

# SURVEY DATA CERTIFICATION



**PHOENIX**  
TECHNOLOGY SERVICES

Job # 60559 Wellbore Name OH  
Well Name: Mickey 10  
County/State: Weld, CO  
Latitude: 40 30' 59.015" N

Client: Extraction Oil and Gas  
API#: 05 123 43847 00  
Direction: 86.77  
Longitude: 104 54' 52.873" W

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

## TIE IN DATA

MD	TVD	INC	AZM
1553.00	1546.84	11.10	291.80

N-S	E-W	DATA SOURCE
41.61	-84.77	MWD
Data Source Company:		NEWSCO

## FIRST SURVEY

DATE	DEPTH	INC	AZM
13-Jan-17	1586.00	11.39	292.45

## LAST SURVEY

DATE	DEPTH	INC	AZM
17-Jan-17	17416.00	89.58	87.96

## STRAIGHT LINE PROJECTION TO TD

DATE	DEPTH	INC	AZM
17-Jan-17	17485.00	89.58	87.96

## DEPTH DATUM

KELLY BUSHING	GROUND LEVEL
25.00	4880.00

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

DD 1: Colby Hansen  
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

17-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.

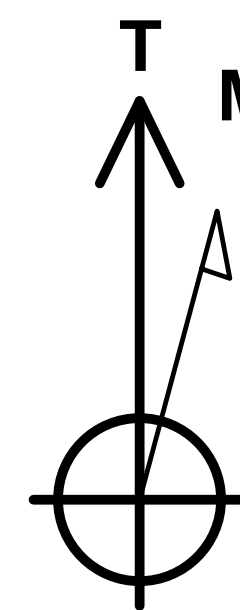




Project: Weld County, CO (NAD83)  
Site: Mickey  
Well: 10  
Wellbore: OH / Job #60559  
Design: Plan 2 12-08-16  
Rig: Patterson 346



PHOENIX  
TECHNOLOGY SERVICES



Azimuths to True North  
Magnetic North: 8.45°

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

#### LEGEND

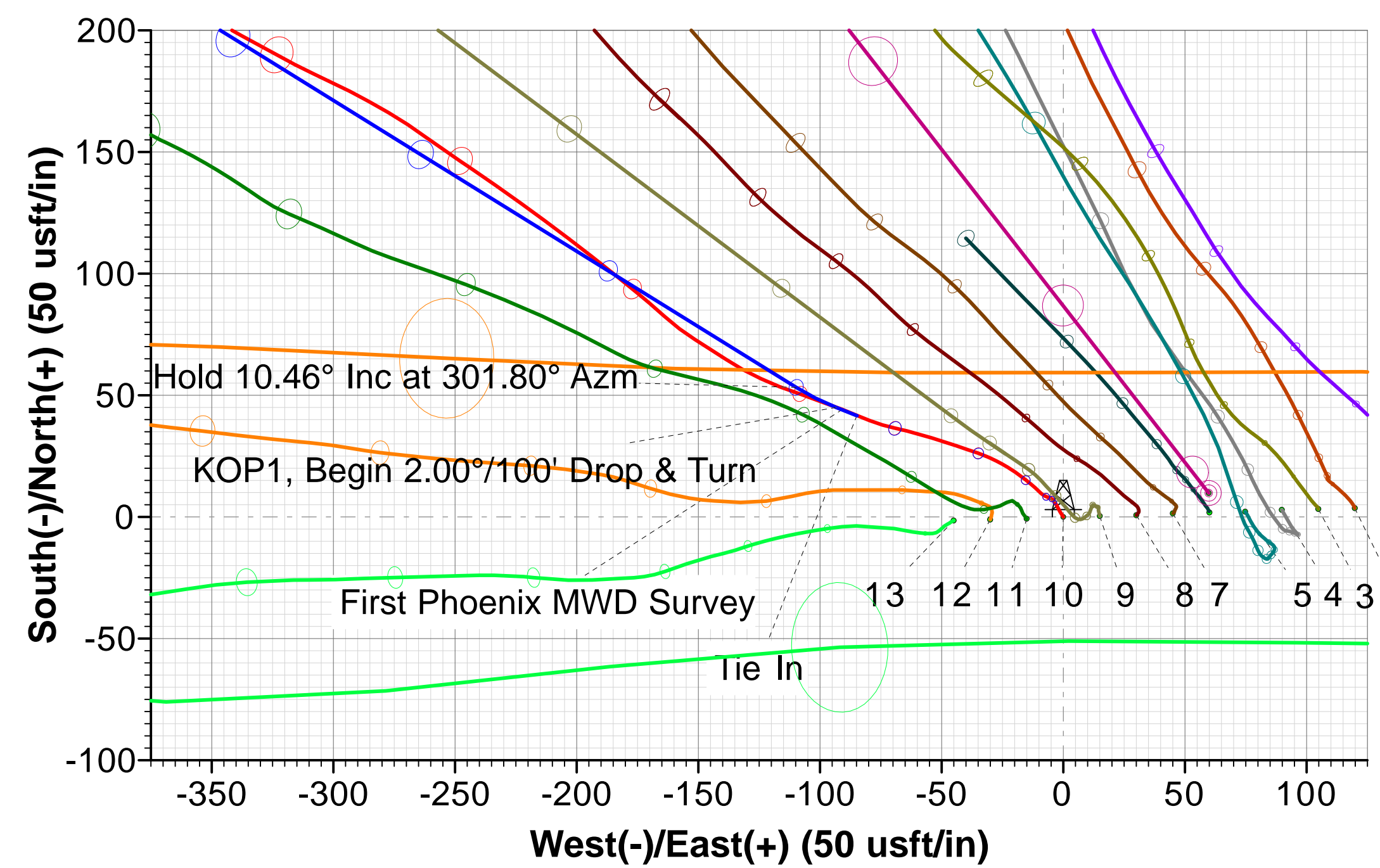
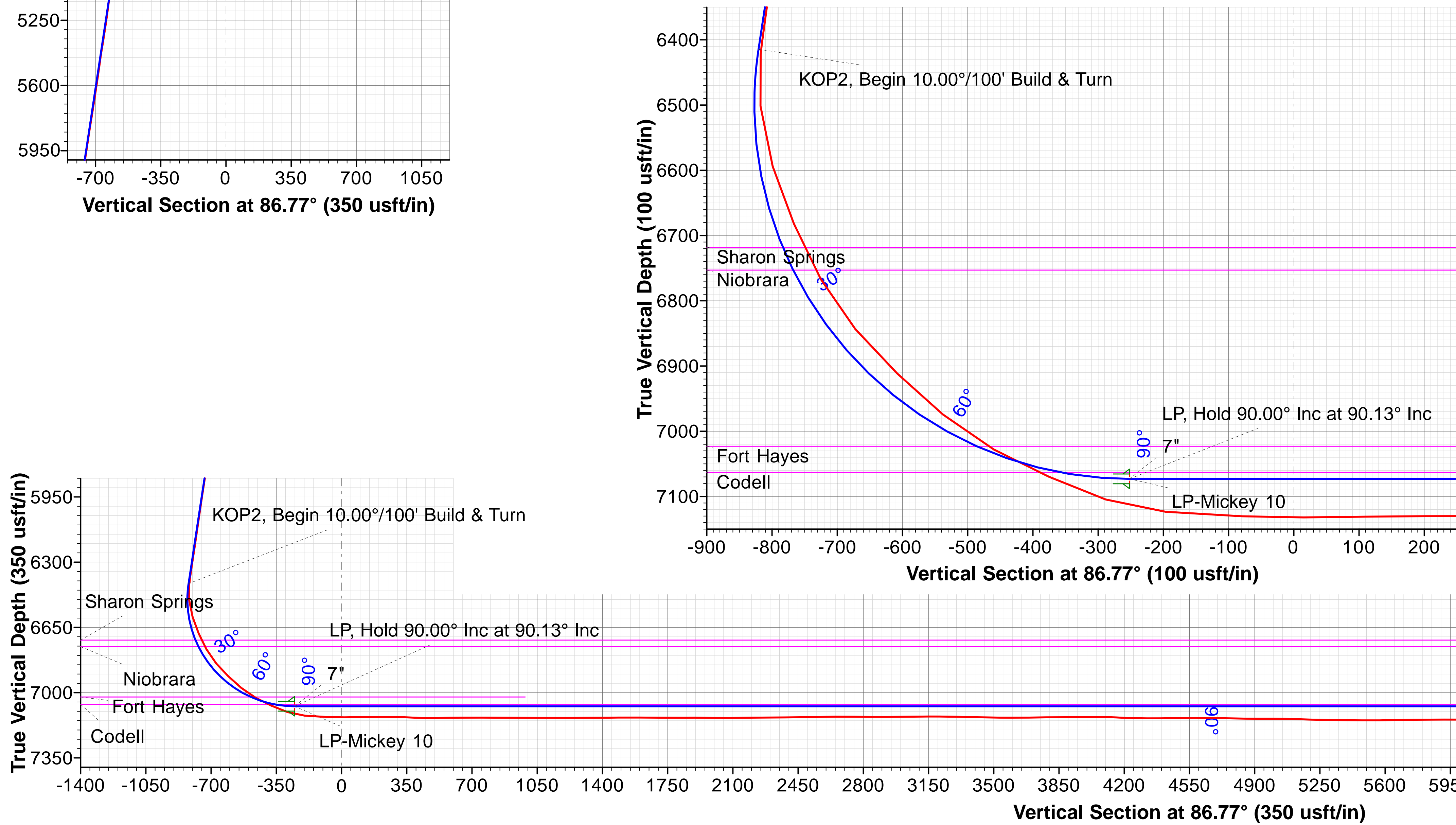
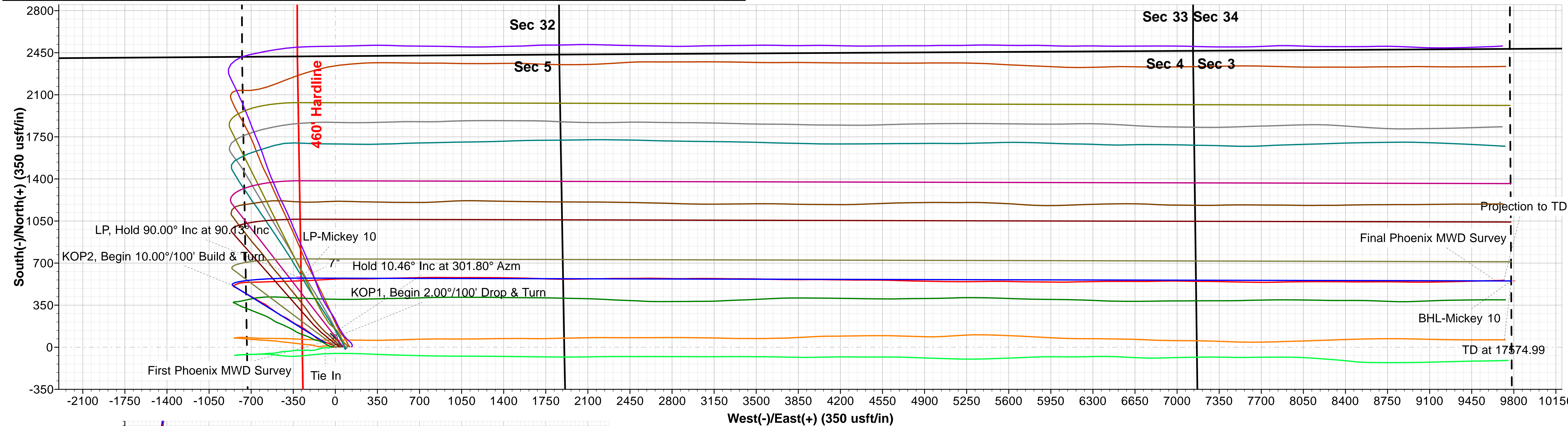
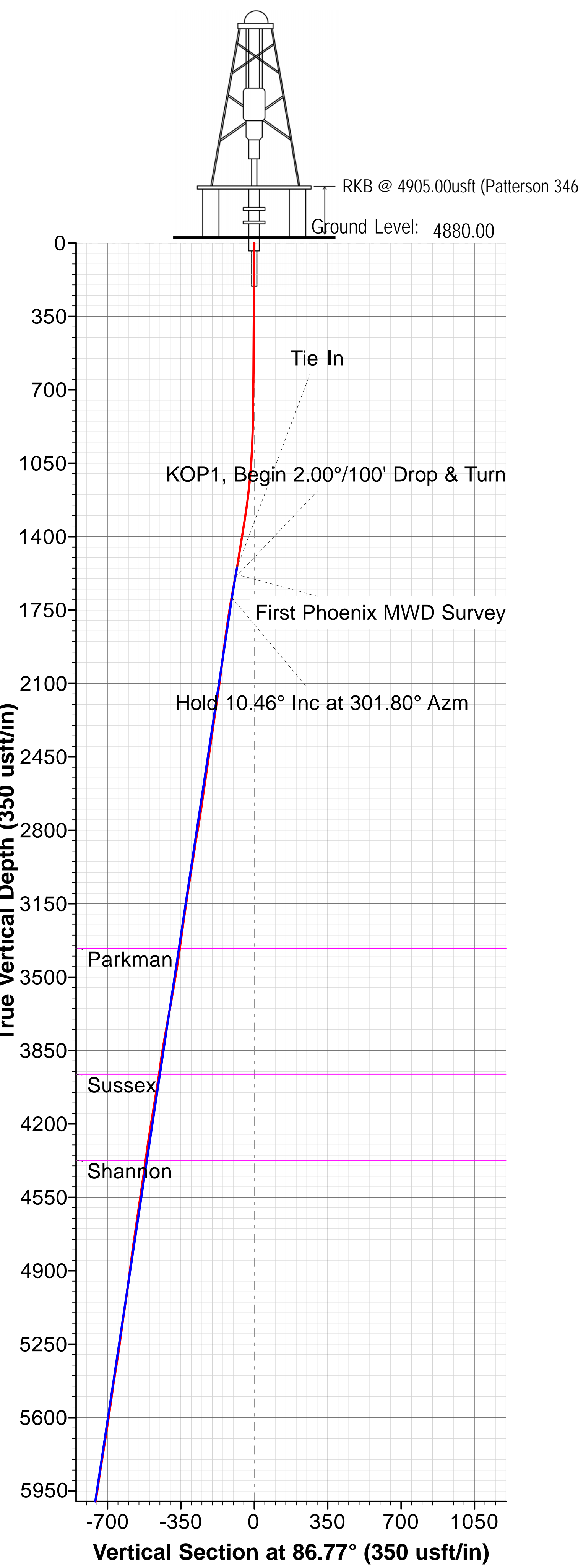
- 4, OH / Job #60553, Surveys (Patterson 346) V0
- 10, OH / Job #60559, Surveys (Patterson 346) V0
- 2, OH / Job #60551, Surveys (Patterson 346) V0
- 6 (Abandoned), Surface, Surface V0
- 12, OH / Job #60561, Surveys (Patterson 346) V0
- 5, OH / Job #60554, Surveys (Patterson 346) V0
- 7, OH / Job #60556, Surveys (Patterson 346) V0
- 3, OH / Job #60552, Surveys (Patterson 346) V0
- 3, OH / Job #60552, Plan 1 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, Plan 2 12-07-16 V0
- 9, OH / Job #60558, 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
- Plan 2 12-08-16

Map System: US State Plane 1983  
Datum: North American Datum 1983  
Ellipsoid: GRS 1980  
Zone Name: Colorado Northern Zone  
Local Origin: Well 10, True North  
Latitude: 40° 30' 59.015 N  
Longitude: 104° 54' 52.873 W  
Grid East: 3162734.67  
Grid North: 1431499.63  
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:		4880.00				
		0.00	0.00	1431499.63	Easting		3162734.67		Latitude		Longitude
									40° 30' 59.015 N		104° 54' 52.873 W

SECTION DETAILS											
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	1553.00	11.10	291.80	1546.84	41.61	-84.77	0.00	0.00	-82.29		Tie In
2	1601.00	11.10	291.80	1593.94	45.04	-93.35	0.00	0.00	-90.66		KOP1, Begin 2.00°/100' Drop & Turn
3	1699.69	10.46	301.80	1690.90	53.29	-109.78	2.00	113.78	-106.61		Hold 10.46° Inc at 301.80° Azm
4	6503.20	10.46	301.80	6414.60	512.78	-850.92	0.00	0.00	-820.69		KOP2, Begin 10.00°/100' Build & Turn
5	7492.09	90.00	90.13	7073.00	575.26	-284.70	10.00	147.91	-251.84	LP-Mickey 10	LP, Hold 90.00° Inc at 90.13° Inc
6	17554.99	90.00	90.13	7073.00	551.70	9778.17	0.00	0.00	9793.72	BHL-Mickey 10	TD at 17574.99

DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude		Longitude	Shape
BHL-Mickey 10	7073.00	551.69	9778.17	1432115.86	3172508.99	40° 31' 4.447 N		104° 52' 46.261 W	Point
LP-Mickey 10	7073.00	575.26	-284.70	1432073.00	3162446.18	40° 31' 4.699 N		104° 54' 56.560 W	Point



#### FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3363.00	3400.04	Parkman	0.00	86.77
3963.00	4010.18	Sussex	0.00	86.77
4373.00	4427.11	Shannon	0.00	86.77
6718.00	6813.88	Sharon Springs	0.00	86.77
6753.00	6852.41	Niobrara	0.00	86.77
7023.00	7250.37	Fort Hayes	0.00	86.77
7063.00	7384.63	Codell	0.00	86.77





# **Extraction Oil & Gas**

**Weld County, CO (NAD83)**

**Mickey**

**10**

**OH / Job #60559**

**Survey: Phoenix MWD Surveys**

## **Standard Survey Report**

**18 January, 2017**



<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 10
<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>	10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60559	<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		

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

<b>Well</b>	10		
<b>Well Position</b>	<b>+N/-S</b>	0.00 usft	<b>Northing:</b>
	<b>+E/-W</b>	0.00 usft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 usft	<b>Wellhead Elevation:</b>	0.00 usft
		<b>Latitude:</b>	40° 30' 59.015 N
		<b>Longitude:</b>	104° 54' 52.873 W
		<b>Ground Level:</b>	4,880.00 usft

<b>Wellbore</b>	OH / Job #60559				
<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	52,519

<b>Design</b>	Surveys (Patterson 346)				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00	86.77	

<b>Survey Program</b>	<b>Date</b>	1/18/2017			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
221.00	1,601.00	Surveys (OH / Surface)	MWD		
1,553.00	17,485.00	Phoenix MWD Surveys (OH / Job #60559)	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>	
1,553.00	11.10	291.80	1,546.84	41.61	-84.77	-82.29	0.00	0.00	0.00	
<b>Tie In</b>										
1,586.00	11.39	292.45	1,579.21	44.04	-90.73	-88.10	0.96	0.88	1.97	
<b>First Phoenix MWD Survey</b>										
1,681.00	11.14	288.00	1,672.38	50.45	-108.13	-105.11	0.95	-0.26	-4.68	
1,775.00	10.12	294.81	1,764.77	56.73	-124.26	-120.87	1.72	-1.09	7.24	
1,870.00	9.54	303.44	1,858.38	64.57	-138.41	-134.55	1.66	-0.61	9.08	
1,964.00	9.27	301.83	1,951.12	72.85	-151.34	-147.00	0.40	-0.29	-1.71	
2,059.00	9.81	312.29	2,044.81	82.33	-163.83	-158.93	1.91	0.57	11.01	

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 10
<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>	10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60559	<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)
2,153.00	11.38	309.02	2,137.20	93.56	-176.96	-171.41	1.79	1.67	-3.48
2,247.00	11.04	308.39	2,229.41	104.99	-191.22	-185.00	0.38	-0.36	-0.67
2,342.00	10.69	306.82	2,322.71	115.92	-205.40	-198.54	0.48	-0.37	-1.65
2,436.00	10.93	306.29	2,415.04	126.42	-219.56	-212.09	0.28	0.26	-0.56
2,531.00	10.57	305.12	2,508.37	136.76	-233.95	-225.87	0.44	-0.38	-1.23
2,625.00	10.04	303.32	2,600.86	146.22	-247.85	-239.22	0.66	-0.56	-1.91
2,720.00	10.77	306.28	2,694.29	156.02	-261.92	-252.72	0.95	0.77	3.12
2,814.00	11.76	300.42	2,786.48	166.07	-277.27	-267.47	1.61	1.05	-6.23
2,908.00	10.59	297.12	2,878.70	174.86	-293.21	-282.90	1.42	-1.24	-3.51
3,002.00	9.95	294.56	2,971.20	182.17	-308.29	-297.54	0.84	-0.68	-2.72
3,097.00	10.41	299.73	3,064.70	189.84	-323.21	-312.00	1.08	0.48	5.44
3,191.00	9.61	297.41	3,157.27	197.67	-337.55	-325.88	0.95	-0.85	-2.47
3,285.00	10.37	303.67	3,249.85	205.97	-351.55	-339.39	1.41	0.81	6.66
3,380.00	9.28	303.50	3,343.45	214.94	-365.06	-352.37	1.15	-1.15	-0.18
3,474.00	11.19	304.49	3,435.95	224.29	-378.90	-365.66	2.04	2.03	1.05
3,568.00	11.98	304.58	3,528.04	234.99	-394.45	-380.58	0.84	0.84	0.10
3,663.00	11.88	295.93	3,620.99	244.86	-411.36	-396.91	1.88	-0.11	-9.11
3,758.00	11.89	295.14	3,713.96	253.29	-429.01	-414.07	0.17	0.01	-0.83
3,852.00	11.21	295.31	3,806.05	261.31	-446.04	-430.61	0.72	-0.72	0.18
3,946.00	9.73	303.28	3,898.49	269.58	-460.94	-445.03	2.20	-1.57	8.48
4,040.00	11.00	304.10	3,990.95	278.97	-475.01	-458.54	1.36	1.35	0.87
4,135.00	12.13	306.50	4,084.02	289.99	-490.54	-473.43	1.29	1.19	2.53
4,230.00	11.76	305.25	4,176.97	301.51	-506.47	-488.68	0.48	-0.39	-1.32
4,324.00	10.95	303.54	4,269.13	311.97	-521.73	-503.33	0.93	-0.86	-1.82
4,418.00	9.74	306.03	4,361.60	321.58	-535.61	-516.64	1.37	-1.29	2.65
4,513.00	11.12	307.14	4,455.02	331.84	-549.41	-529.84	1.47	1.45	1.17
4,607.00	10.69	307.87	4,547.33	342.67	-563.52	-543.32	0.48	-0.46	0.78
4,702.00	10.46	304.46	4,640.71	352.95	-577.58	-556.78	0.70	-0.24	-3.59
4,796.00	9.69	294.92	4,733.27	361.12	-591.79	-570.51	1.95	-0.82	-10.15
4,891.00	8.15	293.14	4,827.12	367.13	-605.24	-583.59	1.65	-1.62	-1.87
4,985.00	9.03	303.21	4,920.07	373.79	-617.54	-595.50	1.85	0.94	10.71
5,080.00	9.69	299.58	5,013.80	381.82	-630.73	-608.22	0.93	0.69	-3.82
5,174.00	10.63	301.71	5,106.33	390.28	-644.98	-621.97	1.08	1.00	2.27
5,269.00	8.85	301.33	5,199.96	398.69	-658.68	-635.18	1.87	-1.87	-0.40
5,363.00	10.25	300.09	5,292.65	406.64	-672.09	-648.12	1.51	1.49	-1.32
5,458.00	11.22	299.31	5,385.99	415.40	-687.47	-662.98	1.03	1.02	-0.82
5,552.00	9.17	299.40	5,478.50	423.56	-701.97	-676.99	2.18	-2.18	0.10
5,646.00	10.04	299.31	5,571.18	431.25	-715.64	-690.21	0.93	0.93	-0.10
5,740.00	10.43	300.85	5,663.68	439.62	-730.09	-704.17	0.51	0.41	1.64
5,835.00	11.17	300.81	5,757.00	448.74	-745.37	-718.91	0.78	0.78	-0.04
5,929.00	10.38	300.72	5,849.34	457.73	-760.47	-733.48	0.84	-0.84	-0.10
6,024.00	9.96	298.30	5,942.85	466.00	-775.07	-747.58	0.63	-0.44	-2.55
6,118.00	10.29	301.59	6,035.39	474.25	-789.38	-761.41	0.71	0.35	3.50

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<b>Site:</b>	Mickey	<b>MD Reference:</b>	RKB @ 4905.00usft (Patterson 346)
<b>Well:</b>	10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60559	<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)
6,213.00	9.58	299.68	6,128.96	482.61	-803.47	-775.01	0.82	-0.75	-2.01
6,307.00	9.84	299.34	6,221.62	490.42	-817.27	-788.34	0.28	0.28	-0.36
6,402.00	10.34	296.92	6,315.15	498.26	-831.95	-802.56	0.69	0.53	-2.55
6,496.00	7.77	290.93	6,407.97	504.35	-845.41	-815.65	2.91	-2.73	-6.37
6,590.00	6.65	42.52	6,501.56	510.65	-847.67	-817.56	12.69	-1.19	118.71
6,685.00	19.32	65.38	6,593.99	521.30	-829.58	-798.90	14.14	13.34	24.06
6,779.00	22.96	74.46	6,681.67	532.70	-797.76	-766.49	5.20	3.87	9.66
6,874.00	29.27	86.72	6,766.99	539.00	-756.66	-725.09	8.71	6.64	12.91
6,967.00	40.21	89.20	6,843.30	540.73	-703.78	-672.20	11.86	11.76	2.67
7,061.00	46.47	88.41	6,911.64	542.10	-639.31	-607.76	6.68	6.66	-0.84
7,155.00	49.74	88.11	6,974.40	544.23	-569.38	-537.82	3.49	3.48	-0.32
7,250.00	61.40	88.70	7,028.02	546.38	-491.19	-459.63	12.28	12.27	0.62
7,344.00	65.83	88.24	7,069.78	548.63	-407.03	-375.48	4.73	4.71	-0.49
7,438.00	70.58	88.08	7,104.67	551.44	-319.82	-288.25	5.06	5.05	-0.17
7,532.00	86.31	87.61	7,123.44	554.90	-228.08	-196.46	16.74	16.73	-0.50
7,650.00	86.93	86.09	7,130.40	561.37	-110.47	-78.67	1.39	0.53	-1.29
7,744.00	90.97	87.34	7,132.12	566.76	-16.66	15.29	4.50	4.30	1.33
7,838.00	90.44	89.86	7,130.97	569.05	77.30	109.23	2.74	-0.56	2.68
7,932.00	90.46	90.30	7,130.23	568.92	171.29	203.07	0.47	0.02	0.47
8,026.00	88.92	89.38	7,130.74	569.18	265.29	296.93	1.91	-1.64	-0.98
8,120.00	86.98	87.65	7,134.10	571.62	359.19	390.82	2.76	-2.06	-1.84
8,213.00	90.50	88.84	7,136.14	574.46	452.11	483.75	4.00	3.78	1.28
8,307.00	91.44	89.02	7,134.55	576.22	546.07	577.67	1.02	1.00	0.19
8,401.00	89.82	89.31	7,133.52	577.59	640.06	671.58	1.75	-1.72	0.31
8,495.00	89.62	88.35	7,133.98	579.51	734.03	765.51	1.04	-0.21	-1.02
8,589.00	89.77	90.28	7,134.48	580.63	828.02	859.41	2.06	0.16	2.05
8,684.00	89.82	90.55	7,134.82	579.94	923.02	954.22	0.29	0.05	0.28
8,778.00	89.84	90.04	7,135.10	579.46	1,017.02	1,048.04	0.54	0.02	-0.54
8,872.00	90.27	90.20	7,135.01	579.26	1,111.02	1,141.88	0.49	0.46	0.17
8,967.00	89.88	89.41	7,134.88	579.58	1,206.01	1,236.75	0.93	-0.41	-0.83
9,062.00	90.17	91.10	7,134.84	579.16	1,301.01	1,331.57	1.80	0.31	1.78
9,156.00	90.45	90.63	7,134.33	577.74	1,395.00	1,425.33	0.58	0.30	-0.50
9,250.00	90.67	90.85	7,133.41	576.53	1,488.98	1,519.10	0.33	0.23	0.23
9,344.00	89.36	91.46	7,133.39	574.63	1,582.96	1,612.82	1.54	-1.39	0.65
9,439.00	89.48	92.02	7,134.35	571.75	1,677.91	1,707.46	0.60	0.13	0.59
9,533.00	90.60	92.04	7,134.29	568.42	1,771.85	1,801.06	1.19	1.19	0.02
9,627.00	89.58	90.06	7,134.14	566.70	1,865.83	1,894.79	2.37	-1.09	-2.11
9,722.00	89.48	89.94	7,134.92	566.70	1,960.83	1,989.64	0.16	-0.11	-0.13
9,817.00	90.00	88.57	7,135.35	567.93	2,055.82	2,084.54	1.54	0.55	-1.44
9,911.00	90.76	89.71	7,134.72	569.34	2,149.80	2,178.46	1.46	0.81	1.21
10,006.00	90.92	88.68	7,133.33	570.68	2,244.78	2,273.36	1.10	0.17	-1.08
10,100.00	90.00	89.52	7,132.58	572.15	2,338.76	2,367.28	1.33	-0.98	0.89
10,194.00	90.59	90.29	7,132.09	572.31	2,432.76	2,461.14	1.03	0.63	0.82
10,289.00	91.80	88.75	7,130.11	573.11	2,527.73	2,556.00	2.06	1.27	-1.62

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 10
<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>	10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60559	<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)
10,383.00	90.03	89.93	7,128.61	574.19	2,621.71	2,649.89	2.26	-1.88	1.26
10,478.00	89.44	91.84	7,129.05	572.72	2,716.69	2,744.64	2.10	-0.62	2.01
10,572.00	89.81	90.63	7,129.67	570.69	2,810.67	2,838.35	1.35	0.39	-1.29
10,666.00	90.21	89.79	7,129.65	570.35	2,904.67	2,932.18	0.99	0.43	-0.89
10,761.00	90.35	88.50	7,129.18	571.77	2,999.65	3,027.10	1.37	0.15	-1.36
10,855.00	91.00	90.81	7,128.08	572.33	3,093.64	3,120.96	2.55	0.69	2.46
10,950.00	89.20	91.31	7,127.91	570.58	3,188.62	3,215.69	1.97	-1.89	0.53
11,045.00	88.87	90.09	7,129.51	569.42	3,283.59	3,310.46	1.33	-0.35	-1.28
11,139.00	88.60	89.73	7,131.59	569.56	3,377.57	3,404.29	0.48	-0.29	-0.38
11,234.00	89.41	91.00	7,133.24	568.96	3,472.55	3,499.09	1.59	0.85	1.34
11,329.00	89.79	91.72	7,133.90	566.70	3,567.52	3,593.78	0.86	0.40	0.76
11,423.00	90.72	91.10	7,133.48	564.39	3,661.49	3,687.47	1.19	0.99	-0.66
11,517.00	90.65	90.63	7,132.36	562.97	3,755.47	3,781.22	0.51	-0.07	-0.50
11,612.00	90.31	90.00	7,131.56	562.45	3,850.47	3,876.04	0.75	-0.36	-0.66
11,706.00	89.60	88.93	7,131.64	563.33	3,944.46	3,969.93	1.37	-0.76	-1.14
11,801.00	90.87	91.33	7,131.25	563.11	4,039.45	4,064.76	2.86	1.34	2.53
11,895.00	87.19	90.60	7,132.84	561.53	4,133.41	4,158.48	3.99	-3.91	-0.78
11,989.00	88.32	90.90	7,136.52	560.30	4,227.33	4,252.18	1.24	1.20	0.32
12,084.00	90.24	90.41	7,137.71	559.21	4,322.31	4,346.95	2.09	2.02	-0.52
12,179.00	91.09	89.50	7,136.61	559.29	4,417.30	4,441.79	1.31	0.89	-0.96
12,273.00	90.00	90.79	7,135.72	559.05	4,511.29	4,535.62	1.80	-1.16	1.37
12,367.00	89.78	91.56	7,135.90	557.12	4,605.27	4,629.34	0.85	-0.23	0.82
12,461.00	88.99	91.74	7,136.91	554.42	4,699.22	4,722.99	0.86	-0.84	0.19
12,556.00	89.06	91.40	7,138.52	551.81	4,794.18	4,817.65	0.37	0.07	-0.36
12,650.00	89.52	90.95	7,139.69	549.89	4,888.15	4,911.36	0.68	0.49	-0.48
12,745.00	90.25	91.13	7,139.88	548.16	4,983.13	5,006.10	0.79	0.77	0.19
12,839.00	88.17	90.86	7,141.17	546.53	5,077.10	5,099.83	2.23	-2.21	-0.29
12,933.00	88.38	90.17	7,144.00	545.69	5,171.06	5,193.58	0.77	0.22	-0.73
13,027.00	89.07	89.64	7,146.09	545.84	5,265.03	5,287.42	0.93	0.73	-0.56
13,122.00	89.21	89.53	7,147.52	546.53	5,360.02	5,382.29	0.19	0.15	-0.12
13,216.00	89.37	88.65	7,148.69	548.02	5,454.00	5,476.21	0.95	0.17	-0.94
13,311.00	90.80	91.19	7,148.54	548.15	5,548.99	5,571.06	3.07	1.51	2.67
13,406.00	91.48	91.23	7,146.65	546.15	5,643.95	5,665.75	0.72	0.72	0.04
13,500.00	90.41	90.84	7,145.10	544.45	5,737.92	5,759.48	1.21	-1.14	-0.41
13,595.00	90.18	90.27	7,144.61	543.53	5,832.91	5,854.27	0.65	-0.24	-0.60
13,689.00	90.43	90.67	7,144.11	542.76	5,926.91	5,948.07	0.50	0.27	0.43
13,784.00	88.48	90.52	7,145.02	541.77	6,021.89	6,042.85	2.06	-2.05	-0.16
13,879.00	86.60	88.28	7,149.10	542.77	6,116.79	6,137.65	3.08	-1.98	-2.36
13,973.00	88.20	89.45	7,153.36	544.63	6,210.67	6,231.49	2.11	1.70	1.24
14,068.00	88.09	88.74	7,156.44	546.13	6,305.61	6,326.36	0.76	-0.12	-0.75
14,163.00	88.54	89.40	7,159.23	547.67	6,400.55	6,421.24	0.84	0.47	0.69
14,257.00	89.93	90.29	7,160.48	547.92	6,494.54	6,515.09	1.76	1.48	0.95
14,352.00	90.78	90.05	7,159.90	547.64	6,589.54	6,609.92	0.93	0.89	-0.25

<b>Company:</b>	Extraction Oil & Gas	<b>Local Co-ordinate Reference:</b>	Well 10
<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>	10	<b>North Reference:</b>	True
<b>Wellbore:</b>	OH / Job #60559	<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)
14,446.00	88.86	90.33	7,160.19	547.33	6,683.53	6,703.75	2.06	-2.04	0.30
14,540.00	87.13	88.68	7,163.48	548.14	6,777.46	6,797.58	2.54	-1.84	-1.76
14,635.00	87.18	88.64	7,168.19	550.36	6,872.32	6,892.41	0.07	0.05	-0.04
14,729.00	88.03	90.34	7,172.12	551.19	6,966.23	6,986.22	2.02	0.90	1.81
14,823.00	88.93	91.22	7,174.62	549.91	7,060.19	7,079.95	1.34	0.96	0.94
14,918.00	86.86	90.75	7,178.11	548.28	7,155.10	7,174.63	2.23	-2.18	-0.49
15,013.00	87.93	89.96	7,182.42	547.69	7,250.00	7,269.34	1.40	1.13	-0.83
15,107.00	87.72	91.48	7,185.99	546.51	7,343.92	7,363.05	1.63	-0.22	1.62
15,202.00	88.11	91.11	7,189.45	544.37	7,438.84	7,457.69	0.57	0.41	-0.39
15,296.00	89.90	90.97	7,191.08	542.66	7,532.80	7,551.41	1.91	1.90	-0.15
15,391.00	88.68	91.33	7,192.26	540.76	7,627.78	7,646.12	1.34	-1.28	0.38
15,485.00	87.57	89.94	7,195.33	539.71	7,721.72	7,739.86	1.89	-1.18	-1.48
15,580.00	87.21	88.19	7,199.66	541.26	7,816.60	7,834.68	1.88	-0.38	-1.84
15,674.00	87.06	89.26	7,204.36	543.35	7,910.46	7,928.50	1.15	-0.16	1.14
15,768.00	89.41	89.21	7,207.25	544.61	8,004.40	8,022.37	2.50	2.50	-0.05
15,863.00	88.88	89.48	7,208.67	545.69	8,099.38	8,117.26	0.63	-0.56	0.28
15,958.00	88.13	90.51	7,211.15	545.70	8,194.35	8,212.08	1.34	-0.79	1.08
16,053.00	86.14	89.71	7,215.90	545.52	8,289.22	8,306.79	2.26	-2.09	-0.84
16,148.00	84.14	90.76	7,223.95	545.13	8,383.87	8,401.27	2.38	-2.11	1.11
16,242.00	83.50	90.84	7,234.06	543.83	8,477.32	8,494.49	0.69	-0.68	0.09
16,431.00	83.17	88.95	7,256.00	544.17	8,665.03	8,681.93	1.01	-0.17	-1.00
16,525.00	86.20	90.26	7,264.71	544.81	8,758.61	8,775.39	3.51	3.22	1.39
16,620.00	87.96	90.90	7,269.55	543.85	8,853.48	8,870.06	1.97	1.85	0.67
16,714.00	89.96	91.00	7,271.25	542.29	8,947.45	8,963.79	2.13	2.13	0.11
16,809.00	88.65	90.01	7,272.41	541.45	9,042.43	9,058.58	1.73	-1.38	-1.04
16,903.00	89.32	88.86	7,274.07	542.38	9,136.41	9,152.46	1.42	0.71	-1.22
16,998.00	90.21	88.91	7,274.46	544.23	9,231.39	9,247.39	0.94	0.94	0.05
17,092.00	90.43	88.46	7,273.94	546.39	9,325.36	9,341.34	0.53	0.23	-0.48
17,187.00	90.80	88.33	7,272.92	549.05	9,420.32	9,436.29	0.41	0.39	-0.14
17,281.00	89.71	88.99	7,272.50	551.25	9,514.29	9,530.24	1.36	-1.16	0.70
17,376.00	89.51	88.62	7,273.15	553.23	9,609.27	9,625.18	0.44	-0.21	-0.39
17,416.00	89.58	87.96	7,273.46	554.42	9,649.25	9,665.16	1.66	0.18	-1.65
<b>Final Phoenix MWD Survey</b>									
17,485.00	89.58	87.96	7,273.97	556.88	9,718.21	9,734.14	0.00	0.00	0.00
<b>Projection to TD</b>									

### Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,553.00	1,546.84	41.61	-84.77	Tie In
1,586.00	1,579.21	44.04	-90.73	First Phoenix MWD Survey
17,416.00	7,273.46	554.42	9,649.25	Final Phoenix MWD Survey
17,485.00	7,273.97	556.88	9,718.21	Projection to TD