



Job Number: SVGJ-140200
 Company: PDC
 Lease/Well: Guttersen 44-13
 Location: Weld County, CO
 Rig Name: MS Slickline
 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\GUTTER~1\4413.SVY
 Date/Time: 24-Feb-14 / 16:23
 Curve Name: Surface - 6500' 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	.42	116.08	100.00	-.16	.33	-.16	.37	116.08	.42
200.00	.61	180.13	200.00	-.85	.66	-.85	1.08	142.44	.57
300.00	.76	148.70	299.99	-1.95	1.00	-1.95	2.19	152.88	.40
400.00	.20	103.08	399.99	-2.56	1.52	-2.56	2.97	149.38	.64
500.00	.48	228.54	499.98	-2.88	1.37	-2.88	3.19	154.51	.62
600.00	.23	223.26	599.98	-3.30	.92	-3.30	3.43	164.43	.25
700.00	.43	303.54	699.98	-3.24	.47	-3.24	3.27	171.75	.45
800.00	.58	240.85	799.98	-3.28	-.29	-3.28	3.29	184.98	.54
900.00	.13	8.48	899.98	-3.41	-.71	-3.41	3.49	191.76	.67

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	.16	357.59	999.98	-3.16	-.70	-3.16	3.24	192.48	.04
1100.00	.52	236.44	1099.97	-3.27	-1.08	-3.27	3.45	198.33	.62
1200.00	.05	210.93	1199.97	-3.56	-1.48	-3.56	3.86	202.63	.48
1300.00	.67	303.55	1299.97	-3.27	-1.99	-3.27	3.83	211.34	.67
1400.00	.41	246.87	1399.97	-3.09	-2.81	-3.09	4.18	222.27	.56
1500.00	.64	312.64	1499.96	-2.85	-3.55	-2.85	4.56	231.20	.60
1600.00	.77	265.22	1599.96	-2.53	-4.63	-2.53	5.28	241.33	.58
1700.00	.45	253.15	1699.95	-2.70	-5.68	-2.70	6.29	244.55	.34
1800.00	.29	296.69	1799.95	-2.70	-6.28	-2.70	6.83	246.71	.31
1900.00	.88	280.79	1899.94	-2.44	-7.26	-2.44	7.66	251.39	.61
2000.00	1.07	253.74	1999.93	-2.56	-8.91	-2.56	9.27	253.96	.49
2100.00	1.00	247.12	2099.91	-3.16	-10.61	-3.16	11.07	253.40	.14
2200.00	.80	270.48	2199.90	-3.50	-12.11	-3.50	12.61	253.90	.41
2300.00	1.47	221.72	2299.88	-4.45	-13.66	-4.45	14.37	251.97	1.12
2400.00	1.31	203.87	2399.85	-6.45	-14.98	-6.45	16.31	246.70	.46
2500.00	1.79	224.19	2499.82	-8.62	-16.53	-8.62	18.64	242.47	.72
2600.00	2.02	215.10	2599.76	-11.18	-18.63	-11.18	21.73	239.04	.38
2700.00	1.48	217.68	2699.72	-13.64	-20.44	-13.64	24.57	236.28	.55
2800.00	1.66	224.63	2799.68	-15.69	-22.24	-15.69	27.22	234.79	.26
2900.00	1.64	208.39	2899.64	-17.98	-23.94	-17.98	29.94	233.09	.47
3000.00	1.90	228.13	2999.59	-20.35	-25.86	-20.35	32.90	231.80	.66
3100.00	1.27	225.06	3099.55	-22.24	-27.87	-22.24	35.66	231.42	.64
3200.00	1.45	255.91	3199.52	-23.33	-29.89	-23.33	37.91	232.02	.74
3300.00	1.05	266.54	3299.50	-23.69	-32.03	-23.69	39.84	233.51	.46
3400.00	.77	237.70	3399.49	-24.11	-33.51	-24.11	41.28	234.27	.53
3500.00	.99	247.29	3499.48	-24.80	-34.88	-24.80	42.79	234.58	.26
3600.00	.28	291.14	3599.47	-25.05	-35.90	-25.05	43.77	235.10	.81
3700.00	.62	239.21	3699.47	-25.23	-36.59	-25.23	44.45	235.41	.50
3800.00	.27	264.52	3799.46	-25.53	-37.29	-25.53	45.20	235.60	.39

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	.78	283.98	3899.46	-25.39	-38.19	-25.39	45.86	236.38	.53
4000.00	.86	264.82	3999.45	-25.29	-39.59	-25.29	46.99	237.43	.28
4100.00	.31	222.60	4099.44	-25.56	-40.53	-25.56	47.91	237.76	.66
4200.00	.07	175.93	4199.44	-25.82	-40.70	-25.82	48.20	237.61	.27
4300.00	.09	312.40	4299.44	-25.83	-40.76	-25.83	48.25	237.64	.15
4400.00	.46	352.62	4399.44	-25.38	-40.87	-25.38	48.11	238.16	.40
4500.00	.68	321.72	4499.44	-24.51	-41.29	-24.51	48.02	239.30	.37
4600.00	.38	300.72	4599.43	-23.88	-41.94	-23.88	48.26	240.34	.35
4700.00	.69	345.19	4699.43	-23.13	-42.38	-23.13	48.28	241.38	.50
4800.00	1.44	324.92	4799.41	-21.52	-43.25	-21.52	48.31	243.55	.83
4900.00	1.47	300.77	4899.38	-19.83	-45.08	-19.83	49.25	246.25	.61
5000.00	.97	304.87	4999.36	-18.69	-46.88	-18.69	50.47	248.26	.51
5100.00	.81	307.30	5099.35	-17.78	-48.13	-17.78	51.31	249.72	.16
5200.00	.66	312.44	5199.34	-16.96	-49.12	-16.96	51.97	250.95	.16
5300.00	.66	313.09	5299.33	-16.18	-49.96	-16.18	52.52	252.05	.01
5400.00	.70	286.12	5399.32	-15.62	-50.97	-15.62	53.31	252.96	.32
5500.00	.48	240.88	5499.32	-15.65	-51.93	-15.65	54.23	253.22	.50
5600.00	.20	196.41	5599.32	-16.02	-52.34	-16.02	54.74	252.98	.37
5700.00	.51	118.64	5699.32	-16.40	-52.00	-16.40	54.53	252.49	.51
5800.00	.63	93.72	5799.31	-16.65	-51.06	-16.65	53.71	251.94	.27
5900.00	.56	71.02	5899.31	-16.53	-50.05	-16.53	52.71	251.72	.24
6000.00	.28	145.05	5999.30	-16.57	-49.45	-16.57	52.15	251.47	.55
6100.00	.13	112.12	6099.30	-16.82	-49.20	-16.82	52.00	251.13	.18
6200.00	.45	65.61	6199.30	-16.70	-48.74	-16.70	51.52	251.09	.37
6300.00	.78	17.31	6299.30	-15.88	-48.18	-15.88	50.73	251.75	.59
6400.00	.31	270.72	6399.29	-15.23	-48.25	-15.23	50.59	252.48	.92
Last Survey Depth Recorded									
6500.00	.19	251.74	6499.29	-15.28	-48.67	-15.28	51.02	252.57	.14