

# SURVEY DATA CERTIFICATION



**PHOENIX**  
TECHNOLOGY SERVICES

Job #	60554	Wellbore Name	OH
Well Name:	Mickey 5	Client:	Extraction Oil and Gas
County/State:	Weld, CO	API#:	05-123-43855
Latitude:	40° 30' 59.036N	Direction:	80.12
Longitude:	104° 54' 51.905W	1/4-1/4 Section-Township-Range-Footages:	SWNE 5 6N67W

## TIE IN DATA

MD	TVD	INC	AZM
1554.00	1552.76	5.90	341.60

N-S	E-W	DATA SOURCE
4.09	-3.56	MWD
Data Source Company:		NEWSCO

## FIRST SURVEY

DATE	DEPTH	INC	AZM
6-Dec-16	1580.00	5.68	339.58

## LAST SURVEY

DATE	DEPTH	INC	AZM
10-Dec-16	17533.00	89.95	93.35

## STRAIGHT LINE PROJECTION TO TD

DATE	DEPTH	INC	AZM
10-Dec-16	17600.00	89.95	93.35

## DEPTH DATUM

KELLY BUSHING	GROUND LEVEL
25.00	4881.00

MWD 1: Ben Hursh  
MWD 2: Justin Schram  
MWD 3:

DD 1: Chris Apodaca  
DD 2: Scott Sanford  
DD 3:

TOTAL CORRECTION: 8.45  
DECLINATION OR GRID: DEC  
MWD TYPE: Velocity UTX

PRINT YOUR NAME

SIGN YOUR NAME

DATE

Justin Schram

Justin Schram

10-Dec-16

PRINT WELL PLANNER

SIGN WELL PLANNER

DATE

Travis Kniss

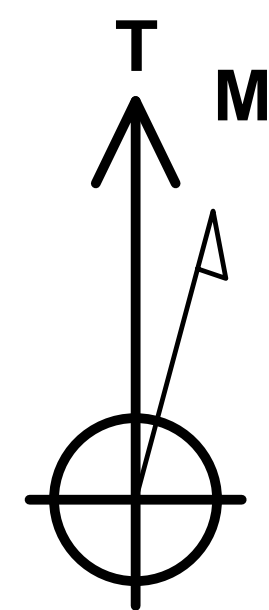
Travis Kniss

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.



Project: Weld County, CO (NAD83)  
Site: Mickey  
Well: 5  
Wellbore: OH / Job #60554  
Design: Plan 2 11-21-16  
Rig: Patterson 346



Azimuths to True North  
Magnetic North: 8.45°

Magnetic Field  
Strength: 52519.5nT  
Dip Angle: 66.95°  
Date: 12/20/2016  
Model: HDGM

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 (Abandoned), Surface, Surface V0
- 12, OH / Job #60561, Plan 2 12-07-16 V0
- 3, OH / Job #60552, Surveys (Patterson 346) V0
- 3, OH / Job #60552, Plan 2 11-21-16 V0
- 6-Z, OH / Job #60555, Plan 1 12-07-16 V0
- 11, OH / Job #60560, Plan 2 12-07-16 V0
- 11, OH / Job #60560, Surveys (Patterson 346) V0
- 8, OH / Job #60557, Surveys (Patterson 346) V0
- 13, OH / Job #60562, Plan 2 12-07-16 V0
- 13, OH / Job #60562, Surveys (Patterson 346) V0
- 1, OH / Job #60550, Surveys (Patterson 346) V0
- 7, OH / Job #60556, Plan 2 12-07-16 V0
- 7, OH / Job #60556, Surveys (Patterson 346) V0
- 12, OH / Job #60561, Surveys (Patterson 346) V0
- 5, OH / Surface, Surveys V0
- 5, OH / Job #60554, Surveys (Patterson 346) V0
- 9, OH / Job #60558, Plan 2 12-07-16 V0
- 9, OH / Job #60558, Surveys (Patterson 346) V0
- 8, OH / Job #60557, Plan 2 12-07-16 V0
- Plan 2 11-21-16

Map System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone Name: Colorado Northern Zone

Local Origin: Well 5, True North

Latitude: 40° 30' 59.036 N  
Longitude: 104° 54' 51.905 W

Grid East: 3162809.44  
Grid North: 1431502.32  
Scale Factor: 1.000

Geomagnetic Model: HDGM  
Sample Date: 20-Dec-16  
Magnetic Declination: 8.45°  
Dip Angle from Horizontal: 66.95°  
Magnetic Field Strength: 52520

To convert a Magnetic Direction to a Grid Direction, Add 8.07°  
To convert a Magnetic Direction to a True Direction, Add 8.45° East  
To convert a True Direction to a Grid Direction, Subtract 0.38°

WELL DETAILS

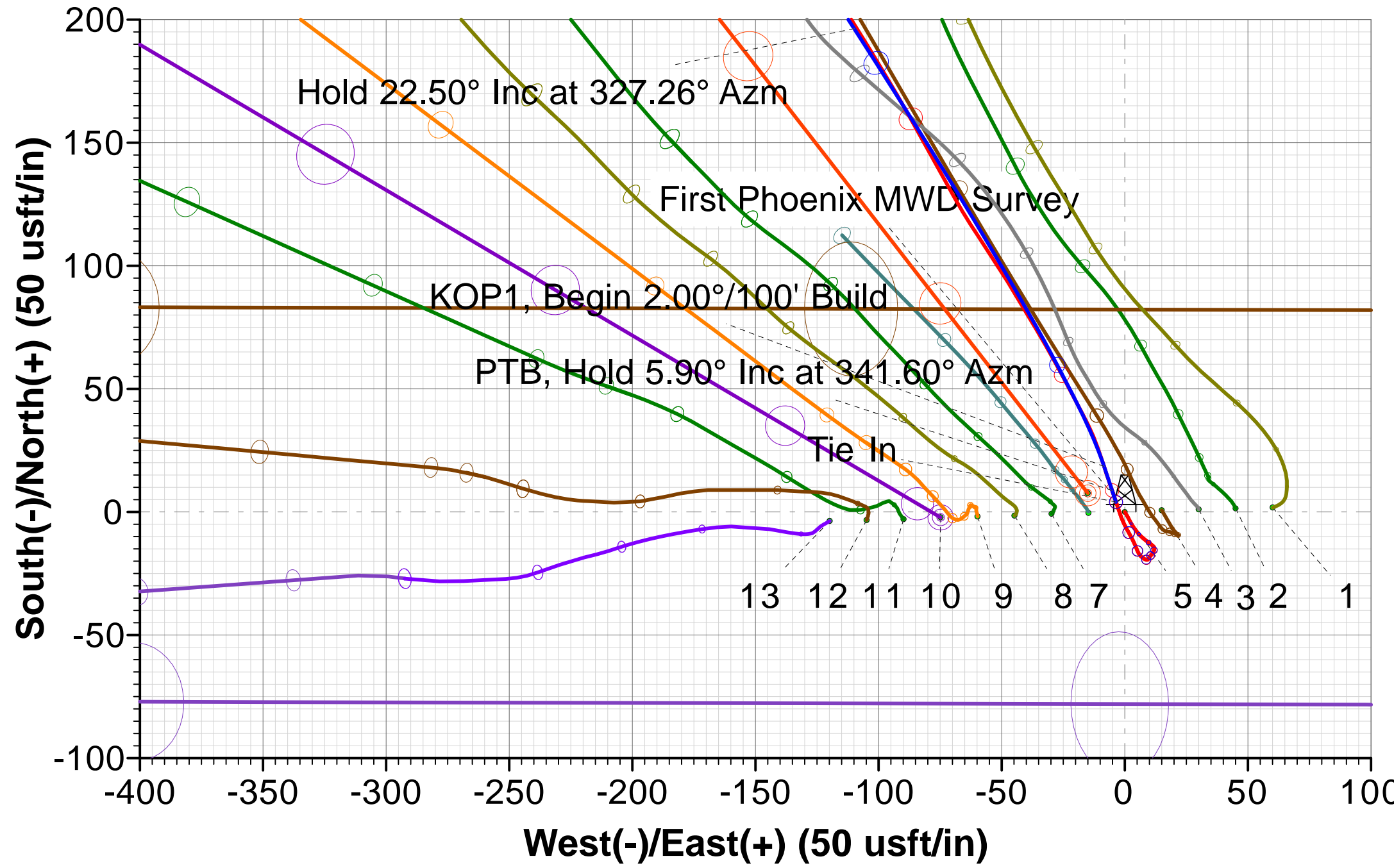
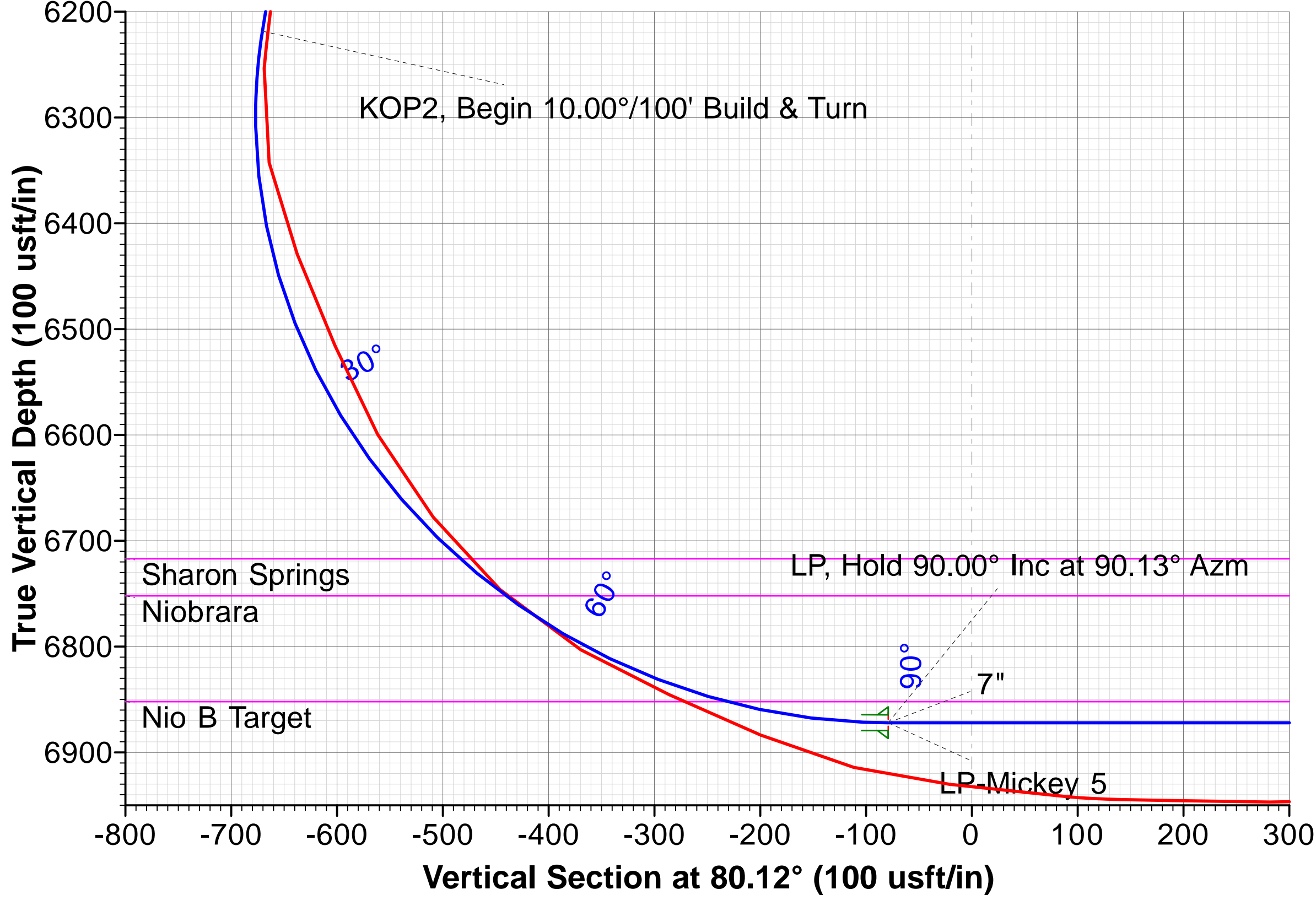
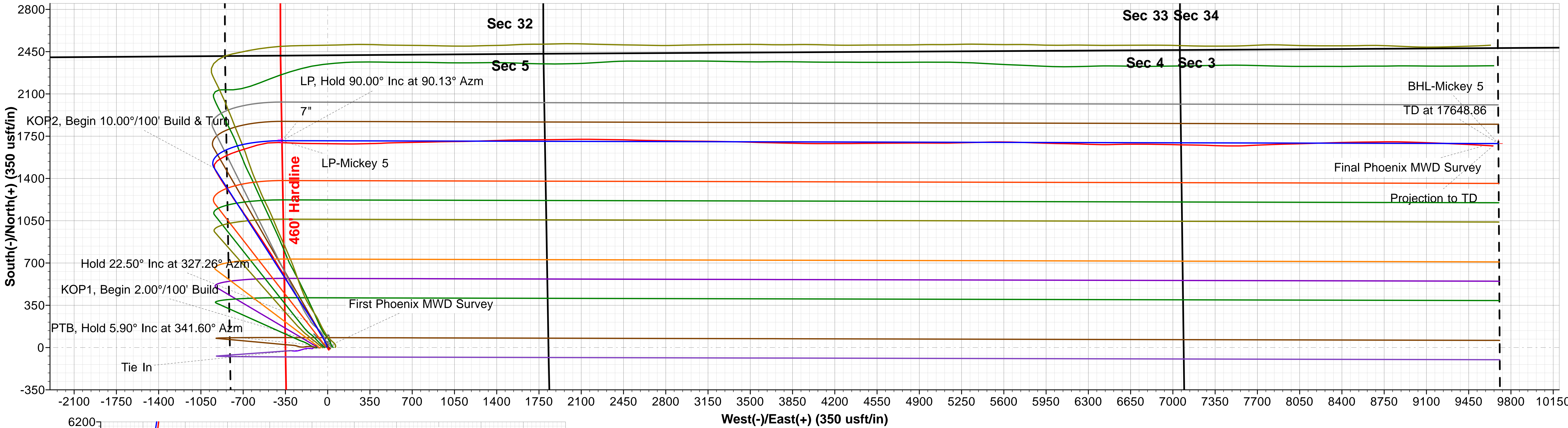
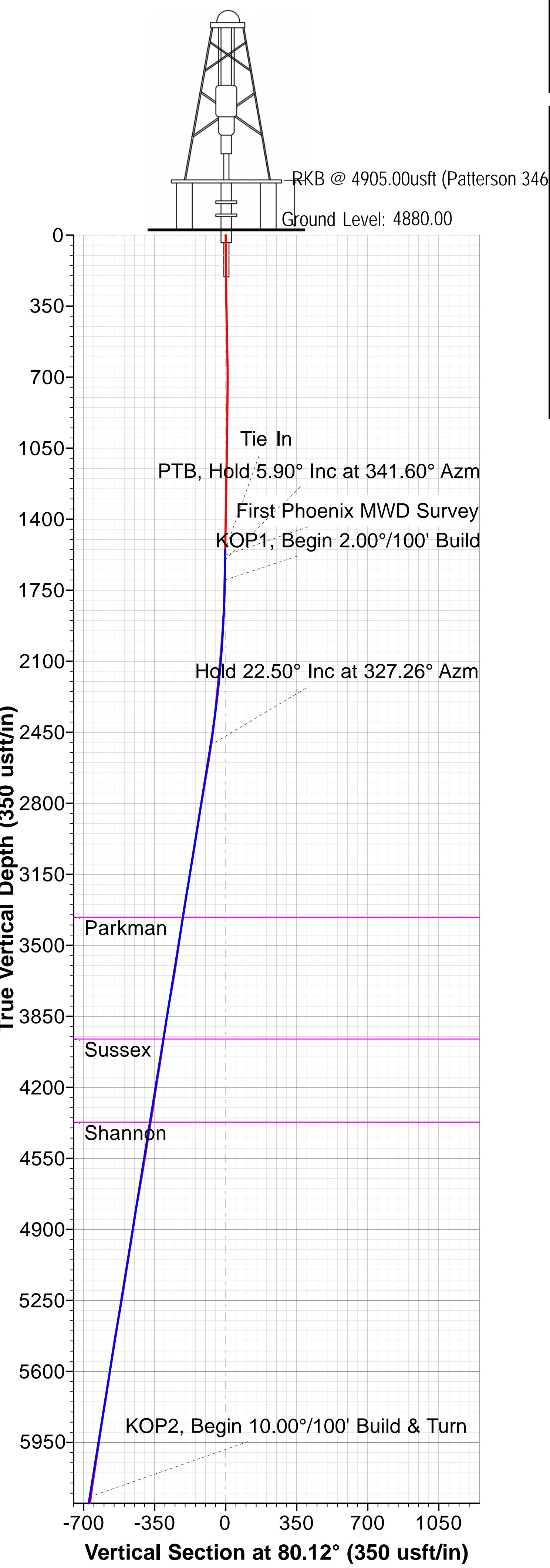
+N/-S	+E/-W	Northing	Ground Level: 4880.00	Latitude	Longitude
0.00	0.00	1431502.32	3162809.44	40° 30' 59.036 N	104° 54' 51.905 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target	Annotation
1	1554.00	5.90	341.60	1552.76	4.09	-3.56	0.00	0.00	-2.81		Tie In
2	1602.00	5.90	341.60	1600.50	8.77	-5.12	0.00	0.00	-3.54		PTB, Hold 5.90° Inc at 341.60° Azm
3	1702.00	5.90	341.60	1699.97	18.52	-8.37	0.00	0.00	-5.06		KOP1, Begin 2.00°/100' Build
4	2544.04	22.50	327.26	2513.61	196.38	-109.88	2.00	-19.09	-74.54		Hold 22.50° Inc at 327.26° Azm
5	6554.05	22.50	327.26	6218.46	1487.01	-939.65	0.00	0.00	-670.47		KOP2, Begin 10.00°/100' Build & Turn
6	7573.91	90.00	90.13	6872.00	1713.02	-378.65	10.00	120.84	-79.00	LP-Mickey 5	LP, Hold 90.00° Inc at 90.13° Azm
7	17648.86	90.00	90.13	6872.00	1689.39	9696.26	0.00	0.00	9842.34	BHL-Mickey 5	TD at 17648.86

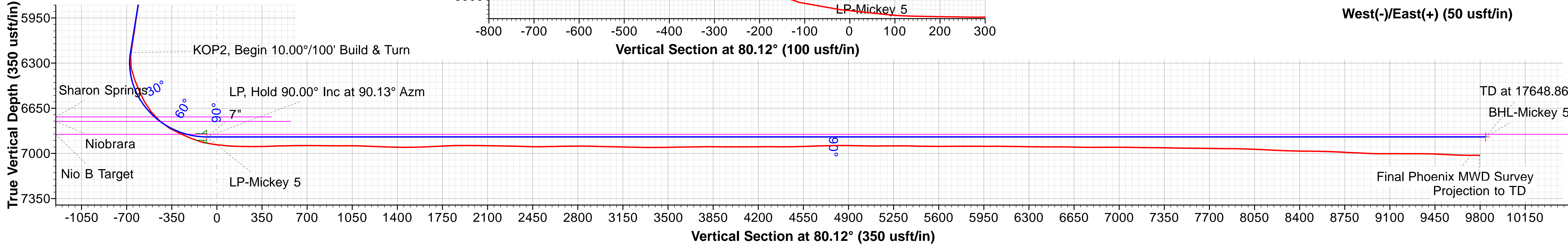
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL-Mickey 5	6872.00	1689.39	9696.26	1433255.70	3172494.34	40° 31' 15.712 N	104° 52' 46.348 W	Point
LP-Mickey 5	6872.00	1713.02	-378.65	1433212.80	3162419.49	40° 31' 15.964 N	104° 54' 56.808 W	Point



FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3362.00	3462.31	Parkman	0.00	80.12
3962.00	4111.73	Sussex	0.00	80.12
4372.00	4555.50	Shannon	0.00	80.12
6717.00	7129.18	Sharon Springs	0.00	80.12
6752.00	7184.92	Niobrara	0.00	80.12
6852.00	7417.66	Nio B Target	0.00	80.12





# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Mickey**

**5**

**OH / Job #60554**

**Survey: Phoenix MWD Surveys**

## **Standard Survey Report**

**11 December, 2016**



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Site:</b>	Mickey	<b>MD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Well:</b>	5	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60554	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	Compass 5000 RMR

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

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

Well	5					
Well Position	+N/-S	0.00 usft	Northing:	1,431,502.32 usft	Latitude:	40° 30' 59.036 N
	+E/-W	0.00 usft	Easting:	3,162,809.44 usft	Longitude:	104° 54' 51.905 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,880.00 usft

<b>Wellbore</b>	OH / Job #60554				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	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	80.12	

<b>Survey Program</b>	<b>Date</b>	12/10/2016			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
126.00	1,602.00	Surveys (OH / Surface)	MWD		
1,554.00	17,600.00	Phoenix MWD Surveys (OH / Job #60554)	MWD+HDGM	OWSG Rev.2 MWD + HDGM	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usft)</b>	<b>Build Rate (°/100usft)</b>	<b>Turn Rate (°/100usft)</b>	
1,554.00	5.90	341.60	1,552.76	4.09	-3.56	-2.81	0.00	0.00	0.00	
<b>Tie In</b>										
1,580.00	5.68	339.58	1,578.63	6.56	-4.43	-3.24	1.15	-0.85	-7.77	
<b>First Phoenix MWD Survey</b>										
1,674.00	5.82	343.02	1,672.15	15.48	-7.45	-4.68	0.40	0.15	3.66	
1,769.00	8.25	340.28	1,766.43	26.50	-11.16	-6.44	2.58	2.56	-2.88	
1,863.00	9.96	332.18	1,859.25	40.04	-17.23	-10.10	2.27	1.82	-8.62	
1,958.00	11.78	331.92	1,952.54	55.86	-25.63	-15.66	1.92	1.92	-0.27	
2,052.00	14.19	329.73	2,044.13	74.28	-35.95	-22.67	2.62	2.56	-2.33	

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Site:</b>	Mickey	<b>MD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Well:</b>	5	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60554	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	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	13.40	327.99	2,136.39	93.68	-47.66	-30.88	0.94	-0.83	-1.83
2,241.00	13.99	326.25	2,227.72	112.36	-59.74	-39.58	0.77	0.63	-1.85
2,335.00	16.91	331.50	2,318.31	133.83	-72.58	-48.54	3.44	3.11	5.59
2,430.00	19.66	330.63	2,408.51	159.90	-87.01	-58.29	2.91	2.89	-0.92
2,524.00	21.67	328.38	2,496.46	188.46	-103.87	-69.99	2.30	2.14	-2.39
2,617.00	22.98	328.02	2,582.48	218.48	-122.49	-83.18	1.42	1.41	-0.39
2,712.00	24.25	326.83	2,669.53	250.55	-142.99	-97.87	1.43	1.34	-1.25
2,807.00	23.16	326.89	2,756.51	282.53	-163.86	-112.96	1.15	-1.15	0.06
2,901.00	23.15	327.69	2,842.94	313.63	-183.84	-127.30	0.33	-0.01	0.85
2,996.00	21.37	327.89	2,930.85	344.07	-203.02	-140.97	1.88	-1.87	0.21
3,090.00	22.07	325.36	3,018.18	373.11	-222.16	-154.85	1.24	0.74	-2.69
3,185.00	22.37	325.96	3,106.13	402.77	-242.43	-169.72	0.40	0.32	0.63
3,279.00	22.28	325.55	3,193.08	432.29	-262.52	-184.45	0.19	-0.10	-0.44
3,374.00	22.92	327.69	3,280.79	462.78	-282.60	-199.00	1.10	0.67	2.25
3,468.00	21.35	327.59	3,367.86	492.69	-301.55	-212.54	1.67	-1.67	-0.11
3,563.00	24.19	330.80	3,455.45	524.29	-320.32	-225.61	3.26	2.99	3.38
3,657.00	24.53	331.07	3,541.08	558.18	-339.16	-238.35	0.38	0.36	0.29
3,752.00	25.59	331.51	3,627.14	593.47	-358.48	-251.34	1.13	1.12	0.46
3,846.00	26.16	327.67	3,711.72	628.83	-379.25	-265.73	1.88	0.61	-4.09
3,940.00	24.75	328.00	3,796.59	663.02	-400.76	-281.05	1.51	-1.50	0.35
4,035.00	22.52	328.98	3,883.62	695.48	-420.68	-295.10	2.38	-2.35	1.03
4,129.00	21.92	329.54	3,970.64	726.04	-438.85	-307.76	0.68	-0.64	0.60
4,223.00	22.88	327.30	4,057.54	756.54	-457.61	-321.02	1.37	1.02	-2.38
4,318.00	21.95	327.20	4,145.36	787.00	-477.21	-335.09	0.98	-0.98	-0.11
4,413.00	21.07	327.08	4,233.75	816.26	-496.11	-348.69	0.93	-0.93	-0.13
4,507.00	21.16	325.78	4,321.44	844.48	-514.83	-362.30	0.51	0.10	-1.38
4,601.00	22.95	327.06	4,408.55	873.89	-534.34	-376.47	1.97	1.90	1.36
4,696.00	21.48	327.13	4,496.50	904.04	-553.85	-390.52	1.55	-1.55	0.07
4,791.00	22.97	325.33	4,584.44	933.90	-573.84	-405.09	1.72	1.57	-1.89
4,886.00	22.02	326.08	4,672.21	963.92	-594.32	-420.11	1.04	-1.00	0.79
4,980.00	23.35	325.59	4,758.94	993.92	-614.69	-435.03	1.43	1.41	-0.52
5,074.00	20.95	325.35	4,846.00	1,023.11	-634.77	-449.80	2.56	-2.55	-0.26
5,168.00	20.76	329.39	4,933.84	1,051.28	-652.81	-462.74	1.54	-0.20	4.30
5,262.00	20.91	322.34	5,021.71	1,078.90	-671.54	-476.46	2.67	0.16	-7.50
5,357.00	21.02	326.93	5,110.43	1,106.60	-691.20	-491.07	1.73	0.12	4.83
5,451.00	21.77	326.67	5,197.95	1,135.29	-709.98	-504.65	0.80	0.80	-0.28
5,546.00	22.84	324.36	5,285.84	1,165.00	-730.40	-519.67	1.46	1.13	-2.43
5,640.00	20.51	321.93	5,373.19	1,192.79	-751.19	-535.38	2.66	-2.48	-2.59
5,735.00	21.72	326.48	5,461.81	1,220.55	-771.16	-550.29	2.14	1.27	4.79
5,830.00	21.26	327.96	5,550.21	1,249.81	-790.00	-563.84	0.75	-0.48	1.56
5,924.00	20.35	326.76	5,638.08	1,277.93	-808.01	-576.75	1.07	-0.97	-1.28
6,019.00	20.63	325.16	5,727.07	1,305.48	-826.62	-590.36	0.66	0.29	-1.68
6,113.00	21.39	325.41	5,814.82	1,333.18	-845.81	-604.51	0.81	0.81	0.27

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Site:</b>	Mickey	<b>MD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Well:</b>	5	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60554	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	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	21.08	325.67	5,903.37	1,361.55	-865.28	-618.83	0.34	-0.33	0.27
6,302.00	21.39	329.35	5,990.99	1,390.26	-883.56	-631.90	1.46	0.33	3.91
6,397.00	23.06	328.99	6,078.93	1,421.11	-901.97	-644.76	1.76	1.76	-0.38
6,492.00	23.33	328.88	6,166.25	1,453.16	-921.28	-658.28	0.29	0.28	-0.12
6,586.00	19.77	335.81	6,253.68	1,483.61	-937.42	-668.95	4.65	-3.79	7.37
6,681.00	22.60	18.12	6,342.76	1,515.81	-938.34	-664.33	16.02	2.98	44.54
6,775.00	25.06	54.07	6,429.19	1,544.81	-916.48	-637.82	15.44	2.62	38.24
6,870.00	23.27	61.40	6,515.88	1,565.60	-883.70	-601.96	3.67	-1.88	7.72
6,964.00	30.46	61.80	6,599.68	1,585.78	-846.35	-561.71	7.65	7.65	0.43
7,059.00	39.07	69.49	6,677.69	1,607.70	-796.98	-509.30	10.16	9.06	8.09
7,153.00	47.13	71.97	6,746.27	1,628.78	-736.37	-445.98	8.76	8.57	2.64
7,249.00	59.96	73.24	6,803.19	1,651.74	-662.82	-369.58	13.41	13.36	1.32
7,343.00	66.61	72.36	6,845.43	1,676.58	-582.66	-286.35	7.12	7.07	-0.94
7,438.00	65.98	84.04	6,883.73	1,694.34	-497.72	-199.61	11.27	-0.66	12.29
7,532.00	76.12	91.34	6,914.26	1,697.75	-409.07	-111.69	13.04	10.79	7.77
7,626.00	84.32	92.93	6,930.21	1,694.28	-316.58	-21.17	8.88	8.72	1.69
7,725.00	83.87	91.08	6,940.40	1,690.84	-218.17	75.19	1.91	-0.45	-1.87
7,792.00	88.76	90.47	6,944.70	1,689.93	-151.33	140.88	7.35	7.30	-0.91
7,841.00	89.20	90.39	6,945.57	1,689.57	-102.34	189.08	0.91	0.90	-0.16
7,935.00	89.14	90.67	6,946.94	1,688.70	-8.36	281.52	0.30	-0.06	0.30
8,030.00	92.44	90.94	6,945.63	1,687.36	86.61	374.85	3.49	3.47	0.28
8,124.00	91.84	90.27	6,942.12	1,686.37	180.54	467.22	0.96	-0.64	-0.71
8,219.00	90.17	88.22	6,940.45	1,687.62	275.51	560.99	2.78	-1.76	-2.16
8,313.00	91.42	89.26	6,939.15	1,689.69	369.47	653.92	1.73	1.33	1.11
8,408.00	88.72	86.97	6,939.03	1,692.81	464.41	747.98	3.73	-2.84	-2.41
8,502.00	89.69	88.96	6,940.33	1,696.15	558.33	841.09	2.35	1.03	2.12
8,596.00	90.25	88.89	6,940.38	1,697.92	652.31	933.98	0.60	0.60	-0.07
8,691.00	89.83	88.78	6,940.32	1,699.85	747.29	1,027.88	0.46	-0.44	-0.12
8,785.00	87.90	88.40	6,942.18	1,702.16	841.24	1,120.83	2.09	-2.05	-0.40
8,880.00	87.94	88.88	6,945.63	1,704.41	936.15	1,214.72	0.51	0.04	0.51
8,974.00	87.66	89.36	6,949.23	1,705.86	1,030.07	1,307.50	0.59	-0.30	0.51
9,068.00	88.75	89.17	6,952.18	1,707.06	1,124.02	1,400.25	1.18	1.16	-0.20
9,162.00	90.86	88.56	6,952.50	1,708.92	1,217.99	1,493.16	2.34	2.24	-0.65
9,257.00	91.54	88.09	6,950.51	1,711.70	1,312.93	1,587.16	0.87	0.72	-0.49
9,351.00	93.41	87.81	6,946.45	1,715.06	1,406.78	1,680.19	2.01	1.99	-0.30
9,445.00	92.46	88.48	6,941.64	1,718.10	1,500.60	1,773.15	1.24	-1.01	0.71
9,540.00	90.95	89.44	6,938.81	1,719.82	1,595.54	1,866.98	1.88	-1.59	1.01
9,635.00	89.28	89.98	6,938.62	1,720.30	1,690.54	1,960.64	1.85	-1.76	0.57
9,729.00	89.67	89.31	6,939.48	1,720.88	1,784.53	2,053.34	0.82	0.41	-0.71
9,823.00	88.93	89.44	6,940.63	1,721.91	1,878.52	2,146.11	0.80	-0.79	0.14
9,917.00	88.61	89.03	6,942.65	1,723.16	1,972.49	2,238.90	0.55	-0.34	-0.44
10,012.00	88.83	88.97	6,944.77	1,724.82	2,067.45	2,332.74	0.24	0.23	-0.06
10,106.00	88.11	91.05	6,947.28	1,724.80	2,161.41	2,425.31	2.34	-0.77	2.21
10,201.00	90.66	90.82	6,948.30	1,723.25	2,256.38	2,518.61	2.70	2.68	-0.24

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Site:</b>	Mickey	<b>MD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Well:</b>	5	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60554	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	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)
10,296.00	91.55	90.72	6,946.47	1,721.98	2,351.36	2,611.95	0.94	0.94	-0.11
10,390.00	90.96	91.19	6,944.41	1,720.41	2,445.32	2,704.25	0.80	-0.63	0.50
10,484.00	90.48	92.18	6,943.23	1,717.65	2,539.27	2,796.33	1.17	-0.51	1.05
10,578.00	88.47	90.86	6,944.09	1,715.15	2,633.23	2,888.47	2.56	-2.14	-1.40
10,673.00	88.93	91.14	6,946.24	1,713.50	2,728.19	2,981.74	0.57	0.48	0.29
10,767.00	88.87	90.62	6,948.05	1,712.05	2,822.16	3,074.07	0.56	-0.06	-0.55
10,861.00	88.52	90.86	6,950.19	1,710.84	2,916.13	3,166.43	0.45	-0.37	0.26
10,956.00	88.92	90.80	6,952.31	1,709.46	3,011.09	3,259.76	0.43	0.42	-0.06
11,051.00	89.24	90.18	6,953.84	1,708.65	3,106.08	3,353.19	0.73	0.34	-0.65
11,145.00	90.95	91.07	6,953.68	1,707.63	3,200.07	3,445.61	2.05	1.82	0.95
11,239.00	91.27	91.39	6,951.86	1,705.61	3,294.03	3,537.83	0.48	0.34	0.34
11,334.00	90.60	90.62	6,950.31	1,703.94	3,389.00	3,631.11	1.07	-0.71	-0.81
11,428.00	90.98	92.52	6,949.01	1,701.37	3,482.95	3,723.22	2.06	0.40	2.02
11,523.00	90.12	91.40	6,948.10	1,698.12	3,577.89	3,816.20	1.49	-0.91	-1.18
11,617.00	89.18	91.10	6,948.68	1,696.07	3,671.86	3,908.43	1.05	-1.00	-0.32
11,712.00	90.43	91.27	6,949.00	1,694.10	3,766.84	4,001.66	1.33	1.32	0.18
11,807.00	89.75	91.14	6,948.85	1,692.11	3,861.82	4,094.88	0.73	-0.72	-0.14
11,901.00	90.83	91.23	6,948.37	1,690.16	3,955.79	4,187.13	1.15	1.15	0.10
11,996.00	89.72	89.93	6,947.92	1,689.20	4,050.79	4,280.55	1.80	-1.17	-1.37
12,091.00	89.30	89.72	6,948.73	1,689.49	4,145.78	4,374.19	0.49	-0.44	-0.22
12,185.00	91.32	90.04	6,948.22	1,689.69	4,239.77	4,466.82	2.18	2.15	0.34
12,279.00	91.62	89.55	6,945.81	1,690.02	4,333.74	4,559.45	0.61	0.32	-0.52
12,374.00	92.48	89.24	6,942.41	1,691.03	4,428.68	4,653.15	0.96	0.91	-0.33
12,469.00	90.49	89.68	6,939.95	1,691.92	4,523.63	4,746.85	2.15	-2.09	0.46
12,563.00	90.77	89.72	6,938.92	1,692.41	4,617.63	4,839.54	0.30	0.30	0.04
12,658.00	88.88	89.73	6,939.21	1,692.87	4,712.62	4,933.20	1.99	-1.99	0.01
12,752.00	88.28	89.26	6,941.54	1,693.70	4,806.59	5,025.92	0.81	-0.64	-0.50
12,846.00	91.05	90.21	6,942.09	1,694.13	4,900.58	5,118.58	3.12	2.95	1.01
12,941.00	89.75	90.36	6,941.42	1,693.66	4,995.57	5,212.09	1.38	-1.37	0.16
13,036.00	90.48	90.17	6,941.23	1,693.22	5,090.57	5,305.60	0.79	0.77	-0.20
13,130.00	87.93	88.59	6,942.54	1,694.24	5,184.54	5,398.36	3.19	-2.71	-1.68
13,225.00	89.45	88.68	6,944.71	1,696.50	5,279.49	5,492.28	1.60	1.60	0.09
13,319.00	89.84	88.55	6,945.29	1,698.77	5,373.46	5,585.25	0.44	0.41	-0.14
13,414.00	90.38	88.27	6,945.11	1,701.41	5,468.42	5,679.26	0.64	0.57	-0.29
13,508.00	90.60	90.18	6,944.30	1,702.68	5,562.41	5,772.07	2.05	0.23	2.03
13,602.00	89.14	91.11	6,944.52	1,701.62	5,656.40	5,864.48	1.84	-1.55	0.99
13,697.00	90.32	91.94	6,944.97	1,699.09	5,751.36	5,957.60	1.52	1.24	0.87
13,791.00	90.09	91.95	6,944.63	1,695.90	5,845.30	6,049.60	0.24	-0.24	0.01
13,886.00	88.72	92.07	6,945.62	1,692.57	5,940.24	6,142.56	1.45	-1.44	0.13
13,980.00	89.33	91.03	6,947.22	1,690.03	6,034.19	6,234.68	1.28	0.65	-1.11
14,075.00	89.12	90.67	6,948.50	1,688.62	6,129.17	6,328.01	0.44	-0.22	-0.38
14,169.00	89.95	91.83	6,949.26	1,686.57	6,223.14	6,420.24	1.52	0.88	1.23
14,263.00	90.06	92.75	6,949.25	1,682.81	6,317.06	6,512.12	0.99	0.12	0.98

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Site:</b>	Mickey	<b>MD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Well:</b>	5	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60554	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	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)
14,357.00	89.18	90.29	6,949.88	1,680.32	6,411.02	6,604.26	2.78	-0.94	-2.62
14,452.00	88.22	88.17	6,952.03	1,681.59	6,505.98	6,698.03	2.45	-1.01	-2.23
14,546.00	90.68	89.28	6,952.94	1,683.69	6,599.95	6,790.96	2.87	2.62	1.18
14,640.00	89.87	89.92	6,952.49	1,684.34	6,693.94	6,883.67	1.10	-0.86	0.68
14,735.00	90.59	90.82	6,952.10	1,683.73	6,788.94	6,977.15	1.21	0.76	0.95
14,829.00	88.80	90.59	6,952.60	1,682.57	6,882.92	7,069.55	1.92	-1.90	-0.24
14,923.00	88.83	91.17	6,954.55	1,681.13	6,976.89	7,161.88	0.62	0.03	0.62
15,018.00	90.00	91.84	6,955.52	1,678.63	7,071.85	7,255.00	1.42	1.23	0.71
15,112.00	88.74	89.70	6,956.55	1,677.37	7,165.83	7,347.37	2.64	-1.34	-2.28
15,207.00	89.18	92.31	6,958.28	1,675.70	7,260.79	7,440.64	2.79	0.46	2.75
15,301.00	89.73	92.16	6,959.17	1,672.04	7,354.72	7,532.54	0.61	0.59	-0.16
15,395.00	88.92	90.59	6,960.28	1,669.78	7,448.68	7,624.72	1.88	-0.86	-1.67
15,490.00	89.07	89.38	6,961.94	1,669.81	7,543.66	7,718.30	1.28	0.16	-1.27
15,585.00	89.75	86.51	6,962.92	1,673.21	7,638.59	7,812.40	3.10	0.72	-3.02
15,679.00	89.38	87.71	6,963.64	1,677.95	7,732.46	7,905.70	1.34	-0.39	1.28
15,773.00	87.78	88.16	6,965.97	1,681.34	7,826.37	7,998.79	1.77	-1.70	0.48
15,868.00	87.70	88.18	6,969.71	1,684.37	7,921.25	8,092.78	0.09	-0.08	0.02
15,962.00	86.62	88.46	6,974.37	1,687.12	8,015.09	8,185.70	1.19	-1.15	0.30
16,057.00	88.29	88.39	6,978.59	1,689.73	8,109.96	8,279.61	1.76	1.76	-0.07
16,151.00	88.40	87.78	6,981.30	1,692.87	8,203.86	8,372.67	0.66	0.12	-0.65
16,246.00	89.77	88.60	6,982.82	1,695.87	8,298.80	8,466.71	1.68	1.44	0.86
16,340.00	89.02	88.44	6,983.81	1,698.30	8,392.76	8,559.70	0.82	-0.80	-0.17
16,435.00	87.25	89.10	6,986.90	1,700.34	8,487.69	8,653.56	1.99	-1.86	0.69
16,529.00	87.36	89.33	6,991.32	1,701.62	8,581.57	8,746.28	0.27	0.12	0.24
16,624.00	87.49	89.35	6,995.59	1,702.72	8,676.47	8,839.96	0.14	0.14	0.02
16,718.00	87.22	88.98	6,999.93	1,704.09	8,770.36	8,932.69	0.49	-0.29	-0.39
16,813.00	89.87	91.23	7,002.34	1,703.91	8,865.32	9,026.20	3.66	2.79	2.37
16,907.00	90.34	91.73	7,002.17	1,701.48	8,959.28	9,118.36	0.73	0.50	0.53
17,001.00	89.23	91.74	7,002.52	1,698.64	9,053.24	9,210.43	1.18	-1.18	0.01
17,095.00	90.74	92.53	7,002.55	1,695.13	9,147.17	9,302.37	1.81	1.61	0.84
17,190.00	88.90	92.31	7,002.85	1,691.12	9,242.08	9,395.19	1.95	-1.94	-0.23
17,284.00	86.85	92.57	7,006.33	1,687.13	9,335.93	9,486.95	2.20	-2.18	0.28
17,379.00	87.63	93.05	7,010.90	1,682.47	9,430.70	9,579.52	0.96	0.82	0.51
17,473.00	88.73	93.04	7,013.89	1,677.48	9,524.52	9,671.10	1.17	1.17	-0.01
17,533.00	89.95	93.35	7,014.58	1,674.14	9,584.42	9,729.53	2.10	2.03	0.52
<b>Final Phoenix MWD Survey</b>									
17,600.00	89.95	93.35	7,014.64	1,670.22	9,651.31	9,794.76	0.00	0.00	0.00
<b>Projection to TD</b>									



# Phoenix Technology Services LP

## Survey Report



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 5
<b>Project:</b>	Weld County, CO (NAD83)	<b>TVD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Site:</b>	Mickey	<b>MD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Well:</b>	5	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60554	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys (Patterson 346)	<b>Database:</b>	Compass 5000 RMR

### Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,554.00	1,552.76	4.09	-3.56	Tie In
1,580.00	1,578.63	6.56	-4.43	First Phoenix MWD Survey
17,533.00	7,014.58	1,674.14	9,584.42	Final Phoenix MWD Survey
17,600.00	7,014.64	1,670.22	9,651.31	Projection to TD