



Job Number: SVGJ-141078
 Company: PDC
 Lease/Well: Hingley 12-18
 Location: Weld County, CO
 Rig Name: MS Energy Wireline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.50°
 Grid: East To True North
 File name: S:\2014SU-1\PDC\GJ\HINGLEY\1218.SVY
 Date/Time: 05-Sep-14 / 10:48
 Curve Name: Surface - 8100' 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	.84	17.23	100.00	.70	.22	.70	.73	17.23	.84
200.00	.51	27.32	199.99	1.80	.64	1.80	1.91	19.57	.35
300.00	.53	84.17	299.99	2.24	1.30	2.24	2.59	30.21	.50
400.00	.52	73.91	399.98	2.41	2.20	2.41	3.26	42.37	.09
500.00	.15	83.58	499.98	2.55	2.77	2.55	3.76	47.30	.37
600.00	.41	131.56	599.98	2.33	3.16	2.33	3.93	53.64	.33
700.00	.30	115.21	699.98	1.98	3.67	1.98	4.17	61.64	.15
800.00	.66	186.29	799.97	1.30	3.84	1.30	4.05	71.36	.63
900.00	1.02	175.51	899.96	-.16	3.85	-.16	3.85	92.44	.39

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	1.21	177.77	999.94	-2.11	3.96	-2.11	4.48	118.02	.19
1100.00	1.24	178.62	1099.92	-4.24	4.03	-4.24	5.85	136.51	.04
1200.00	1.16	192.08	1199.90	-6.31	3.84	-6.31	7.39	148.70	.29
1300.00	1.27	204.13	1299.88	-8.32	3.18	-8.32	8.90	159.10	.28
1400.00	1.04	212.56	1399.86	-10.09	2.23	-10.09	10.34	167.52	.29
1500.00	1.10	216.53	1499.84	-11.63	1.17	-11.63	11.69	174.24	.10
1600.00	1.19	222.88	1599.82	-13.16	-.10	-13.16	13.16	180.45	.16
1700.00	1.36	232.22	1699.79	-14.65	-1.75	-14.65	14.75	186.81	.27
1800.00	1.39	243.64	1799.77	-15.91	-3.77	-15.91	16.36	193.34	.28
1900.00	1.43	258.33	1899.74	-16.71	-6.08	-16.71	17.78	200.01	.36
2000.00	1.46	268.84	1999.70	-16.98	-8.58	-16.98	19.03	206.80	.27
2100.00	1.33	271.14	2099.67	-16.99	-11.01	-16.99	20.24	212.95	.14
2200.00	1.47	291.54	2199.65	-16.49	-13.37	-16.49	21.23	219.02	.51
2300.00	1.51	306.95	2299.61	-15.23	-15.61	-15.23	21.81	225.71	.40
2400.00	1.69	304.36	2399.57	-13.60	-17.88	-13.60	22.47	232.74	.19
2500.00	1.71	293.08	2499.53	-12.19	-20.47	-12.19	23.82	239.23	.33
2600.00	1.62	297.17	2599.49	-10.96	-23.10	-10.96	25.57	244.62	.15
2700.00	1.43	290.93	2699.45	-9.87	-25.52	-9.87	27.36	248.87	.25
2800.00	1.13	287.02	2799.43	-9.13	-27.63	-9.13	29.10	251.71	.31
2900.00	1.02	296.11	2899.41	-8.45	-29.38	-8.45	30.57	253.95	.20
3000.00	1.04	310.83	2999.39	-7.47	-30.86	-7.47	31.75	256.40	.26
3100.00	1.12	322.64	3099.38	-6.10	-32.14	-6.10	32.71	259.26	.24
3200.00	1.08	333.41	3199.36	-4.48	-33.16	-4.48	33.46	262.31	.21
3300.00	1.08	341.72	3299.34	-2.74	-33.87	-2.74	33.98	265.38	.16
3400.00	1.34	4.93	3399.32	-.68	-34.07	-.68	34.07	268.86	.55
3500.00	1.60	6.71	3499.28	1.87	-33.80	1.87	33.86	273.17	.26
3600.00	1.72	355.66	3599.24	4.76	-33.75	4.76	34.09	278.02	.34
3700.00	1.78	355.94	3699.20	7.80	-33.98	7.80	34.86	282.93	.06
3800.00	1.78	354.70	3799.15	10.90	-34.23	10.90	35.92	287.66	.04

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	2.11	350.83	3899.09	14.26	-34.67	14.26	37.49	292.36	.35
4000.00	2.10	326.16	3999.03	17.60	-35.98	17.60	40.06	296.06	.90
4100.00	1.90	319.12	4098.96	20.37	-38.09	20.37	43.20	298.14	.32
4200.00	1.92	321.18	4198.91	22.93	-40.22	22.93	46.30	299.69	.07
4300.00	1.79	320.13	4298.86	25.44	-42.27	25.44	49.34	301.04	.13
4400.00	1.70	326.83	4398.81	27.88	-44.09	27.88	52.16	302.31	.22
4500.00	1.56	319.10	4498.77	30.15	-45.79	30.15	54.82	303.36	.26
4600.00	1.10	294.96	4598.74	31.58	-47.55	31.58	57.08	303.59	.72
4700.00	1.08	276.64	4698.73	32.10	-49.36	32.10	58.88	303.04	.35
4800.00	1.01	279.46	4798.71	32.35	-51.16	32.35	60.53	302.30	.09
4900.00	1.31	280.99	4898.69	32.71	-53.15	32.71	62.41	301.61	.30
5000.00	1.14	296.63	4998.67	33.38	-55.17	33.38	64.48	301.17	.37
5100.00	1.16	293.75	5098.65	34.23	-56.98	34.23	66.47	300.99	.06
5200.00	1.32	286.54	5198.62	34.97	-59.01	34.97	68.59	300.65	.22
5300.00	1.27	294.65	5298.60	35.76	-61.12	35.76	70.81	300.33	.19
5400.00	1.24	287.40	5398.57	36.54	-63.16	36.54	72.97	300.05	.16
5500.00	1.15	286.11	5498.55	37.14	-65.16	37.14	75.00	299.68	.09
5600.00	1.17	281.02	5598.53	37.62	-67.13	37.62	76.95	299.27	.10
5700.00	.96	306.61	5698.51	38.31	-68.80	38.31	78.75	299.11	.51
5800.00	.95	284.05	5798.50	39.01	-70.28	39.01	80.38	299.04	.37
5900.00	.52	273.10	5898.49	39.24	-71.53	39.24	81.59	298.75	.45
6000.00	.78	298.12	5998.49	39.58	-72.59	39.58	82.68	298.60	.38
6100.00	.37	333.03	6098.48	40.19	-73.33	40.19	83.63	298.73	.52
6200.00	.77	347.99	6198.48	41.14	-73.62	41.14	84.33	299.20	.42
6300.00	.93	346.89	6298.46	42.59	-73.94	42.59	85.33	299.94	.16
6400.00	1.38	22.06	6398.44	44.49	-73.68	44.49	86.07	301.13	.82
6500.00	1.15	23.98	6498.42	46.52	-72.82	46.52	86.41	302.58	.23
6600.00	.84	17.00	6598.41	48.14	-72.19	48.14	86.77	303.70	.33
6700.00	.90	12.19	6698.39	49.61	-71.81	49.61	87.28	304.64	.09

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	1.21	.68	6798.38	51.43	-71.64	51.43	88.19	305.68	.37
6900.00	1.50	32.72	6898.35	53.59	-70.92	53.59	88.89	307.08	.80
7000.00	2.23	357.93	6998.30	56.64	-70.28	56.64	90.26	308.86	1.31
7100.00	1.32	345.87	7098.25	59.70	-70.63	59.70	92.48	310.21	.98
7200.00	.94	310.10	7198.23	61.34	-71.54	61.34	94.24	310.61	.78
7300.00	1.09	289.66	7298.22	62.19	-73.06	62.19	95.95	310.41	.39
7400.00	1.04	273.47	7398.20	62.57	-74.86	62.57	97.57	309.89	.30
7500.00	.61	180.35	7498.19	62.09	-75.77	62.09	97.96	309.33	1.23
7600.00	2.51	127.68	7598.15	60.22	-74.04	60.22	95.44	309.12	2.19
7700.00	4.08	133.85	7697.99	56.42	-69.74	56.42	89.70	308.97	1.61
7800.00	6.12	131.97	7797.58	50.39	-63.21	50.39	80.84	308.56	2.05
7900.00	5.70	132.25	7897.05	43.48	-55.58	43.48	70.56	308.04	.42
8000.00	4.32	134.03	7996.67	37.52	-49.19	37.52	61.87	307.34	1.39
Last Survey Depth Recorded									
8100.00	3.55	131.99	8096.43	32.84	-44.18	32.84	55.05	306.62	.78