

SURVEY DATA CERTIFICATION



PHOENIX
TECHNOLOGY SERVICES

Job # 60561 Wellbore Name OH
Well Name: Mickey 12
County/State: Weld, CO
Latitude: 40 30 59.004

Client: Extraction Oil and Gas
API#: 05-123-43845
Direction:
Longitude: 104 54 53.262

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

TIE IN DATA

MD	TVD	INC	AZM
1553.00	1540.28	9.20	282.90

N-S	E-W	DATA SOURCE
17.45	-155.03	MWD
Data Source Company:		NEWSCO

FIRST SURVEY

DATE	DEPTH	INC	AZM
2-Jan-17	1585.00	9.21	279.39

LAST SURVEY

DATE	DEPTH	INC	AZM
6-Jan-17	17285.00	89.46	90.11

STRAIGHT LINE PROJECTION TO TD

DATE	DEPTH	INC	AZM
6-Jan-17	17365.00	89.46	90.11

DEPTH DATUM

KELLY BUSHING	GROUND LEVEL
25.00	4880.00

MWD 1: Ben Hursh
MWD 2: Brian Murphy
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

Ben Hursh

PRINT WELL PLANNER

Travis Kniss

SIGN YOUR NAME

Ben Hursh
SIGN WELL PLANNER

DATE

6-Jan-17

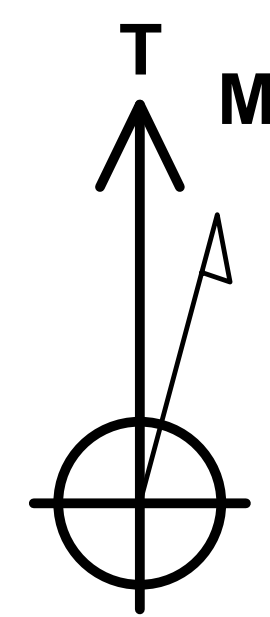
DATE

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: 12
Wellbore: OH / Job #60561
Design: Plan 2 12-07-16
Rig: Patterson 346



Azimuths to True North
Magnetic North: 8.45°

Magnetic Field
Strength: 52519.2snT
Dip Angle: 66.95°
Date: 12/20/2016
Model: HDGM

LEGEND

- 4, OH / Job #60553, Surveys (Patterson 346) V0
- 10, OH / Job #60559, Plan 2 12-08-16 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
- 11, OH / Job #60560, Plan 2 12-07-16 V0
- 11, OH / Job #60560, 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
- 3, OH / Job #60552, Plan 2 11-21-16 V0
- 6-Z, OH / Job #60555, Plan 1 12-07-16 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, Surveys (Patterson 346) V0
- 8, OH / Job #60557, Surveys (Patterson 346) V0
- 13, OH / Job #60562, Plan 2 12-07-16 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 12, True North

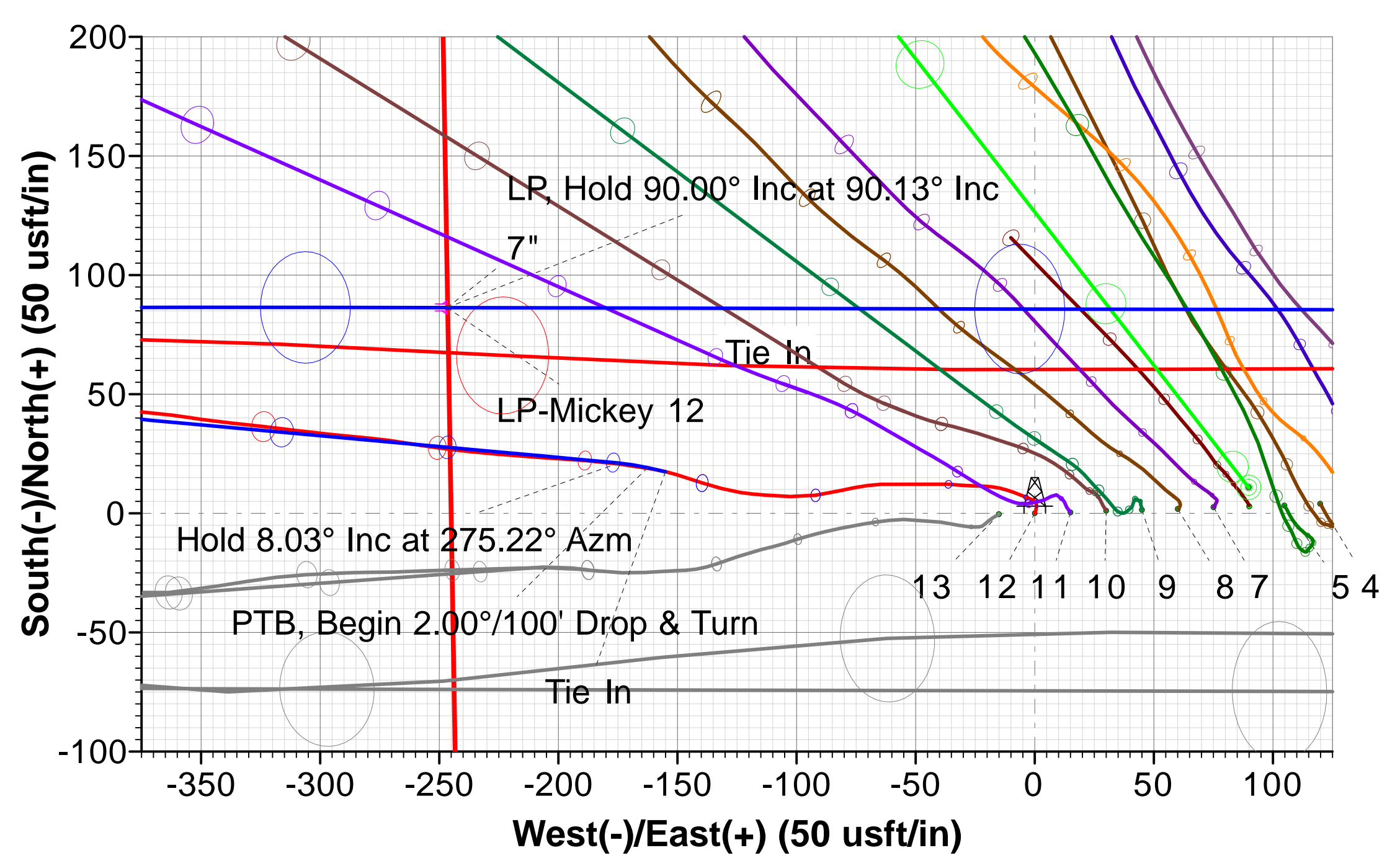
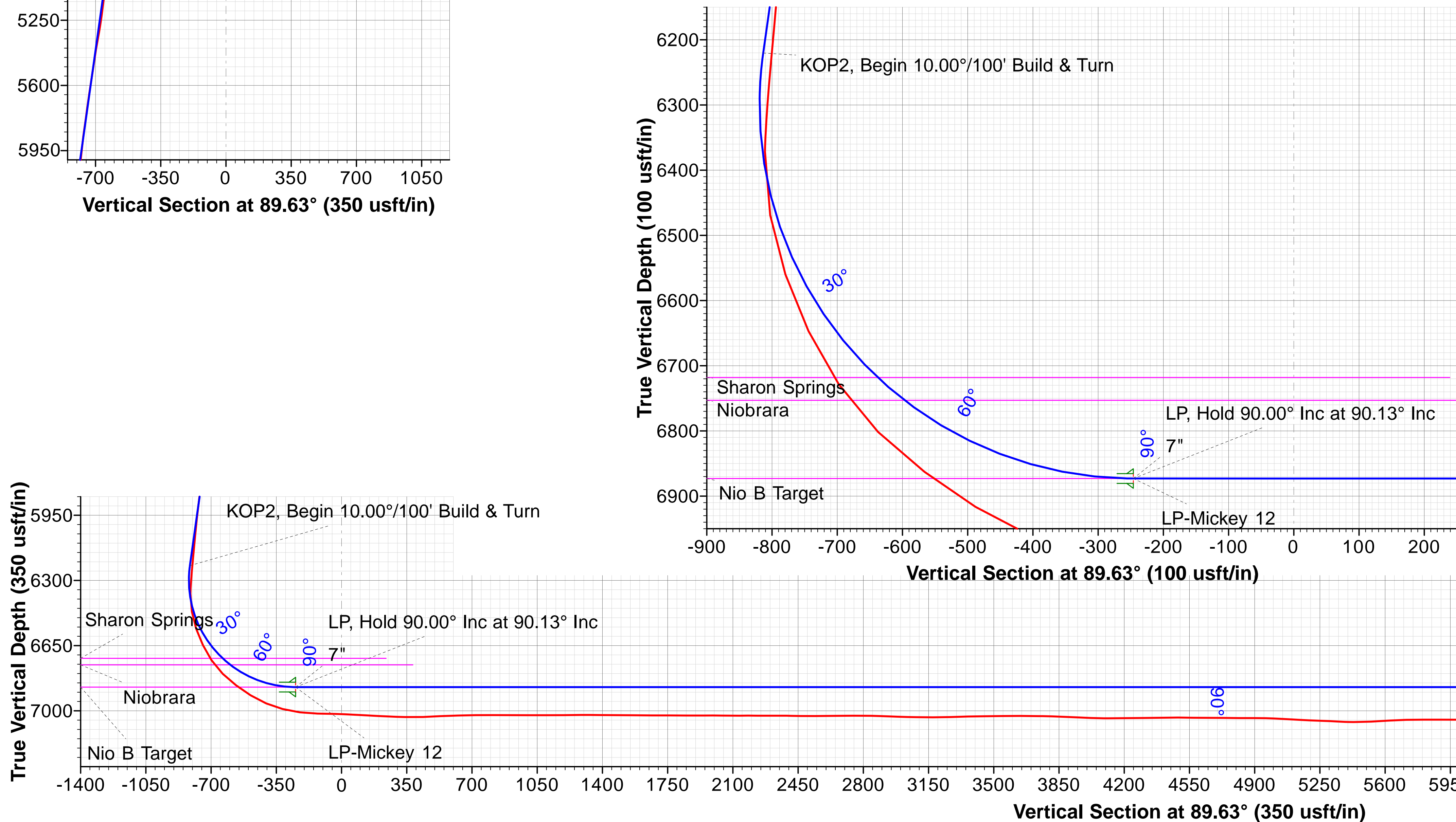
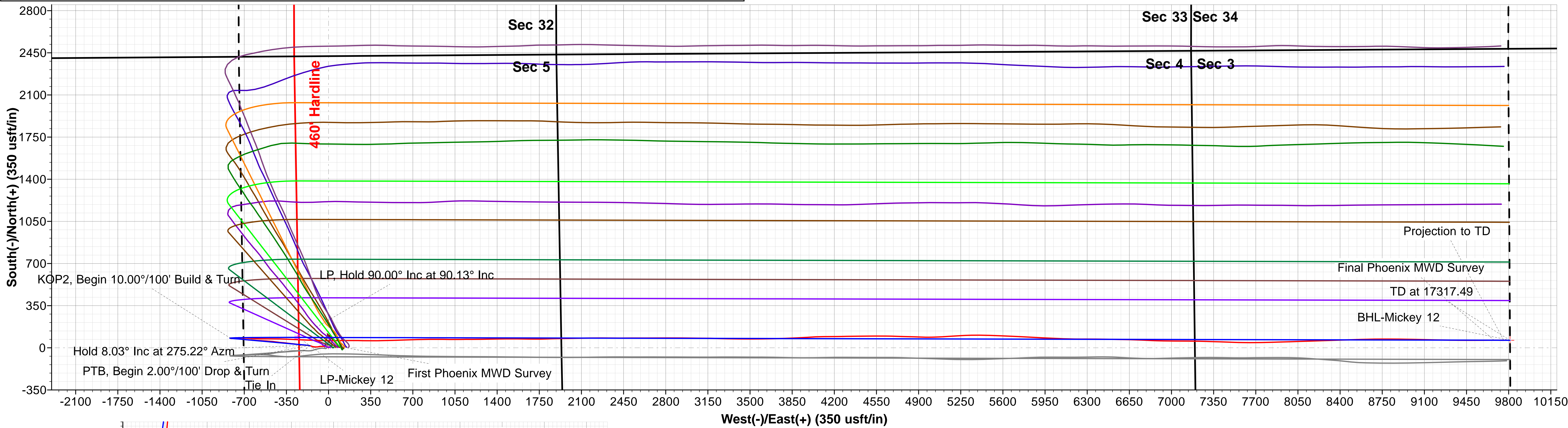
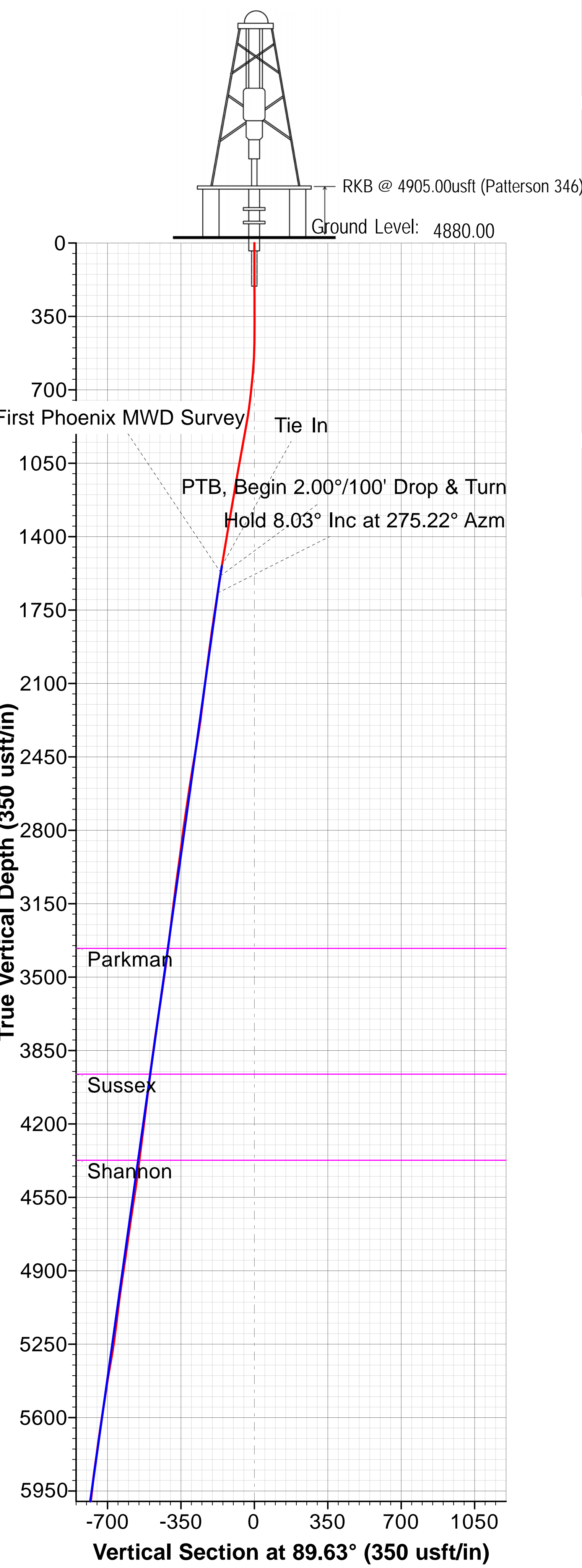
Latitude: 40° 30' 59.004 N
Longitude: 104° 54' 53.262 W

Grid East: 3162704.65
Grid North: 1431498.35
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																	
					Ground Level: 4880.00												
+N/-S		+E/-W		Northing		Easting		Latitude		Longitude							
0.00		0.00		1431498.35		3162704.65		40° 30' 59.004 N		104° 54' 53.262 W							
SECTION DETAILS																	
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation						
1	1553.00	9.20	282.90	1540.28	17.45	-155.03	0.00	0.00	-154.92		Tie In						
2	1601.00	9.20	282.90	1587.66	19.16	-162.51	0.00	0.00	-162.38		PTB, Begin 2.00°/100' Drop & Turn						
3	1682.96	8.03	275.22	1668.70	21.15	-174.60	2.00	-139.24	-174.46		Hold 8.03° Inc at 275.22° Azm						
4	6279.70	8.03	275.22	6220.38	79.53	-814.02	0.00	0.00	-813.49		KOP2, Begin 10.00°/100' Build & Turn						
5	7259.68	90.00	90.13	6873.00	86.35	-246.61	10.00	174.87	-246.06	LP-Mickey 12	LP, Hold 90.00° Inc at 90.13° Inc						
6	17317.49	90.00	90.13	6873.00	62.81	9811.18	0.00	0.00	9811.38	BHL-Mickey 12	TD at 17317.49						
DESIGN TARGET DETAILS																	
Name		TVD		+N/-S		+E/-W		Northing		Easting		Latitude		Longitude		Shape	
BHL-Mickey 12		6873.00		62.80		9811.18		1431625.90		3172515.20		40° 30' 59.605 N		104° 52' 46.225 W		Point	
LP-Mickey 12		6873.00		86.35		-246.61		1431583.07		3162457.47		40° 30' 59.857 N		104° 54' 56.455 W		Point	



FORMATION TOP DETAILS				
TVDPath	MDPath	Formation	DipAngle	DipDir
3363.00	3394.04	Parkman	0.00	89.63
3963.00	3999.98	Sussex	0.00	89.63
4373.00	4414.04	Shannon	0.00	89.63
6718.00	6828.08	Sharon Springs	0.00	89.63
6753.00	6882.04	Niobrara	0.00	89.63
6873.00	7259.68	Nio B Target	0.00	89.63



Extraction Oil & Gas

Weld County, CO (NAD83)

Mickey

12

OH / Job #60561

Survey: Phoenix MWD Surveys

Standard Survey Report

07 January, 2017





Phoenix Technology Services LP

Survey Report



Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 12
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	12	North Reference:	True
Wellbore:	OH / Job #60561	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	12		
Well Position	+N/-S	0.00 usft	Northing: 1,431,498.35 usft
	+E/-W	0.00 usft	Easting: 3,162,704.65 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	40° 30' 59.004 N
		Longitude:	104° 54' 53.262 W
		Ground Level:	4,880.00 usft

Wellbore	OH / Job #60561				
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	89.63	

Survey Program	Date	1/7/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
221.00	1,601.00	Surveys (OH / Surface)	MWD		
1,553.00	17,365.00	Phoenix MWD Surveys (OH / Job #60561)	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	9.20	282.90	1,540.28	17.45	-155.03	-154.92	0.00	0.00	0.00	
Tie In										
1,585.00	9.21	279.39	1,571.87	18.44	-160.05	-159.93	1.75	0.03	-10.97	
First Phoenix MWD Survey										
1,679.00	8.87	277.65	1,664.70	20.63	-174.65	-174.52	0.46	-0.36	-1.85	
1,773.00	8.65	274.10	1,757.60	22.10	-188.89	-188.74	0.62	-0.23	-3.78	
1,868.00	8.10	273.61	1,851.59	23.03	-202.69	-202.54	0.58	-0.58	-0.52	
1,962.00	7.57	274.31	1,944.71	23.91	-215.48	-215.32	0.57	-0.56	0.74	
2,057.00	7.30	275.69	2,038.91	24.98	-227.72	-227.56	0.34	-0.28	1.45	

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 12
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	12	North Reference:	True
Wellbore:	OH / Job #60561	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)
2,151.00	7.07	275.95	2,132.18	26.18	-239.42	-239.25	0.25	-0.24	0.28
2,245.00	6.94	276.81	2,225.47	27.45	-250.81	-250.63	0.18	-0.14	0.91
2,339.00	8.81	280.25	2,318.58	29.40	-263.53	-263.34	2.05	1.99	3.66
2,434.00	10.13	275.21	2,412.29	31.46	-279.01	-278.81	1.64	1.39	-5.31
2,529.00	9.29	275.93	2,505.93	33.01	-294.96	-294.74	0.89	-0.88	0.76
2,623.00	8.92	276.78	2,598.74	34.65	-309.75	-309.52	0.42	-0.39	0.90
2,718.00	8.20	277.02	2,692.68	36.35	-323.78	-323.54	0.76	-0.76	0.25
2,812.00	8.03	275.31	2,785.74	37.78	-336.97	-336.73	0.31	-0.18	-1.82
2,906.00	7.19	278.94	2,878.91	39.30	-349.32	-349.06	1.03	-0.89	3.86
3,001.00	8.27	277.43	2,973.05	41.10	-361.97	-361.70	1.16	1.14	-1.59
3,095.00	7.46	274.55	3,066.17	42.46	-374.76	-374.48	0.96	-0.86	-3.06
3,189.00	6.80	272.93	3,159.44	43.23	-386.40	-386.11	0.73	-0.70	-1.72
3,283.00	7.85	277.28	3,252.67	44.33	-398.32	-398.03	1.26	1.12	4.63
3,378.00	6.36	276.07	3,346.94	45.71	-409.99	-409.69	1.58	-1.57	-1.27
3,473.00	8.23	276.86	3,441.16	47.08	-421.98	-421.67	1.97	1.97	0.83
3,567.00	8.46	278.57	3,534.17	48.91	-435.49	-435.17	0.36	0.24	1.82
3,661.00	8.41	277.80	3,627.15	50.87	-449.14	-448.81	0.13	-0.05	-0.82
3,756.00	8.50	277.41	3,721.12	52.72	-462.99	-462.64	0.11	0.09	-0.41
3,851.00	8.37	270.99	3,815.09	53.75	-476.86	-476.51	1.00	-0.14	-6.76
3,945.00	7.60	273.16	3,908.18	54.21	-489.91	-489.55	0.88	-0.82	2.31
4,039.00	7.34	276.11	4,001.39	55.19	-502.09	-501.72	0.49	-0.28	3.14
4,134.00	7.17	275.30	4,095.62	56.38	-514.02	-513.65	0.21	-0.18	-0.85
4,229.00	7.02	275.55	4,189.90	57.49	-525.71	-525.33	0.16	-0.16	0.26
4,324.00	6.86	273.85	4,284.20	58.43	-537.14	-536.76	0.27	-0.17	-1.79
4,418.00	7.25	270.75	4,377.49	58.89	-548.68	-548.29	0.58	0.41	-3.30
4,513.00	7.86	271.65	4,471.66	59.16	-561.16	-560.77	0.65	0.64	0.95
4,607.00	9.12	274.15	4,564.63	59.88	-575.02	-574.62	1.40	1.34	2.66
4,702.00	8.54	274.65	4,658.51	61.00	-589.56	-589.16	0.62	-0.61	0.53
4,796.00	7.72	274.07	4,751.56	62.01	-602.81	-602.40	0.88	-0.87	-0.62
4,891.00	8.46	276.79	4,845.62	63.29	-616.12	-615.70	0.88	0.78	2.86
4,985.00	8.60	274.44	4,938.58	64.65	-629.99	-629.56	0.40	0.15	-2.50
5,080.00	7.54	271.50	5,032.63	65.36	-643.30	-642.87	1.20	-1.12	-3.09
5,174.00	6.88	269.73	5,125.89	65.50	-655.10	-654.67	0.74	-0.70	-1.88
5,269.00	7.44	272.68	5,220.15	65.76	-666.93	-666.50	0.70	0.59	3.11
5,363.00	10.30	277.38	5,313.02	67.12	-681.35	-680.91	3.14	3.04	5.00
5,458.00	9.48	276.70	5,406.60	69.13	-697.54	-697.09	0.87	-0.86	-0.72
5,552.00	8.18	275.49	5,499.49	70.67	-711.89	-711.42	1.40	-1.38	-1.29
5,647.00	9.39	276.87	5,593.37	72.24	-726.31	-725.83	1.29	1.27	1.45
5,742.00	7.34	273.29	5,687.36	73.52	-740.06	-739.58	2.23	-2.16	-3.77
5,836.00	8.68	275.94	5,780.44	74.60	-753.11	-752.62	1.48	1.43	2.82
5,930.00	6.97	271.81	5,873.56	75.51	-765.87	-765.37	1.91	-1.82	-4.39
6,025.00	6.02	279.94	5,967.95	76.55	-776.54	-776.03	1.39	-1.00	8.56
6,119.00	5.74	274.54	6,061.46	77.78	-786.08	-785.57	0.66	-0.30	-5.74

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 12
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	12	North Reference:	True
Wellbore:	OH / Job #60561	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)
6,213.00	5.19	269.48	6,155.03	78.11	-795.02	-794.50	0.78	-0.59	-5.38
6,308.00	5.02	269.60	6,249.65	78.04	-803.47	-802.96	0.18	-0.18	0.13
6,402.00	3.33	262.95	6,343.40	77.68	-810.29	-809.78	1.87	-1.80	-7.07
6,430.00	0.70	257.11	6,371.38	77.54	-811.27	-810.75	9.41	-9.39	-20.86
6,528.00	10.17	79.73	6,468.90	78.95	-803.31	-802.79	11.09	9.66	-181.00
6,622.00	18.86	82.78	6,559.81	82.35	-780.03	-779.49	9.28	9.24	3.24
6,716.00	25.52	90.89	6,646.82	83.95	-744.66	-744.11	7.78	7.09	8.63
6,810.00	33.86	94.80	6,728.42	81.44	-698.24	-697.70	9.10	8.87	4.16
6,905.00	45.21	92.95	6,801.57	77.47	-638.00	-637.49	12.01	11.95	-1.95
6,999.00	53.46	91.30	6,862.77	74.90	-566.81	-566.32	8.88	8.78	-1.76
7,094.00	57.62	89.55	6,916.52	74.35	-488.50	-488.02	4.63	4.38	-1.84
7,188.00	67.04	91.17	6,960.12	73.77	-405.35	-404.87	10.14	10.02	1.72
7,282.00	75.27	92.53	6,990.46	70.88	-316.52	-316.06	8.86	8.76	1.45
7,377.00	82.91	93.18	7,008.43	66.23	-223.42	-222.99	8.07	8.04	0.68
7,471.00	89.14	92.02	7,014.94	61.98	-129.79	-129.39	6.74	6.63	-1.23
7,566.00	88.59	90.03	7,016.82	60.28	-34.83	-34.44	2.17	-0.58	-2.09
7,660.00	86.96	89.84	7,020.47	60.39	59.10	59.48	1.75	-1.73	-0.20
7,754.00	86.62	89.80	7,025.74	60.68	152.95	153.33	0.36	-0.36	-0.04
7,849.00	88.03	90.82	7,030.17	60.17	247.84	248.22	1.83	1.48	1.07
7,943.00	87.75	90.65	7,033.63	58.96	341.77	342.14	0.35	-0.30	-0.18
8,038.00	92.87	88.65	7,033.12	59.54	436.73	437.10	5.79	5.39	-2.11
8,132.00	92.44	88.68	7,028.76	61.73	530.60	530.99	0.46	-0.46	0.03
8,226.00	91.67	87.59	7,025.39	64.79	624.49	624.89	1.42	-0.82	-1.16
8,321.00	90.75	88.48	7,023.39	68.04	719.41	719.83	1.35	-0.97	0.94
8,415.00	89.66	89.18	7,023.05	69.96	813.39	813.82	1.38	-1.16	0.74
8,510.00	89.74	90.30	7,023.55	70.39	908.38	908.82	1.18	0.08	1.18
8,605.00	90.13	90.69	7,023.65	69.57	1,003.38	1,003.80	0.58	0.41	0.41
8,699.00	89.77	89.09	7,023.74	69.75	1,097.38	1,097.80	1.74	-0.38	-1.70
8,793.00	90.85	90.09	7,023.23	70.43	1,191.37	1,191.80	1.57	1.15	1.06
8,888.00	90.33	89.19	7,022.25	71.02	1,286.36	1,286.79	1.09	-0.55	-0.95
8,982.00	89.10	88.57	7,022.72	72.86	1,380.34	1,380.78	1.47	-1.31	-0.66
9,077.00	90.03	89.86	7,023.44	74.16	1,475.33	1,475.77	1.67	0.98	1.36
9,171.00	89.21	90.01	7,024.06	74.27	1,569.32	1,569.77	0.89	-0.87	0.16
9,266.00	90.08	91.48	7,024.65	73.03	1,664.31	1,664.74	1.80	0.92	1.55
9,360.00	89.78	88.97	7,024.77	72.66	1,758.30	1,758.73	2.69	-0.32	-2.67
9,454.00	89.54	87.92	7,025.32	75.21	1,852.26	1,852.71	1.15	-0.26	-1.12
9,548.00	90.46	89.57	7,025.32	77.27	1,946.24	1,946.69	2.01	0.98	1.76
9,643.00	89.13	88.61	7,025.66	78.78	2,041.22	2,041.68	1.73	-1.40	-1.01
9,737.00	90.42	89.26	7,026.03	80.53	2,135.20	2,135.67	1.54	1.37	0.69
9,832.00	89.28	89.30	7,026.28	81.72	2,230.19	2,230.67	1.20	-1.20	0.04
9,926.00	90.72	91.20	7,026.28	81.31	2,324.18	2,324.66	2.54	1.53	2.02
10,021.00	88.68	89.70	7,026.78	80.57	2,419.17	2,419.64	2.67	-2.15	-1.58
10,115.00	89.58	89.58	7,028.21	81.16	2,513.16	2,513.63	0.97	0.96	-0.13
10,210.00	90.99	90.27	7,027.73	81.28	2,608.15	2,608.62	1.65	1.48	0.73

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 12
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	12	North Reference:	True
Wellbore:	OH / Job #60561	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)
10,304.00	90.41	89.57	7,026.58	81.41	2,702.15	2,702.61	0.97	-0.62	-0.74
10,398.00	89.75	89.71	7,026.45	82.00	2,796.14	2,796.61	0.72	-0.70	0.15
10,493.00	88.07	90.65	7,028.26	81.71	2,891.12	2,891.59	2.03	-1.77	0.99
10,588.00	87.85	90.38	7,031.64	80.85	2,986.06	2,986.51	0.37	-0.23	-0.28
10,682.00	89.21	90.69	7,034.05	79.97	3,080.02	3,080.47	1.48	1.45	0.33
10,776.00	89.78	90.48	7,034.88	79.01	3,174.01	3,174.45	0.65	0.61	-0.22
10,869.00	91.83	92.63	7,033.58	76.49	3,266.96	3,267.38	3.19	2.20	2.31
10,963.00	91.59	90.43	7,030.77	73.98	3,360.88	3,361.28	2.35	-0.26	-2.34
11,058.00	90.27	89.73	7,029.23	73.85	3,455.86	3,456.26	1.57	-1.39	-0.74
11,152.00	91.37	90.37	7,027.88	73.77	3,549.85	3,550.25	1.35	1.17	0.68
11,246.00	88.98	88.23	7,027.60	74.92	3,643.83	3,644.23	3.41	-2.54	-2.28
11,341.00	89.86	89.19	7,028.56	77.06	3,738.80	3,739.21	1.37	0.93	1.01
11,435.00	87.48	87.07	7,030.74	80.12	3,832.71	3,833.15	3.39	-2.53	-2.26
11,529.00	87.71	87.19	7,034.68	84.82	3,926.51	3,926.97	0.28	0.24	0.13
11,623.00	87.79	86.76	7,038.37	89.78	4,020.31	4,020.80	0.46	0.09	-0.46
11,717.00	89.97	89.53	7,040.21	92.82	4,114.22	4,114.73	3.75	2.32	2.95
11,810.00	91.03	89.55	7,039.40	93.57	4,207.22	4,207.73	1.14	1.14	0.02
11,905.00	90.13	88.54	7,038.44	95.15	4,302.20	4,302.72	1.42	-0.95	-1.06
11,998.00	91.33	89.42	7,037.25	96.81	4,395.17	4,395.70	1.60	1.29	0.95
12,092.00	89.67	90.09	7,036.43	97.21	4,489.16	4,489.69	1.90	-1.77	0.71
12,186.00	89.18	88.64	7,037.38	98.25	4,583.15	4,583.68	1.63	-0.52	-1.54
12,280.00	90.11	93.43	7,037.96	96.55	4,677.10	4,677.63	5.19	0.99	5.10
12,374.00	89.16	90.17	7,038.56	93.60	4,771.04	4,771.54	3.61	-1.01	-3.47
12,469.00	90.20	93.04	7,039.09	90.94	4,865.99	4,866.47	3.21	1.09	3.02
12,563.00	88.71	90.44	7,039.98	88.09	4,959.93	4,960.40	3.19	-1.59	-2.77
12,657.00	86.73	87.61	7,043.72	89.68	5,053.83	5,054.30	3.67	-2.11	-3.01
12,752.00	86.94	86.10	7,048.97	94.89	5,148.54	5,149.04	1.60	0.22	-1.59
12,846.00	88.03	86.81	7,053.09	100.69	5,242.27	5,242.81	1.38	1.16	0.76
12,941.00	86.90	88.65	7,057.30	104.45	5,337.10	5,337.66	2.27	-1.19	1.94
13,035.00	89.32	91.18	7,060.40	104.59	5,431.03	5,431.59	3.72	2.57	2.69
13,129.00	93.75	92.19	7,057.88	101.83	5,524.93	5,525.47	4.83	4.71	1.07
13,224.00	93.03	92.17	7,052.26	98.22	5,619.70	5,620.21	0.76	-0.76	-0.02
13,318.00	91.28	92.82	7,048.73	94.13	5,713.54	5,714.02	1.99	-1.86	0.69
13,412.00	90.33	93.06	7,047.41	89.31	5,807.40	5,807.85	1.04	-1.01	0.26
13,507.00	89.35	92.80	7,047.67	84.46	5,902.28	5,902.70	1.07	-1.03	-0.27
13,602.00	90.47	93.20	7,047.82	79.48	5,997.14	5,997.53	1.25	1.18	0.42
13,696.00	89.20	91.99	7,048.09	75.23	6,091.04	6,091.40	1.87	-1.35	-1.29
13,790.00	88.74	90.53	7,049.78	73.16	6,185.00	6,185.34	1.63	-0.49	-1.55
13,885.00	88.86	90.02	7,051.77	72.71	6,279.98	6,280.32	0.55	0.13	-0.54
13,979.00	89.95	90.56	7,052.75	72.23	6,373.97	6,374.30	1.29	1.16	0.57
14,073.00	90.92	90.93	7,052.03	71.01	6,467.96	6,468.28	1.10	1.03	0.39
14,168.00	89.28	91.08	7,051.87	69.34	6,562.94	6,563.25	1.73	-1.73	0.16
14,262.00	88.77	90.78	7,053.47	67.82	6,656.92	6,657.21	0.63	-0.54	-0.32

Company:	Extraction Oil & Gas	Local Co-ordinate Reference:	Well 12
Project:	Weld County, CO (NAD83)	TVD Reference:	RKB @ 4905.00usft (Patterson 346)
Site:	Mickey	MD Reference:	RKB @ 4905.00usft (Patterson 346)
Well:	12	North Reference:	True
Wellbore:	OH / Job #60561	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)
14,357.00	91.28	93.43	7,053.43	64.33	6,751.84	6,752.11	3.84	2.64	2.79
14,451.00	90.26	92.10	7,052.16	59.79	6,845.71	6,845.96	1.78	-1.09	-1.41
14,546.00	91.05	90.87	7,051.08	57.33	6,940.67	6,940.90	1.54	0.83	-1.29
14,640.00	88.84	90.01	7,051.17	56.61	7,034.66	7,034.88	2.52	-2.35	-0.91
14,735.00	88.41	90.63	7,053.45	56.08	7,129.64	7,129.85	0.79	-0.45	0.65
14,830.00	88.84	91.24	7,055.73	54.53	7,224.59	7,224.80	0.79	0.45	0.64
14,924.00	89.51	91.58	7,057.08	52.22	7,318.56	7,318.74	0.80	0.71	0.36
15,019.00	90.43	91.65	7,057.13	49.54	7,413.52	7,413.68	0.97	0.97	0.07
15,113.00	90.93	92.70	7,056.01	45.97	7,507.44	7,507.58	1.24	0.53	1.12
15,208.00	91.10	90.38	7,054.33	43.42	7,602.39	7,602.51	2.45	0.18	-2.44
15,302.00	90.89	89.63	7,052.70	43.41	7,696.37	7,696.49	0.83	-0.22	-0.80
15,397.00	89.79	88.37	7,052.13	45.07	7,791.35	7,791.48	1.76	-1.16	-1.33
15,491.00	89.98	88.42	7,052.32	47.70	7,885.31	7,885.46	0.21	0.20	0.05
15,585.00	91.30	88.07	7,051.27	50.58	7,979.26	7,979.42	1.45	1.40	-0.37
15,680.00	89.54	88.38	7,050.58	53.52	8,074.21	8,074.39	1.88	-1.85	0.33
15,774.00	89.76	87.99	7,051.15	56.50	8,168.16	8,168.35	0.48	0.23	-0.41
15,869.00	89.75	88.33	7,051.56	59.55	8,263.11	8,263.32	0.36	-0.01	0.36
15,963.00	89.99	87.89	7,051.77	62.65	8,357.06	8,357.29	0.53	0.26	-0.47
16,058.00	90.61	87.88	7,051.27	66.16	8,451.99	8,452.24	0.65	0.65	-0.01
16,152.00	89.47	88.84	7,051.21	68.85	8,545.95	8,546.22	1.59	-1.21	1.02
16,246.00	90.47	88.46	7,051.26	71.06	8,639.92	8,640.20	1.14	1.06	-0.40
16,341.00	89.88	89.93	7,050.97	72.40	8,734.91	8,735.20	1.67	-0.62	1.55
16,435.00	90.78	89.77	7,050.42	72.64	8,828.91	8,829.19	0.97	0.96	-0.17
16,529.00	88.31	91.34	7,051.17	71.73	8,922.89	8,923.17	3.11	-2.63	1.67
16,624.00	88.55	91.24	7,053.77	69.59	9,017.83	9,018.09	0.27	0.25	-0.11
16,718.00	89.22	91.04	7,055.60	67.72	9,111.79	9,112.04	0.74	0.71	-0.21
16,812.00	89.43	91.36	7,056.71	65.76	9,205.77	9,206.00	0.41	0.22	0.34
16,907.00	90.18	91.00	7,057.03	63.80	9,300.74	9,300.96	0.88	0.79	-0.38
17,001.00	87.47	90.40	7,058.96	62.65	9,394.71	9,394.92	2.95	-2.88	-0.64
17,096.00	87.81	89.93	7,062.87	62.38	9,489.63	9,489.83	0.61	0.36	-0.49
17,190.00	88.68	89.64	7,065.75	62.73	9,583.58	9,583.79	0.98	0.93	-0.31
17,285.00	89.46	90.11	7,067.29	62.94	9,678.57	9,678.77	0.96	0.82	0.49
Final Phoenix MWD Survey									
17,365.00	89.46	90.11	7,068.05	62.78	9,758.56	9,758.77	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	1,540.28	17.45	-155.03	Tie In
1,585.00	1,571.87	18.44	-160.05	First Phoenix MWD Survey
17,285.00	7,067.29	62.94	9,678.57	Final Phoenix MWD Survey
17,365.00	7,068.05	62.78	9,758.56	Projection to TD