



Job Number: SVGJ-141404  
 Company: PDC  
 Lease/Well: Henry 5-2  
 Location: Weld County, CO  
 Rig Name: MS Energy Wireline  
 RKB: 0'  
 G.L. or M.S.L.: GL

State/Country: Colorado/USA  
 Declination: 8.35°  
 Grid: East To True North  
 File name: S:\2014SU-1\PDC\GJ\HENRY\52.SVY  
 Date/Time: 17-Dec-14 / 10:44  
 Curve Name: Surface - 7000' 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*

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	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.23	269.73	100.00	.00	-.20	.00	.20	269.73	.23
200.00	.11	257.43	200.00	-.02	-.50	-.02	.50	267.37	.12
300.00	.08	279.49	300.00	-.03	-.66	-.03	.66	267.20	.05
400.00	.18	272.91	400.00	-.01	-.88	-.01	.88	269.18	.10
500.00	.25	272.73	500.00	.01	-1.26	.01	1.26	270.26	.07
600.00	.35	265.29	600.00	-.01	-1.78	-.01	1.78	269.71	.11
700.00	.34	247.54	699.99	-.15	-2.36	-.15	2.36	266.42	.11
800.00	.45	268.23	799.99	-.27	-3.03	-.27	3.04	264.85	.18
900.00	.58	265.47	899.99	-.33	-3.92	-.33	3.94	265.26	.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	
1000.00	.57	282.90	999.98	-.25	-4.91	-.25	4.92	267.04	.17
1100.00	.73	295.85	1099.98	.13	-5.97	.13	5.97	271.29	.22
1200.00	.86	302.65	1199.97	.82	-7.18	.82	7.22	276.50	.16
1300.00	.80	294.18	1299.96	1.51	-8.44	1.51	8.58	280.13	.14
1400.00	.82	297.93	1399.95	2.13	-9.71	2.13	9.94	282.37	.06
1500.00	.79	309.25	1499.94	2.90	-10.88	2.90	11.26	284.93	.16
1600.00	.81	310.63	1599.93	3.80	-11.95	3.80	12.54	287.63	.03
1700.00	.87	302.44	1699.92	4.66	-13.13	4.66	13.93	289.56	.13
1800.00	.75	293.22	1799.91	5.33	-14.37	5.33	15.33	290.35	.18
1900.00	.68	305.40	1899.90	5.93	-15.45	5.93	16.55	291.00	.17
2000.00	.53	277.06	1999.89	6.33	-16.40	6.33	17.58	291.12	.33
2100.00	.32	259.56	2099.89	6.34	-17.13	6.34	18.27	290.31	.24
2200.00	.34	258.52	2199.89	6.23	-17.70	6.23	18.76	289.39	.02
2300.00	.33	255.25	2299.89	6.10	-18.27	6.10	19.26	288.46	.02
2400.00	.43	254.66	2399.89	5.92	-18.91	5.92	19.81	287.40	.10
2500.00	.46	241.73	2499.88	5.63	-19.62	5.63	20.41	286.02	.10
2600.00	.47	223.92	2599.88	5.15	-20.26	5.15	20.90	284.26	.14
2700.00	.43	240.55	2699.88	4.67	-20.87	4.67	21.39	282.61	.14
2800.00	.60	232.50	2799.87	4.17	-21.61	4.17	22.01	280.91	.18
2900.00	.54	242.68	2899.87	3.63	-22.45	3.63	22.74	279.19	.12
3000.00	.66	244.43	2999.86	3.17	-23.38	3.17	23.60	277.71	.12
3100.00	.71	231.99	3099.85	2.54	-24.39	2.54	24.52	275.94	.16
3200.00	.63	231.77	3199.85	1.81	-25.31	1.81	25.38	274.10	.08
3300.00	.31	253.09	3299.84	1.40	-26.00	1.40	26.04	273.07	.36
3400.00	.10	2.77	3399.84	1.40	-26.26	1.40	26.30	273.06	.36
3500.00	.27	48.37	3499.84	1.65	-26.08	1.65	26.13	273.61	.21
3600.00	.23	29.10	3599.84	1.98	-25.80	1.98	25.88	274.39	.09
3700.00	.13	72.06	3699.84	2.19	-25.60	2.19	25.69	274.89	.16
3800.00	.24	79.42	3799.84	2.26	-25.28	2.26	25.39	275.11	.11

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	.33	71.40	3899.84	2.39	-24.81	2.39	24.92	275.51	.10
4000.00	.31	55.22	3999.84	2.64	-24.31	2.64	24.45	276.20	.09
4100.00	.42	75.36	4099.84	2.89	-23.73	2.89	23.91	276.93	.17
4200.00	.44	62.23	4199.83	3.16	-23.04	3.16	23.25	277.80	.10
4300.00	.44	53.59	4299.83	3.56	-22.39	3.56	22.67	279.05	.07
4400.00	.35	47.73	4399.83	4.00	-21.86	4.00	22.22	280.37	.10
4500.00	.41	57.87	4499.83	4.39	-21.33	4.39	21.77	281.64	.09
4600.00	.39	67.74	4599.82	4.71	-20.71	4.71	21.24	282.82	.07
4700.00	.54	69.38	4699.82	5.01	-19.95	5.01	20.57	284.09	.15
4800.00	.63	74.39	4799.82	5.32	-18.98	5.32	19.71	285.66	.10
4900.00	.50	86.41	4899.81	5.50	-18.02	5.50	18.84	286.97	.18
5000.00	.59	89.96	4999.81	5.52	-17.07	5.52	17.94	287.94	.10
5100.00	.70	106.79	5099.80	5.35	-15.97	5.35	16.84	288.52	.22
5200.00	.73	110.03	5199.79	4.95	-14.78	4.95	15.59	288.53	.05
5300.00	.67	120.66	5299.78	4.44	-13.68	4.44	14.38	287.97	.14
5400.00	.77	127.37	5399.78	3.73	-12.65	3.73	13.18	286.44	.13
5500.00	.84	138.39	5499.77	2.78	-11.62	2.78	11.95	283.43	.17
5600.00	.73	159.78	5599.76	1.63	-10.92	1.63	11.04	278.49	.31
5700.00	.64	166.39	5699.75	.49	-10.57	.49	10.58	272.65	.12
5800.00	.57	168.01	5799.74	-.54	-10.33	-.54	10.35	267.01	.07
5900.00	.72	112.70	5899.74	-1.27	-9.65	-1.27	9.73	262.51	.61
6000.00	1.05	104.65	5999.73	-1.74	-8.18	-1.74	8.37	257.97	.35
6100.00	1.65	112.23	6099.70	-2.52	-5.96	-2.52	6.47	247.09	.62
6200.00	1.99	116.08	6199.65	-3.83	-3.07	-3.83	4.91	218.74	.36
6300.00	1.56	108.87	6299.60	-5.03	-.22	-5.03	5.04	182.54	.48
6400.00	1.02	134.91	6399.58	-6.10	1.70	-6.10	6.33	164.47	.78
6500.00	1.03	191.30	6499.56	-7.61	2.15	-7.61	7.91	164.23	.97
6600.00	1.20	210.83	6599.54	-9.39	1.44	-9.39	9.50	171.30	.41
6700.00	1.53	227.98	6699.52	-11.18	-.09	-11.18	11.18	180.47	.52

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	2.08	244.36	6799.47	-12.86	-2.72	-12.86	13.15	191.94	.75
6900.00	1.79	257.93	6899.41	-13.97	-5.88	-13.97	15.16	202.83	.54
Last Survey Depth Recorded									
7000.00	1.41	266.99	6999.37	-14.36	-8.64	-14.36	16.76	211.02	.46