



Job Number: SVGJ-140230  
 Company: PDC  
 Lease/Well: B&C Farms 1  
 Location: Weld County, CO  
 Rig Name: MS Slickline  
 RKB: 0'  
 G.L. or M.S.L.: GL

State/Country: Colorado/USA  
 Declination: 8.43°  
 Grid: East To True North  
 File name: S:\2014SU-1\PDC\G\B&CFAR-1\1.SVY  
 Date/Time: 28-Feb-14 / 16:40  
 Curve Name: Surface - 7100' 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*

<i>Measured Depth FT</i>	<i>Incl Angle Deg</i>	<i>Drift Direction Deg</i>	<i>True Vertical Depth</i>	<i>N-S FT</i>	<i>E-W FT</i>	<i>Vertical Section FT</i>	<i>C L O S U R E</i>		<i>Dogleg Severity Deg/100</i>
							<i>Distance FT</i>	<i>Direction Deg</i>	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.35	164.33	100.00	-.29	.08	-.29	.31	164.33	.35
200.00	.38	230.90	200.00	-.80	-.09	-.80	.80	186.61	.40
300.00	.24	351.86	300.00	-.80	-.38	-.80	.88	205.39	.54
400.00	.30	76.71	400.00	-.53	-.15	-.53	.55	196.18	.37
500.00	.36	189.37	500.00	-.78	.05	-.78	.78	176.38	.55
600.00	.33	302.01	599.99	-.94	-.25	-.94	.97	194.68	.57
700.00	.35	203.91	699.99	-1.07	-.61	-1.07	1.23	209.95	.51
800.00	.22	87.24	799.99	-1.34	-.55	-1.34	1.44	202.24	.49
900.00	.29	20.10	899.99	-1.09	-.27	-1.09	1.12	193.79	.29

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	.45	307.78	999.99	-.61	-.49	-.61	.78	218.80	.46
1100.00	.44	263.35	1099.99	-.41	-1.18	-.41	1.25	250.70	.34
1200.00	.29	12.04	1199.99	-.21	-1.51	-.21	1.53	262.05	.60
1300.00	.50	279.31	1299.98	.11	-1.89	.11	1.89	273.25	.59
1400.00	.19	138.61	1399.98	.05	-2.21	.05	2.21	271.38	.66
1500.00	.41	332.15	1499.98	.25	-2.27	.25	2.28	276.18	.60
1600.00	.32	226.55	1599.98	.37	-2.64	.37	2.66	277.98	.58
1700.00	.39	266.75	1699.98	.16	-3.18	.16	3.18	272.85	.25
1800.00	.45	309.27	1799.98	.39	-3.82	.39	3.84	275.79	.31
1900.00	.41	354.52	1899.97	.99	-4.16	.99	4.28	283.41	.33
2000.00	.49	314.60	1999.97	1.65	-4.50	1.65	4.79	290.12	.32
2100.00	.62	321.64	2099.97	2.37	-5.14	2.37	5.66	294.78	.15
2200.00	.80	11.15	2199.96	3.48	-5.34	3.48	6.38	303.10	.62
2300.00	.88	5.65	2299.95	4.93	-5.13	4.93	7.12	313.87	.11
2400.00	.89	359.95	2399.94	6.47	-5.06	6.47	8.21	322.01	.09
2500.00	.86	8.67	2499.93	7.99	-4.94	7.99	9.40	328.26	.14
2600.00	.89	339.84	2599.91	9.46	-5.10	9.46	10.75	331.69	.44
2700.00	.83	359.93	2699.90	10.92	-5.37	10.92	12.16	333.82	.31
2800.00	.81	357.75	2799.89	12.35	-5.39	12.35	13.47	336.39	.04
2900.00	.84	332.00	2899.88	13.70	-5.77	13.70	14.86	337.17	.37
3000.00	.59	10.93	2999.88	14.85	-6.01	14.85	16.02	337.96	.53
3100.00	.72	.00	3099.87	15.99	-5.92	15.99	17.05	339.69	.18
3200.00	.68	2.72	3199.86	17.21	-5.89	17.21	18.19	341.11	.05
3300.00	.69	337.06	3299.86	18.35	-6.09	18.35	19.34	341.63	.30
3400.00	.69	338.56	3399.85	19.47	-6.55	19.47	20.54	341.41	.02
3500.00	.56	331.99	3499.84	20.46	-7.00	20.46	21.62	341.12	.15
3600.00	.90	300.06	3599.83	21.29	-7.91	21.29	22.71	339.62	.52
3700.00	1.04	280.14	3699.82	21.84	-9.48	21.84	23.81	336.53	.36
3800.00	.99	272.14	3799.80	22.03	-11.24	22.03	24.73	332.97	.15

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	.65	269.55	3899.79	22.06	-12.67	22.06	25.44	330.13	.34
4000.00	1.04	294.08	3999.78	22.42	-14.06	22.42	26.47	327.91	.52
4100.00	.71	280.73	4099.77	22.91	-15.50	22.91	27.66	325.92	.39
4200.00	.73	294.56	4199.76	23.29	-16.69	23.29	28.65	324.38	.17
4300.00	.59	271.98	4299.76	23.57	-17.78	23.57	29.53	322.97	.29
4400.00	.91	284.21	4399.75	23.79	-19.07	23.79	30.48	321.28	.36
4500.00	1.06	314.37	4499.73	24.63	-20.50	24.63	32.04	320.23	.53
4600.00	1.00	335.20	4599.72	26.07	-21.53	26.07	33.81	320.45	.38
4700.00	1.10	348.45	4699.70	27.80	-22.08	27.80	35.50	321.54	.26
4800.00	.79	334.48	4799.69	29.36	-22.57	29.36	37.04	322.45	.38
4900.00	1.31	329.79	4899.67	30.97	-23.45	30.97	38.84	322.87	.53
5000.00	1.31	343.95	4999.65	33.06	-24.34	33.06	41.05	323.64	.32
5100.00	1.57	313.01	5099.62	35.09	-25.65	35.09	43.47	323.83	.81
5200.00	1.54	330.86	5199.58	37.20	-27.31	37.20	46.15	323.72	.48
5300.00	1.48	327.58	5299.54	39.46	-28.66	39.46	48.77	324.01	.11
5400.00	.30	347.73	5399.53	40.81	-29.41	40.81	50.30	324.23	1.20
5500.00	.35	282.54	5499.53	41.13	-29.76	41.13	50.77	324.11	.35
5600.00	.39	250.23	5599.53	41.08	-30.38	41.08	51.09	323.52	.21
5700.00	.09	150.96	5699.53	40.90	-30.66	40.90	51.11	323.14	.41
5800.00	.48	237.32	5799.53	40.60	-30.97	40.60	51.07	322.66	.48
5900.00	.44	263.68	5899.52	40.34	-31.71	40.34	51.31	321.83	.21
6000.00	.47	272.06	5999.52	40.31	-32.50	40.31	51.78	321.12	.07
6100.00	.55	226.48	6099.52	39.99	-33.26	39.99	52.01	320.25	.40
6200.00	.51	218.55	6199.51	39.31	-33.88	39.31	51.90	319.24	.08
6300.00	.44	176.27	6299.51	38.58	-34.14	38.58	51.51	318.50	.35
6400.00	.41	119.38	6399.51	38.02	-33.80	38.02	50.87	318.37	.41
6500.00	.24	96.84	6499.50	37.82	-33.28	37.82	50.38	318.66	.21
6600.00	.40	160.08	6599.50	37.47	-32.95	37.47	49.90	318.67	.36
6700.00	.20	158.48	6699.50	36.98	-32.77	36.98	49.41	318.45	.20

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	
6800.00	.80	232.94	6799.50	36.40	-33.26	36.40	49.31	317.58	.77
6900.00	1.16	222.50	6899.48	35.23	-34.50	35.23	49.31	315.60	.40
7000.00	1.05	207.67	6999.46	33.67	-35.61	33.67	49.01	313.40	.31
<b>Last Survey Depth Recorded</b>									
7100.00	1.59	180.84	7099.44	31.47	-36.06	31.47	47.86	311.12	.81