



Job Number: SVGJ-131128
 Company: PDC
 Lease/Well: Guttersen 8D
 Location: Weld County, CO
 Rig Name: MS Energy Wireline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.36°
 Grid: East To True North
 File name: S:\2013SU~1\PDC\GJ\GUTTER~1\8D.SVY
 Date/Time: 31-Oct-13 / 09:40
 Curve Name: Surface - 6840' M.D. (Rate Gyro)

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	.68	158.08	100.00	-.55	.22	-.55	.59	158.08	.68
200.00	.47	110.15	199.99	-1.24	.83	-1.24	1.49	146.31	.50
300.00	.28	228.91	299.99	-1.54	1.03	-1.54	1.86	146.32	.65
400.00	.27	103.51	399.99	-1.76	1.07	-1.76	2.06	148.61	.49
500.00	.21	333.59	499.99	-1.65	1.22	-1.65	2.05	143.50	.44
600.00	.30	175.34	599.99	-1.75	1.16	-1.75	2.10	146.39	.50
700.00	.26	322.70	699.99	-1.83	1.05	-1.83	2.11	150.24	.54
800.00	.54	205.13	799.99	-2.07	.71	-2.07	2.19	161.17	.70
900.00	.69	253.60	899.98	-2.67	-.07	-2.67	2.67	181.51	.52

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	.30	243.50	999.98	-2.96	-.88	-2.96	3.09	196.61	.40
1100.00	.88	238.11	1099.97	-3.48	-1.77	-3.48	3.90	206.94	.58
1200.00	.92	243.75	1199.96	-4.24	-3.14	-4.24	5.28	216.52	.10
1300.00	.78	226.23	1299.95	-5.07	-4.35	-5.07	6.68	220.66	.29
1400.00	.50	269.79	1399.94	-5.54	-5.28	-5.54	7.65	223.63	.54
1500.00	.43	238.60	1499.94	-5.74	-6.04	-5.74	8.33	226.46	.26
1600.00	.42	252.94	1599.94	-6.04	-6.71	-6.04	9.03	228.00	.11
1700.00	.67	228.91	1699.93	-6.53	-7.50	-6.53	9.94	228.94	.33
1800.00	.59	241.00	1799.93	-7.17	-8.39	-7.17	11.03	229.50	.15
1900.00	.76	237.73	1899.92	-7.77	-9.40	-7.77	12.20	230.43	.17
2000.00	1.08	258.88	1999.91	-8.30	-10.89	-8.30	13.69	232.66	.46
2100.00	.83	279.15	2099.90	-8.37	-12.53	-8.37	15.07	236.24	.42
2200.00	1.28	311.67	2199.88	-7.51	-14.08	-7.51	15.95	241.91	.73
2300.00	1.32	320.02	2299.85	-5.89	-15.65	-5.89	16.72	249.38	.19
2400.00	1.54	319.99	2399.82	-3.98	-17.25	-3.98	17.71	257.02	.22
2500.00	1.69	326.89	2499.78	-1.71	-18.92	-1.71	19.00	264.83	.25
2600.00	1.72	328.48	2599.74	.80	-20.51	.80	20.53	272.24	.06
2700.00	1.52	316.30	2699.70	3.04	-22.21	3.04	22.42	277.79	.40
2800.00	1.01	323.72	2799.67	4.71	-23.65	4.71	24.12	281.26	.53
2900.00	1.22	306.93	2899.65	6.06	-25.02	6.06	25.75	283.61	.39
3000.00	1.55	314.43	2999.63	7.65	-26.84	7.65	27.91	285.90	.38
3100.00	1.47	312.49	3099.59	9.46	-28.75	9.46	30.27	288.21	.09
3200.00	1.06	285.24	3199.57	10.57	-30.59	10.57	32.37	289.06	.72
3300.00	.86	246.56	3299.55	10.51	-32.17	10.51	33.85	288.10	.66
3400.00	1.17	228.57	3399.54	9.54	-33.63	9.54	34.95	285.84	.44
3500.00	1.06	218.79	3499.52	8.14	-34.97	8.14	35.91	283.11	.22
3600.00	1.24	219.62	3599.50	6.59	-36.24	6.59	36.83	280.30	.18
3700.00	1.48	216.17	3699.47	4.71	-37.69	4.71	37.99	277.13	.25
3800.00	1.22	199.47	3799.44	2.67	-38.81	2.67	38.90	273.93	.47

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	.89	228.75	3899.43	1.15	-39.75	1.15	39.76	271.66	.62
4000.00	1.14	192.02	3999.41	-.33	-40.54	-.33	40.54	269.53	.68
4100.00	1.49	205.48	4099.39	-2.48	-41.31	-2.48	41.38	266.56	.46
4200.00	1.43	200.45	4199.35	-4.82	-42.30	-4.82	42.58	263.49	.14
4300.00	1.34	187.46	4299.33	-7.15	-42.89	-7.15	43.48	260.53	.33
4400.00	1.28	171.75	4399.30	-9.42	-42.88	-9.42	43.90	257.61	.36
4500.00	1.12	156.09	4499.28	-11.42	-42.32	-11.42	43.84	254.91	.36
4600.00	.81	151.56	4599.26	-12.93	-41.59	-12.93	43.56	252.73	.32
4700.00	.15	226.73	4699.26	-13.64	-41.35	-13.64	43.54	251.74	.79
4800.00	.40	261.55	4799.26	-13.78	-41.79	-13.78	44.00	251.75	.29
4900.00	.73	209.62	4899.25	-14.39	-42.45	-14.39	44.82	251.28	.58
5000.00	1.15	192.81	4999.24	-15.92	-42.99	-15.92	45.84	249.68	.50
5100.00	1.00	170.44	5099.22	-17.76	-43.07	-17.76	46.58	247.59	.44
5200.00	.55	193.65	5199.21	-19.09	-43.03	-19.09	47.08	246.08	.54
5300.00	.52	230.05	5299.21	-19.84	-43.50	-19.84	47.81	245.48	.34
5400.00	.55	195.61	5399.21	-20.60	-43.97	-20.60	48.56	244.90	.32
5500.00	.51	203.74	5499.20	-21.47	-44.28	-21.47	49.21	244.14	.09
5600.00	.42	157.66	5599.20	-22.21	-44.32	-22.21	49.58	243.38	.37
5700.00	.41	98.66	5699.20	-22.61	-43.83	-22.61	49.31	242.71	.41
5800.00	.39	52.70	5799.19	-22.45	-43.20	-22.45	48.69	242.54	.31
5900.00	.45	65.09	5899.19	-22.08	-42.58	-22.08	47.96	242.59	.11
6000.00	.61	74.58	5999.19	-21.78	-41.71	-21.78	47.05	242.43	.18
6100.00	.56	108.63	6099.18	-21.79	-40.73	-21.79	46.19	241.85	.35
6200.00	.19	113.64	6199.18	-22.01	-40.12	-22.01	45.76	241.24	.37
6300.00	.24	121.47	6299.18	-22.19	-39.78	-22.19	45.55	240.85	.06
6400.00	.14	107.47	6399.18	-22.33	-39.49	-22.33	45.37	240.51	.11
6500.00	.56	35.74	6499.18	-21.97	-39.09	-21.97	44.84	240.66	.53
6600.00	.31	92.51	6599.17	-21.59	-38.53	-21.59	44.17	240.74	.47
6700.00	.64	62.25	6699.17	-21.34	-37.77	-21.34	43.38	240.53	.40

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	.58	128.62	6799.17	-21.40	-36.88	-21.40	42.64	239.88	.67
Last Survey Depth Recorded									
6840.00	.26	125.20	6839.17	-21.58	-36.65	-21.58	42.53	239.51	.80