334.74	5,931.26	2,068.92	-927.48	-378.36	0.82	0.81	-0.32	
6,492.00	24.14	336.57	6,018.13	2,103.96	-943.32	-384.90	0.95	0.55	1.93	
6,586.00	23.20	334.01	6,104.23	2,138.24	-959.08	-391.54	1.48	-1.00	-2.72	
6,681.00	23.23	333.68	6,191.53	2,171.85	-975.59	-399.08	0.14	0.03	-0.35	
6,775.00	22.88	333.91	6,278.03	2,204.88	-991.84	-406.53	0.38	-0.37	0.24	
6,870.00	22.09	334.26	6,365.80	2,237.56	-1,007.72	-413.69	0.84	-0.83	0.37	
6,964.00	21.80	341.15	6,453.01	2,270.00	-1,021.04	-418.44	2.76	-0.31	7.33	
7,059.00	28.55	8.28	6,539.22	2,309.34	-1,023.48	-410.93	13.90	7.11	28.56	
7,153.00	29.53	42.79	6,621.97	2,348.84	-1,004.38	-382.52	17.64	1.04	36.71	
7,248.00	35.75	52.77	6,701.99	2,382.87	-966.31	-337.13	8.64	6.55	10.51	
7,343.00	42.12	68.97	6,776.04	2,411.20	-914.29	-279.66	12.60	6.71	17.05	
7,438.00	47.79	79.12	6,843.33	2,429.31	-849.87	-212.76	9.61	5.97	10.68	
7,532.00	45.80	77.63	6,907.68	2,443.10	-782.76	-144.33	2.41	-2.12	-1.59	
7,626.00	54.49	78.50	6,967.86	2,457.97	-712.22	-72.32	9.27	9.24	0.93	
7,721.00	63.47	81.98	7,016.78	2,471.64	-632.06	8.70	9.96	9.45	3.66	
7,816.00	65.57	82.64	7,057.65	2,483.11	-547.08	93.84	2.30	2.21	0.69	
7,910.00	74.05	86.16	7,090.07	2,491.64	-459.37	180.88	9.68	9.02	3.74	
8,005.00	80.11	88.29	7,111.31	2,496.10	-366.93	271.48	6.74	6.38	2.24	
8,099.00	83.47	88.69	7,124.73	2,498.55	-273.94	362.11	3.60	3.57	0.43	
8,194.00	90.52	89.50	7,129.70	2,500.04	-179.14	454.25	7.47	7.42	0.85	
8,288.00	91.68	88.83	7,127.90	2,501.41	-85.17	545.55	1.43	1.23	-0.71	
8,382.00	91.12	88.76	7,125.60	2,503.39	8.78	636.99	0.60	-0.60	-0.07	
8,500.00	90.81	88.22	7,123.62	2,506.50	126.72	751.93	0.53	-0.26	-0.46	
8,595.00	89.38	90.00	7,123.46	2,507.97	221.70	844.24	2.40	-1.51	1.87	
8,689.00	90.63	91.54	7,123.45	2,506.71	315.69	934.90	2.11	1.33	1.64	
8,783.00	92.31	92.45	7,121.04	2,503.44	409.60	1,024.98	2.03	1.79	0.97	
8,878.00	91.72	89.98	7,117.70	2,501.43	504.51	1,116.35	2.67	-0.62	-2.60	
8,972.00	89.09	90.30	7,117.03	2,501.20	598.50	1,207.27	2.82	-2.80	0.34	
9,067.00	89.70	90.87	7,118.04	2,500.23	693.49	1,298.97	0.88	0.64	0.60	
9,161.00	90.85	91.51	7,117.58	2,498.28	787.46	1,389.45	1.40	1.22	0.68	
9,255.00	89.66	91.12	7,117.17	2,496.12	881.44	1,479.87	1.33	-1.27	-0.41	
9,349.00	91.32	90.77	7,116.36	2,494.57	975.42	1,570.45	1.80	1.77	-0.37	
9,444.00	90.46	89.78	7,114.89	2,494.11	1,070.40	1,662.28	1.38	-0.91	-1.04	
9,538.00	90.91	88.11	7,113.76	2,495.84	1,164.38	1,753.68	1.84	0.48	-1.78	
9,633.00	90.14	88.48	7,112.89	2,498.67	1,259.33	1,846.30	0.90	-0.81	0.39	
9,727.00	90.06	89.39	7,112.73	2,500.42	1,353.31	1,937.71	0.97	-0.09	0.97	
9,821.00	88.62	87.21	7,113.81	2,503.20	1,447.26	2,029.35	2.78	-1.53	-2.32	
9,916.00	90.61	87.38	7,114.45	2,507.69	1,542.14	2,122.32	2.10	2.09	0.18	
10,010.00	91.36	90.31	7,112.83	2,509.58	1,636.10	2,213.74	3.22	0.80	3.12	
10,105.00	90.06	89.00	7,111.66	2,510.15	1,731.09	2,305.83	1.94	-1.37	-1.38	
10,200.00	88.21	88.27	7,113.09	2,512.42	1,826.04	2,398.32	2.09	-1.95	-0.77	
10,294.00	88.09	89.54	7,116.13	2,514.21	1,919.98	2,489.69	1.36	-0.13	1.35	



Phoenix Technology Services LP
Survey Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 1
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4906.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4906.00usft (Patterson 346)
Well:	1	North Reference:	True
Wellbore:	OH / Job #60550	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 346)	Database:	Compass 5000 RMR

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)	
10,388.00	88.33	91.25	7,119.06	2,513.56	2,013.92	2,580.47	1.84	0.26	1.82	
10,483.00	90.00	91.74	7,120.45	2,511.09	2,108.88	2,671.76	1.83	1.76	0.52	
10,577.00	90.88	91.32	7,119.72	2,508.58	2,202.84	2,762.08	1.04	0.94	-0.45	
10,671.00	90.85	91.35	7,118.31	2,506.39	2,296.80	2,852.49	0.05	-0.03	0.03	
10,765.00	90.39	91.03	7,117.29	2,504.43	2,390.78	2,942.96	0.60	-0.49	-0.34	
10,860.00	89.37	90.49	7,117.49	2,503.17	2,485.77	3,034.59	1.21	-1.07	-0.57	
10,955.00	91.11	91.50	7,117.09	2,501.52	2,580.75	3,126.12	2.12	1.83	1.06	
11,049.00	91.32	90.77	7,115.10	2,499.66	2,674.71	3,216.60	0.81	0.22	-0.78	
11,143.00	90.51	89.25	7,113.59	2,499.65	2,768.69	3,307.57	1.83	-0.86	-1.62	
11,237.00	87.77	88.24	7,115.01	2,501.71	2,862.65	3,399.03	3.11	-2.91	-1.07	
11,332.00	88.94	89.38	7,117.73	2,503.68	2,957.59	3,491.43	1.72	1.23	1.20	
11,427.00	89.00	89.21	7,119.44	2,504.85	3,052.56	3,583.65	0.19	0.06	-0.18	
11,521.00	88.63	89.27	7,121.38	2,506.09	3,146.54	3,674.93	0.40	-0.39	0.06	
11,615.00	89.98	89.91	7,122.52	2,506.76	3,240.52	3,766.08	1.59	1.44	0.68	
11,710.00	90.85	88.98	7,121.84	2,507.68	3,335.51	3,858.26	1.34	0.92	-0.98	
11,805.00	92.03	89.83	7,119.45	2,508.67	3,430.48	3,950.42	1.53	1.24	0.89	
11,900.00	93.14	91.41	7,115.16	2,507.64	3,525.37	4,042.02	2.03	1.17	1.66	
11,994.00	93.31	90.97	7,109.88	2,505.70	3,619.20	4,132.36	0.50	0.18	-0.47	
12,089.00	91.61	89.40	7,105.80	2,505.39	3,714.11	4,224.15	2.43	-1.79	-1.65	
12,183.00	89.67	89.32	7,104.75	2,506.44	3,808.09	4,315.38	2.07	-2.06	-0.09	
12,278.00	88.76	90.00	7,106.05	2,507.00	3,903.08	4,407.47	1.20	-0.96	0.72	
12,372.00	88.61	91.38	7,108.21	2,505.87	3,997.04	4,498.14	1.48	-0.16	1.47	
12,467.00	88.73	91.39	7,110.41	2,503.58	4,091.99	4,589.47	0.13	0.13	0.01	
12,562.00	90.65	90.53	7,110.93	2,501.99	4,186.97	4,681.01	2.21	2.02	-0.91	
12,656.00	90.55	89.78	7,109.94	2,501.73	4,280.96	4,771.93	0.80	-0.11	-0.80	
12,751.00	90.16	89.12	7,109.35	2,502.64	4,375.96	4,864.11	0.81	-0.41	-0.69	
12,845.00	90.38	90.14	7,108.91	2,503.25	4,469.95	4,955.25	1.11	0.23	1.09	
12,940.00	89.54	89.26	7,108.98	2,503.75	4,564.95	5,047.33	1.28	-0.88	-0.93	
13,034.00	90.65	90.40	7,108.82	2,504.03	4,658.95	5,138.38	1.69	1.18	1.21	
13,129.00	89.26	89.54	7,108.90	2,504.08	4,753.94	5,230.35	1.72	-1.46	-0.91	
13,223.00	89.44	88.53	7,109.96	2,505.66	4,847.92	5,321.72	1.09	0.19	-1.07	
13,318.00	90.26	90.29	7,110.21	2,506.64	4,942.91	5,413.91	2.04	0.86	1.85	
13,412.00	90.17	89.85	7,109.86	2,506.52	5,036.91	5,504.87	0.48	-0.10	-0.47	
13,506.00	89.33	88.47	7,110.27	2,507.90	5,130.90	5,596.19	1.72	-0.89	-1.47	
13,601.00	89.22	89.04	7,111.47	2,509.96	5,225.87	5,688.64	0.61	-0.12	0.60	
13,695.00	89.37	90.87	7,112.63	2,510.04	5,319.86	5,779.63	1.95	0.16	1.95	
13,790.00	90.00	91.42	7,113.15	2,508.14	5,414.83	5,871.09	0.88	0.66	0.58	
13,884.00	89.85	90.39	7,113.27	2,506.65	5,508.82	5,961.70	1.11	-0.16	-1.10	
13,979.00	88.95	89.07	7,114.27	2,507.10	5,603.81	6,053.76	1.68	-0.95	-1.39	
14,073.00	89.55	90.49	7,115.50	2,507.46	5,697.80	6,144.83	1.64	0.64	1.51	
14,167.00	90.84	92.13	7,115.18	2,505.31	5,791.77	6,235.25	2.22	1.37	1.74	
14,261.00	91.54	91.60	7,113.23	2,502.26	5,885.70	6,325.40	0.93	0.74	-0.56	
14,356.00	90.67	89.82	7,111.39	2,501.08	5,980.67	6,417.03	2.09	-0.92	-1.87	



Phoenix Technology Services LP
Survey Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 1
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4906.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4906.00usft (Patterson 346)
Well:	1	North Reference:	True
Wellbore:	OH / Job #60550	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 346)	Database:	Compass 5000 RMR

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)	
14,450.00	91.38	88.66	7,109.71	2,502.33	6,074.64	6,508.31	1.45	0.76	-1.23	
14,544.00	88.48	90.71	7,109.83	2,502.84	6,168.63	6,599.42	3.78	-3.09	2.18	
14,639.00	89.03	91.07	7,111.89	2,501.37	6,263.59	6,690.97	0.69	0.58	0.38	
14,733.00	89.05	90.27	7,113.47	2,500.27	6,357.57	6,781.66	0.85	0.02	-0.85	
14,827.00	89.59	89.43	7,114.58	2,500.51	6,451.56	6,872.71	1.06	0.57	-0.89	
14,922.00	89.84	88.94	7,115.05	2,501.87	6,546.55	6,964.99	0.58	0.26	-0.52	
15,016.00	89.88	90.81	7,115.28	2,502.07	6,640.55	7,056.03	1.99	0.04	1.99	
15,111.00	87.81	89.77	7,117.20	2,501.59	6,735.52	7,147.84	2.44	-2.18	-1.09	
15,205.00	88.01	89.94	7,120.63	2,501.83	6,829.46	7,238.83	0.28	0.21	0.18	
15,300.00	89.14	91.46	7,122.99	2,500.67	6,924.42	7,330.45	1.99	1.19	1.60	
15,394.00	89.91	91.62	7,123.77	2,498.14	7,018.38	7,420.77	0.84	0.82	0.17	
15,488.00	90.50	91.36	7,123.43	2,495.70	7,112.35	7,511.12	0.69	0.63	-0.28	
15,583.00	90.50	90.36	7,122.60	2,494.27	7,207.33	7,602.70	1.05	0.00	-1.05	
15,677.00	90.76	89.68	7,121.57	2,494.24	7,301.33	7,693.68	0.77	0.28	-0.72	
15,772.00	88.55	89.92	7,122.14	2,494.57	7,396.32	7,785.71	2.34	-2.33	0.25	
15,866.00	86.73	88.50	7,126.01	2,495.86	7,490.22	7,876.93	2.45	-1.94	-1.51	
15,961.00	86.50	87.18	7,131.62	2,499.44	7,584.99	7,969.56	1.41	-0.24	-1.39	
16,055.00	87.77	87.78	7,136.32	2,503.56	7,678.78	8,061.38	1.49	1.35	0.64	
16,150.00	88.39	90.58	7,139.50	2,504.92	7,773.70	8,153.61	3.02	0.65	2.95	
16,244.00	88.68	92.02	7,141.91	2,502.79	7,867.65	8,244.01	1.56	0.31	1.53	
16,339.00	88.73	91.70	7,144.05	2,499.71	7,962.57	8,335.12	0.34	0.05	-0.34	
16,433.00	88.62	90.35	7,146.23	2,498.03	8,056.53	8,425.64	1.44	-0.12	-1.44	
16,527.00	88.37	90.79	7,148.70	2,497.09	8,150.49	8,516.36	0.54	-0.27	0.47	
16,622.00	88.91	89.57	7,150.95	2,496.79	8,245.46	8,608.22	1.40	0.57	-1.28	
16,717.00	88.47	90.25	7,153.12	2,496.94	8,340.44	8,700.19	0.85	-0.46	0.72	
16,811.00	87.80	89.29	7,156.18	2,497.32	8,434.38	8,791.22	1.24	-0.71	-1.02	
16,905.00	88.90	88.12	7,158.89	2,499.44	8,528.32	8,882.68	1.71	1.17	-1.24	
16,999.00	87.00	91.30	7,162.25	2,499.92	8,622.24	8,973.71	3.94	-2.02	3.38	
17,093.00	87.58	92.09	7,166.70	2,497.14	8,716.09	9,063.86	1.04	0.62	0.84	
17,188.00	88.66	92.45	7,169.81	2,493.38	8,810.97	9,154.75	1.20	1.14	0.38	
17,282.00	89.49	92.58	7,171.33	2,489.26	8,904.86	9,244.61	0.89	0.88	0.14	
17,377.00	88.05	90.72	7,173.37	2,486.52	8,999.79	9,335.81	2.48	-1.52	-1.96	
17,471.00	87.58	89.18	7,176.95	2,486.61	9,093.72	9,426.75	1.71	-0.50	-1.64	
17,566.00	86.82	89.26	7,181.59	2,487.90	9,188.60	9,518.91	0.80	-0.80	0.08	
17,660.00	86.02	87.87	7,187.46	2,490.25	9,282.38	9,610.28	1.70	-0.85	-1.48	
17,755.00	86.79	88.27	7,193.42	2,493.44	9,377.14	9,702.81	0.91	0.81	0.42	
17,850.00	87.87	87.86	7,197.85	2,496.64	9,471.98	9,795.42	1.22	1.14	-0.43	
17,881.00	88.26	86.74	7,198.89	2,498.10	9,502.93	9,825.74	3.82	1.26	-3.61	
Final Phoenix MWD Survey										
17,948.00	88.26	86.74	7,200.93	2,501.91	9,569.79	9,891.42	0.00	0.00	0.00	
Projection to TD										



Phoenix Technology Services LP

Survey Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 1
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4906.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4906.00usft (Patterson 346)
Well:	1	North Reference:	True
Wellbore:	OH / Job #60550	Survey Calculation Method:	Minimum Curvature
Design:	Surveys (Patterson 346)	Database:	Compass 5000 RMR

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,553.00	1,500.84	272.10	-163.74	Tie In
1,580.00	1,525.02	282.16	-170.31	First Phoenix MWD Survey
17,881.00	7,198.89	2,498.10	9,502.93	Final Phoenix MWD Survey
17,948.00	7,200.93	2,501.91	9,569.79	Projection to TD

Checked By: _____ Approved By: _____ Date: _____