



Job Number: SVGJ-150038
 Company: PDC
 Lease/Well: Zarlengo 24-4
 Location: Adams County, CO
 Rig Name: MS Slickline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.52°
 Grid: East To True North
 File name: S:\2015SU~1\PDC\GJ\ZARLENGO\244.SVY
 Date/Time: 11-Feb-15 / 11:31
 Curve Name: Surface - 7900' 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	.37	52.47	100.00	.20	.26	.20	.32	52.47	.37
200.00	.27	64.26	200.00	.50	.72	.50	.88	55.61	.12
300.00	.44	139.94	300.00	.30	1.18	.30	1.22	75.59	.46
400.00	.60	161.22	399.99	-.49	1.60	-.49	1.67	106.88	.25
500.00	.91	168.14	499.98	-1.76	1.93	-1.76	2.61	132.32	.32
600.00	1.02	166.21	599.97	-3.40	2.31	-3.40	4.11	145.85	.11
700.00	1.25	170.72	699.95	-5.34	2.69	-5.34	5.98	153.23	.25
800.00	1.53	187.26	799.92	-7.74	2.70	-7.74	8.20	160.76	.49
900.00	1.60	193.89	899.88	-10.42	2.20	-10.42	10.65	168.09	.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	1.27	184.86	999.85	-12.88	1.77	-12.88	13.00	172.18	.40
1100.00	.90	185.74	1099.83	-14.77	1.60	-14.77	14.85	173.83	.37
1200.00	.92	190.55	1199.82	-16.34	1.37	-16.34	16.39	175.20	.08
1300.00	.91	206.80	1299.81	-17.83	.87	-17.83	17.86	177.22	.26
1400.00	.89	241.20	1399.80	-18.92	-.17	-18.92	18.92	180.52	.53
1500.00	1.01	240.04	1499.78	-19.73	-1.62	-19.73	19.80	184.68	.12
1600.00	1.02	240.28	1599.77	-20.61	-3.15	-20.61	20.85	188.70	.01
1700.00	1.19	244.65	1699.75	-21.50	-4.86	-21.50	22.04	192.75	.19
1800.00	1.36	248.05	1799.72	-22.39	-6.90	-22.39	23.43	197.14	.19
1900.00	1.53	249.27	1899.69	-23.30	-9.25	-23.30	25.07	201.66	.17
2000.00	1.61	249.25	1999.65	-24.27	-11.82	-24.27	27.00	205.95	.08
2100.00	1.65	248.64	2099.61	-25.30	-14.47	-25.30	29.14	209.77	.04
2200.00	1.61	248.71	2199.57	-26.33	-17.12	-26.33	31.41	213.03	.04
2300.00	1.24	254.32	2299.54	-27.13	-19.47	-27.13	33.40	215.66	.39
2400.00	1.06	264.10	2399.52	-27.52	-21.43	-27.52	34.88	217.91	.27
2500.00	1.01	275.99	2499.51	-27.52	-23.23	-27.52	36.02	220.16	.22
2600.00	1.14	286.20	2599.49	-27.15	-25.06	-27.15	36.95	222.70	.23
2700.00	1.34	287.94	2699.47	-26.52	-27.13	-26.52	37.94	225.65	.20
2800.00	1.45	296.98	2799.44	-25.58	-29.37	-25.58	38.95	228.94	.25
2900.00	1.74	305.38	2899.40	-24.13	-31.73	-24.13	39.87	232.75	.37
3000.00	2.12	300.03	2999.34	-22.32	-34.57	-22.32	41.15	237.15	.42
3100.00	2.82	291.85	3099.25	-20.48	-38.46	-20.48	43.57	241.96	.78
3200.00	3.14	289.62	3199.11	-18.65	-43.32	-18.65	47.16	246.71	.34
3300.00	3.16	286.23	3298.96	-16.96	-48.55	-16.96	51.42	250.74	.19
3400.00	2.77	279.51	3398.83	-15.79	-53.58	-15.79	55.85	253.58	.52
3500.00	2.54	276.19	3498.72	-15.15	-58.16	-15.15	60.10	255.40	.28
3600.00	2.14	281.20	3598.64	-14.55	-62.20	-14.55	63.88	256.83	.45
3700.00	1.89	287.98	3698.57	-13.68	-65.60	-13.68	67.01	258.22	.35
3800.00	1.83	294.12	3798.52	-12.52	-68.62	-12.52	69.75	259.66	.21

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	1.92	294.47	3898.47	-11.17	-71.60	-11.17	72.47	261.13	.09
4000.00	2.01	297.16	3998.41	-9.67	-74.69	-9.67	75.31	262.62	.13
4100.00	2.17	290.78	4098.34	-8.20	-78.02	-8.20	78.45	264.00	.28
4200.00	2.07	275.95	4198.28	-7.34	-81.59	-7.34	81.92	264.86	.56
4300.00	2.16	272.30	4298.21	-7.08	-85.27	-7.08	85.56	265.25	.16
4400.00	2.30	267.52	4398.13	-7.09	-89.15	-7.09	89.44	265.45	.23
4500.00	2.54	261.17	4498.04	-7.52	-93.35	-7.52	93.65	265.39	.36
4600.00	2.76	256.04	4597.94	-8.44	-97.87	-8.44	98.24	265.07	.32
4700.00	3.08	249.18	4697.81	-9.98	-102.72	-9.98	103.20	264.45	.47
4800.00	3.38	245.46	4797.65	-12.15	-107.91	-12.15	108.60	263.57	.37
4900.00	3.03	248.19	4897.49	-14.36	-113.05	-14.36	113.96	262.76	.38
5000.00	2.48	242.95	4997.37	-16.33	-117.43	-16.33	118.56	262.08	.60
5100.00	2.43	239.80	5097.28	-18.38	-121.19	-18.38	122.57	261.38	.14
5200.00	2.50	236.00	5197.19	-20.66	-124.83	-20.66	126.53	260.60	.18
5300.00	2.33	223.54	5297.10	-23.36	-128.04	-23.36	130.15	259.66	.55
5400.00	2.05	206.62	5397.03	-26.43	-130.24	-26.43	132.89	258.53	.70
5500.00	2.19	193.36	5496.96	-29.89	-131.48	-29.89	134.84	257.19	.51
5600.00	2.40	184.28	5596.88	-33.83	-132.08	-33.83	136.35	255.63	.42
5700.00	2.75	181.78	5696.78	-38.32	-132.31	-38.32	137.75	253.85	.37
5800.00	2.90	179.79	5796.66	-43.25	-132.38	-43.25	139.26	251.91	.18
5900.00	2.06	182.48	5896.57	-47.57	-132.44	-47.57	140.73	250.24	.85
6000.00	1.29	201.90	5996.52	-50.41	-132.94	-50.41	142.18	249.23	.95
6100.00	1.02	220.78	6096.50	-52.13	-133.94	-52.13	143.73	248.73	.46
6200.00	.94	233.05	6196.49	-53.30	-135.18	-53.30	145.31	248.48	.22
6300.00	.75	237.09	6296.48	-54.15	-136.39	-54.15	146.74	248.35	.20
6400.00	.88	246.02	6396.47	-54.81	-137.64	-54.81	148.15	248.28	.18
6500.00	.77	238.38	6496.46	-55.48	-138.91	-55.48	149.58	248.23	.16
6600.00	.73	219.18	6596.45	-56.32	-139.89	-56.32	150.80	248.07	.25
6700.00	.78	206.33	6696.44	-57.43	-140.59	-57.43	151.87	247.78	.18

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	1.61	159.67	6796.42	-59.36	-140.40	-59.36	152.43	247.08	1.22
6900.00	2.58	147.83	6896.35	-62.58	-138.72	-62.58	152.18	245.72	1.06
7000.00	1.41	125.52	6996.29	-65.20	-136.52	-65.20	151.29	244.47	1.38
7100.00	.51	27.82	7096.28	-65.52	-135.31	-65.52	150.34	244.16	1.56
7200.00	1.11	356.86	7196.27	-64.16	-135.15	-64.16	149.61	244.61	.72
7300.00	1.20	3.23	7296.25	-62.15	-135.15	-62.15	148.75	245.31	.16
7400.00	1.25	350.23	7396.23	-60.03	-135.27	-60.03	147.99	246.07	.28
7500.00	1.37	17.24	7496.20	-57.81	-135.10	-57.81	146.95	246.83	.62
7600.00	1.22	22.91	7596.18	-55.69	-134.34	-55.69	145.42	247.48	.20
7700.00	1.39	42.14	7696.15	-53.81	-133.11	-53.81	143.57	247.99	.47
7800.00	1.53	60.16	7796.12	-52.24	-131.14	-52.24	141.16	248.28	.48
Last Survey Depth Recorded									
7900.00	1.44	63.30	7896.08	-51.01	-128.85	-51.01	138.59	248.40	.12