



**SUMMIT**  
SLICKLINE INC.

**Company:** PDC Energy  
**Lease / Well:** OLSON 29-21  
**County/Parish:** WELD 123  
**State:** COLORADO  
**Date:** 9/21/2016  
**Rig:** NA  
**Surveyor:** JOHNNY RIDDLE  
**Job Number:** 3001-05123-20198  
**Instrument Number:** 3123 **Type:** MEMORY  
**Proposed Direction:** 0 **GL Elev:** 4937  
**Magnetic Declination** 9.82 EAST TO TRUE NORTH  
**Calulation Method:** MINIMUM OF CURVATURE  
**Log Measured From:** GL

**TIE-IN Coordinates**

Measured Depth (ft.)	Inclination	Azimuth Bearing	Vertical Depth	Coordinates	
				(+N/-S)	(+E/-W)
0	0.00	0.00	0.00	0.00	0.00

**Directional Survey Report**

Measured Depth (ft.)	Inclination	Azimuth Bearing	Vertical Depth	Vertical Section	Coordinates (+N/-S)	Coordinates (+E/-W)	Dog-Leg / 100 ft.	Closure Distance	Closure Direction
100	0.05	25.25	100.00	0.04	0.04	0.02	0.05	0.04	25.25°
200	0.29	226.94	200.00	-0.09	-0.09	-0.15	0.34	0.17	237.56°
300	0.24	286.83	300.00	-0.21	-0.21	-0.53	0.27	0.57	248.87°
400	0.42	220.26	400.00	-0.43	-0.43	-0.97	0.39	1.06	246.34°
500	0.63	198.94	499.99	-1.22	-1.22	-1.39	0.28	1.85	228.53°
600	0.62	196.72	599.99	-2.26	-2.26	-1.72	0.03	2.84	217.23°
700	0.61	202.68	699.98	-3.27	-3.27	-2.08	0.06	3.88	212.45°
800	0.69	219.63	799.98	-4.23	-4.23	-2.67	0.21	5.00	212.28°
900	0.89	242.22	899.97	-5.05	-5.05	-3.74	0.37	6.29	216.52°
1000	1.00	259.17	999.95	-5.58	-5.58	-5.29	0.30	7.68	223.45°
1100	0.92	271.18	1099.94	-5.73	-5.73	-6.95	0.22	9.00	230.49°
1200	0.85	276.40	1199.93	-5.63	-5.63	-8.48	0.11	10.18	236.45°
1300	1.05	277.87	1299.91	-5.42	-5.42	-10.13	0.20	11.49	241.86°
1400	0.96	283.73	1399.90	-5.09	-5.09	-11.85	0.14	12.90	246.74°
1500	1.08	277.42	1499.88	-4.77	-4.77	-13.60	0.16	14.41	250.66°
1600	1.12	282.21	1599.86	-4.45	-4.45	-15.49	0.10	16.11	253.99°
1700	1.39	293.91	1699.84	-3.75	-3.75	-17.55	0.37	17.95	257.95°
1800	1.31	314.10	1799.81	-2.46	-2.46	-19.48	0.48	19.64	262.80°
1900	1.33	309.92	1899.79	-0.92	-0.92	-21.19	0.10	21.21	267.51°
2000	1.25	310.43	1999.76	0.53	0.53	-22.91	0.08	22.92	271.33°
2100	1.19	311.65	2099.74	1.93	1.93	-24.52	0.07	24.60	274.50°
2200	1.26	326.34	2199.71	3.53	3.53	-25.91	0.32	26.15	277.77°
2300	1.22	311.68	2299.69	5.16	5.16	-27.31	0.32	27.79	280.69°
2400	0.86	327.66	2399.68	6.50	6.50	-28.51	0.46	29.24	282.84°
2500	1.16	320.95	2499.66	7.92	7.92	-29.55	0.32	30.59	285.01°
2600	0.88	318.09	2599.64	9.28	9.28	-30.70	0.28	32.07	286.82°
2700	1.09	329.09	2699.63	10.67	10.67	-31.70	0.28	33.44	288.60°
2800	0.69	340.48	2799.62	12.05	12.05	-32.39	0.44	34.56	290.41°
2900	1.09	3.60	2899.60	13.57	13.57	-32.53	0.53	35.24	292.64°
3000	0.88	353.69	2999.59	15.28	15.28	-32.55	0.27	35.96	295.14°
3100	1.01	30.48	3099.58	16.80	16.80	-32.19	0.61	36.31	297.56°
3200	0.77	38.79	3199.57	18.08	18.08	-31.32	0.27	36.17	300.00°
3300	0.89	50.20	3299.55	19.10	19.10	-30.31	0.20	35.82	302.23°
3400	0.79	4.05	3399.55	20.29	20.29	-29.66	0.66	35.94	304.37°
3500	1.01	15.23	3499.53	21.83	21.83	-29.38	0.28	36.60	306.61°
3600	0.88	354.24	3599.52	23.44	23.44	-29.23	0.37	37.47	308.73°
3700	1.00	11.12	3699.51	25.06	25.06	-29.13	0.30	38.43	310.70°
3800	0.51	0.82	3799.50	26.36	26.36	-28.96	0.51	39.16	312.31°
3900	0.82	14.86	3899.49	27.50	27.50	-28.77	0.35	39.80	313.71°
4000	0.68	32.64	3999.48	28.69	28.69	-28.27	0.27	40.28	315.43°
4100	1.06	43.23	4099.47	29.87	29.87	-27.31	0.41	40.47	317.56°
4200	1.47	58.25	4199.45	31.21	31.21	-25.59	0.52	40.36	320.66°
4300	1.33	39.06	4299.42	32.79	32.79	-23.77	0.49	40.50	324.07°
4400	1.64	44.76	4399.38	34.71	34.71	-22.03	0.34	41.11	327.60°
4500	1.57	51.33	4499.34	36.58	36.58	-19.95	0.20	41.67	331.39°
4600	1.56	36.77	4599.31	38.53	38.53	-18.07	0.40	42.55	334.88°
4700	1.62	49.43	4699.27	40.54	40.54	-16.18	0.36	43.64	338.24°
4800	1.24	59.23	4799.24	42.01	42.01	-14.17	0.45	44.34	341.36°

Directional Survey Report									
Measured Depth (ft.)	Inclination	Azimuth Bearing	Vertical Depth	Vertical Section	Coordinates (+N/-S) (+E/-W)		Dog-Leg / 100 ft.	Closure Distance	Closure Direction
4900	0.61	51.52	4899.22	42.89	42.89	-12.83	0.64	44.77	343.35°
5000	0.38	33.43	4999.22	43.50	43.50	-12.23	0.28	45.19	344.30°
5100	0.49	19.97	5099.22	44.18	44.18	-11.90	0.15	45.75	344.93°
5200	0.43	23.85	5199.21	44.93	44.93	-11.60	0.07	46.40	345.52°
5300	0.30	347.55	5299.21	45.52	45.52	-11.51	0.26	46.96	345.82°
5400	0.29	299.15	5399.21	45.90	45.90	-11.78	0.24	47.39	345.60°
5500	0.48	255.26	5499.21	45.92	45.92	-12.41	0.34	47.57	344.88°
5600	0.22	129.24	5599.21	45.69	45.69	-12.67	0.63	47.41	344.51°
5700	0.20	117.91	5699.21	45.49	45.49	-12.36	0.05	47.14	344.79°
5800	0.24	149.39	5799.21	45.23	45.23	-12.10	0.13	46.82	345.02°
5900	0.33	145.27	5899.21	44.81	44.81	-11.83	0.09	46.35	345.21°
6000	0.23	127.58	5999.20	44.45	44.45	-11.51	0.13	45.92	345.48°
6100	0.32	274.17	6099.20	44.35	44.35	-11.63	0.53	45.85	345.31°
6200	0.52	308.79	6199.20	44.65	44.65	-12.26	0.31	46.31	344.65°
6300	0.79	318.78	6299.19	45.46	45.46	-13.07	0.29	47.30	343.96°
6400	0.81	319.19	6399.18	46.51	46.51	-13.98	0.02	48.57	343.27°
6500	0.47	120.12	6499.18	46.84	46.84	-14.09	1.26	48.91	343.26°
6600	1.06	236.72	6599.18	46.13	46.13	-14.51	1.34	48.35	342.54°
6700	0.49	5.72	6699.17	46.04	46.04	-15.24	1.42	48.50	341.68°
6800	1.01	207.01	6799.17	45.68	45.68	-15.60	1.48	48.27	341.15°
6900	0.95	158.33	6899.15	44.13	44.13	-15.69	0.81	46.83	340.42°
7000	0.74	298.19	6999.15	43.66	43.66	-15.96	1.59	46.49	339.93°
7100	1.06	137.06	7099.14	43.29	43.29	-15.89	1.78	46.12	339.84°
7200	1.09	128.57	7199.13	42.02	42.02	-14.52	0.16	44.46	340.94°
7250	1.48	166.08	7249.12	41.10	41.10	-13.99	1.81	43.41	341.20°

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