



## **Ursa Operating Company, LLC**

**Rockies Region**

**Speakman A**

**BAT 34D-24-07-96**

**Wellbore #1**

**Design: Actual**

## **End of Well Report**

**01 March, 2015**



<b>Company:</b>	Ursa Operating Company, LLC	<b>Local Co-ordinate Reference:</b>	Well BAT 34D-24-07-96
<b>Project:</b>	Rockies Region	<b>TVD Reference:</b>	BAT 34D-24-07-96 @ 5199.5usft (Capstar 321)
<b>Site:</b>	Speakman A	<b>MD Reference:</b>	BAT 34D-24-07-96 @ 5199.5usft (Capstar 321)
<b>Well:</b>	BAT 34D-24-07-96	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Project		Rockies Region	
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	Speakman A					
Site Position:		Northing:	1,588,429.06	usft	Latitude:	39° 25' 15.663 N
From:	Lat/Long	Easting:	2,276,734.73	usft	Longitude:	108° 3' 38.016 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16	"	Grid Convergence:	-1.61 °

Well		BAT 34D-24-07-96, SHL LAT:39.420593850 LONG:-108.060056458				
Well Position	+N/-S	0.0 usft	Northing:	1,588,270.76 usft	Latitude:	39° 25' 14.138 N
	+E/-W	0.0 usft	Easting:	2,276,872.59 usft	Longitude:	108° 3' 36.203 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,199.5 usft	Ground Level:	5,182.5 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/25/2015	9.90	65.56	51,834

Design		Actual			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)		+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0		0.0	0.0	138.35

Survey Program		Date	3/1/2015		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
156.0	6,261.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

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<b>Well:</b>	BAT 34D-24-07-96	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
156.0	0.60	253.09	156.0	-0.3	-0.2	-0.8	0.38	0.38	0.00	
186.0	0.57	238.38	186.0	-0.4	-0.4	-1.1	0.51	-0.10	-49.03	
214.0	0.75	168.85	214.0	-0.3	-0.6	-1.1	2.74	0.64	-248.32	
246.0	1.63	146.31	246.0	0.3	-1.2	-0.8	3.06	2.75	-70.44	
276.0	2.68	142.18	276.0	1.5	-2.1	-0.2	3.54	3.50	-13.77	
306.0	3.56	138.66	305.9	3.1	-3.4	0.9	3.00	2.93	-11.73	
336.0	4.79	142.58	335.8	5.3	-5.1	2.2	4.21	4.10	13.07	
366.0	5.93	143.67	365.7	8.1	-7.3	3.9	3.81	3.80	3.63	
396.0	6.99	144.46	395.5	11.4	-10.0	5.9	3.55	3.53	2.63	
426.0	8.09	142.36	425.3	15.3	-13.2	8.2	3.78	3.67	-7.00	
456.0	9.14	141.56	454.9	19.8	-16.7	11.0	3.52	3.50	-2.67	
486.0	10.11	140.33	484.5	24.8	-20.6	14.2	3.31	3.23	-4.10	
516.0	11.21	138.09	514.0	30.4	-24.8	17.8	3.92	3.67	-7.47	
546.0	12.39	137.35	543.3	36.5	-29.4	21.9	3.97	3.93	-2.47	
576.0	13.49	135.63	572.6	43.2	-34.2	26.6	3.88	3.67	-5.73	
606.0	14.33	135.94	601.7	50.4	-39.4	31.6	2.81	2.80	1.03	
636.0	15.20	136.62	630.7	58.1	-44.9	36.9	2.96	2.90	2.27	
666.0	16.04	136.47	659.6	66.1	-50.8	42.4	2.80	2.80	-0.50	
696.0	16.92	137.13	688.4	74.7	-57.0	48.3	3.00	2.93	2.20	
726.0	17.89	136.42	717.0	83.6	-63.5	54.4	3.31	3.23	-2.37	
756.0	18.68	137.21	745.5	93.0	-70.4	60.8	2.76	2.63	2.63	
786.0	19.82	137.04	773.8	102.9	-77.6	67.6	3.80	3.80	-0.57	
816.0	21.45	136.16	801.9	113.5	-85.3	74.8	5.53	5.43	-2.93	
846.0	22.54	136.07	829.7	124.7	-93.4	82.6	3.64	3.63	-0.30	
876.0	23.82	135.46	857.3	136.5	-101.9	90.9	4.34	4.27	-2.03	
906.0	24.79	136.38	884.6	148.8	-110.7	99.5	3.47	3.23	3.07	

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<b>Site:</b>	Speakman A	<b>MD Reference:</b>	BAT 34D-24-07-96 @ 5199.5usft (Capstar 321)
<b>Well:</b>	BAT 34D-24-07-96	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
936.0	26.02	135.63	911.7	161.7	-120.0	108.4	4.24	4.10	-2.50	
966.0	27.11	136.07	938.5	175.1	-129.6	117.7	3.69	3.63	1.47	
996.0	28.17	137.26	965.1	189.0	-139.8	127.3	3.98	3.53	3.97	
1,026.0	29.49	136.64	991.4	203.5	-150.3	137.2	4.51	4.40	-2.07	
1,056.0	30.59	135.68	1,017.4	218.5	-161.2	147.6	4.00	3.67	-3.20	
1,086.0	31.51	136.51	1,043.1	233.9	-172.3	158.3	3.38	3.07	2.77	
1,116.0	32.12	135.50	1,068.6	249.8	-183.7	169.3	2.70	2.03	-3.37	
1,146.0	33.09	135.54	1,093.8	265.9	-195.2	180.6	3.23	3.23	0.13	
1,176.0	34.07	135.38	1,118.8	282.5	-207.0	192.2	3.28	3.27	-0.53	
1,206.0	35.29	135.15	1,143.5	299.5	-219.2	204.3	4.09	4.07	-0.77	
1,236.0	35.80	134.72	1,167.9	316.9	-231.5	216.6	1.89	1.70	-1.43	
1,266.0	37.00	134.58	1,192.1	334.7	-244.0	229.3	4.01	4.00	-0.47	
1,296.0	37.71	136.55	1,215.9	352.9	-257.0	242.0	4.63	2.37	6.57	
1,326.0	38.10	137.61	1,239.6	371.3	-270.5	254.6	2.53	1.30	3.53	
1,356.0	38.45	137.26	1,263.1	389.9	-284.2	267.1	1.37	1.17	-1.17	
1,386.0	38.67	138.31	1,286.6	408.6	-298.0	279.7	2.30	0.73	3.50	
1,416.0	39.20	137.43	1,309.9	427.4	-312.0	292.3	2.55	1.77	-2.93	
1,446.0	38.80	138.14	1,333.2	446.3	-326.0	305.0	2.00	-1.33	2.37	
1,476.0	38.70	137.38	1,356.6	465.1	-339.9	317.7	1.62	-0.33	-2.53	
1,506.0	38.98	137.74	1,380.0	483.9	-353.8	330.4	1.20	0.93	1.20	
1,536.0	39.02	137.61	1,403.3	502.8	-367.7	343.1	0.30	0.13	-0.43	
1,566.0	39.24	136.38	1,426.6	521.7	-381.6	356.0	2.69	0.73	-4.10	
1,596.0	39.20	136.16	1,449.8	540.7	-395.3	369.1	0.48	-0.13	-0.73	
1,626.0	39.07	135.94	1,473.1	559.6	-408.9	382.2	0.63	-0.43	-0.73	
1,656.0	39.02	136.60	1,496.4	578.5	-422.6	395.3	1.40	-0.17	2.20	
1,686.0	39.29	136.25	1,519.7	597.4	-436.3	408.4	1.16	0.90	-1.17	
1,716.0	39.33	136.20	1,542.9	616.4	-450.0	421.5	0.17	0.13	-0.17	

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<b>Site:</b>	Speakman A	<b>MD Reference:</b>	BAT 34D-24-07-96 @ 5199.5usft (Capstar 321)
<b>Well:</b>	BAT 34D-24-07-96	<b>North Reference:</b>	True
<b>Wellbore:</b>	Wellbore #1	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Actual	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
1,746.0	39.20	136.20	1,566.1	635.4	-463.7	434.6	0.43	-0.43	0.00	
1,776.0	39.55	135.50	1,589.3	654.4	-477.4	447.9	1.88	1.17	-2.33	
1,806.0	39.55	135.28	1,612.4	673.4	-491.0	461.3	0.47	0.00	-0.73	
1,836.0	39.38	136.60	1,635.6	692.5	-504.7	474.6	2.85	-0.57	4.40	
1,866.0	39.90	135.37	1,658.7	711.6	-518.4	487.9	3.14	1.73	-4.10	
1,896.0	39.86	136.47	1,681.7	730.8	-532.3	501.3	2.35	-0.13	3.67	
1,911.0	39.99	136.29	1,693.2	740.5	-539.2	507.9	1.16	0.87	-1.20	
1,977.0	40.43	136.73	1,743.6	783.0	-570.1	537.2	0.79	0.67	0.67	
2,062.0	39.73	137.34	1,808.6	837.8	-610.2	574.5	0.94	-0.82	0.72	
2,147.0	39.46	139.36	1,874.2	891.9	-650.7	610.5	1.55	-0.32	2.38	
2,233.0	40.91	139.19	1,939.8	947.4	-692.7	646.7	1.69	1.69	-0.20	
2,318.0	39.86	138.53	2,004.6	1,002.5	-734.2	683.0	1.33	-1.24	-0.78	
2,404.0	40.47	139.36	2,070.3	1,057.9	-776.0	719.4	0.94	0.71	0.97	
2,489.0	41.88	140.37	2,134.3	1,113.9	-818.8	755.4	1.83	1.66	1.19	
2,574.0	41.13	139.58	2,197.9	1,170.2	-861.9	791.7	1.08	-0.88	-0.93	
2,660.0	42.45	139.89	2,262.1	1,227.5	-905.7	828.7	1.55	1.53	0.36	
2,745.0	42.28	139.71	2,324.9	1,284.7	-949.4	865.7	0.25	-0.20	-0.21	
2,830.0	42.36	138.97	2,387.7	1,342.0	-992.8	903.0	0.59	0.09	-0.87	
2,916.0	41.40	139.49	2,451.8	1,399.4	-1,036.3	940.5	1.19	-1.12	0.60	
3,001.0	39.86	138.53	2,516.3	1,454.7	-1,078.1	976.8	1.96	-1.81	-1.13	
3,087.0	38.06	138.44	2,583.1	1,508.8	-1,118.6	1,012.6	2.09	-2.09	-0.10	
3,172.0	36.13	138.72	2,650.9	1,560.0	-1,157.0	1,046.5	2.28	-2.27	0.33	
3,257.0	33.75	137.65	2,720.6	1,608.7	-1,193.3	1,079.0	2.89	-2.80	-1.26	
3,343.0	32.17	136.95	2,792.8	1,655.5	-1,227.7	1,110.7	1.89	-1.84	-0.81	
3,428.0	29.09	136.15	2,865.9	1,698.8	-1,259.1	1,140.4	3.66	-3.62	-0.94	
3,513.0	27.38	138.48	2,940.8	1,739.0	-1,288.7	1,167.7	2.39	-2.01	2.74	
3,599.0	22.68	138.88	3,018.7	1,775.3	-1,316.0	1,191.7	5.47	-5.47	0.47	

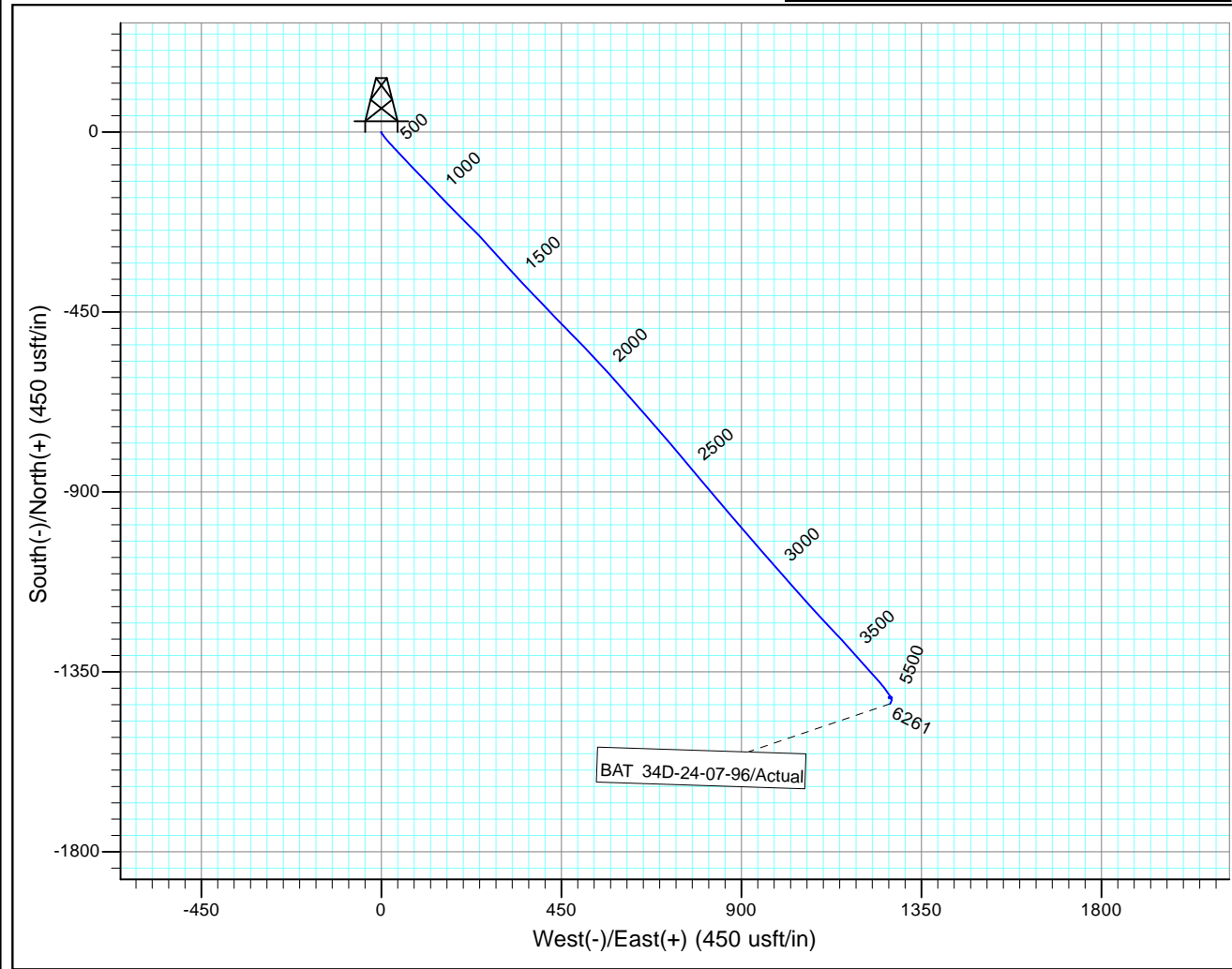
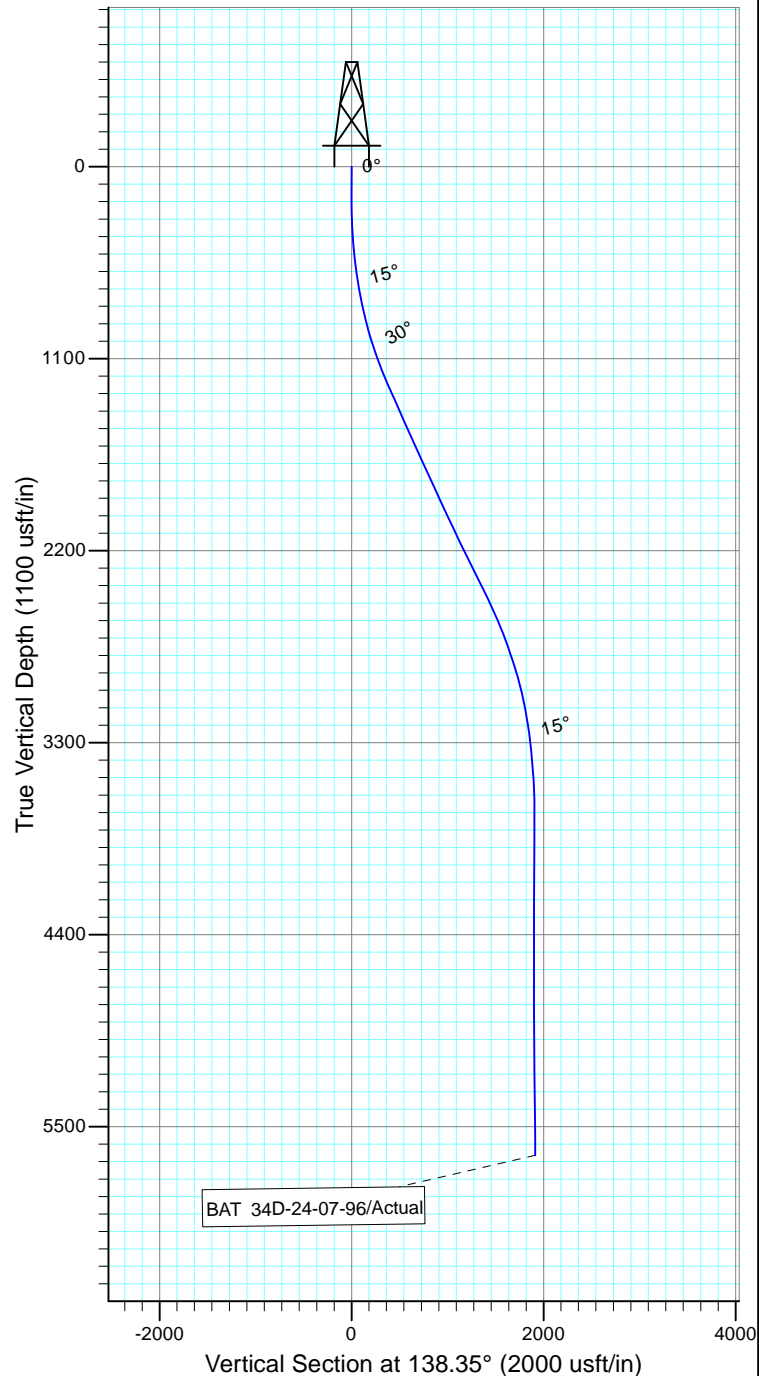
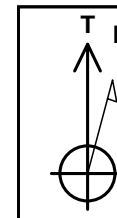
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Survey										
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3,684.0	18.90	138.00	3,098.1	1,805.5	-1,338.6	1,211.7	4.46	-4.45	-1.04	
3,770.0	16.44	137.30	3,180.1	1,831.6	-1,357.9	1,229.3	2.87	-2.86	-0.81	
3,855.0	12.96	139.10	3,262.3	1,853.2	-1,373.9	1,243.7	4.13	-4.09	2.12	
3,940.0	10.77	142.31	3,345.4	1,870.6	-1,387.4	1,254.8	2.69	-2.58	3.78	
4,026.0	8.77	145.44	3,430.2	1,885.1	-1,399.2	1,263.5	2.41	-2.33	3.64	
4,111.0	5.98	143.32	3,514.5	1,896.0	-1,408.1	1,269.8	3.30	-3.28	-2.49	
4,197.0	3.25	122.05	3,600.2	1,902.8	-1,412.9	1,274.5	3.69	-3.17	-24.73	
4,282.0	0.50	212.62	3,685.2	1,905.2	-1,414.5	1,276.4	3.87	-3.24	106.55	
4,368.0	1.05	256.87	3,771.2	1,904.9	-1,415.0	1,275.4	0.90	0.64	51.45	
4,453.0	1.41	245.93	3,856.1	1,904.2	-1,415.6	1,273.7	0.50	0.42	-12.87	
4,538.0	0.66	262.71	3,941.1	1,903.7	-1,416.1	1,272.2	0.94	-0.88	19.74	
4,624.0	0.57	282.54	4,027.1	1,903.0	-1,416.1	1,271.3	0.27	-0.10	23.06	
4,709.0	1.19	268.52	4,112.1	1,902.1	-1,416.0	1,270.0	0.77	0.73	-16.49	
4,794.0	0.48	345.16	4,197.1	1,901.2	-1,415.7	1,269.1	1.38	-0.84	90.16	
4,880.0	0.53	2.87	4,283.1	1,900.6	-1,415.0	1,269.0	0.19	0.06	20.59	
4,965.0	0.62	302.36	4,368.1	1,899.9	-1,414.3	1,268.6	0.69	0.11	-71.19	
5,051.0	0.83	41.89	4,454.1	1,899.4	-1,413.6	1,268.6	1.30	0.24	115.73	
5,136.0	0.40	23.87	4,539.1	1,899.2	-1,412.9	1,269.2	0.55	-0.51	-21.20	
5,221.0	0.57	257.18	4,624.1	1,898.9	-1,412.7	1,268.9	1.02	0.20	-149.05	
5,307.0	0.82	245.94	4,710.1	1,898.5	-1,413.0	1,267.9	0.33	0.29	-13.07	
5,392.0	0.44	159.27	4,795.1	1,898.6	-1,413.6	1,267.5	1.07	-0.45	-101.96	
5,478.0	1.15	109.69	4,881.1	1,899.7	-1,414.2	1,268.4	1.08	0.83	-57.65	
5,563.0	1.23	110.45	4,966.0	1,901.2	-1,414.8	1,270.0	0.10	0.09	0.89	
5,648.0	1.27	127.54	5,051.0	1,902.9	-1,415.7	1,271.7	0.44	0.05	20.11	
5,734.0	1.58	117.30	5,137.0	1,905.0	-1,416.8	1,273.5	0.47	0.36	-11.91	
5,819.0	1.10	125.34	5,222.0	1,906.9	-1,417.8	1,275.2	0.61	-0.56	9.46	
5,905.0	1.19	186.38	5,308.0	1,908.3	-1,419.2	1,275.7	1.36	0.10	70.98	

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Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	V. Sec (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Build (°/100usft)	Turn (°/100usft)	
5,990.0	1.93	199.22	5,392.9	1,909.6	-1,421.4	1,275.2	0.96	0.87	15.11	
6,076.0	1.85	200.45	5,478.9	1,910.9	-1,424.1	1,274.2	0.10	-0.09	1.43	
6,161.0	1.76	203.08	5,563.8	1,912.1	-1,426.6	1,273.2	0.14	-0.11	3.09	
6,204.0	2.07	206.91	5,606.8	1,912.7	-1,427.9	1,272.6	0.78	0.72	8.91	
6,261.0	2.07	206.91	5,663.8	1,913.4	-1,429.7	1,271.7	0.00	0.00	0.00	

Checked By: _____	Approved By: _____	Date: _____
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Design: Actual (BAT 34D-24-07-96/Wellbore #1)

Created By: *Matthew Linton* Date: 11:35, March 01 2015

THIS SURVEY IS CORRECT TO THE BEST OF  
 MY KNOWLEDGE AND IS SUPPORTED  
 BY ACTUAL FIELD DATA