



Job Number: SVGJ-140228
 Company: PDC
 Lease/Well: Bay Family Trust 32-1
 Location: Weld County, CO
 Rig Name: MS Slickline
 RKB: 0'
 G.L. or M.S.L.: GL

State/Country: Colorado/USA
 Declination: 8.42°
 Grid: East To True North
 File name: S:\2014SU~1\PDC\GJ\BAYFAM~1\32-1.SVY
 Date/Time: 28-Feb-14 / 16:47
 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	.19	309.75	100.00	.11	-.13	.11	.17	309.75	.19
200.00	.54	249.83	200.00	.05	-.70	.05	.70	274.07	.47
300.00	.40	226.17	299.99	-.35	-1.39	-.35	1.44	255.70	.24
400.00	.33	131.59	399.99	-.79	-1.43	-.79	1.63	241.12	.54
500.00	.60	161.48	499.99	-1.48	-1.05	-1.48	1.81	215.34	.35
600.00	.77	121.13	599.98	-2.32	-.30	-2.32	2.34	187.48	.50
700.00	1.07	130.90	699.97	-3.28	.98	-3.28	3.42	163.41	.34
800.00	1.06	128.36	799.95	-4.46	2.41	-4.46	5.07	151.66	.05
900.00	.62	158.37	899.94	-5.54	3.33	-5.54	6.46	148.98	.61

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	.83	110.90	999.94	-6.30	4.21	-6.30	7.58	146.27	.61
1100.00	.46	156.82	1099.93	-6.93	5.04	-6.93	8.57	143.95	.61
1200.00	.49	116.30	1199.93	-7.49	5.58	-7.49	9.34	143.28	.33
1300.00	.59	184.79	1299.92	-8.19	5.92	-8.19	10.11	144.12	.61
1400.00	.34	161.98	1399.92	-8.99	5.97	-8.99	10.79	146.38	.31
1500.00	.71	152.88	1499.92	-9.82	6.35	-9.82	11.69	147.12	.38
1600.00	.99	166.97	1599.90	-11.21	6.82	-11.21	13.13	148.67	.35
1700.00	.95	179.57	1699.89	-12.88	7.03	-12.88	14.67	151.39	.22
1800.00	1.00	151.16	1799.88	-14.48	7.45	-14.48	16.28	152.76	.48
1900.00	.69	197.70	1899.87	-15.81	7.69	-15.81	17.58	154.07	.73
2000.00	.38	204.74	1999.86	-16.69	7.37	-16.69	18.24	156.18	.32
2100.00	.93	169.55	2099.86	-17.79	7.38	-17.79	19.26	157.47	.66
2200.00	.66	167.50	2199.85	-19.15	7.65	-19.15	20.62	158.22	.27
2300.00	.57	178.06	2299.84	-20.21	7.79	-20.21	21.66	158.92	.14
2400.00	.39	233.83	2399.84	-20.91	7.53	-20.91	22.22	160.19	.48
2500.00	.59	253.41	2499.83	-21.25	6.76	-21.25	22.30	162.34	.26
2600.00	.28	214.90	2599.83	-21.60	6.13	-21.60	22.45	164.15	.41
2700.00	.51	192.92	2699.83	-22.24	5.89	-22.24	23.00	165.16	.27
2800.00	.85	229.83	2799.82	-23.15	5.23	-23.15	23.73	167.28	.54
2900.00	.54	219.73	2899.81	-23.99	4.36	-23.99	24.38	169.70	.33
3000.00	.89	279.15	2999.81	-24.23	3.29	-24.23	24.45	172.27	.77
3100.00	.84	286.90	3099.80	-23.89	1.82	-23.89	23.96	175.64	.13
3200.00	.60	266.46	3199.79	-23.71	.60	-23.71	23.72	178.56	.35
3300.00	.61	240.79	3299.78	-24.00	-.39	-24.00	24.01	180.93	.27
3400.00	1.32	206.36	3399.77	-25.29	-1.37	-25.29	25.33	183.09	.89
3500.00	1.13	181.41	3499.75	-27.31	-1.90	-27.31	27.38	183.98	.56
3600.00	1.69	151.45	3599.72	-29.59	-1.22	-29.59	29.62	182.36	.91
3700.00	1.19	114.19	3699.69	-31.31	.43	-31.31	31.32	179.21	1.03
3800.00	1.10	120.05	3799.67	-32.22	2.21	-32.22	32.30	176.08	.15

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	.92	104.71	3899.65	-32.90	3.82	-32.90	33.12	173.38	.32
4000.00	1.04	116.46	3999.64	-33.51	5.41	-33.51	33.95	170.84	.23
4100.00	1.00	113.50	4099.62	-34.26	7.02	-34.26	34.98	168.42	.07
4200.00	.91	105.34	4199.61	-34.82	8.58	-34.82	35.87	166.15	.16
4300.00	1.33	112.68	4299.59	-35.48	10.42	-35.48	36.98	163.63	.44
4400.00	.82	65.99	4399.57	-35.64	12.15	-35.64	37.65	161.18	.97
4500.00	1.10	81.85	4499.56	-35.21	13.75	-35.21	37.80	158.67	.38
4600.00	1.17	57.19	4599.54	-34.52	15.56	-34.52	37.86	155.74	.49
4700.00	1.33	84.75	4699.52	-33.86	17.57	-33.86	38.15	152.57	.62
4800.00	.66	91.14	4799.50	-33.77	19.30	-33.77	38.89	150.24	.68
4900.00	.78	58.21	4899.49	-33.42	20.46	-33.42	39.18	148.53	.42
5000.00	.42	69.09	4999.49	-32.93	21.38	-32.93	39.26	147.01	.38
5100.00	.62	73.30	5099.48	-32.64	22.24	-32.64	39.50	145.73	.20
5200.00	.02	223.21	5199.48	-32.50	22.74	-32.50	39.67	145.01	.64
5300.00	.40	96.28	5299.48	-32.55	23.08	-32.55	39.90	144.66	.41
5400.00	.67	162.60	5399.48	-33.15	23.60	-33.15	40.69	144.55	.63
5500.00	.14	187.63	5499.47	-33.83	23.76	-33.83	41.34	144.91	.55
5600.00	.91	159.92	5599.47	-34.69	24.02	-34.69	42.20	145.31	.79
5700.00	.66	142.56	5699.46	-35.90	24.64	-35.90	43.54	145.53	.34
5800.00	1.04	132.36	5799.45	-36.97	25.66	-36.97	45.00	145.23	.41
5900.00	.49	147.20	5899.44	-37.94	26.56	-37.94	46.31	145.00	.58
6000.00	.61	186.98	5999.43	-38.82	26.73	-38.82	47.14	145.45	.39
6100.00	.45	228.92	6099.43	-39.61	26.37	-39.61	47.58	146.35	.41
6200.00	.66	317.73	6199.43	-39.44	25.69	-39.44	47.07	146.93	.79
6300.00	.16	279.48	6299.42	-38.99	25.16	-38.99	46.41	147.17	.54
6400.00	.51	4.64	6399.42	-38.53	25.06	-38.53	45.96	146.96	.52
6500.00	.70	355.01	6499.42	-37.47	25.04	-37.47	45.07	146.25	.21
6600.00	.95	310.56	6599.41	-36.33	24.36	-36.33	43.74	146.16	.67
6700.00	1.27	322.88	6699.39	-34.90	23.06	-34.90	41.83	146.55	.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	.99	316.68	6799.37	-33.39	21.80	-33.39	39.88	146.86	.31