



Site: Wethington 21-7 Pad  
Well: Wethington 6-7  
Wellbore: Wellbore #1  
Design: Plan #1

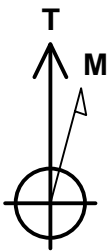
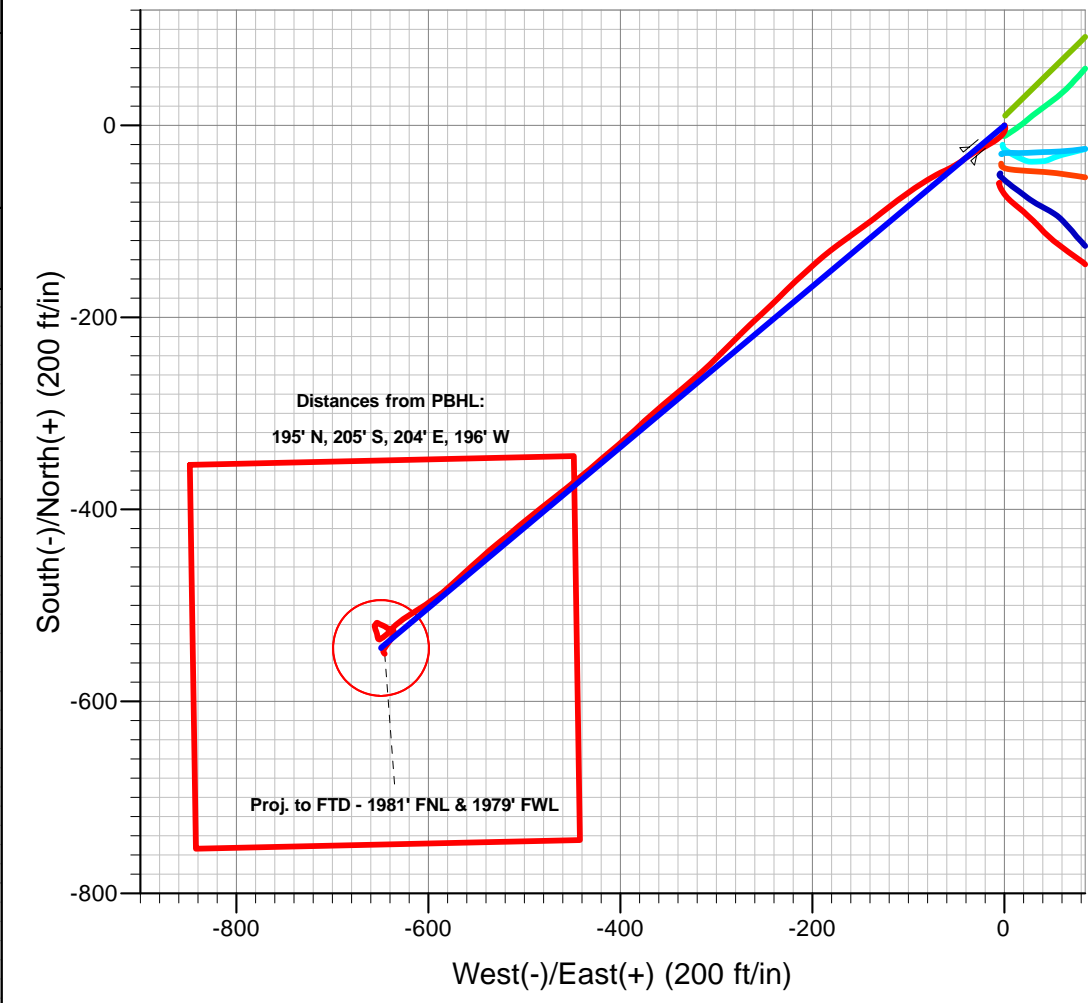
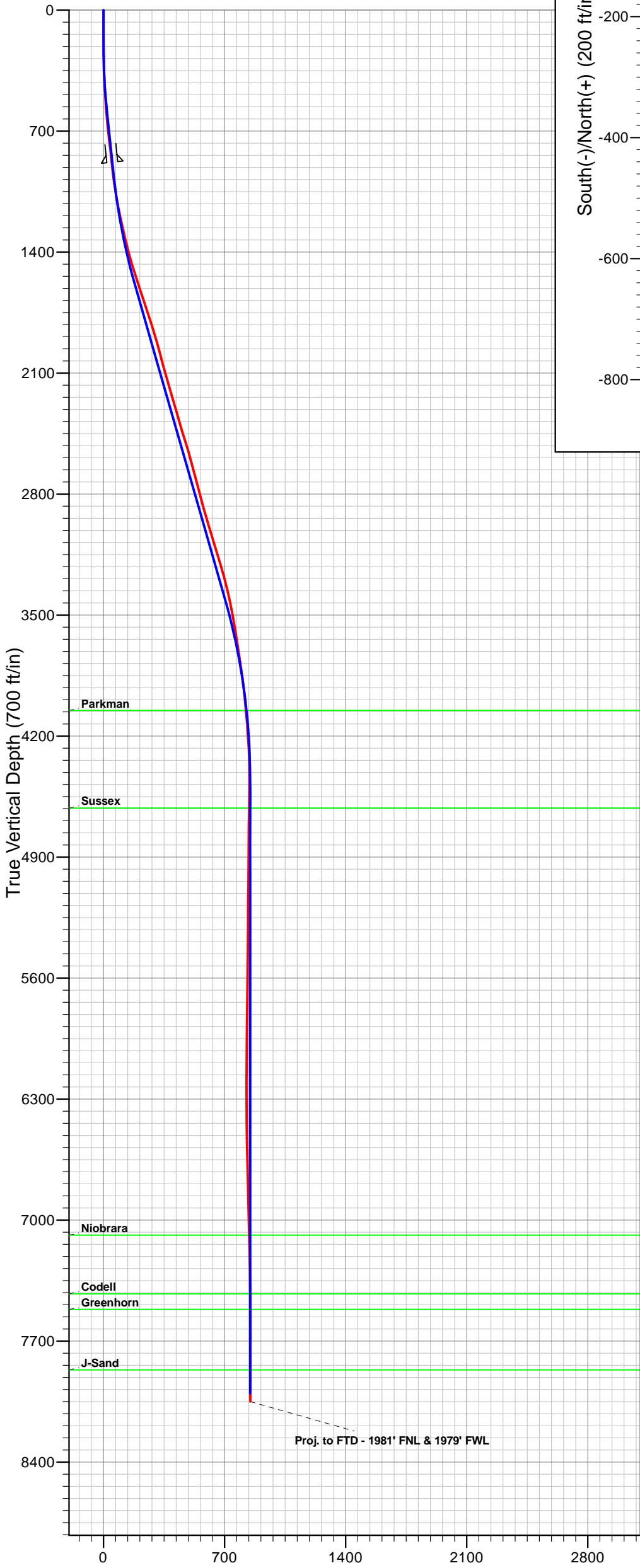
Reference Details - WELL CENTRE  
Geodetic System: US State Plane 1983  
Ellipsoid: GRS 1980  
Zone: Colorado Northern Zone  
Northing: 1268675.57  
Easting: 3190192.52  
Latitude: 40° 4' 8.029 N  
Longitude: 104° 49' 13.595 W  
Grid Convergence: 0.44° West  
Ground Elevation: 4902.00  
KB Elevation: 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

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Closure	Annotation
250.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP - Build at 2°/100'
549.45	550.00	6.00	230.03	-10.08	-12.03	15.69	15.69	End of Build - Hold at 6° Inc.
949.75	952.50	6.00	230.03	-37.11	-44.27	57.77	57.77	Build at 1.50°/100'
1603.15	1618.98	16.00	230.03	-118.68	-141.60	184.76	184.76	End of Build - Hold at 16° Inc.
3397.91	3486.03	16.00	230.03	-449.20	-535.95	699.30	699.30	Drop at 1.50°
4450.58	4552.51	0.00	0.00	-544.21	-649.32	847.22	847.22	End of Drop
8002.00	8103.93	0.00	0.00	-544.21	-649.32	847.22	847.22	PBHL - 1980' FNL & 1980' FWL



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 6-7**

**S-Well**

**Final Surveys**

**Job Number: TBA**

**Surface location**

**NAD 83**

**Lat: 40.068897°N**

**Long: 104.820443°W**

## **Final Survey Report**

**October 4, 2011**

<b>Company:</b>	Anadarko Petroleum Corporation	<b>Local Co-ordinate Reference:</b>	Well Wethington 6-7
<b>Project:</b>	Weld County, Colorado (Northern Zone)	<b>TVD Reference:</b>	WELL @ 4917.00ft (Original Well Elev)
<b>Site:</b>	Wethington 21-7 Pad	<b>MD Reference:</b>	WELL @ 4917.00ft (Original Well Elev)
<b>Well:</b>	Wethington 6-7	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	EDM Depart

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

<b>Well</b>	Wethington 6-7		
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b> 1,268,675.57 ft
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b> 3,190,192.52 ft
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	40° 4' 8.029 N
		<b>Longitude:</b>	104° 49' 13.595 W
		<b>Ground Level:</b>	4,902.00 ft

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

<b>Design</b>	Surveys				
<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) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>	
	0.00	0.00	0.00		230.03

<b>Survey Program</b>	<b>Date</b>	10/04/11			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
15.00	8,155.00	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Turn Rate (°/100ft)</b>	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
15.00	0.00	0.00	15.00	0.00	0.00	0.00	0.00	0.00	0.00	
73.00	0.50	57.70	73.00	0.14	0.21	-0.25	0.86	0.86	0.00	
102.00	0.70	162.80	102.00	0.03	0.37	-0.31	3.31	0.69	362.41	
132.00	0.70	158.90	132.00	-0.31	0.49	-0.18	0.16	0.00	-13.00	
162.00	0.90	155.80	161.99	-0.70	0.66	-0.05	0.68	0.67	-10.33	
192.00	0.90	165.90	191.99	-1.14	0.81	0.11	0.53	0.00	33.67	
222.00	1.10	168.80	221.98	-1.65	0.92	0.35	0.69	0.67	9.67	
252.00	1.40	176.80	251.98	-2.30	1.00	0.71	1.15	1.00	26.67	
282.00	1.40	182.50	281.97	-3.03	1.00	1.18	0.46	0.00	19.00	

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<b>Well:</b>	Wethington 6-7	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	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)
310.00	1.60	189.90	309.96	-3.76	0.92	1.71	0.99	0.71	26.43
340.00	1.90	197.90	339.95	-4.65	0.70	2.45	1.29	1.00	26.67
402.00	2.50	208.50	401.90	-6.81	-0.26	4.58	1.17	0.97	17.10
447.00	3.00	215.50	446.85	-8.63	-1.42	6.63	1.34	1.11	15.56
493.00	3.50	224.30	492.77	-10.62	-3.10	9.19	1.53	1.09	19.13
538.00	3.90	229.90	537.68	-12.59	-5.23	12.09	1.20	0.89	12.44
584.00	4.60	233.40	583.55	-14.69	-7.90	15.50	1.62	1.52	7.61
629.00	5.30	237.30	628.39	-16.89	-11.10	19.36	1.73	1.56	8.67
674.00	6.00	239.80	673.17	-19.20	-14.88	23.74	1.65	1.56	5.56
765.00	6.70	240.80	763.61	-24.18	-23.63	33.64	0.78	0.77	1.10
810.00	6.50	242.90	808.31	-26.62	-28.19	38.70	0.70	-0.44	4.67
856.00	6.30	242.20	854.02	-28.99	-32.74	43.71	0.47	-0.43	-1.52
921.00	6.30	231.30	918.63	-32.88	-38.67	50.76	1.84	0.00	-16.77
1,012.00	8.80	237.30	1,008.84	-39.76	-48.43	62.66	2.88	2.75	6.59
1,103.00	10.00	245.10	1,098.62	-46.85	-61.46	77.19	1.92	1.32	8.57
1,193.00	12.30	240.80	1,186.91	-54.82	-76.91	94.16	2.72	2.56	-4.78
1,284.00	12.80	234.50	1,275.74	-65.40	-93.58	113.73	1.60	0.55	-6.92
1,375.00	14.30	233.80	1,364.21	-77.89	-110.86	135.00	1.66	1.65	-0.77
1,465.00	15.80	231.70	1,451.12	-92.05	-129.45	158.34	1.77	1.67	-2.33
1,556.00	17.80	234.50	1,538.23	-107.81	-150.49	184.59	2.37	2.20	3.08
1,647.00	18.50	233.80	1,624.71	-124.41	-173.47	212.86	0.81	0.77	-0.77
1,738.00	19.00	227.70	1,710.88	-142.91	-196.08	242.07	2.22	0.55	-6.70
1,829.00	17.60	227.80	1,797.28	-162.12	-217.23	270.62	1.54	-1.54	0.11
1,919.00	16.40	224.00	1,883.35	-180.40	-236.13	296.86	1.82	-1.33	-4.22
2,010.00	14.40	228.50	1,971.08	-197.15	-253.54	320.95	2.56	-2.20	4.95
2,101.00	16.40	225.00	2,058.81	-213.73	-271.10	345.06	2.42	2.20	-3.85
2,192.00	15.50	225.40	2,146.31	-231.35	-288.84	369.98	1.00	-0.99	0.44
2,282.00	16.40	226.10	2,232.84	-248.61	-306.56	394.64	1.02	1.00	0.78
2,374.00	16.00	229.60	2,321.19	-265.83	-325.57	420.28	1.15	-0.43	3.80
2,464.00	16.40	230.60	2,407.62	-281.93	-344.83	445.38	0.54	0.44	1.11
2,555.00	17.80	228.20	2,494.59	-299.36	-365.13	472.13	1.72	1.54	-2.64
2,645.00	15.30	226.80	2,580.86	-316.66	-384.05	497.74	2.81	-2.78	-1.56
2,736.00	15.10	229.90	2,668.67	-332.51	-401.86	521.58	0.92	-0.22	3.41
2,827.00	14.60	230.60	2,756.63	-347.43	-419.79	544.91	0.58	-0.55	0.77
2,919.00	15.00	228.90	2,845.58	-362.61	-437.73	568.40	0.64	0.43	-1.85
3,009.00	16.20	231.30	2,932.27	-378.12	-456.30	592.60	1.51	1.33	2.67
3,099.00	17.20	233.10	3,018.47	-393.96	-476.74	618.44	1.25	1.11	2.00
3,190.00	16.50	229.20	3,105.57	-410.48	-497.28	644.80	1.46	-0.77	-4.29
3,281.00	17.10	231.30	3,192.68	-427.29	-517.51	671.10	0.94	0.66	2.31
3,371.00	15.00	229.20	3,279.17	-443.18	-536.65	695.97	2.42	-2.33	-2.33
3,462.00	13.40	228.20	3,367.39	-457.90	-553.43	718.29	1.78	-1.76	-1.10
3,553.00	11.30	227.10	3,456.28	-471.00	-567.82	737.73	2.32	-2.31	-1.21
3,644.00	9.00	228.20	3,545.85	-481.82	-579.66	753.75	2.54	-2.53	1.21
3,734.00	9.70	234.20	3,634.65	-490.94	-591.06	768.35	1.33	0.78	6.67

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<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	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)	
3,825.00	8.10	237.30	3,724.55	-498.89	-602.67	782.36	1.83	-1.76	3.41	
3,916.00	8.80	235.60	3,814.57	-506.29	-613.81	795.65	0.82	0.77	-1.87	
4,007.00	6.90	238.40	3,904.71	-513.09	-624.21	807.98	2.13	-2.09	3.08	
4,097.00	5.60	231.00	3,994.17	-518.68	-632.23	817.72	1.70	-1.44	-8.22	
4,188.00	5.10	218.30	4,084.78	-524.65	-638.19	826.12	1.41	-0.55	-13.96	
4,279.00	3.90	229.90	4,175.50	-529.82	-643.06	833.18	1.65	-1.32	12.75	
4,370.00	3.30	235.20	4,266.32	-533.31	-647.58	838.88	0.75	-0.66	5.82	
4,461.00	1.60	240.50	4,357.23	-535.43	-650.84	842.74	1.88	-1.87	5.82	
4,551.00	1.40	343.80	4,447.22	-534.99	-652.24	843.53	2.62	-0.22	114.78	
4,642.00	1.80	344.90	4,538.18	-532.54	-652.92	842.48	0.44	0.44	1.21	
4,733.00	1.80	348.10	4,629.13	-529.77	-653.59	841.21	0.11	0.00	3.52	
4,823.00	1.80	342.40	4,719.09	-527.04	-654.31	840.01	0.20	0.00	-6.33	
4,914.00	0.90	336.80	4,810.06	-525.02	-655.02	839.26	1.00	-0.99	-6.15	
5,005.00	1.10	348.40	4,901.05	-523.50	-655.48	838.64	0.31	0.22	12.75	
5,096.00	1.20	345.60	4,992.03	-521.72	-655.89	837.81	0.13	0.11	-3.08	
5,186.00	0.70	53.10	5,082.02	-520.48	-655.68	836.85	1.26	-0.56	75.00	
5,277.00	0.50	43.30	5,173.02	-519.86	-654.97	835.90	0.25	-0.22	-10.77	
5,368.00	0.70	31.70	5,264.01	-519.10	-654.40	834.98	0.26	0.22	-12.75	
5,459.00	0.70	35.90	5,355.00	-518.17	-653.78	833.92	0.06	0.00	4.62	
5,549.00	0.90	129.00	5,445.00	-518.17	-652.91	833.25	1.30	0.22	103.44	
5,640.00	0.90	113.90	5,535.99	-518.91	-651.70	832.80	0.26	0.00	-16.59	
5,731.00	1.40	111.10	5,626.97	-519.60	-650.01	831.94	0.55	0.55	-3.08	
5,822.00	1.90	114.30	5,717.93	-520.62	-647.60	830.75	0.56	0.55	3.52	
5,913.00	1.40	126.90	5,808.89	-521.91	-645.34	829.84	0.68	-0.55	13.85	
6,004.00	1.80	118.50	5,899.86	-523.26	-643.19	829.07	0.51	0.44	-9.23	
6,094.00	1.90	116.00	5,989.81	-524.59	-640.61	827.94	0.14	0.11	-2.78	
6,185.00	0.90	93.90	6,080.78	-525.30	-638.54	826.81	1.23	-1.10	-24.29	
6,276.00	0.90	110.10	6,171.77	-525.59	-637.16	825.94	0.28	0.00	17.80	
6,367.00	0.90	154.70	6,262.76	-526.49	-636.18	825.76	0.75	0.00	49.01	
6,458.00	0.90	167.40	6,353.75	-527.83	-635.72	826.27	0.22	0.00	13.96	
6,548.00	0.90	184.20	6,443.74	-529.22	-635.62	827.09	0.29	0.00	18.67	
6,640.00	1.10	210.20	6,535.73	-530.71	-636.11	828.42	0.53	0.22	28.26	
6,730.00	1.20	212.40	6,625.71	-532.25	-637.05	830.13	0.12	0.11	2.44	
6,821.00	1.20	215.50	6,716.69	-533.83	-638.12	831.97	0.07	0.00	3.41	
6,912.00	1.60	213.10	6,807.66	-535.67	-639.36	834.10	0.44	0.44	-2.64	
7,002.00	1.90	214.50	6,897.62	-537.95	-640.89	836.74	0.34	0.33	1.56	
7,093.00	1.80	220.10	6,988.57	-540.29	-642.67	839.60	0.23	-0.11	6.15	
7,184.00	1.60	212.40	7,079.53	-542.45	-644.27	842.22	0.33	-0.22	-8.46	
7,229.00	1.60	214.80	7,124.51	-543.50	-644.97	843.43	0.15	0.00	5.33	
7,320.00	1.10	204.60	7,215.49	-545.34	-646.05	845.44	0.61	-0.55	-11.21	
7,411.00	0.70	207.40	7,306.48	-546.63	-646.67	846.74	0.44	-0.44	3.08	
7,502.00	0.50	188.10	7,397.47	-547.51	-646.99	847.55	0.31	-0.22	-21.21	
7,593.00	0.40	155.40	7,488.47	-548.19	-646.91	847.93	0.30	-0.11	-35.93	

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<b>Design:</b>	Surveys	<b>Database:</b>	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)	
7,684.00	0.40	150.10	7,579.47	-548.76	-646.62	848.07	0.04	0.00	-5.82	
7,774.00	0.20	194.80	7,669.47	-549.18	-646.50	848.25	0.33	-0.22	49.67	
7,865.00	0.20	93.10	7,760.47	-549.35	-646.38	848.27	0.34	0.00	-111.76	
7,956.00	0.20	129.40	7,851.47	-549.45	-646.10	848.12	0.14	0.00	39.89	
8,046.00	0.40	147.00	7,941.46	-549.82	-645.81	848.13	0.24	0.22	19.56	
8,092.00	0.20	150.50	7,987.46	-550.02	-645.68	848.17	0.44	-0.43	7.61	
<b>Last Survey</b>										
8,155.00	0.20	150.50	8,050.46	-550.21	-645.58	848.21	0.00	0.00	0.00	
<b>Proj. to FTD - 1981' FNL &amp; 1979' FWL</b>										

Survey Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
8,092.00	7,987.46	-550.02	-645.68	Last Survey	
8,155.00	8,050.46	-550.21	-645.58	Proj. to FTD - 1981' FNL & 1979' FWL	

Checked By: _____	Approved By: _____	Date: _____
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