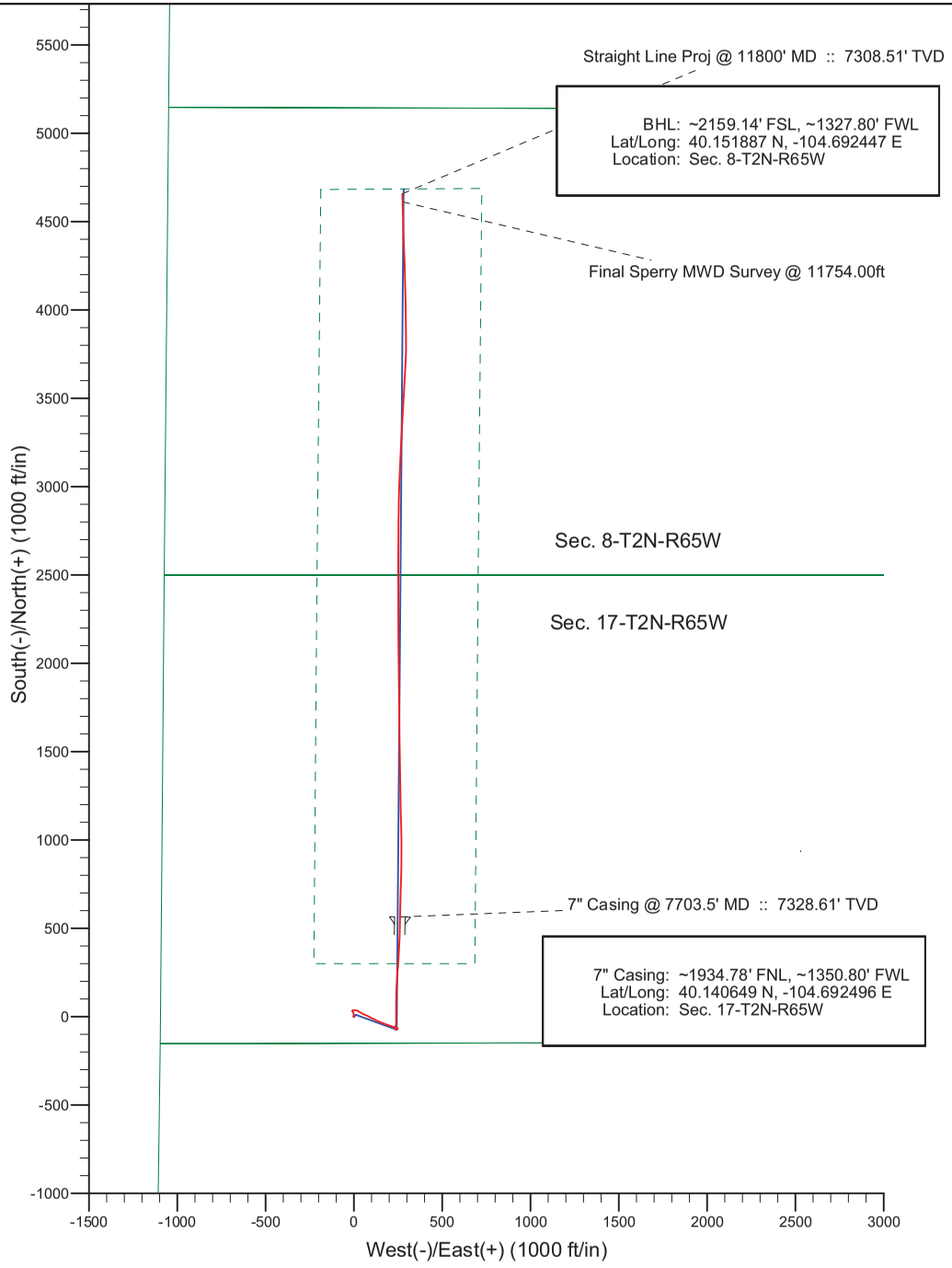
Project: Weld County, CO (NAD 83)
Site: Sec. 17-T2N-R65W
Well: Melbon 19C-8HZ
Wellbore: Plan A Rev 0
Design: Actual Field Surveys

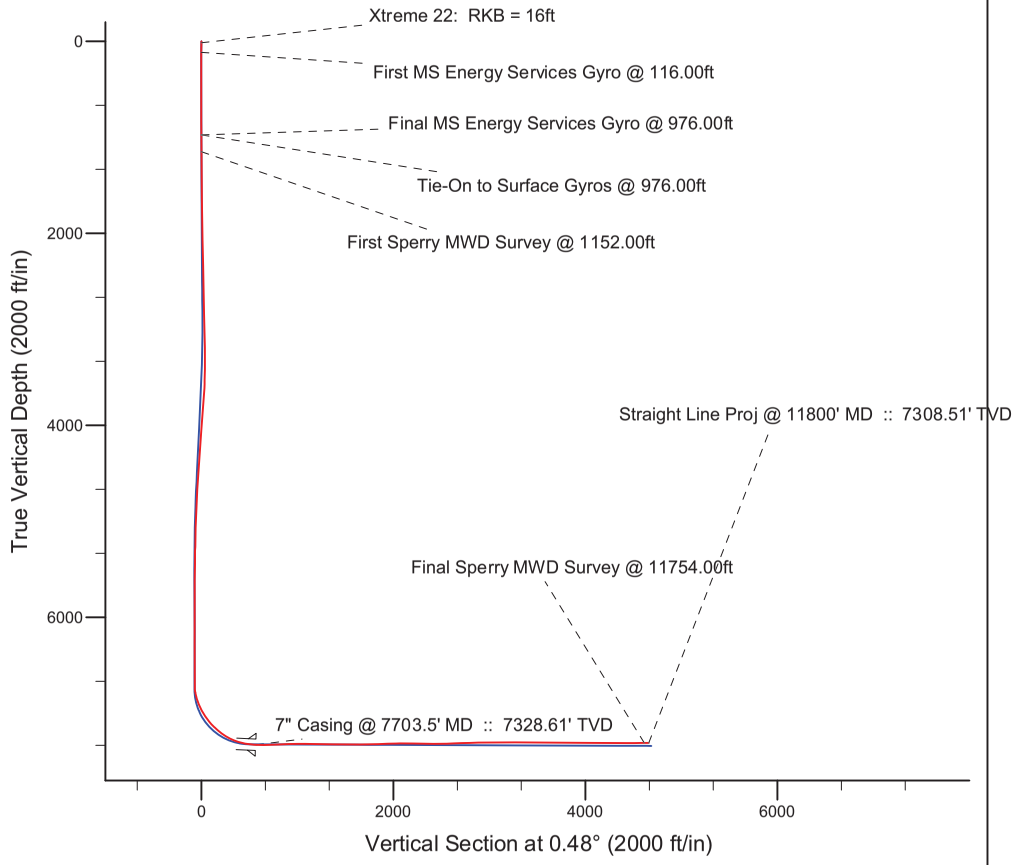
Anadarko Petroleum Corporation

HALLIBURTON
Sperry Drilling



LEGEND

Melbon 19C-8HZ, Plan A Rev 0, Plan A Rev 0 Proposal V0
Actual Field Surveys



WELL DETAILS: Melbon 19C-8HZ
Ground Level: 4949.00 RKB=16 @ 4965.00ft (Xtreme 22)
Design: Actual Field Surveys (Melbon 19C-8HZ/Plan A Rev 0)
Created By: Fred Hartmann Date: 04/28/2013 Reviewed: _____ Date: _____

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)
Sec. 17-T2N-R65W
Melbon 19C-8HZ

Plan A Rev 0

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

29 April, 2013

Well Coordinates: 1,294,542.90 N, 3,225,499.48 E (40° 08' 20.76" N, 104° 41' 36.35" W)
Ground Level: 4,949.00 ft

Local Coordinate Origin:	Centered on Well Melbon 19C-8HZ
Viewing Datum:	RKB=16 @ 4965.00ft (Xtreme 22)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied
Version: 2003.16 Build: 43I

HALLIBURTON

Design Report for Melbon 19C-8HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
Xtreme 22: RKB = 16ft							
116.00	0.24	202.39	116.00	-0.19	-0.08	-0.19	0.24
First MS Energy Services Gyro @ 116.00ft							
216.00	0.33	270.31	216.00	-0.39	-0.45	-0.39	0.33
316.00	0.09	243.58	316.00	-0.42	-0.81	-0.43	0.25
416.00	0.24	211.24	416.00	-0.63	-0.98	-0.64	0.17
516.00	0.05	358.52	516.00	-0.77	-1.09	-0.78	0.28
616.00	0.03	14.18	616.00	-0.70	-1.09	-0.71	0.02
716.00	0.31	331.69	716.00	-0.44	-1.21	-0.45	0.29
816.00	0.25	285.48	816.00	-0.14	-1.55	-0.15	0.23
916.00	0.22	22.00	916.00	0.10	-1.69	0.08	0.35
976.00	0.41	49.11	975.99	0.34	-1.48	0.33	0.39
Tie-On to Surface Gyros @ 976.00ft - Final MS Energy Services Gyro @ 976.00ft							
1,152.00	0.72	332.67	1,151.99	1.74	-1.51	1.73	0.42
First Sperry MWD Survey @ 1152.00ft							
1,335.00	0.70	3.75	1,334.97	3.88	-1.97	3.86	0.21
1,518.00	0.35	350.90	1,517.97	5.54	-1.98	5.53	0.20
1,794.00	0.84	18.72	1,793.95	8.29	-1.47	8.28	0.20
2,069.00	1.11	4.00	2,068.91	12.86	-0.64	12.85	0.13
2,344.00	1.36	344.30	2,343.85	18.66	-1.33	18.64	0.18
2,619.00	1.74	324.05	2,618.75	25.18	-4.67	25.14	0.24
2,889.00	1.42	329.84	2,888.65	31.39	-8.75	31.31	0.13
2,974.00	0.83	28.25	2,973.63	32.84	-8.99	32.77	1.43
3,060.00	1.42	32.32	3,059.62	34.29	-8.13	34.22	0.69
3,146.00	1.37	55.22	3,145.59	35.78	-6.71	35.72	0.65
3,231.00	2.38	74.54	3,230.54	36.83	-4.18	36.79	1.39
3,317.00	3.12	84.12	3,316.45	37.54	-0.13	37.54	1.01
3,402.00	3.67	93.90	3,401.30	37.60	4.89	37.64	0.94
3,488.00	4.85	102.58	3,487.06	36.62	11.18	36.71	1.56
3,574.00	6.28	112.63	3,572.65	34.02	19.07	34.17	2.01
3,660.00	7.46	122.38	3,658.04	29.22	28.13	29.45	1.92
3,745.00	9.47	118.50	3,742.11	22.92	38.93	23.25	2.46
3,831.00	9.88	116.28	3,826.88	16.28	51.77	16.71	0.64
3,917.00	10.10	115.35	3,911.58	9.78	65.20	10.33	0.32
4,088.00	9.93	115.81	4,079.97	-3.05	92.02	-2.28	0.11
4,260.00	8.92	117.33	4,249.65	-15.63	117.22	-14.65	0.60
4,345.00	8.79	115.35	4,333.64	-21.44	128.94	-20.36	0.39
4,431.00	8.71	112.84	4,418.64	-26.78	140.88	-25.60	0.45
4,517.00	9.29	111.39	4,503.58	-31.84	153.35	-30.55	0.72
4,602.00	9.28	111.04	4,587.46	-36.80	166.13	-35.41	0.07
4,688.00	9.33	110.64	4,672.33	-41.75	179.13	-40.25	0.10
4,774.00	9.79	110.43	4,757.14	-46.76	192.50	-45.14	0.54
4,860.00	9.83	108.43	4,841.88	-51.63	206.32	-49.90	0.40
4,945.00	8.49	109.44	4,925.80	-56.01	219.12	-54.18	1.59
5,031.00	6.23	111.09	5,011.08	-59.81	229.46	-57.88	2.64
5,117.00	4.79	106.15	5,096.68	-62.49	237.27	-60.50	1.76
5,203.00	3.21	107.30	5,182.47	-64.20	243.01	-62.16	1.84
5,288.00	1.92	118.64	5,267.38	-65.59	246.54	-63.52	1.62

Design Report for Melbon 19C-8HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,373.00	0.87	162.27	5,352.36	-66.89	247.98	-64.81	1.67
5,459.00	0.78	197.95	5,438.35	-68.07	248.00	-65.99	0.60
5,630.00	1.02	230.26	5,609.33	-70.15	246.47	-68.08	0.32
5,802.00	0.95	264.99	5,781.31	-71.25	243.87	-69.20	0.34
5,974.00	1.31	294.96	5,953.27	-70.54	240.67	-68.53	0.40
6,059.00	0.57	224.13	6,038.26	-70.44	239.50	-68.43	1.46
6,231.00	1.02	261.23	6,210.25	-71.29	237.39	-69.29	0.38
6,402.00	0.31	243.17	6,381.24	-71.73	235.47	-69.75	0.43
6,488.00	0.39	11.63	6,467.24	-71.54	235.32	-69.57	0.73
6,658.00	0.38	277.42	6,637.23	-70.91	234.88	-68.94	0.33
6,750.00	1.33	18.06	6,729.22	-69.85	234.91	-67.88	1.58
6,793.00	8.58	8.08	6,772.04	-66.20	235.51	-64.22	16.92
6,836.00	14.30	8.03	6,814.16	-57.75	236.71	-55.77	13.30
6,879.00	17.66	6.69	6,855.50	-46.01	238.21	-44.02	7.86
6,921.00	21.14	1.78	6,895.11	-32.11	239.19	-30.11	9.14
6,964.00	24.73	1.07	6,934.70	-15.36	239.60	-13.36	8.37
7,007.00	28.38	0.04	6,973.16	3.86	239.77	5.86	8.56
7,050.00	31.53	358.72	7,010.41	25.32	239.53	27.33	7.48
7,093.00	35.43	0.01	7,046.27	49.03	239.28	51.04	9.22
7,136.00	39.60	1.06	7,080.37	75.21	239.53	77.22	9.81
7,178.00	42.64	1.42	7,112.01	102.82	240.13	104.83	7.26
7,221.00	44.77	1.33	7,143.09	132.52	240.85	134.54	4.96
7,264.00	48.83	2.05	7,172.52	163.85	241.78	165.87	9.52
7,307.00	53.24	3.75	7,199.55	197.23	243.48	199.26	10.71
7,350.00	56.63	4.05	7,224.25	232.34	245.88	234.39	7.90
7,393.00	59.67	4.82	7,246.94	268.75	248.71	270.82	7.23
7,435.00	63.51	4.06	7,266.92	305.57	251.56	307.67	9.28
7,478.00	67.71	3.60	7,284.68	344.64	254.17	346.76	9.82
7,521.00	72.60	2.68	7,299.27	385.01	256.38	387.15	11.55
7,564.00	76.95	1.91	7,310.56	426.46	258.04	428.61	10.26
7,607.00	80.04	1.27	7,319.13	468.57	259.21	470.73	7.33
7,647.00	84.39	0.88	7,324.55	508.19	259.95	510.35	10.92
7,703.50	87.38	1.27	7,328.61	564.53	261.01	566.69	5.34
7" Casing @ 7703.5' MD :: 7328.61' TVD							
7,781.00	91.48	1.81	7,329.38	641.98	263.10	644.16	5.34
7,872.00	92.29	2.07	7,326.38	732.87	266.18	735.08	0.93
7,965.00	92.04	1.10	7,322.87	825.77	268.75	827.99	1.08
8,051.00	90.99	0.17	7,320.60	911.73	269.70	913.96	1.63
8,136.00	90.56	359.34	7,319.45	996.72	269.34	998.95	1.10
8,222.00	89.20	358.22	7,319.63	1,082.70	267.50	1,084.90	2.05
8,308.00	90.00	358.89	7,320.23	1,168.67	265.34	1,170.85	1.21
8,394.00	88.89	358.43	7,321.06	1,254.64	263.32	1,256.80	1.40
8,479.00	89.57	359.46	7,322.20	1,339.62	261.76	1,341.76	1.45
8,565.00	89.07	359.44	7,323.22	1,425.61	260.93	1,427.74	0.58
8,651.00	88.95	358.97	7,324.71	1,511.59	259.74	1,513.71	0.56
8,736.00	90.56	359.70	7,325.07	1,596.58	258.75	1,598.69	2.08
8,822.00	90.74	359.09	7,324.10	1,682.57	257.85	1,684.67	0.74
8,908.00	91.48	359.17	7,322.43	1,768.54	256.54	1,770.63	0.87
8,993.00	92.04	359.43	7,319.82	1,853.49	255.50	1,855.57	0.73
9,079.00	91.98	359.82	7,316.80	1,939.44	254.94	1,941.51	0.46
9,165.00	91.11	359.37	7,314.48	2,025.40	254.33	2,027.46	1.14

Design Report for Melbon 19C-8HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
9,250.00	89.57	359.26	7,313.98	2,110.39	253.32	2,112.44	1.82
9,336.00	90.06	359.31	7,314.26	2,196.39	252.24	2,198.42	0.57
9,422.00	87.53	359.31	7,316.07	2,282.35	251.21	2,284.38	2.94
9,508.00	89.63	0.07	7,318.20	2,368.32	250.74	2,370.34	2.60
9,593.00	90.62	0.33	7,318.01	2,453.32	251.04	2,455.34	1.20
9,679.00	91.61	0.76	7,316.34	2,539.30	251.86	2,541.32	1.26
9,764.00	92.04	0.41	7,313.63	2,624.25	252.73	2,626.27	0.65
9,850.00	91.67	359.61	7,310.85	2,710.20	252.74	2,712.23	1.02
9,936.00	91.73	0.69	7,308.30	2,796.16	252.97	2,798.18	1.26
10,022.00	91.73	0.76	7,305.70	2,882.12	254.05	2,884.14	0.08
10,107.00	90.93	1.88	7,303.73	2,967.07	256.01	2,969.11	1.62
10,193.00	88.64	2.41	7,304.05	3,053.00	259.23	3,055.07	2.73
10,279.00	90.25	2.60	7,304.88	3,138.91	262.99	3,141.01	1.89
10,365.00	91.05	2.72	7,303.91	3,224.82	266.98	3,226.94	0.94
10,450.00	89.88	2.89	7,303.22	3,309.71	271.14	3,311.86	1.39
10,536.00	90.74	3.23	7,302.75	3,395.58	275.73	3,397.78	1.08
10,622.00	89.94	3.82	7,302.24	3,481.42	281.02	3,483.65	1.16
10,707.00	89.01	3.05	7,303.02	3,566.26	286.11	3,568.53	1.42
10,793.00	89.81	3.17	7,303.91	3,652.13	290.77	3,654.44	0.94
10,879.00	89.51	2.30	7,304.42	3,738.03	294.88	3,740.37	1.07
10,964.00	87.59	359.05	7,306.57	3,822.98	295.88	3,825.32	4.44
11,050.00	89.38	359.14	7,308.84	3,908.94	294.52	3,911.27	2.08
11,136.00	90.62	359.50	7,308.84	3,994.93	293.50	3,997.25	1.50
11,221.00	89.44	358.83	7,308.80	4,079.92	292.26	4,082.22	1.60
11,307.00	89.44	358.13	7,309.64	4,165.88	289.98	4,168.17	0.81
11,393.00	89.44	358.19	7,310.48	4,251.83	287.22	4,254.09	0.07
11,478.00	89.63	358.11	7,311.17	4,336.79	284.48	4,339.02	0.24
11,564.00	90.49	358.23	7,311.08	4,422.74	281.73	4,424.95	1.01
11,650.00	90.19	358.31	7,310.57	4,508.70	279.13	4,510.88	0.36
11,735.00	90.99	358.62	7,309.69	4,593.67	276.86	4,595.82	1.01
11,754.00	91.05	358.15	7,309.35	4,612.65	276.32	4,614.81	2.49
Final Sperry MWD Survey @ 11754.00ft							
11,800.00	91.05	358.15	7,308.51	4,658.62	274.84	4,660.76	0.00
Straight Line Proj @ 11800' MD :: 7308.51' TVD							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
16.00	16.00	0.00	0.00	Xtreme 22: RKB = 16ft
116.00	116.00	-0.19	-0.08	First MS Energy Services Gyro @ 116.00ft
976.00	975.99	0.34	-1.48	Tie-On to Surface Gyros @ 976.00ft
976.00	975.99	0.34	-1.48	Final MS Energy Services Gyro @ 976.00ft
1,152.00	1,151.99	1.74	-1.51	First Sperry MWD Survey @ 1152.00ft
11,754.00	7,309.35	4,612.65	276.32	Final Sperry MWD Survey @ 11754.00ft
11,800.00	7,308.51	4,658.62	274.84	Straight Line Proj @ 11800' MD :: 7308.51' TVD

Design Report for Melbon 19C-8HZ - Actual Field Surveys

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	0.48	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
16.00	976.00	MS Energy Services - Surface Gyros	NS-GYRO-MS
1,152.00	7,647.00	Sperry MWD Surveys - Vert/Build	MWD+IFR1+SC
7,781.00	11,754.00	Sperry MWD Surveys - Lateral	MWD+IFR1+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,703.50	7,328.61	7" Casing @ 7703.5' MD :: 7328.61' TVD	7	8-3/4