



**SUMMIT**  
SLICKLINE INC.

**Company:** PDC ENERGY  
**Lease / Well:** PHILLIPS 1 RUN 2 API 05123-20575  
**County/Parish:** WELD 123  
**State:** COLORADO  
**Date:** 12/28/2016  
**Rig:** NA  
**Surveyor:** SHON LANE  
**Job Number:** 05123-20575  
**Instrument Number:** 3123 **Type:** MEMORY  
**Proposed Direction:** 0 **GL Elev:** 4905  
**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	0.42	135.26	100.00	-0.26	-0.26	0.26	0.42	0.37	135.26°
200	0.40	167.07	200.00	-0.86	-0.86	0.59	0.23	1.05	145.39°
300	0.53	152.43	299.99	-1.61	-1.61	0.89	0.18	1.84	151.19°
400	0.33	161.01	399.99	-2.29	-2.29	1.19	0.21	2.59	152.50°
500	0.47	179.21	499.99	-2.98	-2.98	1.29	0.19	3.24	156.51°
600	0.57	184.97	599.98	-3.88	-3.88	1.26	0.11	4.08	162.07°
700	0.76	172.44	699.98	-5.03	-5.03	1.30	0.24	5.20	165.52°
800	0.77	187.78	799.97	-6.36	-6.36	1.30	0.20	6.49	168.47°
900	0.93	182.21	899.96	-7.83	-7.83	1.17	0.18	7.92	171.48°
1000	1.03	173.22	999.94	-9.54	-9.54	1.25	0.18	9.62	172.54°
1100	1.24	181.85	1099.92	-11.51	-11.51	1.32	0.27	11.59	173.46°
1200	1.12	175.54	1199.90	-13.57	-13.57	1.36	0.18	13.64	174.27°
1300	1.07	179.77	1299.88	-15.48	-15.48	1.44	0.10	15.54	174.68°
1400	1.13	181.68	1399.87	-17.39	-17.39	1.42	0.07	17.45	175.35°
1500	1.15	184.13	1499.85	-19.38	-19.38	1.31	0.05	19.43	176.12°
1600	1.14	188.27	1599.83	-21.37	-21.37	1.10	0.08	21.40	177.05°
1700	1.07	198.88	1699.81	-23.23	-23.23	0.65	0.22	23.24	178.39°
1800	0.96	202.15	1799.79	-24.89	-24.89	0.04	0.12	24.89	179.92°
1900	0.89	194.20	1899.78	-26.42	-26.42	-0.47	0.15	26.43	181.02°
2000	0.87	200.03	1999.77	-27.89	-27.89	-0.92	0.09	27.90	181.89°
2100	0.69	213.68	2099.76	-29.10	-29.10	-1.51	0.26	29.14	182.98°
2200	0.33	224.88	2199.75	-29.81	-29.81	-2.05	0.37	29.88	183.94°
2300	0.10	203.77	2299.75	-30.09	-30.09	-2.29	0.24	30.18	184.35°
2400	0.07	207.24	2399.75	-30.23	-30.23	-2.35	0.03	30.32	184.45°
2500	0.13	264.16	2499.75	-30.29	-30.29	-2.49	0.11	30.39	184.71°
2600	0.38	304.91	2599.75	-30.11	-30.11	-2.88	0.29	30.25	185.46°
2700	0.40	307.96	2699.75	-29.71	-29.71	-3.43	0.03	29.91	186.58°
2800	0.38	259.27	2799.75	-29.56	-29.56	-4.03	0.32	29.83	187.76°
2900	0.57	225.84	2899.74	-29.96	-29.96	-4.71	0.33	30.33	188.93°
3000	0.84	201.95	2999.74	-30.99	-30.99	-5.34	0.39	31.45	189.78°
3100	1.11	201.25	3099.72	-32.57	-32.57	-5.97	0.27	33.12	190.38°
3200	1.16	200.43	3199.70	-34.43	-34.43	-6.67	0.05	35.07	190.97°
3300	1.24	208.18	3299.68	-36.33	-36.33	-7.53	0.18	37.10	191.72°
3400	1.34	219.93	3399.65	-38.18	-38.18	-8.80	0.28	39.18	192.97°
3500	1.78	251.53	3499.62	-39.57	-39.57	-11.02	0.95	41.07	195.56°
3600	1.97	259.13	3599.57	-40.38	-40.38	-14.18	0.31	42.80	199.35°
3700	2.08	262.41	3699.50	-40.95	-40.95	-17.67	0.16	44.60	203.34°
3800	1.93	261.23	3799.44	-41.44	-41.44	-21.13	0.16	46.52	207.02°
3900	1.46	263.64	3899.40	-41.84	-41.84	-24.06	0.48	48.27	209.90°
4000	0.44	282.86	3999.38	-41.90	-41.90	-25.70	1.05	49.15	211.53°
4100	0.40	353.79	4099.38	-41.46	-41.46	-26.11	0.49	49.00	212.20°
4200	0.43	29.44	4199.38	-40.79	-40.79	-25.97	0.26	48.35	212.48°
4300	0.38	27.40	4299.38	-40.17	-40.17	-25.63	0.05	47.65	212.54°
4400	0.28	358.81	4399.37	-39.63	-39.63	-25.48	0.19	47.12	212.74°
4500	1.12	264.69	4499.37	-39.48	-39.48	-26.46	1.17	47.52	213.83°
4600	1.51	252.90	4599.34	-39.95	-39.95	-28.69	0.47	49.19	215.68°
4700	1.50	251.42	4699.31	-40.76	-40.76	-31.19	0.04	51.33	217.43°
4800	1.32	245.38	4799.28	-41.66	-41.66	-33.48	0.23	53.44	218.79°

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	0.99	240.03	4899.26	-42.57	-42.57	-35.28	0.35	55.28	219.65°
5000	0.77	239.02	4999.24	-43.34	-43.34	-36.60	0.22	56.73	220.18°
5100	0.62	236.27	5099.24	-43.99	-43.99	-37.63	0.15	57.89	220.54°
5200	0.50	249.73	5199.23	-44.44	-44.44	-38.49	0.18	58.79	220.89°
5300	0.63	263.76	5299.23	-44.65	-44.65	-39.44	0.19	59.58	221.45°
5400	0.90	265.39	5399.22	-44.78	-44.78	-40.77	0.27	60.56	222.32°
5500	0.91	248.35	5499.21	-45.13	-45.13	-42.29	0.27	61.85	223.14°
5600	0.81	240.35	5599.20	-45.78	-45.78	-43.64	0.16	63.25	223.63°
5700	0.54	254.78	5699.19	-46.25	-46.25	-44.71	0.32	64.33	224.03°
5800	0.47	283.81	5799.18	-46.27	-46.27	-45.57	0.26	64.94	224.56°
5900	0.38	287.29	5899.18	-46.08	-46.08	-46.28	0.09	65.31	225.13°
6000	0.30	289.48	5999.18	-45.89	-45.89	-46.84	0.08	65.58	225.59°
6100	0.41	294.02	6099.18	-45.66	-45.66	-47.42	0.11	65.83	226.08°
6200	0.48	305.67	6199.18	-45.27	-45.27	-48.09	0.11	66.04	226.73°
6300	0.60	309.93	6299.17	-44.69	-44.69	-48.83	0.13	66.19	227.53°
6400	0.64	316.56	6399.16	-43.95	-43.95	-49.61	0.08	66.28	228.47°
6500	0.68	318.84	6499.16	-43.09	-43.09	-50.39	0.05	66.30	229.46°
6600	0.61	314.62	6599.15	-42.27	-42.27	-51.16	0.08	66.36	230.43°
6700	0.37	341.19	6699.15	-41.59	-41.59	-51.64	0.32	66.31	231.15°
6800	0.63	18.97	6799.14	-40.77	-40.77	-51.57	0.41	65.73	231.67°
6900	0.82	25.19	6899.14	-39.60	-39.60	-51.08	0.21	64.63	232.21°
7000	1.11	32.78	6999.12	-38.14	-38.14	-50.25	0.32	63.09	232.80°
7100	0.96	55.26	7099.11	-36.85	-36.85	-49.04	0.43	61.34	233.08°

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