



Company: Anadarko Petroleum Corp.
Lease / Well: Odenbaugh Cullen C UT 1
County/Parish: WELD
State: COLORADO
Date: 11/4/2014
Rig: NA
Surveyor: SHON LANE
Job Number: 511-512307825
Instrument Number: 4015 **Type:** MEMORY
Proposed Direction: 0 **GL Elev:** 4772
Magnetic Declination 9.86 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	0.13	240.22	100.00	-0.06	-0.06	-0.10	0.13	0.11	240.22°
200	0.02	198.38	200.00	-0.13	-0.13	-0.20	0.12	0.24	237.44°
300	0.10	233.98	300.00	-0.20	-0.20	-0.28	0.08	0.34	234.71°
400	0.03	221.29	400.00	-0.27	-0.27	-0.37	0.07	0.45	233.80°
500	0.06	209.49	500.00	-0.33	-0.33	-0.41	0.03	0.53	230.85°
600	0.11	322.44	600.00	-0.30	-0.30	-0.49	0.14	0.58	238.47°
700	0.16	233.14	700.00	-0.31	-0.31	-0.66	0.19	0.73	244.94°
800	0.26	286.03	800.00	-0.33	-0.33	-0.99	0.21	1.05	251.55°
900	0.11	174.21	900.00	-0.36	-0.36	-1.20	0.32	1.26	253.13°
1000	0.29	193.36	1000.00	-0.71	-0.71	-1.25	0.19	1.44	240.55°
1100	0.36	196.06	1100.00	-1.25	-1.25	-1.40	0.07	1.88	228.07°
1200	0.45	198.12	1199.99	-1.93	-1.93	-1.61	0.09	2.51	219.76°
1300	0.37	202.85	1299.99	-2.60	-2.60	-1.85	0.09	3.19	215.47°
1400	0.53	198.75	1399.99	-3.34	-3.34	-2.13	0.16	3.96	212.52°
1500	0.51	180.26	1499.98	-4.22	-4.22	-2.28	0.17	4.79	208.36°
1600	0.58	193.87	1599.98	-5.16	-5.16	-2.40	0.15	5.69	204.97°
1700	0.49	204.66	1699.98	-6.04	-6.04	-2.70	0.13	6.61	204.11°
1800	0.62	191.51	1799.97	-6.95	-6.95	-2.99	0.18	7.57	203.25°
1900	0.81	218.37	1899.96	-8.04	-8.04	-3.53	0.38	8.78	203.73°
2000	1.02	223.39	1999.95	-9.24	-9.24	-4.58	0.22	10.31	206.39°
2100	1.25	228.42	2099.93	-10.61	-10.61	-6.01	0.25	12.19	209.53°
2200	1.52	228.83	2199.90	-12.21	-12.21	-7.83	0.27	14.50	212.66°
2300	1.58	228.48	2299.86	-13.99	-13.99	-9.86	0.06	17.12	215.16°
2400	1.78	235.09	2399.82	-15.80	-15.80	-12.16	0.28	19.94	217.59°
2500	2.02	234.93	2499.77	-17.70	-17.70	-14.88	0.24	23.12	220.05°
2600	1.77	230.21	2599.71	-19.70	-19.70	-17.51	0.29	26.35	221.63°
2700	1.81	232.47	2699.66	-21.65	-21.65	-19.95	0.08	29.44	222.66°
2800	1.31	225.33	2799.63	-23.42	-23.42	-22.01	0.54	32.14	223.23°
2900	1.39	225.74	2899.60	-25.07	-25.07	-23.69	0.08	34.49	223.39°
3000	1.23	226.76	2999.57	-26.65	-26.65	-25.34	0.16	36.77	223.56°
3100	1.12	221.31	3099.55	-28.12	-28.12	-26.77	0.16	38.82	223.60°
3200	1.15	217.96	3199.53	-29.64	-29.64	-28.03	0.07	40.80	223.40°
3300	1.17	216.42	3299.51	-31.25	-31.25	-29.26	0.04	42.81	223.11°
3400	1.06	233.28	3399.49	-32.63	-32.63	-30.60	0.34	44.74	223.17°
3500	0.98	234.80	3499.48	-33.68	-33.68	-32.04	0.08	46.49	223.58°
3600	0.67	232.58	3599.47	-34.52	-34.52	-33.21	0.31	47.90	223.89°
3700	0.60	235.86	3699.46	-35.17	-35.17	-34.11	0.08	48.99	224.12°
3800	0.70	240.98	3799.45	-35.76	-35.76	-35.07	0.12	50.09	224.44°
3900	0.62	236.70	3899.45	-36.36	-36.36	-36.06	0.09	51.21	224.77°
4000	0.62	228.89	3999.44	-37.01	-37.01	-36.92	0.08	52.27	224.93°
4100	0.64	203.21	4099.43	-37.88	-37.88	-37.55	0.28	53.33	224.75°
4200	0.66	207.08	4199.43	-38.90	-38.90	-38.03	0.05	54.40	224.35°
4300	0.71	212.42	4299.42	-39.94	-39.94	-38.62	0.08	55.56	224.04°
4400	1.00	238.41	4399.41	-40.92	-40.92	-39.70	0.48	57.01	224.13°
4500	0.87	236.51	4499.40	-41.80	-41.80	-41.08	0.13	58.60	224.50°
4600	1.14	227.82	4599.38	-42.88	-42.88	-42.45	0.31	60.34	224.71°
4700	1.23	231.52	4699.36	-44.22	-44.22	-44.02	0.12	62.40	224.87°
4800	1.23	232.38	4799.34	-45.54	-45.54	-45.71	0.02	64.53	225.11°

Directional Survey Report									
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4900	1.11	217.07	4899.32	-46.97	-46.97	-47.15	0.33	66.55	225.11°
5000	1.33	216.82	4999.29	-48.67	-48.67	-48.43	0.22	68.66	224.86°
5100	1.08	209.69	5099.27	-50.42	-50.42	-49.59	0.29	70.72	224.52°
5200	1.28	201.96	5199.25	-52.27	-52.27	-50.47	0.26	72.66	224.00°
5300	1.10	211.91	5299.23	-54.12	-54.12	-51.40	0.27	74.64	223.52°
5400	1.38	206.64	5399.21	-56.02	-56.02	-52.45	0.30	76.74	223.12°
5500	1.37	191.28	5499.18	-58.26	-58.26	-53.22	0.37	78.91	222.41°
5600	1.60	191.83	5599.14	-60.80	-60.80	-53.74	0.23	81.15	221.47°
5700	1.77	190.19	5699.10	-63.69	-63.69	-54.30	0.18	83.69	220.45°
5800	1.50	186.04	5799.06	-66.51	-66.51	-54.71	0.29	86.12	219.44°
5900	1.39	204.08	5899.03	-68.92	-68.92	-55.34	0.47	88.39	218.76°
6000	1.71	211.07	5998.99	-71.31	-71.31	-56.61	0.37	91.04	218.45°
6100	1.70	218.77	6098.95	-73.74	-73.74	-58.31	0.23	94.01	218.33°
6200	1.85	217.31	6198.90	-76.18	-76.18	-60.21	0.16	97.10	218.32°
6300	2.08	227.88	6298.84	-78.68	-78.68	-62.54	0.43	100.51	218.48°
6400	2.26	226.33	6398.77	-81.26	-81.26	-65.31	0.19	104.25	218.79°
6500	2.23	229.08	6498.69	-83.90	-83.90	-68.21	0.11	108.12	219.11°
6600	2.33	236.34	6598.61	-86.30	-86.30	-71.37	0.31	111.98	219.59°
6700	2.56	238.86	6698.52	-88.58	-88.58	-74.97	0.25	116.05	220.24°
6800	2.35	243.77	6798.43	-90.64	-90.64	-78.72	0.30	120.05	220.98°
6900	2.44	250.33	6898.34	-92.26	-92.26	-82.57	0.29	123.81	221.83°
7000	2.38	249.51	6998.25	-93.71	-93.71	-86.52	0.07	127.54	222.72°
7100	1.70	244.16	7098.19	-95.08	-95.08	-89.80	0.71	130.78	223.36°
7200	1.35	240.16	7198.16	-96.31	-96.31	-92.15	0.37	133.30	223.74°
7300	1.30	234.21	7298.13	-97.56	-97.56	-94.09	0.15	135.54	223.96°
7400	1.31	225.06	7398.10	-99.03	-99.03	-95.82	0.21	137.80	224.06°
7500	1.38	215.60	7498.08	-100.82	-100.82	-97.33	0.23	140.14	223.99°
7600	1.45	189.37	7598.05	-103.05	-103.05	-98.24	0.65	142.37	223.63°
7700	1.90	176.89	7698.00	-105.95	-105.95	-98.36	0.58	144.57	222.87°

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