



Job Number: SVGJ-140655  
 Company: PDC  
 Lease/Well: Rice 22-2  
 Location: Weld County, CO  
 Rig Name: MS Energy Wireline  
 RKB: 0'  
 G.L. or M.S.L.: GL

State/Country: Colorado/USA  
 Declination: 8.35°  
 Grid: East To True North  
 File name: S:\2014SU-1\PDC\GJ\RICE\222.SVY  
 Date/Time: 30-May-14 / 15:36  
 Curve Name: Surface - 6752' 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	.39	149.99	100.00	-.29	.17	-.29	.34	149.99	.39
200.00	.30	216.30	200.00	-.80	.19	-.80	.82	166.95	.38
300.00	.40	276.21	300.00	-.97	-.32	-.97	1.02	198.01	.36
400.00	.44	258.32	399.99	-1.01	-1.04	-1.01	1.45	225.72	.14
500.00	.33	263.61	499.99	-1.12	-1.70	-1.12	2.04	236.57	.12
600.00	.32	205.91	599.99	-1.41	-2.11	-1.41	2.54	236.31	.31
700.00	.25	254.40	699.99	-1.72	-2.44	-1.72	2.99	234.90	.24
800.00	.18	.37	799.99	-1.62	-2.65	-1.62	3.11	238.60	.35
900.00	.19	273.90	899.99	-1.45	-2.82	-1.45	3.17	242.76	.25

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	.22	287.27	999.99	-1.38	-3.16	-1.38	3.45	246.42	.06
1100.00	.22	81.88	1099.99	-1.30	-3.16	-1.30	3.41	247.66	.43
1200.00	.22	277.75	1199.99	-1.24	-3.16	-1.24	3.39	248.49	.44
1300.00	.29	145.27	1299.99	-1.43	-3.20	-1.43	3.51	246.00	.47
1400.00	.39	196.89	1399.98	-1.96	-3.16	-1.96	3.72	238.18	.31
1500.00	.40	185.90	1499.98	-2.63	-3.29	-2.63	4.22	231.36	.08
1600.00	.13	359.05	1599.98	-2.87	-3.33	-2.87	4.39	229.29	.53
1700.00	.38	232.24	1699.98	-2.96	-3.60	-2.96	4.65	230.57	.47
1800.00	.73	315.93	1799.98	-2.70	-4.30	-2.70	5.08	237.86	.79
1900.00	.89	324.94	1899.97	-1.61	-5.19	-1.61	5.43	252.78	.20
2000.00	.86	305.64	1999.96	-.54	-6.25	-.54	6.27	265.10	.29
2100.00	.78	257.31	2099.95	-.25	-7.52	-.25	7.52	268.11	.68
2200.00	.37	230.02	2199.94	-.60	-8.43	-.60	8.45	265.90	.48
2300.00	.20	3.04	2299.94	-.64	-8.67	-.64	8.69	265.79	.53
2400.00	.90	11.29	2399.94	.31	-8.51	.31	8.51	272.07	.70
2500.00	1.24	354.49	2499.92	2.15	-8.46	2.15	8.73	284.29	.46
2600.00	1.29	346.35	2599.89	4.32	-8.83	4.32	9.83	296.11	.19
2700.00	1.10	334.18	2699.87	6.28	-9.51	6.28	11.40	303.45	.32
2800.00	.96	341.12	2799.86	7.94	-10.20	7.94	12.92	307.90	.19
2900.00	1.55	346.21	2899.83	10.05	-10.79	10.05	14.74	312.95	.60
3000.00	1.63	336.16	2999.79	12.66	-11.69	12.66	17.23	317.28	.29
3100.00	1.39	322.53	3099.76	14.92	-13.00	14.92	19.79	318.94	.43
3200.00	1.71	306.37	3199.72	16.77	-14.94	16.77	22.46	318.30	.54
3300.00	1.76	320.02	3299.68	18.83	-17.13	18.83	25.46	317.71	.42
3400.00	2.08	311.39	3399.62	21.21	-19.48	21.21	28.80	317.44	.43
3500.00	2.19	309.62	3499.55	23.63	-22.31	23.63	32.50	316.64	.13
3600.00	2.10	315.06	3599.48	26.14	-25.08	26.14	36.23	316.19	.22
3700.00	2.26	306.50	3699.41	28.61	-27.96	28.61	40.00	315.66	.36
3800.00	2.74	308.21	3799.31	31.26	-31.42	31.26	44.32	314.86	.49

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	2.54	306.26	3899.21	34.05	-35.08	34.05	48.89	314.15	.22
4000.00	2.31	292.76	3999.12	36.14	-38.73	36.14	52.97	313.02	.61
4100.00	2.27	299.77	4099.04	37.91	-42.31	37.91	56.80	311.86	.28
4200.00	1.39	317.43	4198.99	39.78	-44.85	39.78	59.95	311.58	1.04
4300.00	1.83	323.39	4298.95	41.96	-46.62	41.96	62.72	311.99	.47
4400.00	1.49	353.80	4398.91	44.53	-47.71	44.53	65.26	313.03	.93
4500.00	.99	14.08	4498.89	46.66	-47.64	46.66	66.69	314.40	.66
4600.00	1.50	9.86	4598.86	48.79	-47.21	48.79	67.89	315.94	.52
4700.00	1.13	5.19	4698.84	51.06	-46.89	51.06	69.33	317.44	.38
4800.00	.96	.13	4798.82	52.88	-46.80	52.88	70.62	318.49	.19
4900.00	.94	2.05	4898.81	54.54	-46.77	54.54	71.85	319.38	.04
5000.00	.41	33.77	4998.80	55.66	-46.54	55.66	72.55	320.09	.63
5100.00	.65	69.40	5098.79	56.15	-45.81	56.15	72.47	320.79	.40
5200.00	1.27	82.53	5198.78	56.50	-44.18	56.50	71.72	321.97	.65
5300.00	1.64	77.34	5298.75	56.95	-41.69	56.95	70.58	323.80	.39
5400.00	1.88	76.49	5398.70	57.65	-38.70	57.65	69.43	326.13	.24
5500.00	1.43	66.34	5498.66	58.53	-35.96	58.53	68.70	328.44	.54
5600.00	1.43	50.38	5598.63	59.83	-33.86	59.83	68.75	330.50	.40
5700.00	1.38	53.34	5698.60	61.35	-31.93	61.35	69.16	332.50	.09
5800.00	1.36	86.71	5798.57	62.13	-29.78	62.13	68.90	334.39	.79
5900.00	.25	183.25	5898.56	61.98	-28.61	61.98	68.27	335.23	1.41
6000.00	.74	323.50	5998.56	62.28	-29.00	62.28	68.71	335.03	.95
6100.00	1.00	335.03	6098.55	63.59	-29.75	63.59	70.21	334.93	.31
6200.00	1.38	323.41	6198.53	65.35	-30.84	65.35	72.26	334.74	.45
6300.00	1.27	327.93	6298.50	67.26	-32.15	67.26	74.55	334.45	.15
6400.00	1.06	351.14	6398.48	69.11	-32.88	69.11	76.53	334.56	.51
6500.00	.58	2.88	6498.47	70.53	-32.99	70.53	77.87	334.93	.51
6600.00	.51	350.63	6598.46	71.48	-33.04	71.48	78.74	335.19	.14
6700.00	.89	2.69	6698.46	72.69	-33.08	72.69	79.86	335.53	.41

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	
Last Survey Depth Recorded									
6752.00	.84	45.09	6750.45	73.36	-32.79	73.36	80.36	335.92	1.21