



Job Number: SVGJ-141411
 Company: PDC
 Lease/Well: Johnston 43-24
 Location: Weld County, CO
 Rig Name: MS Energy Wireline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.42°
 Grid: East To True North
 File name: Y:\WINSER~1\2014SU~1\PDC\GJ\JOHNSTON\4324.SVY
 Date/Time: 22-Dec-14 / 16:49
 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	.41	330.94	100.00	.31	-.17	.31	.36	330.94	.41
200.00	.22	317.48	200.00	.77	-.48	.77	.90	328.11	.20
300.00	.20	145.70	300.00	.76	-.51	.76	.92	326.35	.42
400.00	.17	110.42	400.00	.57	-.27	.57	.63	334.48	.12
500.00	.10	96.95	500.00	.51	-.05	.51	.51	354.84	.08
600.00	.06	71.84	600.00	.51	.09	.51	.52	10.05	.05
700.00	.05	339.22	700.00	.57	.12	.57	.58	12.39	.08
800.00	.29	252.09	800.00	.53	-.13	.53	.55	346.13	.29
900.00	.44	232.10	899.99	.22	-.68	.22	.71	287.91	.19

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	.46	223.44	999.99	-.31	-1.25	-.31	1.29	256.15	.07
1100.00	.46	259.94	1099.99	-.67	-1.93	-.67	2.04	250.79	.29
1200.00	.63	276.78	1199.98	-.68	-2.87	-.68	2.95	256.73	.23
1300.00	.72	278.53	1299.98	-.52	-4.03	-.52	4.07	262.68	.09
1400.00	.78	278.61	1399.97	-.32	-5.33	-.32	5.34	266.53	.06
1500.00	.93	269.73	1499.96	-.22	-6.81	-.22	6.82	268.11	.20
1600.00	.88	270.51	1599.94	-.22	-8.39	-.22	8.40	268.49	.05
1700.00	.63	284.97	1699.94	-.07	-9.69	-.07	9.69	269.57	.31
1800.00	.55	309.80	1799.93	.38	-10.59	.38	10.60	272.04	.27
1900.00	.75	331.59	1899.92	1.26	-11.27	1.26	11.34	276.38	.31
2000.00	.80	325.36	1999.92	2.41	-11.98	2.41	12.22	281.37	.10
2100.00	.74	308.69	2099.91	3.39	-12.88	3.39	13.32	284.73	.23
2200.00	.74	312.21	2199.90	4.22	-13.86	4.22	14.49	286.95	.05
2300.00	.66	322.68	2299.89	5.12	-14.69	5.12	15.56	289.20	.15
2400.00	.79	335.68	2399.88	6.20	-15.32	6.20	16.53	292.04	.21
2500.00	.99	330.20	2499.87	7.58	-16.04	7.58	17.74	295.30	.22
2600.00	1.14	315.56	2599.85	9.04	-17.16	9.04	19.40	297.78	.31
2700.00	1.22	313.79	2699.83	10.49	-18.63	10.49	21.38	299.38	.09
2800.00	1.68	332.99	2799.80	12.53	-20.06	12.53	23.65	301.99	.66
2900.00	1.87	342.64	2899.75	15.39	-21.21	15.39	26.21	305.97	.35
3000.00	2.13	342.54	2999.69	18.72	-22.26	18.72	29.09	310.07	.26
3100.00	2.09	338.66	3099.62	22.19	-23.48	22.19	32.31	313.39	.15
3200.00	1.92	344.12	3199.56	25.50	-24.60	25.50	35.44	316.03	.26
3300.00	1.81	357.56	3299.51	28.69	-25.13	28.69	38.14	318.79	.45
3400.00	1.74	15.96	3399.46	31.73	-24.78	31.73	40.26	322.02	.57
3500.00	1.73	30.95	3499.42	34.49	-23.58	34.49	41.78	325.63	.45
3600.00	1.61	43.25	3599.38	36.80	-21.84	36.80	42.80	329.31	.38
3700.00	1.69	42.50	3699.33	38.91	-19.89	38.91	43.70	332.93	.08
3800.00	1.62	39.19	3799.29	41.10	-18.00	41.10	44.86	336.35	.12

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	1.40	37.03	3899.26	43.17	-16.37	43.17	46.17	339.24	.23
4000.00	.85	25.83	3999.24	44.81	-15.31	44.81	47.35	341.14	.59
4100.00	.77	12.71	4099.23	46.13	-14.84	46.13	48.46	342.17	.20
4200.00	.68	358.61	4199.22	47.38	-14.70	47.38	49.61	342.76	.20
4300.00	.64	334.40	4299.21	48.48	-14.96	48.48	50.73	342.85	.28
4400.00	.87	317.73	4399.20	49.54	-15.71	49.54	51.98	342.41	.32
4500.00	1.10	320.23	4499.19	50.84	-16.84	50.84	53.56	341.68	.23
4600.00	1.29	316.57	4599.17	52.40	-18.22	52.40	55.48	340.82	.20
4700.00	1.15	299.55	4699.15	53.71	-19.87	53.71	57.27	339.70	.39
4800.00	1.16	288.39	4799.13	54.53	-21.70	54.53	58.69	338.29	.22
4900.00	.97	272.88	4899.11	54.89	-23.51	54.89	59.71	336.81	.34
5000.00	.60	256.92	4999.10	54.81	-24.87	54.81	60.19	335.60	.43
5100.00	.32	250.74	5099.10	54.60	-25.64	54.60	60.32	334.85	.28
5200.00	.33	251.09	5199.09	54.42	-26.18	54.42	60.38	334.31	.01
5300.00	.34	271.95	5299.09	54.33	-26.74	54.33	60.56	333.79	.12
5400.00	.36	260.72	5399.09	54.29	-27.35	54.29	60.79	333.26	.07
5500.00	.21	219.25	5499.09	54.10	-27.78	54.10	60.81	332.82	.25
5600.00	1.12	165.66	5599.08	53.01	-27.65	53.01	59.79	332.45	1.01
5700.00	.48	144.19	5699.07	51.72	-27.16	51.72	58.42	332.29	.70
5800.00	.33	158.92	5799.07	51.12	-26.81	51.12	57.72	332.32	.18
5900.00	.62	151.28	5899.07	50.37	-26.45	50.37	56.89	332.30	.30
6000.00	.37	143.90	5999.06	49.64	-26.00	49.64	56.03	332.35	.26
6100.00	.42	257.33	6099.06	49.30	-26.17	49.30	55.81	332.04	.66
6200.00	.37	307.28	6199.06	49.41	-26.78	49.41	56.20	331.54	.34
6300.00	.24	252.55	6299.06	49.54	-27.24	49.54	56.54	331.20	.30
6400.00	.48	287.38	6399.06	49.61	-27.84	49.61	56.88	330.70	.31
6500.00	.23	221.01	6499.05	49.58	-28.37	49.58	57.12	330.22	.44
6600.00	.15	296.72	6599.05	49.49	-28.62	49.49	57.17	329.96	.24
6700.00	.28	287.98	6699.05	49.62	-28.97	49.62	57.46	329.72	.13

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	.37	287.68	6799.05	49.79	-29.51	49.79	57.88	329.35	.09
6900.00	.35	261.09	6899.05	49.85	-30.12	49.85	58.24	328.86	.17
7000.00	.17	245.31	6999.05	49.74	-30.55	49.74	58.37	328.44	.19
Last Survey Depth Recorded									
7100.00	.05	42.91	7099.05	49.71	-30.66	49.71	58.40	328.33	.22