

SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

Job # 60558 Wellbore Name OH
Well Name: Mickey 9
County/State: Weld, CO
Latitude: 40 30' 59.018" N

Client: Extraction Oil and Gas
API#: 05 123 43846
Direction: 85.83
Longitude: 104 54' 52.679" W

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

TIE IN DATA

MD	TVD	INC	AZM
1553.00	1550.91	8.10	304.00

N-S	E-W	DATA SOURCE
25.64	-38.90	MWD
Data Source Company:		

FIRST SURVEY

DATE	DEPTH	INC	AZM
19-Jan-17	1586.00	9.24	304.40

LAST SURVEY

DATE	DEPTH	INC	AZM
21-Jan-17	17247.00	85.96	89.09

STRAIGHT LINE PROJECTION TO TD

DATE	DEPTH	INC	AZM
21-Jan-17	17313.00	85.96	89.09

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: Chris Apodaca
DD 3: _____

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

PRINT YOUR NAME

Brian Murphy

SIGN YOUR NAME

DATE

22-Jan-17

PRINT WELL PLANNER

Travis Kniss

SIGN WELL PLANNER

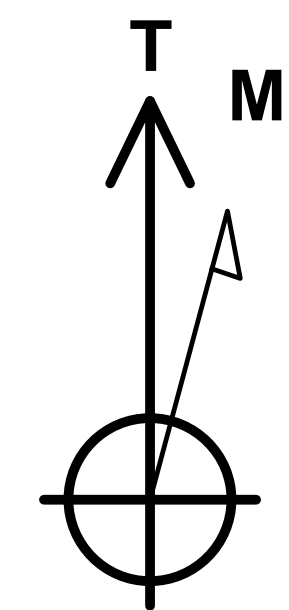
DATE

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: 9
Wellbore: OH / Job #60558
Design: Plan 2 12-07-16
Rig: Patterson 346



Azimuths to True North
Magnetic North: 8.45°

Magnetic Field
Strength: 52519.4snT
Dip Angle: 66.95°
Date: 12/20/2016
Model: HDGM

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, 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
- 8, OH / Job #60557, Plan 2 12-07-16 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
- 9, OH / Job #60558, Surveys (Patterson 346) V0
- Plan 2 12-07-16

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

Local Origin: Well 9, True North

Latitude: 40° 30' 59.018 N
Longitude: 104° 54' 52.679 W

Grid East: 3162749.68
Grid North: 1431500.10
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°

WELL DETAILS

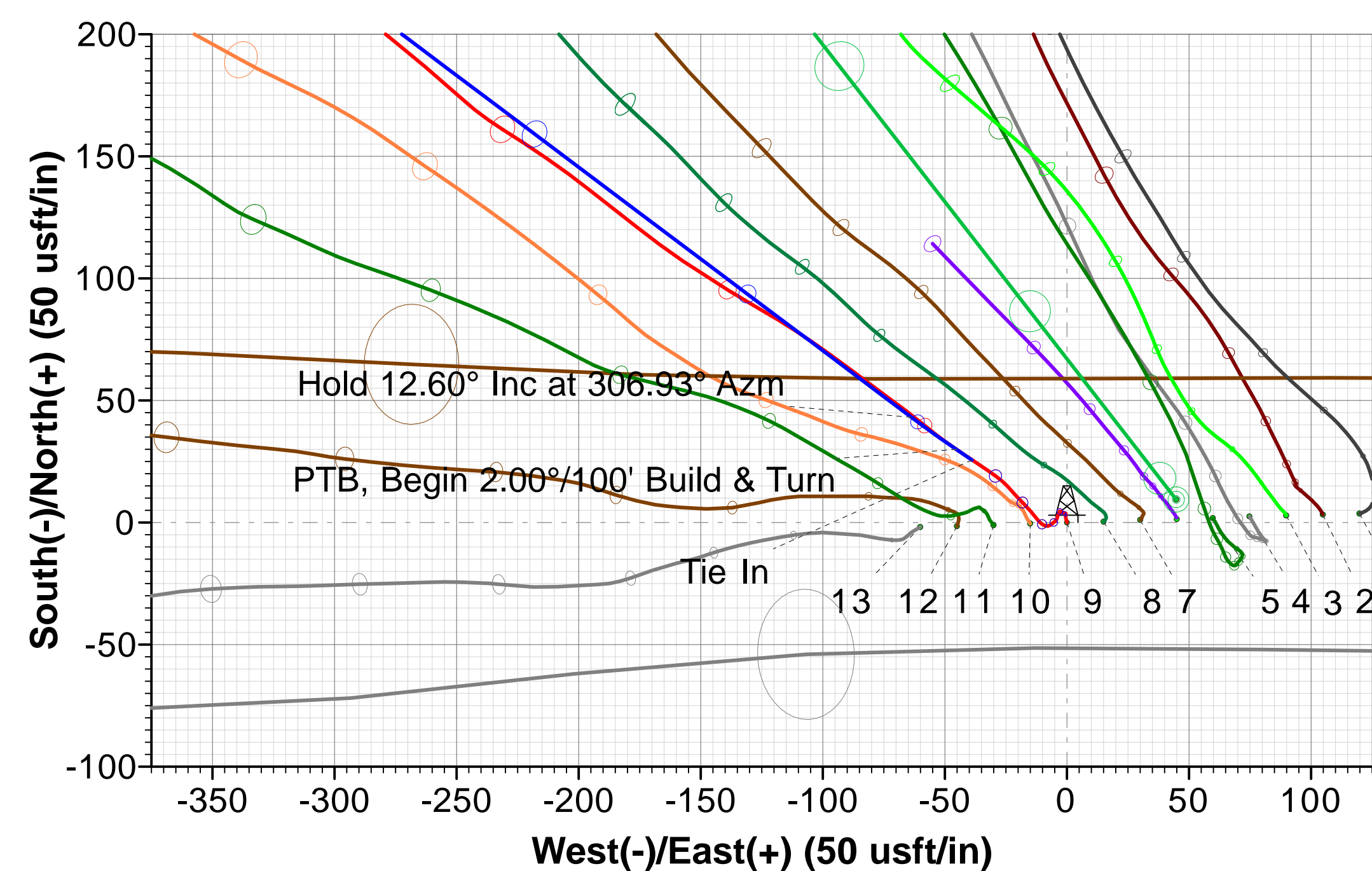
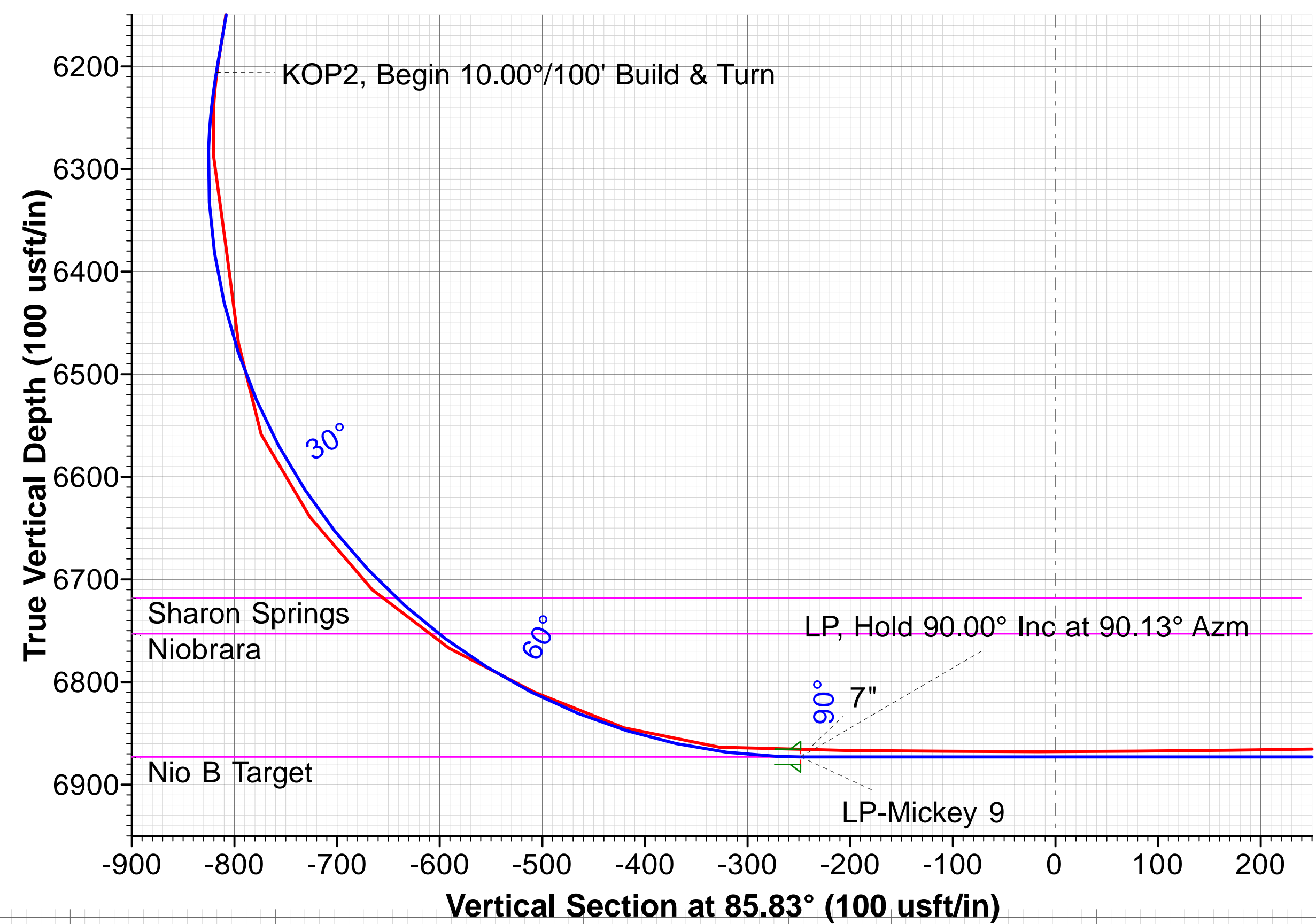
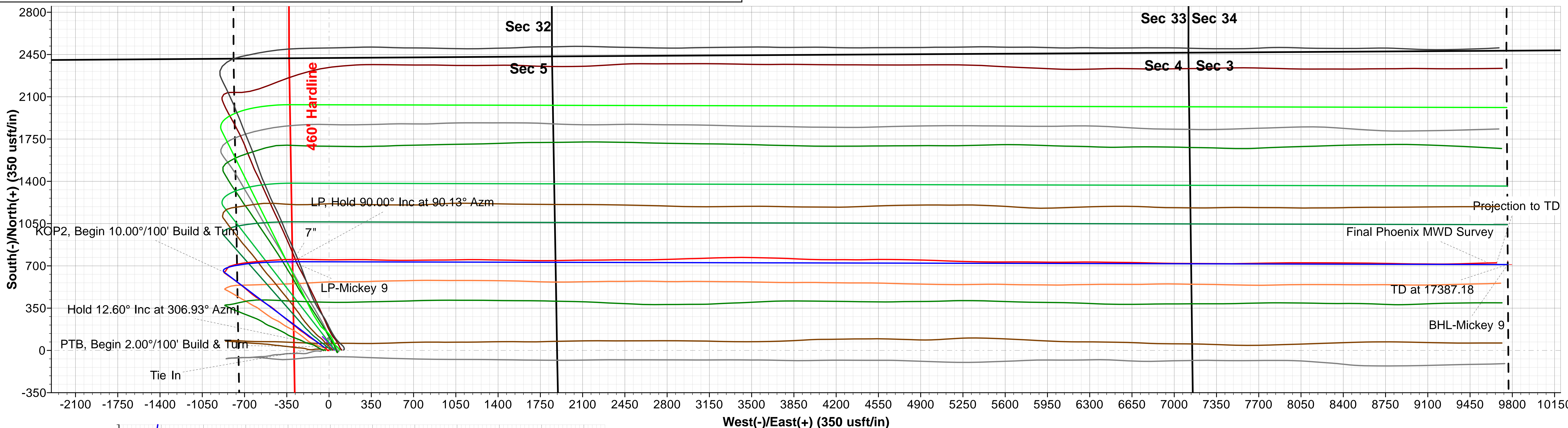
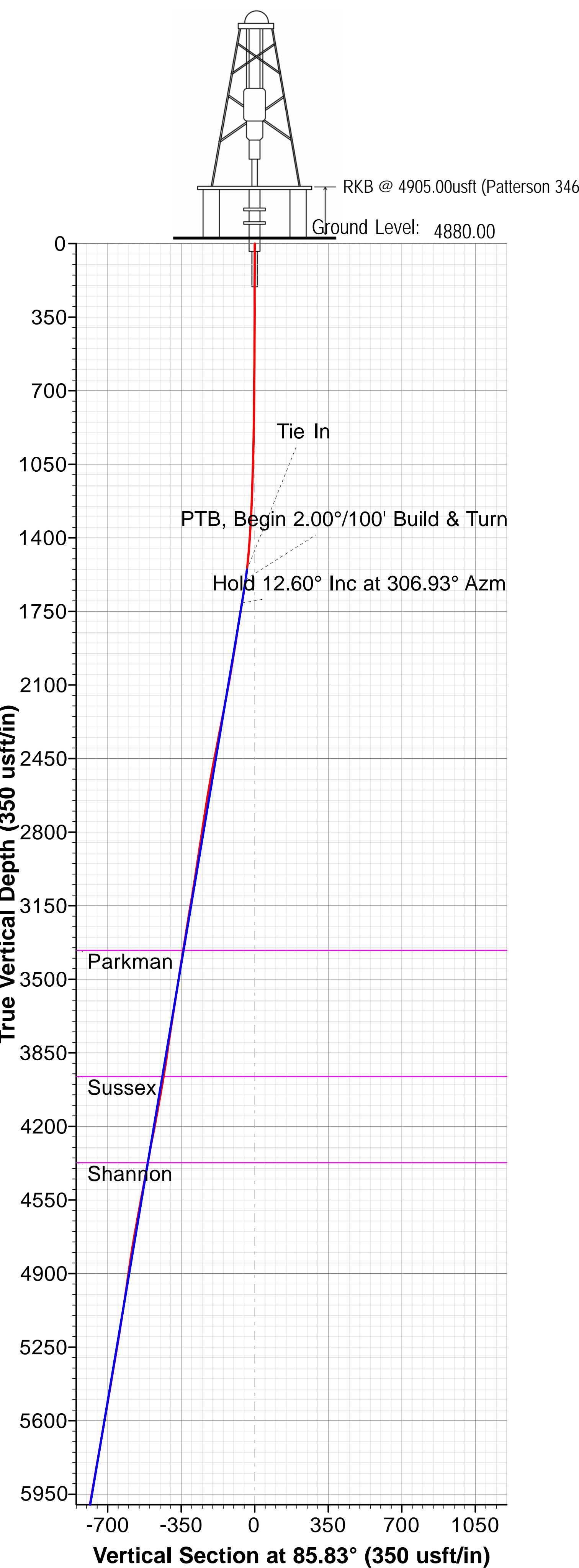
+N/-S	+E/-W	Northing	Ground Level: Easting	4880.00	Latitude	Longitude
0.00	0.00	1431500.10	3162749.68	40° 30' 59.018 N	104° 54' 52.679 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSecl	Target	Annotation
1	1553.00	8.10	304.00	1550.91	25.64	-38.90	0.00	0.00	-36.93		Tie In
2	1601.00	10.40	304.00	1598.29	29.95	-45.29	4.79	0.00	-43.00		PTB, Begin 2.00°/100' Build & Turn
3	1714.61	12.60	306.93	1709.61	43.13	-63.70	2.00	16.34	-60.40		Hold 12.60° Inc at 306.93° Azm
4	6321.83	12.60	306.93	6205.94	646.85	-866.85	0.00	0.00	-817.56		KOP2, Begin 10.00°/100' Build & Turn
5	7322.40	90.00	90.13	6873.00	734.82	-302.49	10.00	142.53	-248.30	LP-Mickey 9	LP, Hold 90.00° Inc at 90.13° Azm
6	17387.18	90.00	90.13	6873.00	711.24	9762.26	0.00	0.00	9788.14	BHL-Mickey 9	TD at 17387.18

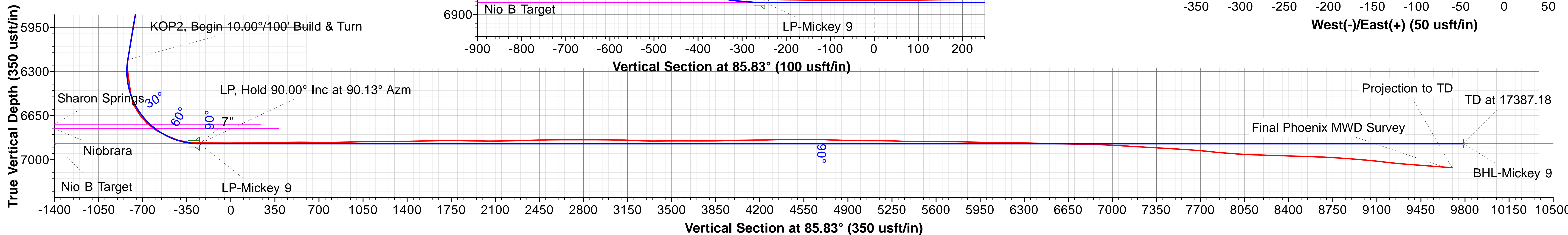
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
BHL-Mickey 9	6873.00	711.25	9762.26	1432275.78	3172507.03	40° 31' 6.028 N	104° 52' 46.272 W	Point
LP-Mickey 9	6873.00	734.82	-302.49	1432232.91	3162442.35	40° 31' 6.280 N	104° 54' 56.596 W	Point



FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3363.00	3408.78	Parkman	0.00	85.83
3963.00	4023.58	Sussex	0.00	85.83
4373.00	4443.69	Shannon	0.00	85.83
6718.00	6888.81	Sharon Springs	0.00	85.83
6753.00	6943.04	Niobrara	0.00	85.83
6873.00	7322.40	Nio B Target	0.00	85.83





Extraction Oil & Gas

Weld County, CO (NAD83)

Mickey

9

OH / Job #60558

Survey: Phoenix MWD Surveys

Standard Survey Report

22 January, 2017



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 9
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	9	North Reference:	True
Wellbore:	OH / Job #60558	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
From:	Lat/Long	Easting:	3,162,869.49 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "
		Latitude:	40° 30' 59.054 N
		Longitude:	104° 54' 51.127 W
		Grid Convergence:	0.38 °

Well	9		
Well Position	+N-S	0.00 usft	Northing: 1,431,500.11 usft
	+E-W	0.00 usft	Easting: 3,162,749.68 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	40° 30' 59.018 N
		Longitude:	104° 54' 52.679 W
		Ground Level:	4,880.00 usft

Wellbore	OH / Job #60558				
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	85.83	

Survey Program	Date	1/22/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
94.00	1,601.00	Surveys (OH / Surface)	MWD		
1,601.00	17,313.00	Phoenix MWD Surveys (OH / Job #60558)	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	8.10	304.00	1,550.91	25.64	-38.90	-36.93	0.00	0.00	0.00	
1,586.00	9.24	304.40	1,583.54	28.44	-43.01	-40.83	3.46	3.45	1.21	
First Phoenix MWD Survey										
1,681.00	12.92	309.18	1,676.75	39.46	-57.54	-54.52	3.99	3.87	5.03	
1,775.00	12.10	305.88	1,768.52	51.87	-73.67	-69.71	1.16	-0.87	-3.51	
1,870.00	11.23	306.90	1,861.56	63.26	-89.14	-84.30	0.94	-0.92	1.07	
1,964.00	12.31	304.53	1,953.58	74.44	-104.71	-99.03	1.26	1.15	-2.52	
2,059.00	11.36	300.14	2,046.56	84.88	-121.15	-114.66	1.38	-1.00	-4.62	
2,153.00	13.19	301.28	2,138.41	95.09	-138.32	-131.04	1.96	1.95	1.21	
2,247.00	13.77	304.38	2,229.82	106.98	-156.72	-148.53	0.99	0.62	3.30	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 9
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	9	North Reference:	True
Wellbore:	OH / Job #60558	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)
2,342.00	14.61	308.20	2,321.92	120.77	-175.47	-166.23	1.32	0.88	4.02
2,436.00	14.44	308.08	2,412.92	135.33	-194.01	-183.66	0.18	-0.18	-0.13
2,531.00	13.63	304.73	2,505.08	149.02	-212.53	-201.14	1.21	-0.85	-3.53
2,625.00	12.78	301.84	2,596.60	160.81	-230.47	-218.17	1.14	-0.90	-3.07
2,720.00	12.61	311.95	2,689.29	173.29	-247.11	-233.86	2.34	-0.18	10.64
2,814.00	12.08	310.12	2,781.11	186.49	-262.26	-248.02	0.70	-0.56	-1.95
2,908.00	10.89	308.96	2,873.23	198.41	-276.69	-261.54	1.29	-1.27	-1.23
3,002.00	11.68	307.97	2,965.41	209.85	-291.09	-275.08	0.87	0.84	-1.05
3,097.00	12.37	307.02	3,058.33	221.89	-306.80	-289.86	0.76	0.73	-1.00
3,191.00	13.19	308.62	3,150.00	234.65	-323.22	-305.31	0.95	0.87	1.70
3,285.00	11.88	307.98	3,241.75	247.29	-339.22	-320.36	1.40	-1.39	-0.68
3,380.00	12.81	307.16	3,334.56	259.67	-355.33	-335.52	1.00	0.98	-0.86
3,474.00	12.05	310.08	3,426.35	272.29	-371.14	-350.37	1.05	-0.81	3.11
3,568.00	12.02	309.49	3,518.29	284.83	-386.20	-364.48	0.13	-0.03	-0.63
3,663.00	12.12	308.70	3,611.19	297.35	-401.62	-378.95	0.20	0.11	-0.83
3,757.00	12.20	308.73	3,703.08	309.74	-417.07	-393.46	0.09	0.09	0.03
3,852.00	11.33	308.75	3,796.08	321.86	-432.17	-407.64	0.92	-0.92	0.02
3,946.00	12.10	312.37	3,888.12	334.28	-446.66	-421.18	1.13	0.82	3.85
4,040.00	12.66	307.61	3,979.94	347.21	-462.09	-435.64	1.24	0.60	-5.06
4,135.00	13.64	305.00	4,072.45	359.98	-479.52	-452.09	1.21	1.03	-2.75
4,230.00	12.56	302.95	4,164.98	372.03	-497.36	-469.01	1.24	-1.14	-2.16
4,324.00	14.43	301.46	4,256.38	383.70	-515.93	-486.69	2.02	1.99	-1.59
4,418.00	12.22	304.11	4,347.84	395.39	-534.16	-504.02	2.44	-2.35	2.82
4,513.00	12.90	305.42	4,440.57	407.18	-551.13	-520.08	0.78	0.72	1.38
4,607.00	13.88	302.10	4,532.01	419.25	-569.23	-537.26	1.32	1.04	-3.53
4,702.00	12.68	300.85	4,624.47	430.65	-587.83	-554.99	1.30	-1.26	-1.32
4,796.00	13.35	306.85	4,716.06	442.45	-605.38	-571.63	1.60	0.71	6.38
4,891.00	11.02	303.67	4,808.91	454.07	-621.71	-587.07	2.55	-2.45	-3.35
4,985.00	11.23	311.00	4,901.15	465.05	-636.10	-600.62	1.52	0.22	7.80
5,080.00	11.44	309.34	4,994.30	477.09	-650.37	-613.98	0.41	0.22	-1.75
5,174.00	12.61	310.46	5,086.24	489.66	-665.38	-628.04	1.27	1.24	1.19
5,269.00	12.65	310.50	5,178.94	503.15	-681.18	-642.82	0.04	0.04	0.04
5,363.00	12.97	309.24	5,270.60	516.50	-697.18	-657.81	0.45	0.34	-1.34
5,458.00	12.82	309.50	5,363.20	529.95	-713.57	-673.17	0.17	-0.16	0.27
5,552.00	13.35	304.71	5,454.76	542.77	-730.54	-689.17	1.28	0.56	-5.10
5,646.00	12.70	307.07	5,546.35	555.17	-747.70	-705.39	0.89	-0.69	2.51
5,740.00	12.75	308.65	5,638.04	567.88	-764.05	-720.77	0.37	0.05	1.68
5,835.00	13.21	306.62	5,730.61	580.90	-780.95	-736.67	0.68	0.48	-2.14
5,929.00	13.02	305.97	5,822.16	593.53	-798.14	-752.90	0.26	-0.20	-0.69
6,024.00	12.79	304.94	5,914.76	605.84	-815.42	-769.24	0.34	-0.24	-1.08
6,118.00	11.74	305.79	6,006.61	617.39	-831.71	-784.65	1.13	-1.12	0.90
6,213.00	11.82	305.87	6,099.61	628.74	-847.43	-799.50	0.09	0.08	0.08
6,307.00	11.50	303.16	6,191.67	639.51	-863.08	-814.33	0.67	-0.34	-2.88

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 9
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Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	9	North Reference:	True
Wellbore:	OH / Job #60558	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)
6,402.00	5.64	21.28	6,285.82	649.07	-869.33	-819.87	12.32	-6.17	82.23
6,496.00	13.11	80.30	6,378.66	655.19	-857.11	-807.23	12.00	7.95	62.79
6,590.00	19.26	0.00	6,469.85	672.69	-846.48	-795.36	22.60	6.54	-85.43
6,685.00	26.65	70.51	6,558.77	695.89	-826.02	-773.27	28.14	7.78	74.22
6,779.00	35.57	76.33	6,639.19	709.42	-779.48	-725.87	10.00	9.49	6.19
6,873.00	46.06	80.88	6,710.24	721.28	-719.32	-665.00	11.59	11.16	4.84
6,967.00	59.54	83.99	6,766.95	730.93	-645.26	-590.44	14.58	14.34	3.31
7,061.00	65.87	85.31	6,810.04	738.69	-562.13	-506.97	6.85	6.73	1.40
7,155.00	70.65	85.24	6,844.85	745.88	-475.14	-419.68	5.09	5.09	-0.07
7,250.00	86.46	87.91	6,863.64	751.36	-382.49	-326.88	16.87	16.64	2.81
7,374.00	90.51	89.64	6,866.92	754.01	-258.59	-203.12	3.55	3.27	1.40
7,468.00	88.64	91.42	6,867.62	753.14	-164.61	-109.45	2.75	-1.99	1.89
7,562.00	90.86	91.37	6,868.03	750.85	-70.64	-15.90	2.36	2.36	-0.05
7,657.00	89.84	89.54	6,867.45	750.10	24.35	78.79	2.21	-1.07	-1.93
7,751.00	91.20	89.61	6,866.59	750.80	118.34	172.58	1.45	1.45	0.07
7,844.00	90.47	89.16	6,865.24	751.79	211.32	265.39	0.92	-0.78	-0.48
7,939.00	91.20	91.46	6,863.85	751.28	306.30	360.08	2.54	0.77	2.42
8,032.00	91.17	91.51	6,861.93	748.87	399.25	452.61	0.06	-0.03	0.05
8,127.00	90.05	90.93	6,860.92	746.85	494.22	547.19	1.33	-1.18	-0.61
8,220.00	89.00	90.41	6,861.69	745.76	587.21	639.85	1.26	-1.13	-0.56
8,314.00	89.51	89.19	6,862.91	746.09	681.20	733.61	1.41	0.54	-1.30
8,408.00	91.54	89.42	6,862.05	747.23	775.19	827.43	2.17	2.16	0.24
8,502.00	91.35	89.57	6,859.68	748.06	869.15	921.21	0.26	-0.20	0.16
8,596.00	91.34	89.62	6,857.47	748.72	963.12	1,014.98	0.05	-0.01	0.05
8,691.00	90.18	88.69	6,856.21	750.12	1,058.10	1,109.81	1.56	-1.22	-0.98
8,785.00	90.62	89.43	6,855.56	751.66	1,152.09	1,203.66	0.92	0.47	0.79
8,879.00	90.27	91.15	6,854.83	751.19	1,246.08	1,297.37	1.87	-0.37	1.83
8,974.00	91.13	90.88	6,853.67	749.51	1,341.06	1,391.97	0.95	0.91	-0.28
9,068.00	91.03	90.75	6,851.89	748.17	1,435.03	1,485.60	0.17	-0.11	-0.14
9,163.00	91.06	90.99	6,850.16	746.73	1,530.00	1,580.22	0.25	0.03	0.25
9,257.00	91.80	91.63	6,847.82	744.58	1,623.95	1,673.76	1.04	0.79	0.68
9,351.00	89.40	89.93	6,846.83	743.30	1,717.92	1,767.39	3.13	-2.55	-1.81
9,446.00	87.94	89.96	6,849.04	743.39	1,812.90	1,862.12	1.54	-1.54	0.03
9,540.00	89.54	88.83	6,851.10	744.38	1,906.86	1,955.91	2.08	1.70	-1.20
9,634.00	89.46	88.88	6,851.92	746.26	2,000.84	2,049.78	0.10	-0.09	0.05
9,729.00	91.27	89.92	6,851.32	747.26	2,095.83	2,144.59	2.20	1.91	1.09
9,823.00	91.28	89.66	6,849.23	747.60	2,189.80	2,238.34	0.28	0.01	-0.28
9,918.00	91.49	89.21	6,846.93	748.54	2,284.77	2,333.12	0.52	0.22	-0.47
10,012.00	91.89	89.26	6,844.16	749.79	2,378.72	2,426.92	0.43	0.43	0.05
10,107.00	90.53	90.63	6,842.15	749.88	2,473.70	2,521.65	2.03	-1.43	1.44
10,201.00	90.20	89.80	6,841.55	749.53	2,567.69	2,615.37	0.95	-0.35	-0.88
10,295.00	89.78	89.10	6,841.57	750.43	2,661.69	2,709.18	0.87	-0.45	-0.74
10,390.00	90.10	88.33	6,841.67	752.56	2,756.66	2,804.06	0.88	0.34	-0.81

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 9
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	9	North Reference:	True
Wellbore:	OH / Job #60558	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)
10,484.00	90.07	88.40	6,841.53	755.24	2,850.62	2,897.97	0.08	-0.03	0.07
10,579.00	89.27	87.87	6,842.08	758.34	2,945.57	2,992.89	1.01	-0.84	-0.56
10,673.00	89.21	89.01	6,843.32	760.89	3,039.53	3,086.78	1.21	-0.06	1.21
10,768.00	87.45	87.58	6,846.09	763.72	3,134.44	3,181.65	2.39	-1.85	-1.51
10,862.00	87.83	88.65	6,849.96	766.81	3,228.31	3,275.49	1.21	0.40	1.14
10,957.00	90.19	89.13	6,851.61	768.65	3,323.27	3,370.34	2.54	2.48	0.51
11,052.00	90.81	89.51	6,850.78	769.78	3,418.26	3,465.16	0.77	0.65	0.40
11,146.00	90.00	91.87	6,850.11	768.64	3,512.24	3,558.81	2.65	-0.86	2.51
11,241.00	89.45	90.96	6,850.57	766.30	3,607.21	3,653.35	1.12	-0.58	-0.96
11,335.00	90.07	91.57	6,850.96	764.22	3,701.18	3,746.93	0.93	0.66	0.65
11,430.00	90.76	92.33	6,850.27	760.99	3,796.12	3,841.39	1.08	0.73	0.80
11,524.00	92.02	92.51	6,847.99	757.02	3,890.01	3,934.74	1.35	1.34	0.19
11,618.00	90.93	91.64	6,845.57	753.62	3,983.92	4,028.15	1.48	-1.16	-0.93
11,713.00	90.35	91.11	6,844.51	751.34	4,078.88	4,122.70	0.83	-0.61	-0.56
11,807.00	91.13	89.13	6,843.30	751.14	4,172.87	4,216.42	2.26	0.83	-2.11
11,902.00	91.23	90.76	6,841.34	751.24	4,267.85	4,311.15	1.72	0.11	1.72
11,996.00	91.23	90.26	6,839.32	750.40	4,361.82	4,404.82	0.53	0.00	-0.53
12,091.00	90.15	88.47	6,838.18	751.45	4,456.80	4,499.62	2.20	-1.14	-1.88
12,185.00	89.42	89.44	6,838.53	753.17	4,550.78	4,593.48	1.29	-0.78	1.03
12,280.00	88.65	90.92	6,840.13	752.87	4,645.77	4,688.19	1.76	-0.81	1.56
12,374.00	87.74	90.57	6,843.09	751.65	4,739.71	4,781.80	1.04	-0.97	-0.37
12,468.00	88.47	91.65	6,846.20	749.83	4,833.64	4,875.35	1.39	0.78	1.15
12,563.00	88.99	91.19	6,848.31	747.47	4,928.59	4,969.87	0.73	0.55	-0.48
12,657.00	90.50	92.15	6,848.73	744.73	5,022.54	5,063.38	1.90	1.61	1.02
12,751.00	89.54	92.44	6,848.69	740.97	5,116.47	5,156.78	1.07	-1.02	0.31
12,846.00	88.00	91.48	6,850.73	737.72	5,211.38	5,251.21	1.91	-1.62	-1.01
12,940.00	88.61	91.58	6,853.51	735.21	5,305.31	5,344.71	0.66	0.65	0.11
13,034.00	89.39	91.01	6,855.15	733.09	5,399.27	5,438.27	1.03	0.83	-0.61
13,129.00	90.14	90.19	6,855.54	732.09	5,494.26	5,532.93	1.17	0.79	-0.86
13,223.00	89.73	89.74	6,855.65	732.15	5,588.26	5,626.69	0.65	-0.44	-0.48
13,318.00	89.03	89.38	6,856.68	732.88	5,683.25	5,721.48	0.83	-0.74	-0.38
13,412.00	89.22	91.23	6,858.11	732.38	5,777.24	5,815.18	1.98	0.20	1.97
13,507.00	88.08	90.12	6,860.35	731.26	5,872.20	5,909.81	1.67	-1.20	-1.17
13,602.00	89.48	90.85	6,862.37	730.46	5,967.17	6,004.48	1.66	1.47	0.77
13,696.00	89.43	89.75	6,863.27	729.96	6,061.16	6,098.18	1.17	-0.05	-1.17
13,791.00	88.91	89.39	6,864.64	730.68	6,156.15	6,192.97	0.67	-0.55	-0.38
13,886.00	88.47	89.25	6,866.82	731.80	6,251.12	6,287.77	0.49	-0.46	-0.15
13,980.00	89.26	91.08	6,868.68	731.53	6,345.10	6,381.48	2.12	0.84	1.95
14,075.00	88.76	90.74	6,870.32	730.02	6,440.07	6,476.09	0.64	-0.53	-0.36
14,169.00	88.46	90.36	6,872.60	729.12	6,534.04	6,569.75	0.51	-0.32	-0.40
14,264.00	88.92	91.28	6,874.77	727.76	6,629.00	6,664.36	1.08	0.48	0.97
14,358.00	88.43	90.88	6,876.95	725.99	6,722.96	6,757.94	0.67	-0.52	-0.43
14,453.00	88.72	91.56	6,879.31	723.97	6,817.91	6,852.49	0.78	0.31	0.72
14,547.00	87.69	90.77	6,882.25	722.06	6,911.84	6,946.04	1.38	-1.10	-0.84

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 9
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	9	North Reference:	True
Wellbore:	OH / Job #60558	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)	
14,641.00	86.48	91.06	6,887.03	720.56	7,005.70	7,039.54	1.32	-1.29	0.31	
15,114.00	86.84	89.62	6,914.59	717.76	7,477.88	7,510.27	0.31	0.08	-0.30	
15,209.00	85.90	88.77	6,920.61	719.09	7,572.68	7,604.91	1.33	-0.99	-0.89	
15,303.00	85.26	88.84	6,927.85	721.05	7,666.38	7,698.51	0.68	-0.68	0.07	
15,398.00	83.43	89.13	6,937.21	722.72	7,760.90	7,792.90	1.95	-1.93	0.31	
15,492.00	86.11	89.25	6,945.78	724.04	7,854.49	7,886.34	2.85	2.85	0.13	
15,586.00	85.17	89.23	6,952.93	725.29	7,948.21	7,979.90	1.00	-1.00	-0.02	
15,681.00	87.80	90.37	6,958.75	725.62	8,043.02	8,074.48	3.02	2.77	1.20	
15,775.00	88.08	90.01	6,962.13	725.31	8,136.95	8,168.15	0.48	0.30	-0.38	
15,870.00	88.13	90.39	6,965.27	724.97	8,231.90	8,262.82	0.40	0.05	0.40	
15,964.00	88.18	89.91	6,968.30	724.73	8,325.85	8,356.50	0.51	0.05	-0.51	
16,247.00	88.09	90.93	6,977.51	722.65	8,608.69	8,638.45	0.36	-0.03	0.36	
16,342.00	86.74	91.00	6,981.79	721.06	8,703.58	8,732.97	1.42	-1.42	0.07	
16,437.00	86.08	90.97	6,987.74	719.43	8,798.38	8,827.40	0.70	-0.69	-0.03	
16,531.00	85.39	91.40	6,994.73	717.49	8,892.10	8,920.73	0.86	-0.73	0.46	
16,625.00	84.83	90.28	7,002.74	716.11	8,985.74	9,014.02	1.33	-0.60	-1.19	
16,719.00	83.84	90.47	7,012.02	715.50	9,079.28	9,107.27	1.07	-1.05	0.20	
16,814.00	83.07	90.29	7,022.85	714.88	9,173.66	9,201.35	0.83	-0.81	-0.19	
16,909.00	85.56	89.21	7,032.26	715.29	9,268.18	9,295.66	2.85	2.62	-1.14	
17,003.00	85.48	88.51	7,039.60	717.16	9,361.88	9,389.24	0.75	-0.09	-0.74	
17,098.00	86.02	88.27	7,046.64	719.82	9,456.58	9,483.88	0.62	0.57	-0.25	
17,192.00	85.13	88.27	7,053.90	722.65	9,550.25	9,577.52	0.95	-0.95	0.00	
17,247.00	85.96	89.09	7,058.17	723.91	9,605.07	9,632.28	2.12	1.51	1.49	
Final Phoenix MWD Survey										
17,313.00	85.96	89.09	7,062.82	724.95	9,670.90	9,698.01	0.00	0.00	0.00	
Projection to TD										

Survey Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
1,586.00	1,583.54	28.44	-43.01	First Phoenix MWD Survey	
17,247.00	7,058.17	723.91	9,605.07	Final Phoenix MWD Survey	
17,313.00	7,062.82	724.95	9,670.90	Projection to TD	