



**Departure**  
Energy Services (US) LP

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## **Laramie Energy II, LLC**

**GarfieldCounty, CO**

**Sec 17-T7S-R94W**

**Savage 18-08C**

**S-Well**

**Job Number: 310019**

## **Final Survey Report**

**26 November, 2010**



Laramie Energy II, LLC

Site: Sec 18-T7S-R94W (Savage 17-05 Pad)  
Well: Savage 18-08C  
Wellbore: 310019  
Design: Plan #2

Reference Details - WELL CENTRE

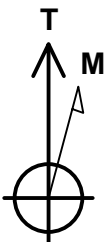
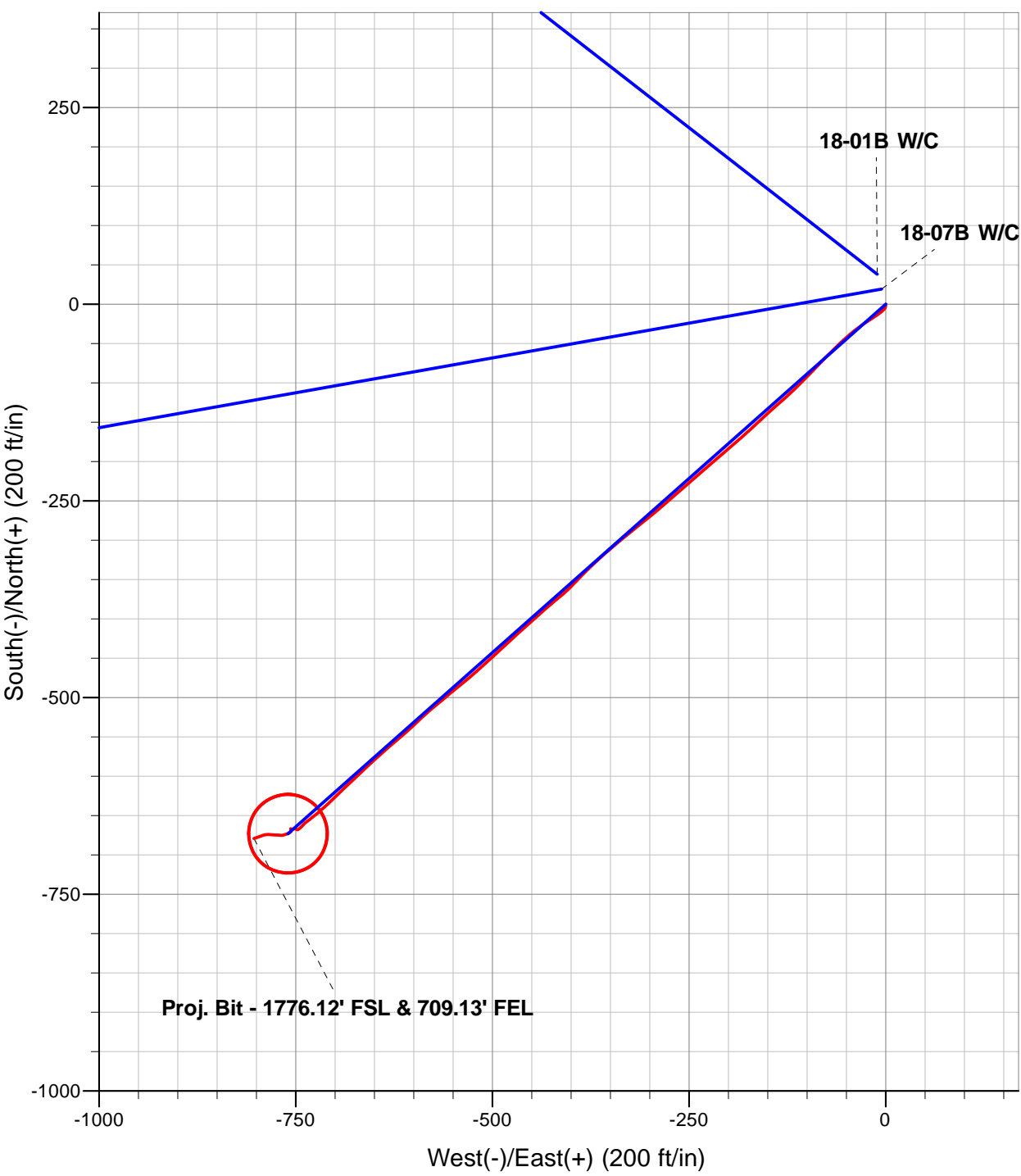
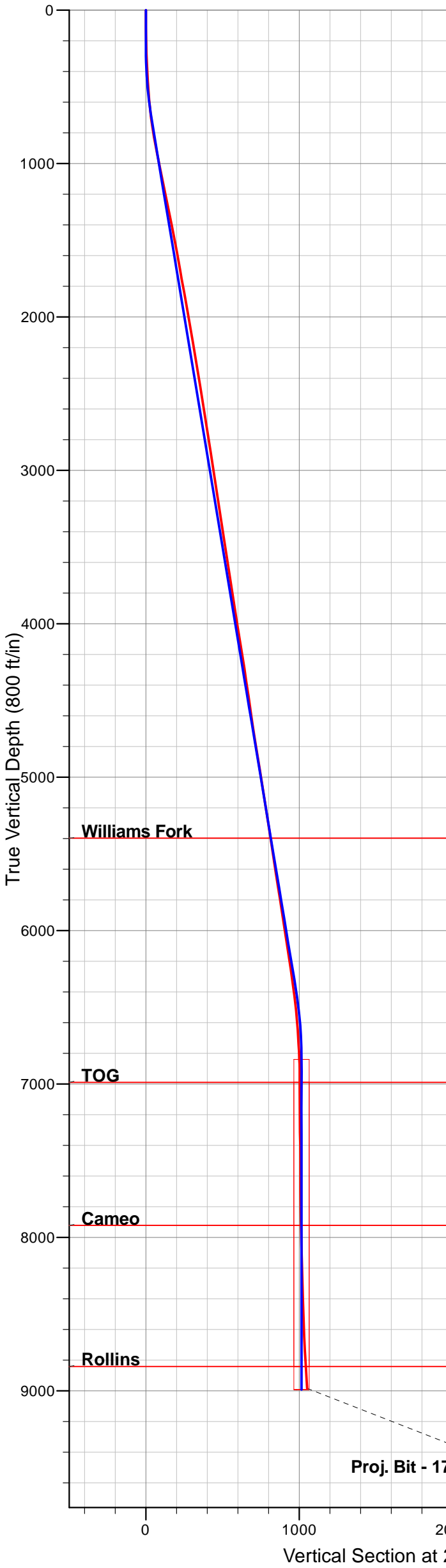
Geodetic System: Universal Transverse Mercator  
Ellipsoid: GRS 1980  
Zone: Zone 13N (108 W to 102 W)  
Northing: 14336919.28  
Easting: 816223.43  
Latitude: 39° 26' 31.1280 N  
Longitude: 107° 55' 8.9290 W  
Grid Convergence: 1.86° East  
Ground Elevation: 7202.00  
KB Elevation: Est. KB @ 7232.00ft



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Azimuths to True North  
Magnetic North: 10.42°  
  
Magnetic Field  
Strength: 52305.8snT  
Dip Angle: 65.73°  
Date: 8/12/2010  
Model: IGRF2010

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
250.00	250.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP - Build at 2°/ 100'
718.87	720.99	9.42	228.47	-25.61	-28.92	38.63	38.63	End of Build - Hold at 9.42° Inc.
6371.13	6450.50	9.42	228.47	-647.34	-730.92	976.37	976.37	Drop at 2°/ 100'
6840.00	6921.50	0.00	0.00	-672.96	-759.84	1015.00	1015.00	End of Drop - Hold Vert.
8992.00	9073.50	0.00	0.00	-672.96	-759.84	1015.00	1015.00	PBHL - 1755' FNL & 668' FEL

<b>Company:</b>	Laramie Energy II, LLC	<b>Local Co-ordinate Reference:</b>	Well Savage 18-08C
<b>Project:</b>	Garfield County, CO	<b>TVD Reference:</b>	Est. KB @ 7232.00ft
<b>Site:</b>	Sec 18-T7S-R94W (Savage 17-05 Pad)	<b>MD Reference:</b>	Est. KB @ 7232.00ft
<b>Well:</b>	Savage 18-08C	<b>North Reference:</b>	True
<b>Wellbore:</b>	310019	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b>	Garfield County, CO		
<b>Map System:</b>	Universal Transverse Mercator	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD83 Colorado - HARN		
<b>Map Zone:</b>	Zone 13N (108 W to 102 W)		

<b>Site</b>	Sec 18-T7S-R94W (Savage 17-05 Pad)		
<b>Site Position:</b>		<b>Northing:</b>	14,336,938.76 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	816,218.67 ft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	13.20 in
		<b>Latitude:</b>	39° 26' 31.3188 N
		<b>Longitude:</b>	107° 55' 8.9976 W
		<b>Grid Convergence:</b>	-1.86 °

<b>Well</b>	Savage 18-08C		
<b>Well Position</b>	<b>+N/-S</b>	0.00 ft	<b>Northing:</b>
	<b>+E/-W</b>	0.00 ft	<b>Easting:</b>
<b>Position Uncertainty</b>	0.00 ft	<b>Wellhead Elevation:</b>	ft
		<b>Latitude:</b>	39° 26' 31.1280 N
		<b>Longitude:</b>	107° 55' 8.9290 W
		<b>Ground Level:</b>	7,202.00 ft

<b>Wellbore</b>	310019				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	8/12/2010	10.42	65.73	52,306

<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	228.47	

<b>Survey Program</b>	<b>Date</b>	11/26/2010			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
112.00	9,065.00	Survey (310019)	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	
112.00	1.00	185.50	111.99	-0.97	-0.09	0.72	0.89	0.89	0.00	
157.00	1.10	177.40	156.99	-1.80	-0.11	1.27	0.40	0.22	-18.00	
219.00	1.50	188.60	218.97	-3.19	-0.21	2.27	0.76	0.65	18.06	
280.00	1.90	208.30	279.94	-4.87	-0.80	3.83	1.15	0.66	32.30	
371.00	2.60	231.00	370.88	-7.50	-3.12	7.31	1.23	0.77	24.95	
463.00	3.70	230.90	462.73	-10.68	-7.05	12.36	1.20	1.20	-0.11	
553.00	4.50	237.00	552.50	-14.44	-12.26	18.75	1.01	0.89	6.78	
644.00	5.90	235.80	643.13	-19.01	-19.13	26.92	1.54	1.54	-1.32	
736.00	8.20	235.90	734.43	-25.35	-28.47	38.12	2.50	2.50	0.11	

<b>Company:</b>	Laramie Energy II, LLC	<b>Local Co-ordinate Reference:</b>	Well Savage 18-08C
<b>Project:</b>	Garfield County, CO	<b>TVD Reference:</b>	Est. KB @ 7232.00ft
<b>Site:</b>	Sec 18-T7S-R94W (Savage 17-05 Pad)	<b>MD Reference:</b>	Est. KB @ 7232.00ft
<b>Well:</b>	Savage 18-08C	<b>North Reference:</b>	True
<b>Wellbore:</b>	310019	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

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)
827.00	10.10	231.20	824.27	-33.99	-40.07	52.53	2.24	2.09	-5.16
919.00	10.60	228.70	914.77	-44.63	-52.71	69.05	0.73	0.54	-2.72
999.00	11.30	224.70	993.31	-55.06	-63.75	84.23	1.29	0.88	-5.00
1,106.00	11.90	224.30	1,098.13	-70.40	-78.83	105.69	0.57	0.56	-0.37
1,201.00	12.00	225.00	1,191.07	-84.40	-92.65	125.32	0.19	0.11	0.74
1,296.00	11.90	223.90	1,284.01	-98.44	-106.43	144.94	0.26	-0.11	-1.16
1,392.00	11.30	227.10	1,378.05	-111.97	-120.18	164.21	0.92	-0.63	3.33
1,487.00	10.50	229.40	1,471.33	-123.94	-133.57	182.17	0.96	-0.84	2.42
1,582.00	10.30	227.40	1,564.77	-135.32	-146.40	199.31	0.43	-0.21	-2.11
1,678.00	10.30	227.00	1,659.23	-146.99	-158.99	216.48	0.07	0.00	-0.42
1,773.00	10.30	227.30	1,752.70	-158.54	-171.44	233.46	0.06	0.00	0.32
1,868.00	10.30	229.40	1,846.17	-169.82	-184.13	250.44	0.40	0.00	2.21
1,964.00	10.00	228.80	1,940.66	-180.90	-196.92	267.36	0.33	-0.31	-0.63
2,058.00	9.70	228.40	2,033.28	-191.53	-208.99	283.44	0.33	-0.32	-0.43
2,154.00	9.80	229.60	2,127.89	-202.20	-221.25	299.69	0.24	0.10	1.25
2,249.00	9.90	229.90	2,221.49	-212.70	-233.66	315.94	0.12	0.11	0.32
2,344.00	9.50	228.50	2,315.13	-223.15	-245.78	331.94	0.49	-0.42	-1.47
2,440.00	9.50	228.80	2,409.82	-233.62	-257.67	347.79	0.05	0.00	0.31
2,535.00	9.00	229.40	2,503.58	-243.62	-269.21	363.06	0.54	-0.53	0.63
2,630.00	8.80	228.30	2,597.44	-253.29	-280.28	377.75	0.28	-0.21	-1.16
2,725.00	8.80	231.20	2,691.32	-262.68	-291.37	392.28	0.47	0.00	3.05
2,820.00	8.80	229.30	2,785.20	-271.97	-302.54	406.80	0.31	0.00	-2.00
2,916.00	9.10	232.20	2,880.03	-281.41	-314.11	421.72	0.56	0.31	3.02
3,011.00	8.90	231.00	2,973.86	-290.64	-325.75	436.56	0.29	-0.21	-1.26
3,106.00	8.80	230.70	3,067.73	-299.87	-337.09	451.16	0.12	-0.11	-0.32
3,202.00	8.60	230.40	3,162.63	-309.10	-348.30	465.68	0.21	-0.21	-0.31
3,297.00	8.80	226.80	3,256.53	-318.60	-359.07	480.04	0.61	0.21	-3.79
3,392.00	8.70	226.00	3,350.43	-328.56	-369.54	494.48	0.17	-0.11	-0.84
3,487.00	8.80	227.30	3,444.32	-338.48	-380.05	508.92	0.23	0.11	1.37
3,583.00	8.40	222.80	3,539.24	-348.61	-390.21	523.24	0.82	-0.42	-4.69
3,678.00	8.60	224.50	3,633.20	-358.76	-399.90	537.23	0.34	0.21	1.79
3,772.00	9.10	230.40	3,726.08	-368.52	-410.55	551.68	1.10	0.53	6.28
3,867.00	9.30	228.80	3,819.86	-378.36	-422.12	566.86	0.34	0.21	-1.68
3,962.00	9.20	229.10	3,913.63	-388.39	-433.63	582.13	0.12	-0.11	0.32
4,058.00	9.20	228.80	4,008.39	-398.47	-445.21	597.48	0.05	0.00	-0.31
4,153.00	9.20	228.20	4,102.17	-408.53	-456.59	612.67	0.10	0.00	-0.63
4,248.00	8.70	227.40	4,196.01	-418.46	-467.54	627.44	0.54	-0.53	-0.84
4,343.00	8.70	227.30	4,289.92	-428.19	-478.10	641.81	0.02	0.00	-0.11
4,439.00	8.20	227.30	4,384.88	-437.76	-488.47	655.92	0.52	-0.52	0.00
4,534.00	8.60	227.00	4,478.86	-447.20	-498.65	669.79	0.42	0.42	-0.32
4,630.00	8.00	228.20	4,573.85	-456.55	-508.88	683.64	0.65	-0.63	1.25
4,724.00	8.60	227.90	4,666.87	-465.62	-518.97	697.21	0.64	0.64	-0.32
4,819.00	9.30	229.80	4,760.71	-475.34	-530.10	711.99	0.80	0.74	2.00
4,915.00	9.10	232.00	4,855.48	-485.02	-542.01	727.32	0.42	-0.21	2.29

<b>Company:</b>	Laramie Energy II, LLC	<b>Local Co-ordinate Reference:</b>	Well Savage 18-08C
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<b>Site:</b>	Sec 18-T7S-R94W (Savage 17-05 Pad)	<b>MD Reference:</b>	Est. KB @ 7232.00ft
<b>Well:</b>	Savage 18-08C	<b>North Reference:</b>	True
<b>Wellbore:</b>	310019	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

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)
5,010.00	9.10	229.40	4,949.28	-494.53	-553.63	742.33	0.43	0.00	-2.74
5,105.00	9.10	230.20	5,043.08	-504.23	-565.11	757.35	0.13	0.00	0.84
5,201.00	9.40	230.70	5,137.84	-514.05	-577.01	772.78	0.32	0.31	0.52
5,296.00	9.10	226.00	5,231.60	-524.19	-588.41	788.03	0.86	-0.32	-4.95
5,392.00	8.40	227.00	5,326.48	-534.24	-599.00	802.63	0.75	-0.73	1.04
5,487.00	7.90	228.90	5,420.52	-543.27	-609.00	816.09	0.60	-0.53	2.00
5,582.00	9.20	230.10	5,514.47	-552.43	-619.74	830.21	1.38	1.37	1.26
5,677.00	8.70	228.50	5,608.31	-562.06	-630.95	844.99	0.59	-0.53	-1.68
5,773.00	9.00	228.00	5,703.17	-571.90	-641.97	859.76	0.32	0.31	-0.52
5,868.00	9.10	227.40	5,796.98	-581.95	-653.02	874.70	0.14	0.11	-0.63
5,964.00	8.70	227.10	5,891.83	-592.04	-663.93	889.55	0.42	-0.42	-0.31
6,059.00	9.00	226.50	5,985.70	-602.04	-674.58	904.16	0.33	0.32	-0.63
6,155.00	8.90	226.20	6,080.53	-612.35	-685.39	919.08	0.11	-0.10	-0.31
6,250.00	8.10	226.00	6,174.48	-622.09	-695.51	933.11	0.84	-0.84	-0.21
6,345.00	8.50	227.20	6,268.49	-631.51	-705.47	946.82	0.46	0.42	1.26
6,441.00	7.90	226.80	6,363.51	-640.84	-715.49	960.51	0.63	-0.63	-0.42
6,536.00	6.90	230.70	6,457.71	-648.93	-724.66	972.73	1.18	-1.05	4.11
6,631.00	4.80	234.10	6,552.22	-654.87	-732.30	982.39	2.24	-2.21	3.58
6,726.00	4.00	229.80	6,646.93	-659.34	-738.05	989.66	0.91	-0.84	-4.53
6,822.00	3.40	221.80	6,742.73	-663.62	-742.50	995.84	0.82	-0.63	-8.33
6,917.00	2.40	233.60	6,837.61	-666.90	-745.98	1,000.62	1.22	-1.05	12.42
7,012.00	0.40	292.10	6,932.58	-667.96	-747.89	1,002.74	2.33	-2.11	61.58
7,108.00	0.50	288.50	7,028.58	-667.70	-748.60	1,003.10	0.11	0.10	-3.75
7,203.00	0.70	293.20	7,123.57	-667.34	-749.53	1,003.56	0.22	0.21	4.95
7,298.00	0.80	299.20	7,218.57	-666.79	-750.64	1,004.02	0.13	0.11	6.32
7,394.00	1.20	258.50	7,314.55	-666.66	-752.21	1,005.12	0.82	0.42	-42.40
7,489.00	1.60	247.50	7,409.52	-667.37	-754.41	1,007.23	0.51	0.42	-11.58
7,585.00	0.90	329.00	7,505.51	-667.24	-756.04	1,008.36	1.79	-0.73	84.90
7,680.00	0.10	321.80	7,600.50	-666.53	-756.47	1,008.22	0.84	-0.84	-7.58
7,775.00	1.00	148.00	7,695.50	-667.17	-756.08	1,008.35	1.16	0.95	-182.95
7,870.00	1.10	173.30	7,790.48	-668.78	-755.54	1,009.01	0.49	0.11	26.63
7,965.00	1.00	225.00	7,885.47	-670.27	-756.02	1,010.36	0.97	-0.11	54.42
8,092.00	1.80	239.40	8,012.43	-672.07	-758.52	1,013.42	0.68	0.63	11.34
8,156.00	1.60	244.40	8,076.40	-672.97	-760.19	1,015.27	0.39	-0.31	7.81
8,251.00	1.50	259.90	8,171.37	-673.76	-762.61	1,017.60	0.45	-0.11	16.32
8,346.00	1.80	245.70	8,266.33	-674.59	-765.19	1,020.09	0.53	0.32	-14.95
8,441.00	1.90	275.50	8,361.28	-675.05	-768.12	1,022.59	1.01	0.11	31.37
8,536.00	2.40	274.70	8,456.21	-674.74	-771.67	1,025.04	0.53	0.53	-0.84
8,632.00	3.30	271.30	8,552.09	-674.51	-776.44	1,028.46	0.95	0.94	-3.54
8,727.00	4.00	277.40	8,646.90	-674.02	-782.46	1,032.64	0.84	0.74	6.42
8,822.00	3.20	255.50	8,741.72	-674.26	-788.31	1,037.18	1.66	-0.84	-23.05
8,917.00	3.80	251.10	8,836.54	-675.94	-793.85	1,042.44	0.69	0.63	-4.63
9,010.00	3.80	251.10	8,929.33	-677.94	-799.69	1,048.13	0.00	0.00	0.00

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<b>Wellbore:</b>	310019	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

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)
9,065.00	3.80	251.10	8,984.21	-679.12	-803.13	1,051.50	0.00	0.00	0.00
Proj. Bit - 1776.12' FSL & 709.13' FEL									

Survey Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
9,065.00	8,984.21	-679.12	-803.13	Proj. Bit - 1776.12' FSL & 709.13' FEL

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_