



Job Number: SVGJ-140432
 Company: PDC
 Lease/Well: Ivan Klein 13-20
 Location: Weld County, CO
 Rig Name: MS Energy Wireline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.38°
 Grid: East To True North
 File name: Y:\WINSER~1\2014SU~1\PDC\GJ\IVANKL~1\1320.SVY
 Date/Time: 14-Apr-14 / 10:15
 Curve Name: Surface - 6800' 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	1.24	161.60	99.99	-1.03	.34	-1.03	1.08	161.60	1.24
200.00	.84	172.16	199.98	-2.78	.78	-2.78	2.89	164.27	.44
300.00	.45	171.54	299.97	-3.89	.94	-3.89	4.01	166.42	.39
400.00	.76	170.30	399.96	-4.94	1.11	-4.94	5.06	167.32	.31
500.00	.87	160.40	499.95	-6.31	1.48	-6.31	6.48	166.82	.18
600.00	.98	149.64	599.94	-7.76	2.16	-7.76	8.05	164.42	.21
700.00	.51	151.90	699.93	-8.89	2.81	-8.89	9.32	162.48	.47
800.00	.60	120.18	799.93	-9.54	3.47	-9.54	10.16	160.03	.32
900.00	1.21	134.19	899.91	-10.54	4.68	-10.54	11.53	156.08	.64

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	.88	116.87	999.90	-11.63	6.12	-11.63	13.14	152.24	.45
1100.00	1.19	140.27	1099.88	-12.77	7.47	-12.77	14.80	149.68	.52
1200.00	.83	165.66	1199.87	-14.27	8.31	-14.27	16.52	149.79	.57
1300.00	.72	123.97	1299.86	-15.33	9.01	-15.33	17.78	149.54	.56
1400.00	.49	109.25	1399.85	-15.82	9.94	-15.82	18.68	147.86	.28
1500.00	.46	88.48	1499.85	-15.95	10.74	-15.95	19.23	146.04	.17
1600.00	.57	97.71	1599.85	-16.00	11.64	-16.00	19.79	143.98	.14
1700.00	.18	43.56	1699.84	-15.96	12.24	-15.96	20.11	142.52	.49
1800.00	.49	152.13	1799.84	-16.22	12.55	-16.22	20.51	142.28	.57
1900.00	.50	152.58	1899.84	-16.99	12.95	-16.99	21.36	142.69	.01
2000.00	.70	103.96	1999.83	-17.52	13.74	-17.52	22.27	141.90	.53
2100.00	.32	78.96	2099.83	-17.62	14.61	-17.62	22.88	140.33	.43
2200.00	.81	102.01	2199.82	-17.71	15.57	-17.71	23.58	138.67	.53
2300.00	1.53	102.41	2299.80	-18.14	17.57	-18.14	25.25	135.92	.72
2400.00	1.56	94.08	2399.77	-18.53	20.23	-18.53	27.43	132.48	.23
2500.00	.51	72.39	2499.75	-18.49	22.01	-18.49	28.75	130.03	1.10
2600.00	.25	87.82	2599.75	-18.35	22.65	-18.35	29.15	129.00	.28
2700.00	.41	99.30	2699.74	-18.40	23.22	-18.40	29.63	128.38	.17
2800.00	.51	98.12	2799.74	-18.52	24.02	-18.52	30.33	127.63	.10
2900.00	.84	59.74	2899.74	-18.21	25.09	-18.21	31.00	125.97	.54
3000.00	.56	31.17	2999.73	-17.42	25.98	-17.42	31.28	123.85	.44
3100.00	.32	64.94	3099.72	-16.89	26.48	-16.89	31.41	122.52	.34
3200.00	.46	86.11	3199.72	-16.74	27.14	-16.74	31.88	121.67	.20
3300.00	.50	27.89	3299.72	-16.33	27.74	-16.33	32.19	120.48	.47
3400.00	.63	302.13	3399.72	-15.65	27.48	-15.65	31.62	119.66	.77
3500.00	.88	225.50	3499.71	-15.89	26.47	-15.89	30.87	120.99	.96
3600.00	1.18	216.53	3599.69	-17.26	25.31	-17.26	30.63	124.30	.34
3700.00	1.20	191.09	3699.67	-19.12	24.49	-19.12	31.07	127.97	.52
3800.00	.82	171.10	3799.66	-20.85	24.40	-20.85	32.10	130.51	.51

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	.68	200.65	3899.65	-22.11	24.30	-22.11	32.86	132.30	.41
4000.00	1.23	254.57	3999.64	-22.95	23.06	-22.95	32.54	134.87	1.00
4100.00	1.56	267.58	4099.61	-23.30	20.66	-23.30	31.14	138.43	.46
4200.00	1.98	251.65	4199.56	-23.90	17.66	-23.90	29.72	143.53	.64
4300.00	1.75	251.53	4299.51	-24.93	14.58	-24.93	28.87	149.68	.23
4400.00	1.73	253.86	4399.46	-25.83	11.68	-25.83	28.35	155.67	.07
4500.00	1.82	267.96	4499.41	-26.30	8.64	-26.30	27.69	161.81	.44
4600.00	2.14	257.39	4599.35	-26.77	5.23	-26.77	27.28	168.94	.48
4700.00	2.15	263.55	4699.28	-27.39	1.55	-27.39	27.43	176.77	.23
4800.00	3.47	255.79	4799.16	-28.34	-3.25	-28.34	28.53	186.55	1.37
4900.00	3.25	248.23	4898.99	-30.13	-8.82	-30.13	31.40	196.31	.49
5000.00	2.78	258.54	4998.85	-31.67	-13.83	-31.67	34.56	203.59	.72
5100.00	2.30	259.65	5098.75	-32.51	-18.18	-32.51	37.25	209.21	.48
5200.00	1.61	251.20	5198.69	-33.32	-21.48	-33.32	39.65	212.81	.75
5300.00	.83	231.90	5298.67	-34.22	-23.38	-34.22	41.45	214.34	.87
5400.00	.33	203.45	5398.67	-34.93	-24.07	-34.93	42.42	214.56	.56
5500.00	.02	42.22	5498.67	-35.19	-24.17	-35.19	42.69	214.49	.35
5600.00	.14	300.53	5598.67	-35.11	-24.26	-35.11	42.68	214.65	.15
5700.00	.49	237.21	5698.66	-35.28	-24.73	-35.28	43.08	215.03	.45
5800.00	.59	206.67	5798.66	-35.97	-25.32	-35.97	43.99	215.14	.30
5900.00	.39	249.47	5898.66	-36.55	-25.87	-36.55	44.78	215.29	.40
6000.00	.59	263.50	5998.65	-36.73	-26.70	-36.73	45.41	216.01	.23
6100.00	.79	269.34	6098.65	-36.80	-27.90	-36.80	46.18	217.17	.21
6200.00	1.01	282.77	6198.63	-36.61	-29.45	-36.61	46.98	218.81	.30
6300.00	1.51	306.34	6298.61	-35.63	-31.37	-35.63	47.47	221.36	.71
6400.00	2.07	330.14	6398.56	-33.29	-33.33	-33.29	47.10	225.04	.92
6500.00	3.01	325.52	6498.46	-29.55	-35.71	-29.55	46.36	230.39	.96
6600.00	2.44	327.09	6598.35	-25.60	-38.36	-25.60	46.12	236.28	.57
6700.00	1.46	357.77	6698.29	-22.54	-39.56	-22.54	45.54	240.33	1.40

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	
Last Survey Depth Recorded									
6800.00	1.02	38.49	6798.27	-20.57	-39.06	-20.57	44.15	242.22	.96