



Job Number: SVGJ-141405
 Company: PDC
 Lease/Well: Lee 1-5
 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: Y:\WINSER~1\2014SU~1\PDC\GJ\LEE\15.SVY
 Date/Time: 17-Dec-14 / 09:43
 Curve Name: Surface - 6700' 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	.16	218.37	100.00	-.11	-.09	-.11	.14	218.37	.16
200.00	.25	206.35	200.00	-.41	-.27	-.41	.49	213.10	.10
300.00	.26	214.58	300.00	-.80	-.50	-.80	.94	211.89	.04
400.00	.21	202.75	400.00	-1.15	-.70	-1.15	1.35	211.11	.07
500.00	.17	211.01	500.00	-1.45	-.84	-1.45	1.68	210.19	.05
600.00	.18	221.32	600.00	-1.69	-1.02	-1.69	1.98	211.13	.03
700.00	.18	225.34	700.00	-1.92	-1.24	-1.92	2.29	212.79	.01
800.00	.14	226.98	800.00	-2.12	-1.44	-2.12	2.56	214.22	.04
900.00	.14	219.04	900.00	-2.29	-1.61	-2.29	2.80	214.99	.02

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	.17	201.90	999.99	-2.53	-1.74	-2.53	3.07	214.52	.05
1100.00	.07	163.07	1099.99	-2.72	-1.78	-2.72	3.25	213.11	.12
1200.00	.13	54.62	1199.99	-2.72	-1.67	-2.72	3.19	211.52	.17
1300.00	.15	47.84	1299.99	-2.56	-1.48	-2.56	2.96	209.94	.03
1400.00	.19	35.62	1399.99	-2.34	-1.28	-2.34	2.67	208.72	.05
1500.00	.15	14.09	1499.99	-2.08	-1.15	-2.08	2.38	209.04	.07
1600.00	.04	.66	1599.99	-1.92	-1.12	-1.92	2.22	210.34	.11
1700.00	.05	235.29	1699.99	-1.91	-1.16	-1.91	2.23	211.26	.08
1800.00	.09	133.99	1799.99	-1.99	-1.14	-1.99	2.29	209.78	.11
1900.00	.10	117.54	1899.99	-2.08	-1.00	-2.08	2.31	205.73	.03
2000.00	.06	71.54	1999.99	-2.10	-.88	-2.10	2.28	202.59	.07
2100.00	.11	349.28	2099.99	-1.99	-.84	-1.99	2.16	202.94	.12
2200.00	.09	305.18	2199.99	-1.85	-.93	-1.85	2.07	206.54	.08
2300.00	.25	328.27	2299.99	-1.62	-1.10	-1.62	1.96	214.24	.17
2400.00	.35	328.72	2399.99	-1.18	-1.38	-1.18	1.81	229.52	.10
2500.00	.40	330.69	2499.99	-.61	-1.71	-.61	1.81	250.32	.05
2600.00	.56	303.48	2599.99	-.04	-2.29	-.04	2.29	269.08	.27
2700.00	.85	288.30	2699.98	.47	-3.40	.47	3.43	277.81	.34
2800.00	.92	282.92	2799.97	.88	-4.88	.88	4.96	280.19	.11
2900.00	.90	280.61	2899.95	1.20	-6.44	1.20	6.55	280.58	.04
3000.00	.74	287.51	2999.94	1.54	-7.83	1.54	7.98	281.14	.19
3100.00	.52	305.57	3099.94	2.00	-8.81	2.00	9.04	282.79	.29
3200.00	.42	336.10	3199.93	2.60	-9.33	2.60	9.68	285.57	.27
3300.00	.43	3.19	3299.93	3.31	-9.46	3.31	10.02	289.28	.20
3400.00	.76	31.19	3399.93	4.25	-9.09	4.25	10.04	295.05	.43
3500.00	.91	39.86	3499.92	5.43	-8.24	5.43	9.87	303.37	.20
3600.00	.99	43.79	3599.90	6.66	-7.13	6.66	9.76	313.04	.10
3700.00	1.01	39.85	3699.89	7.96	-5.97	7.96	9.95	323.13	.07
3800.00	1.10	41.39	3799.87	9.36	-4.77	9.36	10.50	332.98	.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	
3900.00	1.13	35.79	3899.85	10.88	-3.56	10.88	11.45	341.88	.11
4000.00	.91	40.03	3999.83	12.29	-2.47	12.29	12.53	348.62	.23
4100.00	.69	52.19	4099.82	13.26	-1.49	13.26	13.35	353.61	.28
4200.00	.52	64.37	4199.82	13.83	-.60	13.83	13.84	357.51	.21
4300.00	.30	82.54	4299.82	14.06	.07	14.06	14.06	.28	.25
4400.00	.32	91.54	4399.82	14.08	.61	14.08	14.10	2.47	.05
4500.00	.30	94.46	4499.81	14.06	1.15	14.06	14.10	4.66	.03
4600.00	.29	69.59	4599.81	14.12	1.64	14.12	14.22	6.64	.13
4700.00	.63	72.12	4699.81	14.38	2.41	14.38	14.58	9.49	.34
4800.00	.93	68.57	4799.80	14.85	3.68	14.85	15.30	13.93	.30
4900.00	1.09	78.77	4899.78	15.33	5.37	15.33	16.24	19.31	.24
5000.00	1.07	69.41	4999.77	15.84	7.18	15.84	17.39	24.38	.18
5100.00	1.00	64.76	5099.75	16.54	8.84	16.54	18.76	28.13	.11
5200.00	.82	64.64	5199.74	17.22	10.28	17.22	20.06	30.83	.18
5300.00	.85	59.80	5299.73	17.90	11.57	17.90	21.31	32.87	.08
5400.00	.78	53.21	5399.72	18.68	12.75	18.68	22.62	34.32	.12
5500.00	.59	39.63	5499.71	19.49	13.63	19.49	23.78	34.96	.25
5600.00	.80	36.94	5599.70	20.44	14.37	20.44	24.99	35.11	.21
5700.00	.99	58.52	5699.69	21.45	15.53	21.45	26.48	35.91	.38
5800.00	1.39	77.11	5799.67	22.17	17.45	22.17	28.21	38.20	.55
5900.00	1.68	66.41	5899.63	23.03	19.97	23.03	30.48	40.94	.41
6000.00	1.87	65.74	5999.58	24.29	22.81	24.29	33.31	43.20	.19
6100.00	1.40	82.14	6099.54	25.12	25.50	25.12	35.80	45.43	.66
6200.00	1.16	104.83	6199.52	25.03	27.69	25.03	37.33	47.89	.56
6300.00	.97	133.20	6299.50	24.19	29.29	24.19	37.99	50.44	.55
6400.00	.98	142.03	6399.49	22.94	30.43	22.94	38.11	52.99	.15
6500.00	1.19	154.34	6499.47	21.33	31.41	21.33	37.96	55.82	.31
6600.00	1.15	171.74	6599.45	19.40	32.00	19.40	37.42	58.77	.36

Last Survey Depth Recorded

6700.00	1.07	183.52	6699.43	17.47	32.09	17.47	36.54	61.43	.24
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