



Job Number: SVGJ-140885  
 Company: PDC  
 Lease/Well: Carlson 5  
 Location: Weld County, CO  
 Rig Name: MS Energy Wireline  
 RKB: 0'  
 G.L. or M.S.L.: GL

State/Country: Colorado/USA  
 Declination: 8.34°  
 Grid: East To True North  
 File name: S:\2014SU~1\PDC\GJ\CARLSON\5.SVY  
 Date/Time: 17-Jul-14 / 16:39  
 Curve Name: Surface - 6575' M.D. (Rate Gyro)

### MS SURVEY

#### WINSERVE SURVEY CALCULATIONS

*Minimum Curvature Method*

*Vertical Section Plane .00*

*Vertical Section Referenced to Wellhead*

*Rectangular Coordinates Referenced to Wellhead*

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.51	21.52	100.00	.41	.16	.41	.45	21.52	.51
200.00	.11	287.46	200.00	.86	.23	.86	.89	15.33	.53
300.00	.35	91.64	300.00	.88	.45	.88	.99	27.10	.46
400.00	.20	49.27	400.00	.98	.89	.98	1.32	42.06	.24
500.00	.47	205.49	499.99	.73	.84	.73	1.11	49.24	.66
600.00	.50	144.67	599.99	.00	.92	.00	.92	90.03	.49
700.00	.28	221.64	699.99	-.54	1.01	-.54	1.14	118.14	.52
800.00	.21	171.35	799.99	-.90	.87	-.90	1.26	135.96	.22
900.00	.32	165.63	899.99	-1.35	.97	-1.35	1.67	144.40	.11

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
1000.00	.53	166.43	999.99	-2.07	1.15	-2.07	2.37	151.05	.21
1100.00	.46	173.81	1099.98	-2.92	1.30	-2.92	3.20	156.03	.09
1200.00	.45	168.75	1199.98	-3.71	1.42	-3.71	3.97	159.05	.04
1300.00	.43	174.10	1299.98	-4.47	1.53	-4.47	4.72	161.04	.05
1400.00	.37	147.38	1399.97	-5.11	1.75	-5.11	5.40	161.13	.19
1500.00	.15	156.22	1499.97	-5.50	1.97	-5.50	5.85	160.27	.22
1600.00	.48	279.04	1599.97	-5.56	1.61	-5.56	5.79	163.81	.58
1700.00	.55	285.13	1699.97	-5.37	.74	-5.37	5.42	172.19	.09
1800.00	.27	264.98	1799.96	-5.26	.04	-5.26	5.26	179.58	.31
1900.00	.14	293.98	1899.96	-5.23	-.31	-5.23	5.24	183.37	.16
2000.00	.63	337.03	1999.96	-4.68	-.63	-4.68	4.72	187.73	.54
2100.00	.62	284.93	2099.96	-4.03	-1.37	-4.03	4.26	198.79	.55
2200.00	.67	289.18	2199.95	-3.70	-2.45	-3.70	4.44	213.48	.07
2300.00	.35	268.30	2299.95	-3.52	-3.30	-3.52	4.83	223.22	.36
2400.00	.17	203.24	2399.94	-3.66	-3.67	-3.66	5.18	225.05	.32
2500.00	.17	234.21	2499.94	-3.88	-3.85	-3.88	5.47	224.72	.09
2600.00	.42	349.47	2599.94	-3.61	-4.03	-3.61	5.41	228.17	.52
2700.00	.04	190.94	2699.94	-3.28	-4.11	-3.28	5.26	231.35	.46
2800.00	.50	8.02	2799.94	-2.89	-4.05	-2.89	4.98	234.54	.54
2900.00	.37	353.11	2899.94	-2.13	-4.03	-2.13	4.56	242.10	.17
3000.00	.39	291.63	2999.94	-1.69	-4.39	-1.69	4.70	248.95	.39
3100.00	.22	238.10	3099.94	-1.66	-4.87	-1.66	5.14	251.12	.31
3200.00	.39	164.43	3199.93	-2.09	-4.94	-2.09	5.36	247.02	.39
3300.00	.46	140.71	3299.93	-2.73	-4.59	-2.73	5.34	239.25	.19
3400.00	.23	61.63	3399.93	-2.95	-4.16	-2.95	5.10	234.69	.47
3500.00	.29	99.89	3499.93	-2.90	-3.74	-2.90	4.73	232.22	.18
3600.00	.52	20.70	3599.93	-2.51	-3.33	-2.51	4.17	232.90	.55
3700.00	.12	18.10	3699.93	-1.99	-3.13	-1.99	3.71	237.57	.40
3800.00	.62	60.07	3799.92	-1.62	-2.63	-1.62	3.09	238.36	.54

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
3900.00	.48	3.53	3899.92	-.93	-2.14	-.93	2.33	246.41	.54
4000.00	.78	335.64	3999.91	.10	-2.39	.10	2.39	272.51	.42
4100.00	1.63	303.33	4099.89	1.51	-3.86	1.51	4.14	291.32	1.06
4200.00	1.69	296.49	4199.85	2.95	-6.37	2.95	7.02	294.82	.21
4300.00	1.81	309.40	4299.80	4.61	-8.91	4.61	10.03	297.34	.41
4400.00	2.77	302.18	4399.72	6.90	-12.17	6.90	13.99	299.53	1.00
4500.00	2.47	298.84	4499.62	9.22	-16.11	9.22	18.56	299.79	.34
4600.00	1.49	313.64	4599.56	11.16	-18.94	11.16	21.98	300.51	1.10
4700.00	.90	281.33	4699.54	12.21	-20.65	12.21	23.99	300.60	.87
4800.00	.11	349.38	4799.53	12.46	-21.43	12.46	24.79	300.17	.86
4900.00	.28	220.83	4899.53	12.37	-21.61	12.37	24.90	299.78	.36
5000.00	.71	100.07	4999.53	12.07	-21.16	12.07	24.36	299.71	.89
5100.00	.54	349.90	5099.53	12.43	-20.63	12.43	24.09	301.07	1.03
5200.00	1.10	326.90	5199.52	13.70	-21.24	13.70	25.27	302.82	.64
5300.00	1.62	313.53	5299.49	15.48	-22.79	15.48	27.55	304.18	.61
5400.00	1.79	282.12	5399.45	16.78	-25.34	16.78	30.39	303.51	.94
5500.00	1.49	271.38	5499.40	17.14	-28.17	17.14	32.97	301.31	.43
5600.00	.83	321.71	5599.39	17.74	-29.92	17.74	34.78	300.66	1.15
5700.00	.74	333.18	5699.38	18.88	-30.66	18.88	36.01	301.63	.18
5800.00	.65	16.84	5799.37	20.00	-30.78	20.00	36.71	303.01	.52
5900.00	1.19	26.12	5899.36	21.48	-30.16	21.48	37.03	305.45	.56
6000.00	1.15	2.96	5999.34	23.41	-29.65	23.41	37.78	308.29	.47
6100.00	1.66	19.65	6099.31	25.78	-29.12	25.78	38.89	311.52	.65
6200.00	1.95	10.49	6199.26	28.81	-28.32	28.81	40.40	315.50	.41
6300.00	2.00	5.12	6299.20	32.22	-27.85	32.22	42.59	319.16	.19
6400.00	1.97	11.06	6399.14	35.65	-27.37	35.65	44.94	322.49	.21
6500.00	1.82	358.26	6499.08	38.92	-27.09	38.92	47.42	325.17	.45
<b>Last Survey Depth Recorded</b>									
6575.00	1.95	15.50	6574.04	41.34	-26.78	41.34	49.26	327.07	.77