



SUMMIT
SLICKLINE INC.

Company: PDC ENERGY
Lease / Well: WARREN 10-1 RUN 2 API 5123-11483
County/Parish: WELD 123
State: COLORADO
Date: 12/29/2016
Rig: NA
Surveyor: SHON LANE
Job Number: 5123-11483
Instrument Number: 3123 **Type:** MEMORY
Proposed Direction: 0 **GL Elev:** 4945
Magnetic Declination 9.78 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	0.53	304.84	100.00	0.26	0.26	-0.38	0.53	0.46	304.84°
200	0.15	295.94	200.00	0.59	0.59	-0.88	0.38	1.05	303.74°
300	0.50	317.63	299.99	0.97	0.97	-1.29	0.36	1.61	306.84°
400	0.54	284.18	399.99	1.40	1.40	-2.04	0.30	2.48	304.53°
500	0.21	326.58	499.99	1.67	1.67	-2.60	0.41	3.09	302.76°
600	0.40	318.07	599.99	2.08	2.08	-2.93	0.19	3.60	305.41°
700	0.49	287.01	699.98	2.47	2.47	-3.57	0.25	4.34	304.64°
800	0.20	324.89	799.98	2.74	2.74	-4.08	0.35	4.92	303.83°
900	0.28	331.30	899.98	3.09	3.09	-4.30	0.08	5.30	305.73°
1000	0.19	274.48	999.98	3.32	3.32	-4.58	0.24	5.66	305.93°
1100	0.49	307.93	1099.98	3.60	3.60	-5.09	0.35	6.23	305.27°
1200	0.44	262.10	1199.98	3.81	3.81	-5.80	0.37	6.94	303.26°
1300	0.12	288.80	1299.98	3.79	3.79	-6.28	0.34	7.34	301.09°
1400	0.25	315.80	1399.97	3.98	3.98	-6.53	0.15	7.65	301.33°
1500	0.40	325.09	1499.97	4.42	4.42	-6.89	0.16	8.18	302.70°
1600	0.41	323.66	1599.97	5.00	5.00	-7.30	0.01	8.84	304.39°
1700	0.69	325.17	1699.97	5.78	5.78	-7.85	0.28	9.75	306.34°
1800	0.80	350.50	1799.96	6.96	6.96	-8.31	0.34	10.84	309.94°
1900	0.78	358.23	1899.95	8.33	8.33	-8.45	0.11	11.86	314.59°
2000	0.72	355.42	1999.94	9.64	9.64	-8.52	0.07	12.86	318.52°
2100	0.59	355.76	2099.93	10.78	10.78	-8.61	0.13	13.79	321.38°
2200	0.54	356.30	2199.93	11.76	11.76	-8.68	0.05	14.61	323.58°
2300	0.46	350.00	2299.92	12.63	12.63	-8.78	0.10	15.38	325.19°
2400	0.47	329.90	2399.92	13.38	13.38	-9.05	0.16	16.15	325.91°
2500	0.44	310.98	2499.92	13.98	13.98	-9.55	0.15	16.93	325.67°
2600	0.51	296.43	2599.91	14.43	14.43	-10.24	0.14	17.69	324.65°
2700	0.53	262.76	2699.91	14.57	14.57	-11.09	0.30	18.31	322.72°
2800	0.84	245.52	2799.90	14.21	14.21	-12.22	0.37	18.74	319.31°
2900	1.13	258.55	2899.89	13.71	13.71	-13.85	0.36	19.49	314.70°
3000	1.10	272.19	2999.87	13.55	13.55	-15.78	0.27	20.80	310.66°
3100	1.03	286.58	3099.85	13.84	13.84	-17.60	0.28	22.39	308.19°
3200	0.94	288.01	3199.84	14.35	14.35	-19.24	0.09	24.01	306.72°
3300	0.72	291.89	3299.83	14.84	14.84	-20.60	0.23	25.39	305.77°
3400	0.61	281.72	3399.82	15.18	15.18	-21.71	0.16	26.49	304.97°
3500	0.72	268.57	3499.81	15.28	15.28	-22.86	0.19	27.49	303.76°
3600	0.92	263.61	3599.80	15.17	15.17	-24.28	0.21	28.63	302.00°
3700	1.10	267.71	3699.79	15.04	15.04	-26.04	0.19	30.07	300.02°
3800	1.12	267.48	3799.77	14.96	14.96	-27.98	0.02	31.73	298.14°
3900	1.08	271.53	3899.75	14.95	14.95	-29.89	0.09	33.42	296.56°
4000	1.17	279.17	3999.73	15.13	15.13	-31.84	0.17	35.26	295.42°
4100	1.36	278.12	4099.71	15.46	15.46	-34.03	0.19	37.38	294.44°
4200	1.51	280.78	4199.68	15.88	15.88	-36.50	0.16	39.80	293.51°
4300	1.51	282.68	4299.64	16.41	16.41	-39.08	0.05	42.38	292.78°
4400	1.61	286.82	4399.60	17.11	17.11	-41.71	0.15	45.08	292.30°
4500	1.45	301.03	4499.57	18.17	18.17	-44.14	0.41	47.73	292.37°
4600	1.28	304.97	4599.54	19.46	19.46	-46.13	0.19	50.07	292.87°
4700	1.63	299.99	4699.51	20.81	20.81	-48.28	0.37	52.58	293.32°
4800	1.07	302.61	4799.48	22.02	22.02	-50.30	0.56	54.91	293.65°

Directional Survey Report									
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4900	0.86	301.52	4899.47	22.92	22.92	-51.73	0.21	56.58	293.90°
5000	0.73	300.04	4999.46	23.63	23.63	-52.92	0.13	57.95	294.06°
5100	0.61	302.94	5099.45	24.24	24.24	-53.92	0.12	59.11	294.21°
5200	0.53	295.77	5199.44	24.73	24.73	-54.78	0.11	60.10	294.30°
5300	0.54	290.55	5299.44	25.10	25.10	-55.64	0.05	61.04	294.28°
5400	0.57	275.91	5399.44	25.31	25.31	-56.57	0.14	61.98	294.11°
5500	0.63	287.59	5499.43	25.53	25.53	-57.59	0.14	63.00	293.91°
5600	0.52	280.58	5599.42	25.78	25.78	-58.56	0.13	63.99	293.76°
5700	0.51	286.99	5699.42	25.99	25.99	-59.43	0.06	64.87	293.62°
5800	0.46	284.75	5799.42	26.23	26.23	-60.25	0.05	65.71	293.52°
5900	0.23	94.91	5899.42	26.31	26.31	-60.44	0.69	65.91	293.53°
6000	0.40	9.02	5999.42	26.64	26.64	-60.18	0.45	65.81	293.88°
6100	0.18	348.55	6099.41	27.14	27.14	-60.16	0.24	65.99	294.28°
6200	0.26	45.78	6199.41	27.45	27.45	-60.03	0.22	66.00	294.57°
6300	0.56	21.63	6299.41	28.06	28.06	-59.68	0.34	65.95	295.18°
6400	0.45	1.82	6399.41	28.91	28.91	-59.49	0.20	66.14	295.92°
6500	0.44	14.45	6499.40	29.67	29.67	-59.38	0.10	66.38	296.55°
6600	0.79	15.10	6599.40	30.71	30.71	-59.11	0.35	66.61	297.46°
6700	0.93	13.60	6699.39	32.17	32.17	-58.74	0.14	66.97	298.71°
6800	0.90	356.07	6799.37	33.74	33.74	-58.60	0.28	67.62	299.93°
6900	0.95	358.75	6899.36	35.35	35.35	-58.67	0.07	68.50	301.07°
7000	0.50	316.75	6999.35	36.50	36.50	-58.99	0.67	69.37	301.75°
7100	0.28	179.30	7099.35	36.57	36.57	-59.28	0.73	69.66	301.67°
7150	0.79	172.15	7149.35	36.11	36.11	-59.24	1.03	69.37	301.36°

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