



Job Number: SVGJ-120865  
 Company: PDC  
 Lease/Well: Two E Ranch 1-11  
 Location: Weld County, CO  
 Rig Name: Production  
 RKB: 0'  
 G.L. or M.S.L.: GL

State/Country: Colorado/USA  
 Declination: 8.55°  
 Grid: East To True North  
 File name: F:\SURVEY\2012SU~1\PDC\LORENZ\TWOERA~1\1-11.SVY  
 Date/Time: 07-Sep-12 / 10:35  
 Curve Name: Surface - 6830' M.D. (Rate Gyro)

WINSERVE SURVEY CALCULATIONS  
 Minimum Curvature Method  
 Vertical Section Plane .00  
 Vertical Section Referenced to Wellhead  
 Rectangular Coordinates Referenced to Wellhead

We hereby certify that our survey data from  
 Surface MD to 6,830 MD is, to the best of  
 our knowledge a true and accurate account of  
 the well bore.  
 Alan Hart 9/7/12  
 MS Energy Services Date

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
100.00	.24	90.70	100.00	.00	.21	.00	.21	90.70	.24
200.00	.32	44.52	200.00	.19	.61	.19	.64	72.48	.23
300.00	.29	41.46	300.00	.58	.98	.58	1.14	59.21	.03
400.00	.43	43.37	400.00	1.05	1.40	1.05	1.75	53.32	.14
500.00	.49	32.73	499.99	1.68	1.89	1.68	2.53	48.44	.10
600.00	.37	38.11	599.99	2.29	2.32	2.29	3.26	45.39	.13
700.00	.43	38.05	699.99	2.84	2.75	2.84	3.96	44.10	.06
800.00	.37	36.74	799.98	3.40	3.18	3.40	4.65	43.10	.06
900.00	.31	23.76	899.98	3.90	3.48	3.90	5.23	41.73	.10

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	.09	116.24	999.98	4.11	3.66	4.11	5.51	41.65	.33
1100.00	.03	92.55	1099.98	4.08	3.76	4.08	5.54	42.64	.06
1200.00	.11	149.81	1199.98	3.99	3.83	3.99	5.53	43.80	.10
1300.00	.16	217.86	1299.98	3.80	3.79	3.80	5.37	44.94	.16
1400.00	.20	261.97	1399.98	3.67	3.53	3.67	5.09	43.95	.14
1500.00	.18	264.17	1499.98	3.63	3.21	3.63	4.84	41.47	.02
1600.00	.15	256.94	1599.98	3.58	2.92	3.58	4.62	39.21	.04
1700.00	.27	245.21	1699.98	3.45	2.58	3.45	4.31	36.77	.13
1800.00	.21	295.00	1799.98	3.43	2.20	3.43	4.08	32.67	.21
1900.00	.18	340.87	1899.98	3.66	1.98	3.66	4.16	28.46	.15
2000.00	.13	343.09	1999.98	3.91	1.90	3.91	4.35	25.87	.05
2100.00	.21	332.42	2099.98	4.18	1.78	4.18	4.55	23.04	.09
2200.00	.26	320.83	2199.98	4.52	1.55	4.52	4.78	18.94	.07
2300.00	.40	294.90	2299.97	4.85	1.09	4.85	4.97	12.70	.20
2400.00	.46	274.83	2399.97	5.03	.38	5.03	5.04	4.27	.16
2500.00	.52	256.91	2499.97	4.96	-.47	4.96	4.98	354.62	.16
2600.00	.57	249.99	2599.96	4.68	-1.38	4.68	4.88	343.63	.08
2700.00	.58	252.67	2699.96	4.36	-2.33	4.36	4.95	331.94	.03
2800.00	.58	246.03	2799.95	4.01	-3.27	4.01	5.17	320.77	.07
2900.00	.47	240.47	2899.95	3.60	-4.09	3.60	5.45	311.34	.12
3000.00	.49	235.03	2999.95	3.15	-4.80	3.15	5.74	303.30	.05
3100.00	.44	240.18	3099.94	2.72	-5.48	2.72	6.12	296.36	.07
3200.00	.35	240.48	3199.94	2.37	-6.08	2.37	6.53	291.33	.09
3300.00	.40	282.75	3299.94	2.30	-6.69	2.30	7.07	288.99	.27
3400.00	.30	273.71	3399.94	2.40	-7.29	2.40	7.67	288.19	.11
3500.00	.39	284.90	3499.93	2.50	-7.88	2.50	8.27	287.60	.11
3600.00	.61	280.68	3599.93	2.69	-8.73	2.69	9.14	287.10	.22
3700.00	.79	282.43	3699.92	2.93	-9.93	2.93	10.35	286.46	.18
3800.00	.80	279.22	3799.91	3.19	-11.29	3.19	11.73	285.79	.05

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	.88	268.30	3899.90	3.28	-12.75	3.28	13.16	284.44	.18
4000.00	1.22	236.52	3999.89	2.67	-14.40	2.67	14.65	280.51	.66
4100.00	1.45	227.93	4099.86	1.24	-16.23	1.24	16.28	274.36	.30
4200.00	1.56	239.47	4199.83	-.30	-18.34	-.30	18.34	269.06	.32
4300.00	2.37	255.24	4299.77	-1.52	-21.51	-1.52	21.57	265.96	.97
4400.00	3.56	261.39	4399.63	-2.51	-26.58	-2.51	26.70	264.60	1.23
4500.00	2.20	264.45	4499.50	-3.16	-31.56	-3.16	31.72	264.28	1.37
4600.00	1.13	256.01	4599.46	-3.59	-34.43	-3.59	34.62	264.05	1.09
4700.00	1.34	246.67	4699.44	-4.29	-36.46	-4.29	36.71	263.29	.29
4800.00	1.50	254.14	4799.41	-5.11	-38.79	-5.11	39.13	262.50	.24
4900.00	1.95	247.28	4899.36	-6.12	-41.62	-6.12	42.07	261.63	.49
5000.00	2.13	252.30	4999.30	-7.35	-44.96	-7.35	45.56	260.72	.25
5100.00	2.55	258.54	5099.21	-8.35	-48.91	-8.35	49.62	260.31	.49
5200.00	2.59	266.84	5199.11	-8.92	-53.35	-8.92	54.09	260.51	.37
5300.00	2.18	277.01	5299.03	-8.81	-57.49	-8.81	58.16	261.29	.59
5400.00	1.79	278.14	5398.97	-8.36	-60.93	-8.36	61.50	262.19	.39
5500.00	1.39	286.47	5498.93	-7.79	-63.63	-7.79	64.11	263.02	.46
5600.00	1.12	288.38	5598.90	-7.14	-65.73	-7.14	66.11	263.80	.27
5700.00	1.10	283.03	5698.88	-6.62	-67.59	-6.62	67.91	264.41	.11
5800.00	1.15	280.58	5798.87	-6.22	-69.51	-6.22	69.79	264.89	.07
5900.00	1.09	291.29	5898.85	-5.69	-71.38	-5.69	71.61	265.45	.22
6000.00	.89	304.95	5998.83	-4.90	-72.91	-4.90	73.07	266.16	.31
6100.00	.75	328.71	6098.82	-3.89	-73.88	-3.89	73.98	266.98	.36
6200.00	.57	313.43	6198.82	-2.99	-74.58	-2.99	74.64	267.70	.25
6300.00	.60	328.60	6298.81	-2.20	-75.22	-2.20	75.25	268.32	.16
6400.00	.60	340.68	6398.80	-1.26	-75.66	-1.26	75.67	269.05	.13
6500.00	.41	308.67	6498.80	-.54	-76.12	-.54	76.12	269.59	.33
6600.00	.51	321.29	6598.80	.03	-76.67	.03	76.67	270.02	.14
6700.00	.61	4.03	6698.79	.91	-76.91	.91	76.92	270.68	.42



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	.47	4.84	6798.79	1.85	-76.84	1.85	76.86	271.38	.14
Last Survey Depth Recorded									
6830.00	.63	22.97	6828.79	2.12	-76.77	2.12	76.80	271.58	.78