



SUMMIT
SLICKLINE INC.

Company: PDC ENERGY
Lease / Well: HAHN 23-27 05123-20346
County/Parish: WELD 123
State: COLORADO
Date: 2/2/2017
Rig: NA
Surveyor: JOHNNY RIDDLE
Job Number: 3544-05-123-20346
Instrument Number: 3087 **Type:** MEMORY
Proposed Direction: 0 **GL Elev:** 4898
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	1.23	340.98	99.99	1.01	1.01	-0.35	1.23	1.07	340.98°
200	1.61	148.18	199.98	0.84	0.84	0.04	2.82	0.84	2.82°
300	4.19	271.22	299.90	-0.28	-0.28	-2.87	5.24	2.89	264.41°
400	3.93	325.50	399.68	2.62	2.62	-8.47	3.71	8.86	287.20°
500	3.92	324.54	499.45	8.23	8.23	-12.39	0.07	14.88	303.59°
600	3.80	326.35	599.22	13.77	13.77	-16.21	0.17	21.27	310.35°
700	3.73	329.78	699.00	19.34	19.34	-19.68	0.24	27.60	314.50°
800	3.46	331.32	798.81	24.80	24.80	-22.77	0.29	33.67	317.44°
900	3.22	330.28	898.64	29.89	29.89	-25.61	0.25	39.36	319.41°
1000	3.15	329.20	998.48	34.69	34.69	-28.41	0.09	44.84	320.68°
1100	2.86	330.64	1098.35	39.22	39.22	-31.04	0.30	50.02	321.64°
1200	2.70	332.08	1198.23	43.48	43.48	-33.37	0.17	54.80	322.50°
1300	2.42	331.89	1298.13	47.42	47.42	-35.46	0.28	59.21	323.21°
1400	2.39	329.95	1398.04	51.09	51.09	-37.50	0.09	63.37	323.72°
1500	2.30	327.24	1497.96	54.58	54.58	-39.63	0.14	67.45	324.01°
1600	1.93	323.72	1597.89	57.62	57.62	-41.71	0.39	71.14	324.10°
1700	1.99	324.35	1697.83	60.39	60.39	-43.72	0.06	74.56	324.10°
1800	1.94	323.25	1797.77	63.16	63.16	-45.75	0.06	77.99	324.08°
1900	1.70	322.37	1897.72	65.69	65.69	-47.67	0.24	81.16	324.03°
2000	1.59	317.88	1997.68	67.89	67.89	-49.50	0.17	84.02	323.90°
2100	1.54	298.91	2097.64	69.57	69.57	-51.61	0.52	86.62	323.43°
2200	1.45	273.63	2197.61	70.30	70.30	-54.05	0.66	88.68	322.45°
2300	1.62	265.75	2297.57	70.28	70.28	-56.72	0.27	90.31	321.09°
2400	1.69	266.86	2397.53	70.09	70.09	-59.60	0.08	92.01	319.62°
2500	1.71	266.01	2497.49	69.91	69.91	-62.56	0.03	93.81	318.17°
2600	1.66	263.37	2597.44	69.64	69.64	-65.49	0.09	95.59	316.76°
2700	1.48	260.09	2697.41	69.25	69.25	-68.20	0.20	97.19	315.44°
2800	1.40	256.50	2797.38	68.74	68.74	-70.66	0.12	98.58	314.21°
2900	1.32	252.36	2897.35	68.10	68.10	-72.95	0.13	99.80	313.03°
3000	1.28	242.76	2997.32	67.24	67.24	-75.04	0.22	100.76	311.87°
3100	1.69	255.84	3097.29	66.37	66.37	-77.46	0.53	102.01	310.59°
3200	2.15	267.16	3197.23	65.92	65.92	-80.76	0.59	104.25	309.22°
3300	2.20	271.64	3297.16	65.88	65.88	-84.56	0.18	107.19	307.92°
3400	2.37	268.39	3397.08	65.88	65.88	-88.54	0.21	110.36	306.65°
3500	2.50	268.37	3496.99	65.76	65.76	-92.79	0.13	113.73	305.32°
3600	2.58	267.14	3596.89	65.58	65.58	-97.22	0.10	117.27	304.00°
3700	2.51	270.49	3696.79	65.49	65.49	-101.65	0.16	120.92	302.79°
3800	2.16	269.71	3796.71	65.50	65.50	-105.73	0.35	124.37	301.78°
3900	1.65	272.88	3896.65	65.56	65.56	-109.05	0.52	127.24	301.01°
4000	1.69	274.04	3996.61	65.74	65.74	-111.96	0.05	129.83	300.42°
4100	1.62	276.86	4096.57	66.01	66.01	-114.83	0.11	132.45	299.89°
4200	1.61	285.61	4196.53	66.56	66.56	-117.59	0.25	135.12	299.51°
4300	1.53	292.59	4296.49	67.45	67.45	-120.17	0.21	137.81	299.30°
4400	2.05	295.33	4396.44	68.73	68.73	-123.02	0.53	140.92	299.19°
4500	2.84	296.82	4496.35	70.61	70.61	-126.85	0.79	145.18	299.10°
4600	3.03	296.02	4596.22	72.89	72.89	-131.44	0.19	150.29	299.01°
4700	2.55	300.06	4696.10	75.16	75.16	-135.74	0.52	155.16	298.97°
4800	2.04	304.46	4796.02	77.28	77.28	-139.13	0.54	159.15	299.05°

Directional Survey Report									
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					(+N/-S)	(+E/-W)			
4900	1.48	308.32	4895.97	79.09	79.09	-141.61	0.57	162.20	299.18°
5000	1.22	309.35	4995.95	80.57	80.57	-143.45	0.26	164.52	299.32°
5100	1.11	307.82	5095.93	81.83	81.83	-145.04	0.11	166.53	299.43°
5200	0.89	279.27	5195.91	82.55	82.55	-146.57	0.54	168.22	299.39°
5300	1.27	250.49	5295.89	82.31	82.31	-148.38	0.65	169.68	299.02°
5400	1.21	258.56	5395.87	81.73	81.73	-150.46	0.18	171.22	298.51°
5500	0.84	290.14	5495.86	81.77	81.77	-152.18	0.66	172.76	298.25°
5600	0.95	304.09	5595.84	82.49	82.49	-153.56	0.24	174.31	298.24°
5700	0.81	295.66	5695.83	83.26	83.26	-154.88	0.19	175.84	298.26°
5800	0.76	281.00	5795.82	83.69	83.69	-156.17	0.21	177.18	298.19°
5900	0.77	270.99	5895.81	83.83	83.83	-157.49	0.13	178.41	298.03°
6000	0.86	244.22	5995.80	83.52	83.52	-158.84	0.39	179.46	297.73°
6100	0.95	234.44	6095.79	82.71	82.71	-160.19	0.18	180.28	297.31°
6200	0.80	235.31	6195.78	81.83	81.83	-161.44	0.15	180.99	296.88°
6300	0.74	242.95	6295.77	81.14	81.14	-162.59	0.12	181.71	296.52°
6400	0.45	264.03	6395.76	80.80	80.80	-163.55	0.36	182.42	296.29°
6500	0.08	311.49	6495.76	80.81	80.81	-163.99	0.40	182.82	296.23°
6600	0.75	68.72	6595.76	81.09	81.09	-163.44	0.79	182.45	296.39°
6700	0.83	336.55	6695.75	81.99	81.99	-163.12	1.14	182.56	296.69°
6800	1.22	296.53	6795.74	83.13	83.13	-164.36	0.79	184.18	296.83°
6900	1.07	270.45	6895.72	83.62	83.62	-166.24	0.54	186.09	296.70°
7000	0.62	254.81	6995.71	83.48	83.48	-167.70	0.50	187.33	296.46°
7050	0.63	234.50	7045.71	83.25	83.25	-168.18	0.44	187.66	296.34°

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