



Site: Wethington 21-7 Pad
Well: Wethington 2-7
Wellbore: Wellbore #1
Design: Plan #1

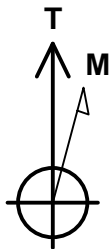
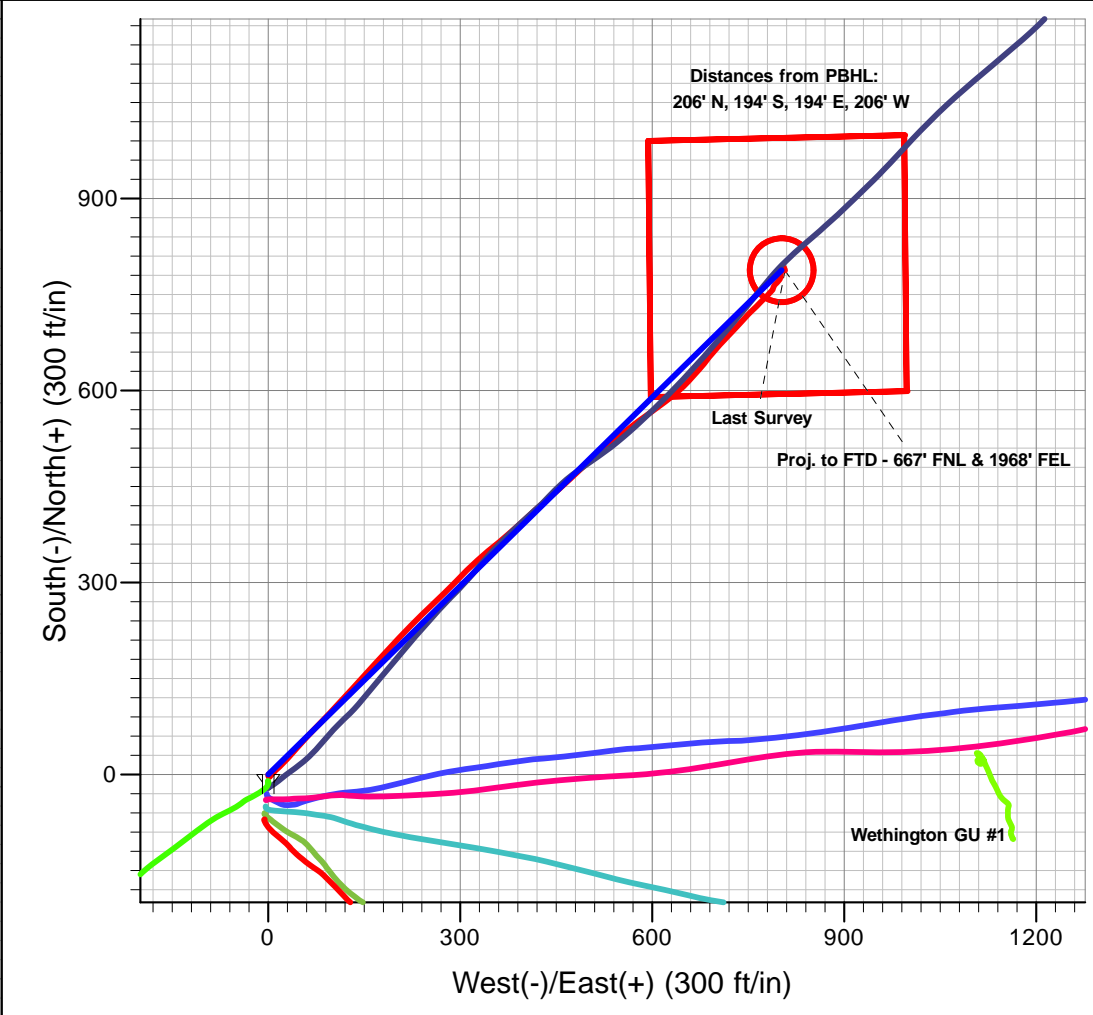
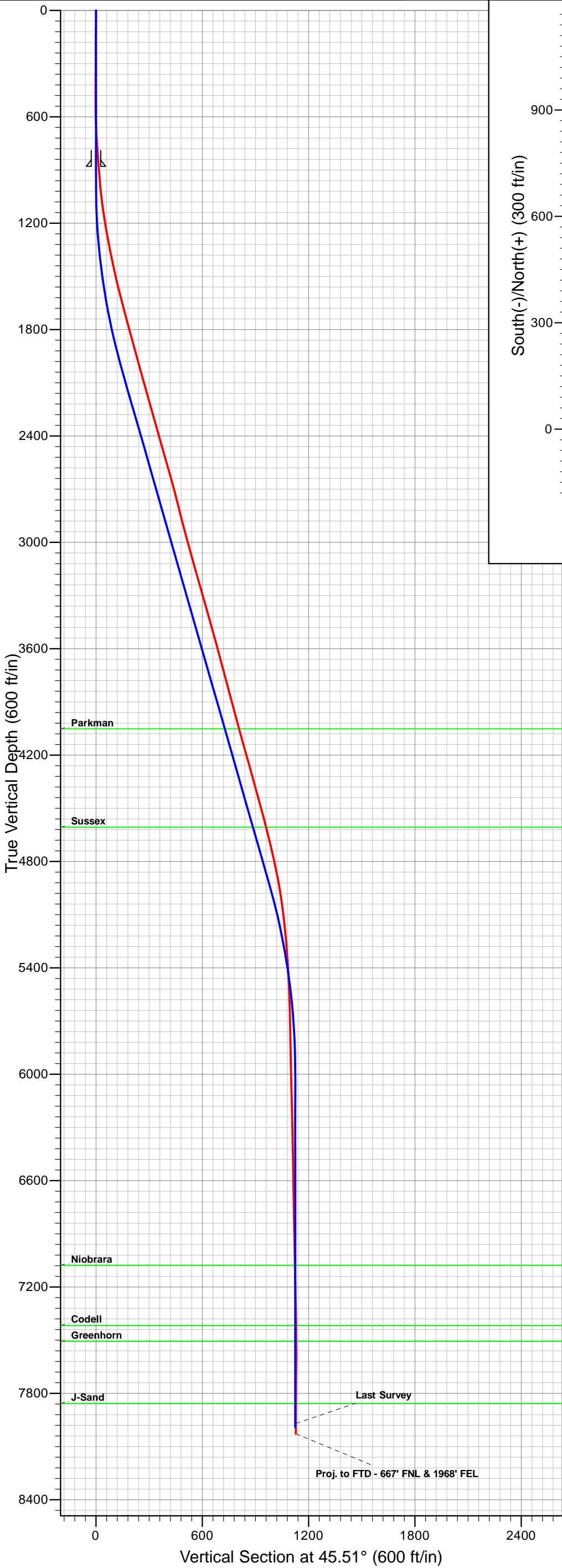
Reference Details - WELL CENTRE
Geodetic System: US State Plane 1983
Ellipsoid: GRS 1980
Zone: Colorado Northern Zone
Northing: 1268685.78
Easting: 3190193.28
Latitude: 40° 4' 8.130 N
Longitude: 104° 49' 13.584 W
Grid Convergence: 0.44° West
Ground Elevation: 4902.00
KB Elevation: WELL @ 4917.00ft (Original Well Elev)



Departure
Energy Services (US) L.P.

Denver, Colorado
Phone: 303.542.2000

Casper, Wyoming
Phone: 307.265.2231
Fax: 307.472.5064
www.departureus.com



Azimuths to True North
Magnetic North: 8.83°

Magnetic Field
Strength: 52926.4snT
Dip Angle: 66.77°
Date: 09/06/2011
Model: IGRF2010



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Anadarko Petroleum Corporation

Weld County, Colorado

Section 7 - Township 1 North - Range 66 West

Wethington 2-7

S-Well

Final Surveys

Job Number: 311036

Surface location

NAD 83

Lat: 40.068925°N

Long: 104.820440°W

Final Survey Report

September 7, 2011

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Wethington 2-7
Project:	Weld County, Colorado (Northern Zone)	TVD Reference:	WELL @ 4917.00ft (Original Well Elev)
Site:	Wethington 21-7 Pad	MD Reference:	WELL @ 4917.00ft (Original Well Elev)
Well:	Wethington 2-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM Depart

Project	Weld County, Colorado (Northern Zone)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Wethington 21-7 Pad, Sec 7-T1N-R66W				
Site Position:		Northing:	1,268,685.79 ft	Latitude:	40° 4' 8.130 N
From:	Lat/Long	Easting:	3,190,193.28 ft	Longitude:	104° 49' 13.584 W
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence:	0.44 °

Well	Wethington 2-7					
Well Position	+N/-S	0.00 ft	Northing:	1,268,685.77 ft	Latitude:	40° 4' 8.130 N
	+E/-W	0.00 ft	Easting:	3,190,193.28 ft	Longitude:	104° 49' 13.584 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,902.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	09/06/11	8.83	66.77	52,926

Design	Surveys				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00	45.51	

Survey Program	Date	10/07/11			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
44.00	8,163.00	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
44.00	0.50	185.60	44.00	-0.19	-0.02	-0.15	1.14	1.14	0.00	
103.00	0.50	181.10	103.00	-0.70	-0.05	-0.53	0.07	0.00	-7.63	
163.00	0.50	168.10	162.99	-1.22	0.00	-0.86	0.19	0.00	-21.67	
223.00	0.50	155.80	222.99	-1.72	0.16	-1.09	0.18	0.00	-20.50	
283.00	0.40	172.60	282.99	-2.16	0.30	-1.31	0.27	-0.17	28.00	
344.00	0.50	181.80	343.99	-2.64	0.31	-1.63	0.20	0.16	15.08	
401.00	0.70	173.30	400.99	-3.24	0.35	-2.02	0.38	0.35	-14.91	
490.00	0.50	135.70	489.98	-4.05	0.68	-2.35	0.48	-0.22	-42.25	
584.00	1.20	65.10	583.97	-3.93	1.86	-1.43	1.21	0.74	-75.11	

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Well:	Wethington 2-7	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Surveys	Database:	EDM Depart

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
675.00	2.60	35.90	674.92	-1.86	3.94	1.51	1.82	1.54	-32.09	
766.00	3.90	43.30	765.77	2.07	7.27	6.63	1.50	1.43	8.13	
852.00	4.40	42.20	851.55	6.64	11.49	12.85	0.59	0.58	-1.28	
954.00	4.60	49.90	953.23	12.17	17.25	20.83	0.62	0.20	7.55	
1,045.00	6.50	45.70	1,043.80	18.12	23.73	29.62	2.13	2.09	-4.62	
1,136.00	8.30	40.50	1,134.04	26.71	31.68	41.32	2.11	1.98	-5.71	
1,227.00	9.50	41.50	1,223.95	37.33	40.92	55.35	1.33	1.32	1.10	
1,317.00	10.90	41.50	1,312.52	49.27	51.48	71.25	1.56	1.56	0.00	
1,408.00	12.00	44.70	1,401.71	62.44	63.84	89.29	1.40	1.21	3.52	
1,499.00	12.70	43.60	1,490.60	76.40	77.39	108.75	0.81	0.77	-1.21	
1,590.00	14.10	43.60	1,579.12	91.68	91.93	129.83	1.54	1.54	0.00	
1,681.00	15.10	42.90	1,667.18	108.39	107.65	152.75	1.12	1.10	-0.77	
1,772.00	14.80	42.90	1,755.10	125.58	123.63	176.20	0.33	-0.33	0.00	
1,862.00	15.50	41.80	1,841.98	142.97	139.47	199.68	0.84	0.78	-1.22	
1,953.00	14.80	42.20	1,929.81	160.64	155.38	223.42	0.78	-0.77	0.44	
2,044.00	15.80	42.90	2,017.59	178.33	171.62	247.40	1.12	1.10	0.77	
2,135.00	16.00	43.30	2,105.11	196.53	188.65	272.31	0.25	0.22	0.44	
2,226.00	15.70	43.30	2,192.65	214.62	205.70	297.14	0.33	-0.33	0.00	
2,316.00	15.30	44.00	2,279.37	232.02	222.30	321.18	0.49	-0.44	0.78	
2,407.00	15.70	45.70	2,367.06	249.26	239.45	345.50	0.67	0.44	1.87	
2,498.00	16.00	46.60	2,454.60	266.48	257.38	370.35	0.43	0.33	0.99	
2,589.00	16.40	45.40	2,541.99	284.11	275.64	395.73	0.57	0.44	-1.32	
2,680.00	15.50	44.30	2,629.49	301.84	293.28	420.74	1.04	-0.99	-1.21	
2,771.00	14.80	45.40	2,717.32	318.70	310.04	444.52	0.83	-0.77	1.21	
2,861.00	14.10	47.80	2,804.48	334.14	326.35	466.97	1.02	-0.78	2.67	
2,952.00	14.40	49.90	2,892.68	348.87	343.22	489.32	0.66	0.33	2.31	
3,043.00	15.10	51.00	2,980.68	363.62	361.08	512.41	0.83	0.77	1.21	
3,134.00	15.80	48.50	3,068.39	379.29	379.57	536.58	1.06	0.77	-2.75	
3,225.00	15.80	47.50	3,155.95	395.87	397.99	561.33	0.30	0.00	-1.10	
3,316.00	16.00	47.80	3,243.47	412.66	416.41	586.24	0.24	0.22	0.33	
3,406.00	15.80	49.20	3,330.03	429.00	434.88	610.86	0.48	-0.22	1.56	
3,497.00	16.20	48.50	3,417.50	445.50	453.76	635.90	0.49	0.44	-0.77	
3,588.00	15.00	46.80	3,505.15	461.98	471.85	660.35	1.41	-1.32	-1.87	
3,678.00	15.10	47.10	3,592.06	477.93	488.93	683.72	0.14	0.11	0.33	
3,769.00	15.30	47.50	3,679.88	494.11	506.47	707.56	0.25	0.22	0.44	
3,815.00	15.10	50.30	3,724.27	502.04	515.55	719.60	1.65	-0.43	6.09	
3,905.00	15.00	52.40	3,811.18	516.63	533.80	742.85	0.62	-0.11	2.33	
3,951.00	15.10	50.60	3,855.60	524.07	543.14	754.72	1.04	0.22	-3.91	
4,042.00	14.80	51.00	3,943.52	538.91	561.34	778.10	0.35	-0.33	0.44	
4,132.00	15.50	53.80	4,030.40	553.24	579.97	801.44	1.12	0.78	3.11	
4,223.00	15.80	54.20	4,118.02	567.67	599.83	825.72	0.35	0.33	0.44	
4,314.00	15.70	53.80	4,205.61	582.19	619.82	850.15	0.16	-0.11	-0.44	
4,405.00	15.80	48.90	4,293.19	597.61	639.09	874.70	1.47	0.11	-5.38	
4,496.00	15.70	43.30	4,380.78	614.71	656.87	899.37	1.67	-0.11	-6.15	

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Design:	Surveys	Database:	EDM Depart

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
4,586.00	15.10	41.10	4,467.55	632.41	672.93	923.23	0.93	-0.67	-2.44	
4,677.00	15.00	36.90	4,555.43	650.76	687.79	946.69	1.20	-0.11	-4.62	
4,768.00	13.70	42.90	4,643.60	668.07	702.20	969.10	2.17	-1.43	6.59	
4,859.00	13.50	44.00	4,732.05	683.61	716.91	990.49	0.36	-0.22	1.21	
4,950.00	12.10	42.90	4,820.78	698.23	730.79	1,010.63	1.56	-1.54	-1.21	
5,040.00	10.70	42.60	4,909.00	711.29	742.86	1,028.40	1.56	-1.56	-0.33	
5,131.00	8.60	44.70	4,998.71	722.35	753.37	1,043.64	2.34	-2.31	2.31	
5,222.00	7.00	46.10	5,088.87	731.03	762.15	1,055.99	1.77	-1.76	1.54	
5,313.00	5.80	45.40	5,179.30	738.11	769.42	1,066.14	1.32	-1.32	-0.77	
5,404.00	4.80	44.00	5,269.91	744.07	775.34	1,074.54	1.11	-1.10	-1.54	
5,494.00	3.90	44.70	5,359.65	748.96	780.11	1,081.36	1.00	-1.00	0.78	
5,585.00	3.20	41.80	5,450.47	753.05	783.98	1,086.99	0.79	-0.77	-3.19	
5,676.00	2.10	42.90	5,541.37	756.17	786.80	1,091.19	1.21	-1.21	1.21	
5,767.00	1.20	25.00	5,632.34	758.25	788.34	1,093.75	1.13	-0.99	-19.67	
5,857.00	1.20	11.30	5,722.32	760.03	788.93	1,095.41	0.32	0.00	-15.22	
5,948.00	1.20	21.10	5,813.30	761.85	789.45	1,097.07	0.23	0.00	10.77	
6,039.00	1.40	33.40	5,904.27	763.67	790.41	1,099.02	0.38	0.22	13.52	
6,130.00	1.40	41.80	5,995.25	765.43	791.76	1,101.22	0.23	0.00	9.23	
6,221.00	1.40	45.00	6,086.22	767.04	793.29	1,103.44	0.09	0.00	3.52	
6,311.00	1.40	45.40	6,176.19	768.59	794.85	1,105.64	0.01	0.00	0.44	
6,402.00	1.10	39.70	6,267.17	770.04	796.20	1,107.62	0.36	-0.33	-6.26	
6,493.00	1.20	41.10	6,358.15	771.43	797.38	1,109.44	0.11	0.11	1.54	
6,584.00	1.10	32.70	6,449.13	772.89	798.48	1,111.24	0.22	-0.11	-9.23	
6,674.00	1.10	24.60	6,539.12	774.40	799.31	1,112.89	0.17	0.00	-9.00	
6,765.00	1.20	21.10	6,630.10	776.08	800.02	1,114.58	0.13	0.11	-3.85	
6,856.00	1.20	9.20	6,721.08	777.91	800.51	1,116.21	0.27	0.00	-13.08	
6,947.00	1.20	5.30	6,812.06	779.80	800.75	1,117.71	0.09	0.00	-4.29	
7,038.00	1.60	2.50	6,903.03	782.02	800.89	1,119.36	0.45	0.44	-3.08	
7,128.00	1.60	359.70	6,993.00	784.53	800.94	1,121.16	0.09	0.00	-3.11	
7,219.00	1.80	3.90	7,083.96	787.23	801.03	1,123.11	0.26	0.22	4.62	
7,310.00	1.90	7.00	7,174.91	790.15	801.31	1,125.36	0.16	0.11	3.41	
7,401.00	1.10	33.40	7,265.88	792.38	801.98	1,127.40	1.14	-0.88	29.01	
7,446.00	0.90	59.10	7,310.87	792.92	802.52	1,128.16	1.08	-0.44	57.11	
7,537.00	0.70	90.00	7,401.86	793.29	803.69	1,129.25	0.51	-0.22	33.96	
7,628.00	0.50	116.40	7,492.86	793.11	804.60	1,129.78	0.37	-0.22	29.01	
7,673.00	0.70	133.40	7,537.86	792.83	804.98	1,129.85	0.59	0.44	37.78	
7,764.00	0.90	150.80	7,628.85	791.83	805.73	1,129.69	0.34	0.22	19.12	
7,855.00	0.90	157.90	7,719.84	790.54	806.35	1,129.22	0.12	0.00	7.80	
7,946.00	0.70	156.50	7,810.83	789.37	806.84	1,128.75	0.22	-0.22	-1.54	
8,036.00	0.50	178.30	7,900.82	788.47	807.07	1,128.29	0.33	-0.22	24.22	
8,105.00	0.50	175.40	7,969.82	787.87	807.10	1,127.89	0.04	0.00	-4.20	
Last Survey										
8,163.00	0.50	175.40	8,027.82	787.37	807.14	1,127.57	0.00	0.00	0.00	

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Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Proj. to FTD - 667' FNL & 1968' FEL									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,105.00	7,969.82	787.87	807.10	Last Survey
8,163.00	8,027.82	787.37	807.14	Proj. to FTD - 667' FNL & 1968' FEL

Checked By: _____ Approved By: _____ Date: _____