

SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

Job # 60557 Wellbore Name OH
Well Name: Mickey 8
County/State: Weld, CO
Latitude: 40 30' 59.022" N

Client: Extraction Oil and Gas
API#: 05 123 43856
Direction: 83.90
Longitude: 104 54' 52.484" W

1/4-1/4 Section-Township-Range-Footages:

TIE IN DATA

MD	TVD	INC	AZM
1553.00	1525.10	12.70	312.80

N-S	E-W	DATA SOURCE
163.15	-187.69	MWD
Data Source Company:		

FIRST SURVEY

DATE	DEPTH	INC	AZM
23-Jan-17	1584.00	13.54	314.66

LAST SURVEY

DATE	DEPTH	INC	AZM
27-Jan-17	17336.00	90.98	86.98

STRAIGHT LINE PROJECTION TO TD

DATE	DEPTH	INC	AZM
27-Jan-17	17410.00	90.98	86.98

DEPTH DATUM

KELLY BUSHING	GROUND LEVEL
25.00	4880.00

MWD 1: Brian Murphy
MWD 2: Kevin Hursh
MWD 3:

DD 1: Scott Sanford
DD 2: Colby Hansen
DD 3:

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

PRINT YOUR NAME

Brian Murphy

SIGN YOUR NAME

DATE

28-Jan-17

PRINT WELL PLANNER

Travis Kniss

SIGN WELL PLANNER

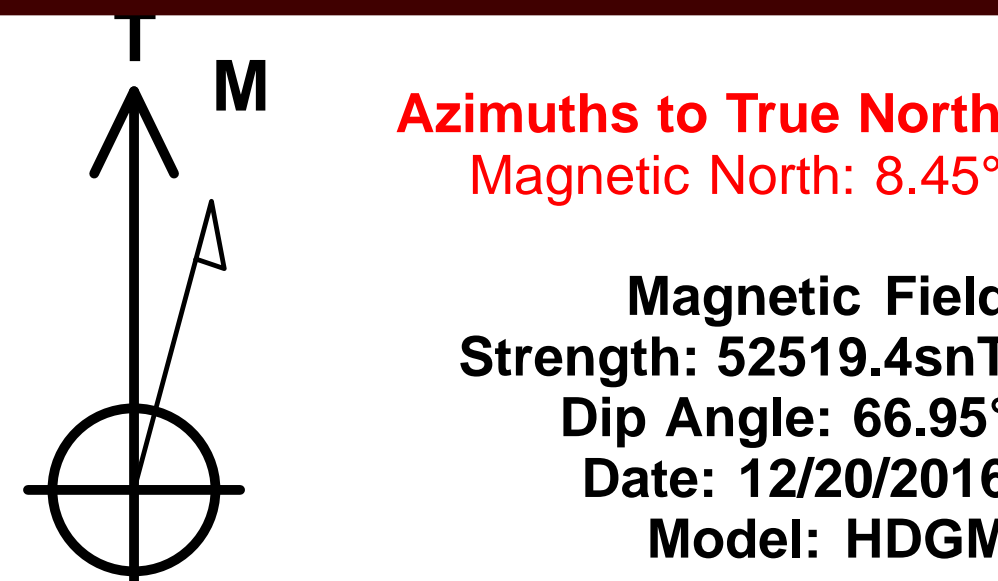
DATE

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.

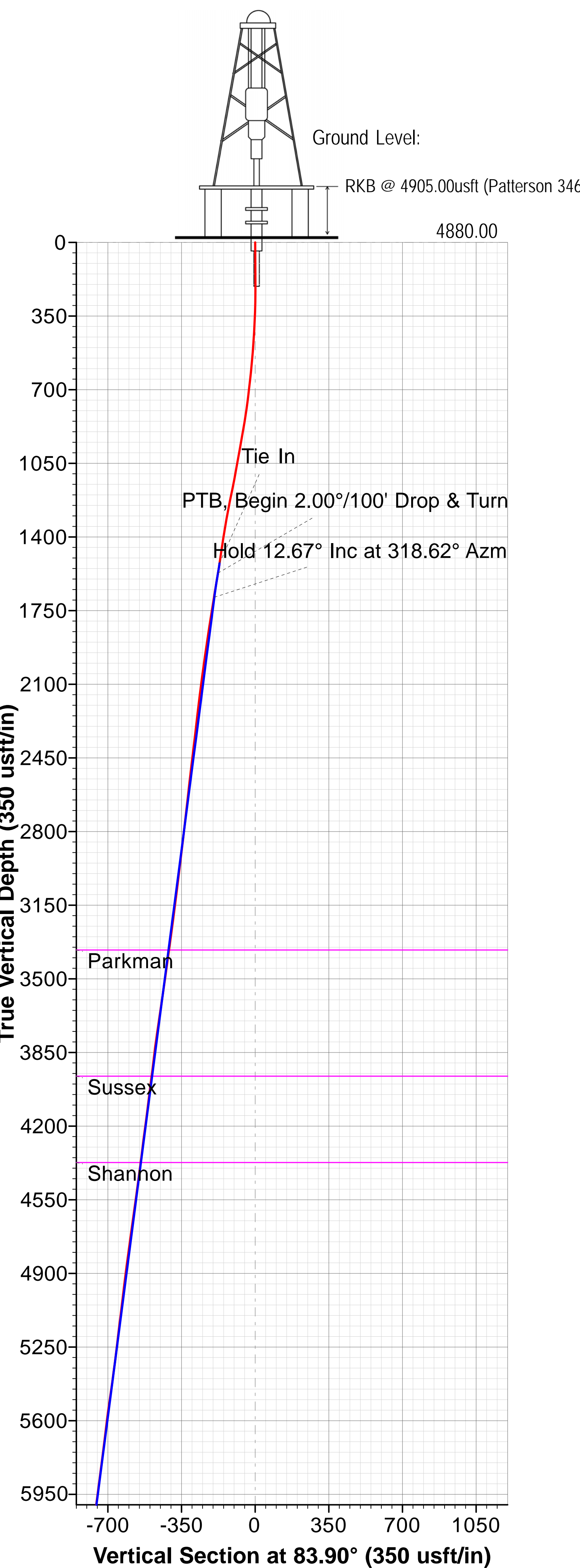


Project: Weld County, CO (NAD83)
Site: Mickey
Well: 8
Wellbore: OH / Job #60557
Design: Plan 2 12-07-16
Rig: Patterson 346



LEGEND

- 4, OH / Job #60553, Surveys (Patterson 346) V0
- 10, OH / Job #60559, Surveys (Patterson 346) V0
- 2, OH / Job #60551, Surveys (Patterson 346) V0
- 6 (Abandoned), Surface, Surface V0
- 12, OH / Job #60561, Surveys (Patterson 346) V0
- 5, OH / Job #60554, 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, Surveys (Patterson 346) V0
- 9, OH / Job #60558, Surveys (Patterson 346) V0
- 8, OH / Job #60557, Surveys (Patterson 346) V0
- 13, OH / Job #60562, Surveys (Patterson 346) V0
- 1, OH / Job #60550, Surveys (Patterson 346) V0
- 7, OH / Job #60556, Surveys (Patterson 346) V0
- 3, OH / Job #60552, Surveys (Patterson 346) V0
- Plan 2 12-07-16



WELL DETAILS											
				Ground Level:		4880.00					
+N/-S		+E/-W		Northing		Easting		Latitude		Longitude	
0.00		0.00		1431500.56		3162764.69		40° 30' 59.022 N		104° 54' 52.484 W	

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	1553.00	12.70	312.80	1525.10	163.15	-187.69	0.00	0.00	-169.30		Tie In
2	1601.00	14.70	313.50	1571.73	170.93	-195.98	4.18	5.08	-176.71		PTB, Begin 2.00°/100' Drop & Turn
3	1718.97	12.67	318.62	1686.35	190.95	-215.39	2.00	151.60	-193.89		Hold 12.67° Inc at 318.62° Azm
4	6371.81	12.67	318.62	6225.84	956.88	-890.18	0.00	0.00	-783.51		KOP2, Begin 10.00°/100' Build & Turn
5	7355.42	90.00	90.13	6873.00	1064.52	-323.06	10.00	130.81	-208.17	LP-Mickey 8	LP, Hold 90.00° Inc at 90.13° Azm
6	17423.68	90.00	90.13	6873.00	1040.95	9745.17	0.00	0.00	9800.61	BHL-Mickey 8	TD at 17423.68

DESIGN TARGET DETAILS										
Name		TVD	+N/-S	+E/-W	Northing	Easting	Latitude		Longitude	Shape
BHL-Mickey 8		6873.00	1040.94	9745.17	1432605.82	3172502.78	40° 31' 9.289 N		104° 52' 46.297 W	Point
LP-Mickey 8		6873.00	1064.52	-323.06	1432562.93	3162434.61	40° 31' 9.541 N		104° 54' 56.668 W	Point

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

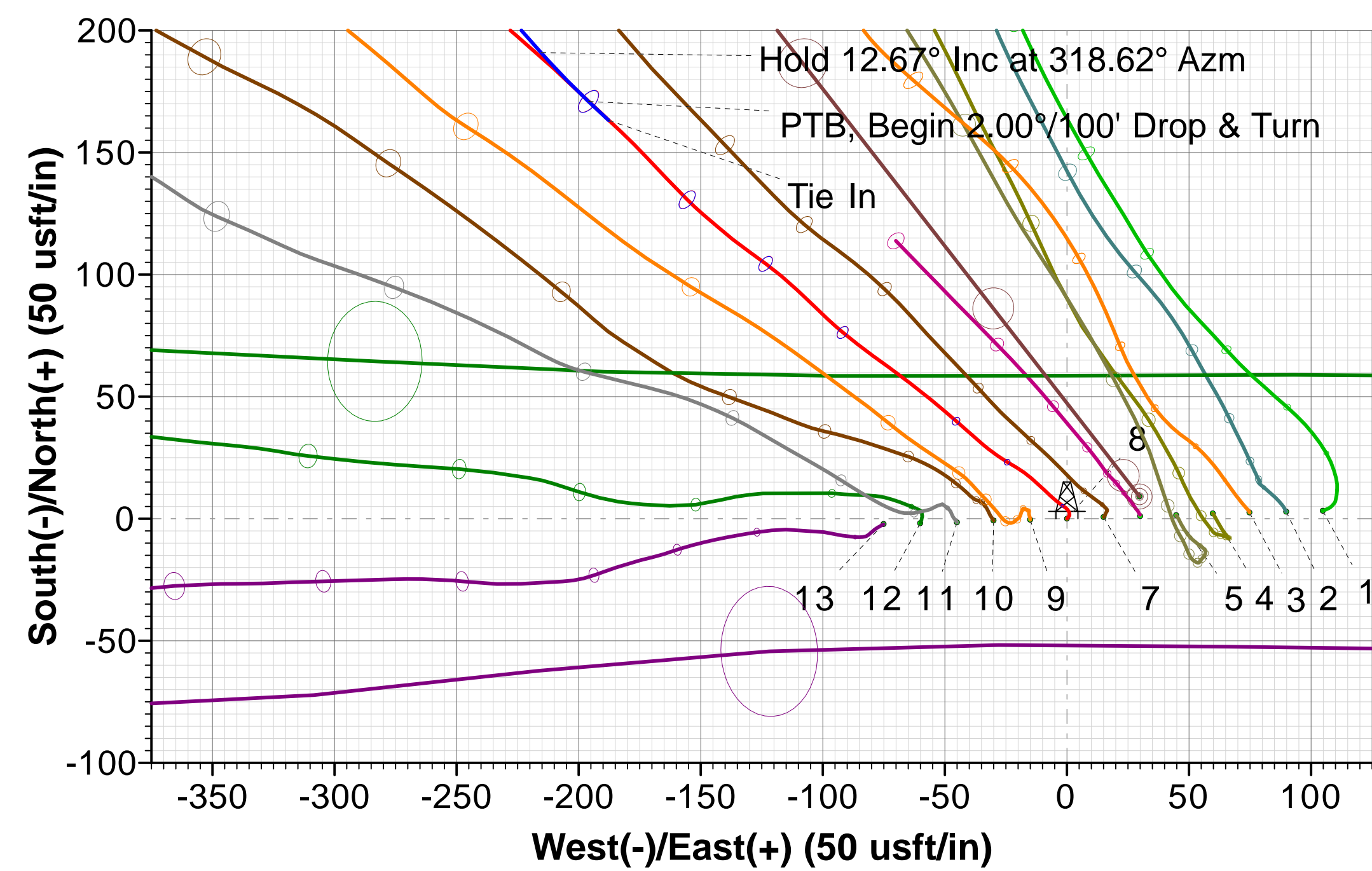
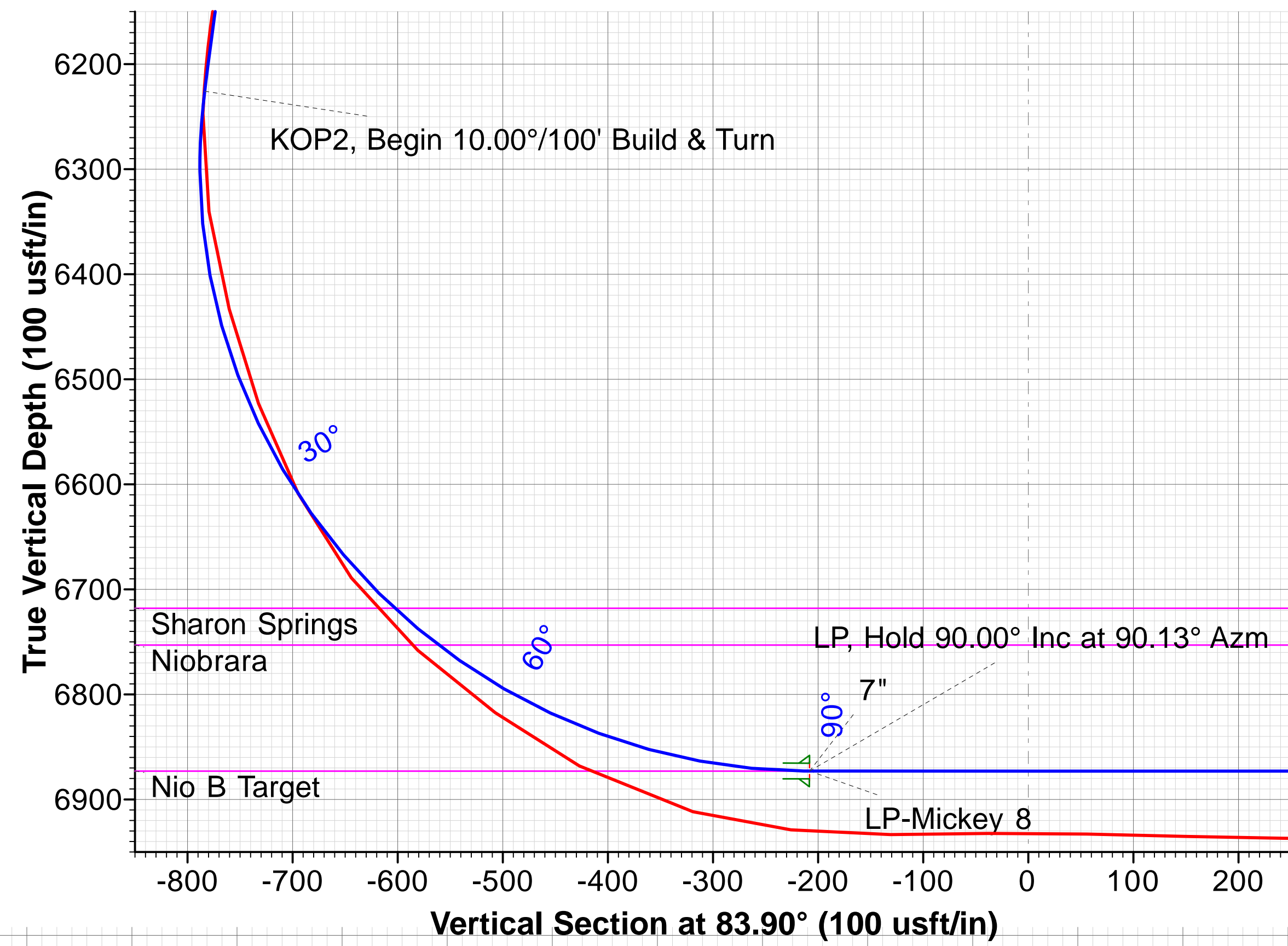
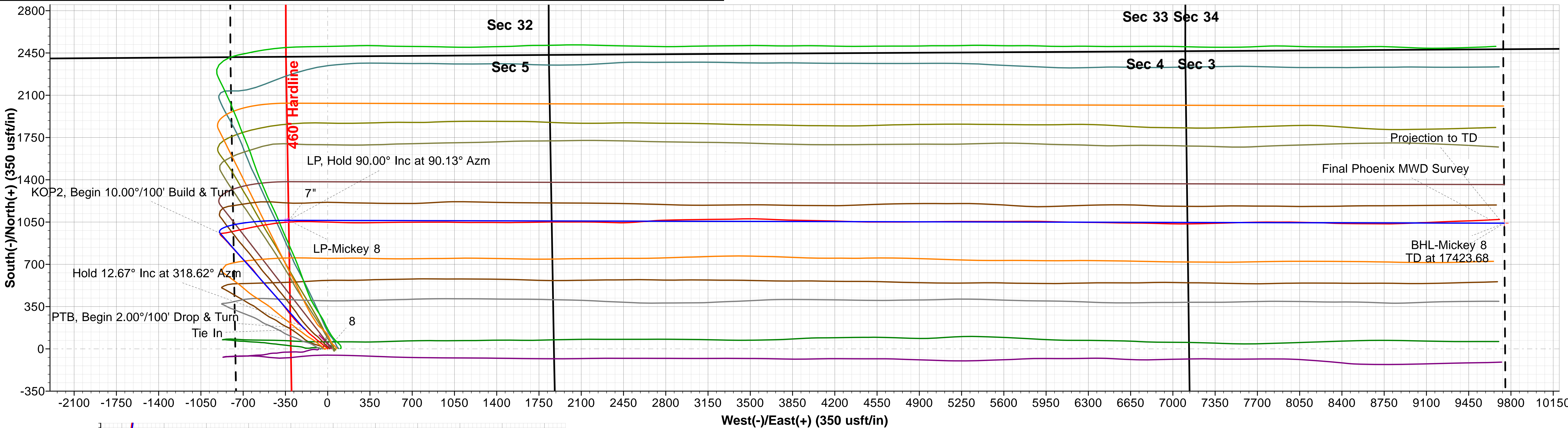
Local Origin: Well 8, True North

Latitude: 40° 30' 59.022 N
Longitude: 104° 54' 52.484 W

Grid East: 3162764.69
Grid North: 1431500.56
Scale Factor: 1.000

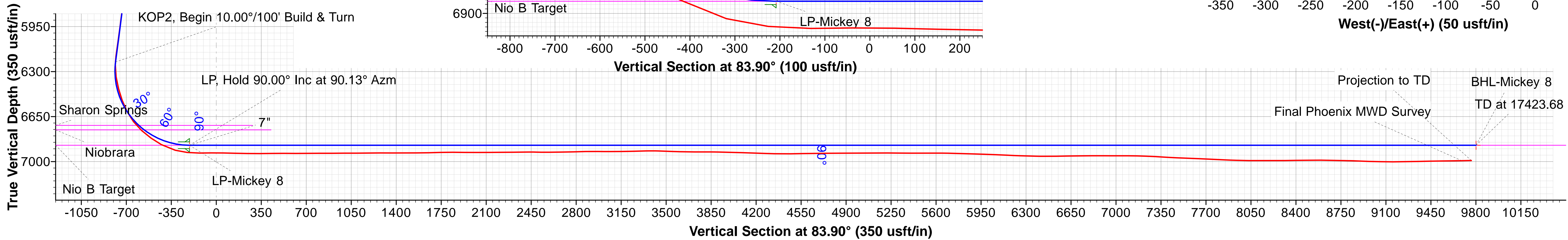
Geomagnetic Model: HDGM
Sample Date: 20-Dec-16
Magnetic Declination: 8.45°
Dip Angle from Horizontal: 66.95°
Magnetic Field Strength: 52519

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°



FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3363.00	3437.48	Parkman	0.00	83.90
3963.00	4052.47	Sussex	0.00	83.90
4373.00	4472.71	Shannon	0.00	83.90
6718.00	6920.66	Sharon Springs	0.00	83.90
6753.00	6975.05	Niobrara	0.00	83.90
6873.00	7355.42	Nio B Target	0.00	83.90





Extraction Oil & Gas

Weld County, CO (NAD83)

Mickey

8

OH / Job #60557

Survey: Phoenix MWD Surveys

Standard Survey Report

28 January, 2017





Phoenix Technology Services LP

Survey Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 8
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	8	North Reference:	True
Wellbore:	OH / Job #60557	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: From: Position Uncertainty:		Northing:	1,431,504.55 usft	Latitude:	40° 30' 59.054 N
	Lat/Long	Easting:	3,162,869.49 usft	Longitude:	104° 54' 51.127 W
	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.38 °

Well	8					
Well Position	+N/-S	0.00 usft	Northing:	1,431,500.57 usft	Latitude:	40° 30' 59.022 N
	+E/-W	0.00 usft	Easting:	3,162,764.69 usft	Longitude:	104° 54' 52.484 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	0.00 usft	Ground Level:	4,880.00 usft

Wellbore	OH / Job #60557				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	12/20/2016	8.45	66.95	52,519

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	83.90	

Survey Program	Date	1/28/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
158.00	1,601.00	Surveys (OH / Surface)	MWD		
1,601.00	17,410.00	Phoenix MWD Surveys (OH / Job #60557)	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	12.70	312.80	1,525.10	163.15	-187.69	-169.29	0.00	0.00	0.00	
Tie In										
1,584.00	13.54	314.66	1,555.29	168.02	-192.77	-173.82	3.03	2.71	6.00	
First Phoenix MWD Survey										
1,679.00	13.67	312.89	1,647.63	183.47	-208.90	-188.22	0.46	0.14	-1.86	
1,773.00	13.17	310.05	1,739.06	197.93	-225.24	-202.93	0.88	-0.53	-3.02	
1,867.00	13.07	310.54	1,830.61	211.72	-241.51	-217.65	0.16	-0.11	0.52	
1,961.00	13.47	316.31	1,922.10	226.55	-257.15	-231.62	1.47	0.43	6.14	
2,056.00	13.32	319.77	2,014.52	242.91	-271.87	-244.51	0.86	-0.16	3.64	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 8
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	8	North Reference:	True
Wellbore:	OH / Job #60557	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)
2,150.00	12.52	319.56	2,106.14	258.93	-285.47	-256.34	0.85	-0.85	-0.22
2,245.00	11.96	319.32	2,198.98	274.23	-298.56	-267.73	0.59	-0.59	-0.25
2,339.00	11.86	319.75	2,290.96	288.99	-311.15	-278.68	0.14	-0.11	0.46
2,434.00	13.26	322.82	2,383.68	305.12	-324.05	-289.79	1.63	1.47	3.23
2,528.00	12.95	324.03	2,475.23	322.23	-336.75	-300.60	0.44	-0.33	1.29
2,623.00	12.15	321.70	2,567.96	338.69	-349.20	-311.23	1.00	-0.84	-2.45
2,717.00	11.17	320.73	2,660.02	353.51	-361.09	-321.48	1.06	-1.04	-1.03
2,811.00	12.83	322.65	2,751.96	368.85	-373.19	-331.88	1.82	1.77	2.04
2,906.00	11.82	321.48	2,844.77	384.85	-385.65	-342.57	1.10	-1.06	-1.23
3,000.00	12.53	318.50	2,936.66	400.02	-398.40	-353.63	1.01	0.76	-3.17
3,095.00	11.21	317.33	3,029.63	414.53	-411.49	-365.11	1.41	-1.39	-1.23
3,188.00	12.49	319.17	3,120.64	428.79	-424.19	-376.22	1.43	1.38	1.98
3,282.00	12.78	319.23	3,212.37	444.35	-437.62	-387.93	0.31	0.31	0.06
3,376.00	12.67	314.97	3,304.06	459.51	-451.71	-400.32	1.00	-0.12	-4.53
3,471.00	13.08	318.53	3,396.67	474.93	-466.20	-413.09	0.94	0.43	3.75
3,565.00	13.63	318.05	3,488.13	491.14	-480.64	-425.73	0.60	0.59	-0.51
3,659.00	13.92	317.86	3,579.43	507.76	-495.63	-438.87	0.31	0.31	-0.20
3,753.00	14.26	318.14	3,670.60	524.76	-510.95	-452.29	0.37	0.36	0.30
3,848.00	14.05	318.70	3,762.71	542.14	-526.36	-465.77	0.26	-0.22	0.59
3,941.00	12.00	320.72	3,853.32	558.11	-539.94	-477.57	2.26	-2.20	2.17
4,035.00	12.21	317.95	3,945.23	573.05	-552.78	-488.76	0.66	0.22	-2.95
4,130.00	13.71	322.36	4,037.81	589.43	-566.39	-500.55	1.89	1.58	4.64
4,223.00	12.84	321.49	4,128.32	606.24	-579.55	-511.85	0.96	-0.94	-0.94
4,317.00	14.21	321.13	4,219.71	623.40	-593.30	-523.69	1.46	1.46	-0.38
4,411.00	13.18	323.27	4,311.04	640.97	-606.95	-535.40	1.22	-1.10	2.28
4,505.00	12.94	320.24	4,402.61	657.65	-620.09	-546.69	0.77	-0.26	-3.22
4,599.00	12.66	314.47	4,494.28	672.96	-634.17	-559.07	1.39	-0.30	-6.14
4,693.00	13.76	318.50	4,585.79	688.55	-648.93	-572.09	1.53	1.17	4.29
4,787.00	12.57	318.35	4,677.32	704.56	-663.13	-584.51	1.27	-1.27	-0.16
4,881.00	12.10	314.82	4,769.15	719.15	-676.92	-596.67	0.95	-0.50	-3.76
4,976.00	11.71	314.77	4,862.11	732.96	-690.83	-609.03	0.41	-0.41	-0.05
5,070.00	11.02	313.04	4,954.26	745.81	-704.17	-620.93	0.82	-0.73	-1.84
5,165.00	11.00	316.97	5,047.52	758.63	-716.99	-632.31	0.79	-0.02	4.14
5,259.00	12.46	320.19	5,139.55	772.98	-729.60	-643.33	1.70	1.55	3.43
5,353.00	11.42	318.17	5,231.52	787.70	-742.30	-654.39	1.19	-1.11	-2.15
5,448.00	12.17	316.47	5,324.51	801.97	-755.47	-665.97	0.87	0.79	-1.79
5,542.00	13.40	319.48	5,416.18	817.44	-769.37	-678.15	1.49	1.31	3.20
5,637.00	13.74	316.72	5,508.53	834.02	-784.26	-691.19	0.77	0.36	-2.91
5,731.00	11.91	317.45	5,600.18	849.29	-798.47	-703.70	1.95	-1.95	0.78
5,825.00	11.93	319.51	5,692.15	863.83	-811.34	-714.95	0.45	0.02	2.19
5,920.00	12.41	318.50	5,785.02	878.94	-824.48	-726.41	0.55	0.51	-1.06
6,014.00	11.93	315.49	5,876.90	893.43	-837.98	-738.30	0.85	-0.51	-3.20
6,109.00	12.04	317.29	5,969.83	907.72	-851.59	-750.31	0.41	0.12	1.89

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 8
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	8	North Reference:	True
Wellbore:	OH / Job #60557	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)	
6,203.00	12.21	312.92	6,061.74	921.69	-865.52	-762.67	0.99	0.18	-4.65	
6,298.00	12.39	314.16	6,154.56	935.63	-880.18	-775.78	0.34	0.19	1.31	
6,392.00	6.76	331.24	6,247.23	947.52	-890.09	-784.36	6.65	-5.99	18.17	
6,486.00	9.87	71.07	6,340.60	955.01	-885.11	-778.62	13.68	3.31	106.20	
6,581.00	14.03	92.84	6,433.57	957.09	-865.89	-759.28	6.38	4.38	22.92	
6,675.00	20.59	76.86	6,523.31	960.28	-838.37	-731.58	8.56	6.98	-17.00	
6,769.00	27.28	77.99	6,609.18	968.53	-801.16	-693.70	7.13	7.12	1.20	
6,864.00	37.44	78.08	6,689.32	979.06	-751.48	-643.19	10.69	10.69	0.09	
6,958.00	47.92	77.53	6,758.33	992.53	-689.29	-579.92	11.16	11.15	-0.59	
7,053.00	54.68	78.29	6,817.69	1,008.02	-616.83	-506.22	7.14	7.12	0.80	
7,148.00	60.75	80.01	6,868.41	1,023.09	-537.99	-426.22	6.57	6.39	1.81	
7,265.00	75.33	82.78	6,912.06	1,039.15	-430.98	-318.12	12.65	12.46	2.37	
7,360.00	83.81	85.39	6,929.24	1,048.74	-338.14	-224.78	9.33	8.93	2.75	
7,455.00	90.72	88.78	6,933.77	1,053.55	-243.44	-130.11	8.10	7.27	3.57	
7,549.00	90.73	91.28	6,932.58	1,053.50	-149.46	-36.66	2.66	0.01	2.66	
7,643.00	88.48	91.74	6,933.23	1,051.03	-55.50	56.50	2.44	-2.39	0.49	
7,738.00	88.77	91.48	6,935.51	1,048.36	39.44	150.62	0.41	0.31	-0.27	
7,832.00	89.10	92.30	6,937.26	1,045.26	133.37	243.69	0.94	0.35	0.87	
7,927.00	90.00	89.54	6,938.00	1,043.74	228.34	337.96	3.06	0.95	-2.91	
8,021.00	91.36	90.01	6,936.89	1,044.10	322.34	431.46	1.53	1.45	0.50	
8,115.00	89.71	89.26	6,936.01	1,044.70	416.33	524.98	1.93	-1.76	-0.80	
8,210.00	89.49	88.39	6,936.67	1,046.65	511.30	619.63	0.94	-0.23	-0.92	
8,305.00	91.01	90.15	6,936.26	1,047.86	606.29	714.20	2.45	1.60	1.85	
8,399.00	89.79	89.36	6,935.60	1,048.26	700.28	807.71	1.55	-1.30	-0.84	
8,493.00	90.60	90.08	6,935.28	1,048.72	794.28	901.22	1.15	0.86	0.77	
8,588.00	89.97	89.58	6,934.81	1,049.00	889.28	995.71	0.85	-0.66	-0.53	
8,682.00	89.97	90.22	6,934.86	1,049.17	983.28	1,089.20	0.68	0.00	0.68	
8,776.00	91.51	91.80	6,933.65	1,047.51	1,077.25	1,182.46	2.35	1.64	1.68	
8,871.00	89.47	89.82	6,932.83	1,046.17	1,172.22	1,276.76	2.99	-2.15	-2.08	
8,965.00	89.93	89.79	6,933.33	1,046.49	1,266.22	1,370.26	0.49	0.49	-0.03	
9,060.00	90.27	90.22	6,933.16	1,046.48	1,361.22	1,464.72	0.58	0.36	0.45	
9,154.00	90.18	90.87	6,932.79	1,045.59	1,455.22	1,558.08	0.70	-0.10	0.69	
9,248.00	91.33	88.74	6,931.55	1,045.91	1,549.20	1,651.57	2.57	1.22	-2.27	
9,342.00	91.93	89.59	6,928.88	1,047.28	1,643.15	1,745.14	1.11	0.64	0.90	
9,437.00	89.33	88.76	6,927.83	1,048.64	1,738.13	1,839.72	2.87	-2.74	-0.87	
9,532.00	89.59	89.49	6,928.73	1,050.09	1,833.11	1,934.32	0.82	0.27	0.77	
9,626.00	89.95	89.93	6,929.11	1,050.57	1,927.11	2,027.83	0.60	0.38	0.47	
9,721.00	90.46	90.28	6,928.77	1,050.40	2,022.11	2,122.28	0.65	0.54	0.37	
9,815.00	90.27	89.64	6,928.17	1,050.46	2,116.10	2,215.75	0.71	-0.20	-0.68	
9,910.00	90.63	91.33	6,927.42	1,049.66	2,211.09	2,310.12	1.82	0.38	1.78	
10,005.00	90.81	91.90	6,926.23	1,046.98	2,306.05	2,404.25	0.63	0.19	0.60	
10,099.00	88.61	91.57	6,926.70	1,044.13	2,400.00	2,497.36	2.37	-2.34	-0.35	
10,194.00	90.58	86.96	6,927.38	1,045.35	2,494.96	2,591.92	5.28	2.07	-4.85	
10,288.00	90.66	85.69	6,926.36	1,051.38	2,588.76	2,685.82	1.35	0.09	-1.35	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 8
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	8	North Reference:	True
Wellbore:	OH / Job #60557	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)
10,383.00	91.44	85.00	6,924.62	1,059.09	2,683.43	2,780.78	1.10	0.82	-0.73
10,477.00	91.94	88.44	6,921.84	1,064.46	2,777.22	2,874.61	3.70	0.53	3.66
10,572.00	88.71	88.63	6,921.31	1,066.89	2,872.17	2,969.28	3.41	-3.40	0.20
10,666.00	90.18	89.11	6,922.22	1,068.74	2,966.15	3,062.92	1.65	1.56	0.51
10,761.00	90.56	89.26	6,921.60	1,070.10	3,061.14	3,157.52	0.43	0.40	0.16
10,855.00	91.68	89.09	6,919.76	1,071.45	3,155.11	3,251.10	1.21	1.19	-0.18
10,950.00	91.44	89.78	6,917.18	1,072.38	3,250.07	3,345.62	0.77	-0.25	0.73
11,044.00	88.00	88.87	6,917.64	1,073.49	3,344.04	3,439.18	3.79	-3.66	-0.97
11,139.00	87.93	87.92	6,921.01	1,076.15	3,438.94	3,533.83	1.00	-0.07	-1.00
11,234.00	88.98	91.28	6,923.57	1,076.81	3,533.89	3,628.31	3.70	1.11	3.54
11,328.00	89.42	92.37	6,924.89	1,073.82	3,627.83	3,721.40	1.25	0.47	1.16
11,422.00	90.44	92.86	6,925.00	1,069.53	3,721.73	3,814.31	1.20	1.09	0.52
11,517.00	88.54	91.38	6,925.85	1,066.02	3,816.66	3,908.33	2.54	-2.00	-1.56
11,706.00	88.33	91.05	6,931.01	1,062.01	4,005.55	4,095.72	0.21	-0.11	-0.17
11,895.00	87.95	91.30	6,937.14	1,058.14	4,194.41	4,283.10	0.24	-0.20	0.13
12,083.00	90.54	92.35	6,939.62	1,052.15	4,382.28	4,469.27	1.49	1.38	0.56
12,178.00	91.62	89.96	6,937.83	1,050.24	4,477.23	4,563.48	2.76	1.14	-2.52
12,367.00	89.91	90.09	6,935.31	1,050.15	4,666.21	4,751.38	0.91	-0.90	0.07
12,461.00	90.14	90.09	6,935.26	1,050.01	4,760.21	4,844.83	0.24	0.24	0.00
12,650.00	90.63	89.17	6,933.99	1,051.23	4,949.20	5,032.88	0.55	0.26	-0.49
12,839.00	89.67	89.34	6,933.50	1,053.68	5,138.18	5,221.05	0.52	-0.51	0.09
12,933.00	89.65	89.98	6,934.06	1,054.24	5,232.17	5,314.58	0.68	-0.02	0.68
13,028.00	89.64	89.85	6,934.65	1,054.38	5,327.17	5,409.05	0.14	-0.01	-0.14
13,217.00	90.41	90.13	6,934.56	1,054.42	5,516.17	5,596.98	0.43	0.41	0.15
13,312.00	88.84	89.77	6,935.19	1,054.50	5,611.16	5,691.45	1.70	-1.65	-0.38
13,500.00	88.09	89.63	6,940.22	1,055.48	5,799.09	5,878.42	0.41	-0.40	-0.07
13,595.00	88.22	90.97	6,943.28	1,054.99	5,894.04	5,972.78	1.42	0.14	1.41
13,784.00	87.09	91.65	6,951.01	1,050.67	6,082.83	6,160.04	0.70	-0.60	0.36
13,878.00	88.52	91.07	6,954.61	1,048.44	6,176.73	6,253.17	1.64	1.52	-0.62
13,973.00	88.04	90.25	6,957.47	1,047.35	6,271.68	6,347.46	1.00	-0.51	-0.86
14,067.00	90.00	90.76	6,959.07	1,046.52	6,365.66	6,440.82	2.15	2.09	0.54
14,162.00	90.65	91.28	6,958.53	1,044.83	6,460.64	6,535.09	0.88	0.68	0.55
14,256.00	91.28	91.37	6,956.95	1,042.65	6,554.60	6,628.29	0.68	0.67	0.10
14,351.00	90.13	89.63	6,955.78	1,041.82	6,649.59	6,722.64	2.20	-1.21	-1.83
14,445.00	91.15	91.18	6,954.73	1,041.16	6,743.57	6,816.03	1.97	1.09	1.65
14,539.00	89.04	91.37	6,954.58	1,039.07	6,837.54	6,909.25	2.25	-2.24	0.20
14,633.00	90.30	91.83	6,955.12	1,036.44	6,931.50	7,002.39	1.43	1.34	0.49
14,727.00	89.59	90.17	6,955.21	1,034.80	7,025.49	7,095.67	1.92	-0.76	-1.77
15,010.00	86.18	88.56	6,965.65	1,037.93	7,308.22	7,377.14	1.33	-1.20	-0.57
15,104.00	87.76	88.13	6,970.62	1,040.64	7,402.05	7,470.72	1.74	1.68	-0.46
15,198.00	87.71	88.14	6,974.33	1,043.70	7,495.93	7,564.39	0.05	-0.05	0.01
15,293.00	87.63	88.45	6,978.20	1,046.52	7,590.81	7,659.04	0.34	-0.08	0.33
15,481.00	87.12	89.80	6,986.81	1,049.39	7,778.58	7,846.05	0.77	-0.27	0.72

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 8
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	8	North Reference:	True
Wellbore:	OH / Job #60557	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)	
15,576.00	88.75	90.26	6,990.23	1,049.34	7,873.52	7,940.44	1.78	1.72	0.48	
15,670.00	88.69	89.48	6,992.33	1,049.56	7,967.49	8,033.91	0.83	-0.06	-0.83	
15,952.00	91.35	93.04	6,992.23	1,043.36	8,249.35	8,313.52	1.58	0.94	1.26	
16,046.00	90.25	92.05	6,990.92	1,039.18	8,343.25	8,406.44	1.57	-1.17	-1.05	
16,140.00	91.26	90.47	6,989.68	1,037.12	8,437.21	8,499.65	1.99	1.07	-1.68	
16,234.00	89.05	90.35	6,989.43	1,036.44	8,531.21	8,593.04	2.35	-2.35	-0.13	
16,329.00	88.87	90.18	6,991.15	1,036.00	8,626.19	8,687.44	0.26	-0.19	-0.18	
16,423.00	89.26	91.15	6,992.68	1,034.91	8,720.17	8,780.77	1.11	0.41	1.03	
16,517.00	87.59	88.51	6,995.27	1,035.19	8,814.12	8,874.22	3.32	-1.78	-2.81	
16,800.00	89.76	87.22	7,001.81	1,045.73	9,096.83	9,156.44	0.89	0.77	-0.46	
16,990.00	91.90	87.66	6,999.06	1,054.22	9,286.61	9,346.05	1.15	1.13	0.23	
17,084.00	90.72	88.37	6,996.91	1,057.47	9,380.52	9,439.78	1.46	-1.26	0.76	
17,179.00	90.80	88.01	6,995.65	1,060.47	9,475.47	9,534.51	0.39	0.08	-0.38	
17,273.00	90.89	87.29	6,994.27	1,064.33	9,569.38	9,628.29	0.77	0.10	-0.77	
17,336.00	90.98	86.98	6,993.24	1,067.48	9,632.29	9,691.19	0.51	0.14	-0.49	
Final Phoenix MWD Survey										
17,410.00	90.98	86.98	6,991.97	1,071.37	9,706.18	9,765.07	0.00	0.00	0.00	
Projection to TD										

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,553.00	1,525.10	163.15	-187.69	Tie In
1,584.00	1,555.29	168.02	-192.77	First Phoenix MWD Survey
17,336.00	6,993.24	1,067.48	9,632.29	Final Phoenix MWD Survey
17,410.00	6,991.97	1,071.37	9,706.18	Projection to TD