



Job Number: SVGJ-141091
 Company: PDC
 Lease/Well: Guttersen 24A
 Location: Weld County, CO
 Rig Name: MS Energy Wireline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.27°
 Grid: East To True North
 File name: S:\2014SU~1\PDC\GJ\GUTTER~1\24A.SVY
 Date/Time: 08-Sep-14 / 10:28
 Curve Name: Surface - 6700' 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	.61	123.72	100.00	-.30	.44	-.30	.53	123.72	.61
200.00	.36	83.52	199.99	-.56	1.20	-.56	1.32	114.88	.41
300.00	.33	66.54	299.99	-.41	1.77	-.41	1.82	102.87	.11
400.00	.31	110.69	399.99	-.39	2.29	-.39	2.32	99.57	.24
500.00	.34	100.24	499.99	-.53	2.84	-.53	2.89	100.68	.07
600.00	.16	127.07	599.99	-.67	3.24	-.67	3.31	101.71	.21
700.00	.30	127.70	699.99	-.92	3.56	-.92	3.67	104.43	.14
800.00	.68	120.24	799.98	-1.37	4.28	-1.37	4.49	107.82	.38
900.00	.93	130.11	899.97	-2.20	5.41	-2.20	5.84	112.09	.28

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	.99	133.94	999.96	-3.32	6.65	-3.32	7.44	116.51	.09
1100.00	1.00	134.96	1099.95	-4.53	7.89	-4.53	9.10	119.88	.02
1200.00	.96	138.72	1199.93	-5.78	9.06	-5.78	10.75	122.53	.08
1300.00	.81	140.61	1299.92	-6.96	10.07	-6.96	12.24	124.65	.15
1400.00	.79	128.69	1399.91	-7.93	11.05	-7.93	13.60	125.67	.17
1500.00	.81	128.45	1499.90	-8.80	12.14	-8.80	15.00	125.94	.02
1600.00	1.06	129.41	1599.89	-9.83	13.41	-9.83	16.63	126.24	.25
1700.00	.90	125.68	1699.87	-10.88	14.76	-10.88	18.34	126.38	.17
1800.00	.77	129.91	1799.86	-11.77	15.92	-11.77	19.79	126.47	.14
1900.00	.61	132.17	1899.85	-12.55	16.83	-12.55	20.99	126.73	.16
2000.00	.26	103.72	1999.85	-12.97	17.44	-12.97	21.73	126.62	.40
2100.00	.17	74.15	2099.85	-12.98	17.81	-12.98	22.03	126.09	.14
2200.00	.31	57.09	2199.85	-12.79	18.18	-12.79	22.23	125.14	.16
2300.00	.28	18.01	2299.85	-12.41	18.48	-12.41	22.26	123.89	.20
2400.00	.25	319.09	2399.85	-12.01	18.41	-12.01	21.98	123.13	.26
2500.00	.35	294.13	2499.85	-11.72	17.99	-11.72	21.47	123.10	.16
2600.00	.71	302.38	2599.84	-11.27	17.19	-11.27	20.55	123.25	.37
2700.00	.73	305.22	2699.83	-10.57	16.14	-10.57	19.30	123.21	.04
2800.00	.70	296.37	2799.83	-9.93	15.08	-9.93	18.05	123.37	.11
2900.00	.72	301.58	2899.82	-9.33	13.99	-9.33	16.82	123.69	.07
3000.00	.34	290.81	2999.81	-8.90	13.18	-8.90	15.90	124.02	.39
3100.00	.47	315.58	3099.81	-8.50	12.62	-8.50	15.21	123.96	.22
3200.00	.42	283.49	3199.81	-8.12	11.97	-8.12	14.47	124.14	.25
3300.00	.73	287.70	3299.80	-7.84	11.01	-7.84	13.52	125.45	.31
3400.00	.67	291.34	3399.80	-7.43	9.86	-7.43	12.35	127.02	.07
3500.00	1.18	298.01	3499.78	-6.74	8.40	-6.74	10.77	128.72	.52
3600.00	1.59	296.33	3599.75	-5.64	6.25	-5.64	8.42	132.04	.41
3700.00	1.88	293.39	3699.71	-4.37	3.50	-4.37	5.60	141.29	.30
3800.00	2.21	296.42	3799.64	-2.86	.27	-2.86	2.87	174.60	.35

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	2.30	287.87	3899.57	-1.39	-3.37	-1.39	3.64	247.58	.35
4000.00	2.49	288.60	3999.48	-.08	-7.33	-.08	7.33	269.38	.19
4100.00	2.55	285.43	4099.38	1.20	-11.54	1.20	11.60	275.96	.15
4200.00	2.78	290.18	4199.27	2.63	-15.96	2.63	16.17	279.37	.32
4300.00	2.40	292.45	4299.17	4.27	-20.17	4.27	20.62	281.95	.39
4400.00	2.15	297.06	4399.09	5.92	-23.78	5.92	24.50	283.99	.31
4500.00	2.07	301.24	4499.02	7.71	-26.99	7.71	28.07	285.95	.17
4600.00	1.74	310.74	4598.97	9.64	-29.68	9.64	31.21	287.99	.46
4700.00	1.86	303.16	4698.92	11.52	-32.19	11.52	34.19	289.69	.27
4800.00	1.52	309.30	4798.88	13.25	-34.58	13.25	37.03	290.96	.38
4900.00	1.21	319.58	4898.85	14.89	-36.29	14.89	39.23	292.31	.39
5000.00	1.20	316.58	4998.83	16.45	-37.69	16.45	41.13	293.58	.06
5100.00	.94	307.89	5098.81	17.72	-39.06	17.72	42.89	294.40	.31
5200.00	.80	345.83	5198.80	18.90	-39.88	18.90	44.13	295.36	.58
5300.00	.33	358.65	5298.79	19.86	-40.06	19.86	44.71	296.38	.48
5400.00	.48	37.35	5398.79	20.48	-39.81	20.48	44.77	297.23	.30
5500.00	.31	34.85	5498.79	21.04	-39.40	21.04	44.67	298.10	.17
5600.00	.25	349.84	5598.79	21.48	-39.28	21.48	44.77	298.67	.22
5700.00	.33	15.19	5698.79	21.97	-39.25	21.97	44.98	299.24	.15
5800.00	.46	11.81	5798.78	22.64	-39.09	22.64	45.17	300.08	.13
5900.00	.48	31.10	5898.78	23.39	-38.79	23.39	45.30	301.09	.16
6000.00	.29	61.97	5998.78	23.87	-38.35	23.87	45.17	301.90	.27
6100.00	.48	75.47	6098.78	24.09	-37.72	24.09	44.76	302.57	.21
6200.00	.45	37.57	6198.77	24.51	-37.08	24.51	44.45	303.47	.30
6300.00	.25	57.09	6298.77	24.94	-36.65	24.94	44.33	304.23	.23
6400.00	.41	54.70	6398.77	25.26	-36.18	25.26	44.13	304.93	.16
6500.00	.46	52.12	6498.77	25.72	-35.57	25.72	43.89	305.87	.05
6600.00	.65	50.82	6598.76	26.32	-34.81	26.32	43.65	307.09	.19

Last Survey Depth Recorded

6700.00	.76	45.96	6698.75	27.14	Page 3	-33.90	27.14	43.43	308.68	.13
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