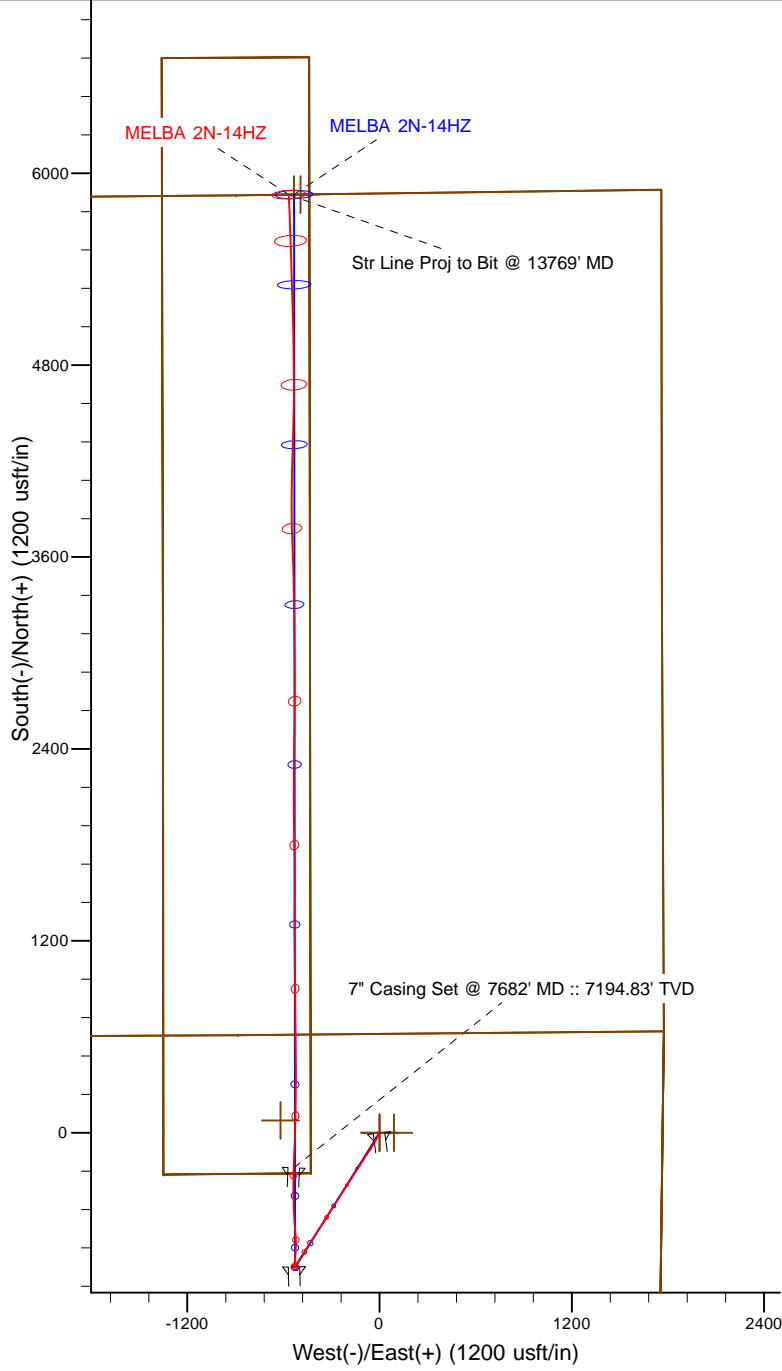
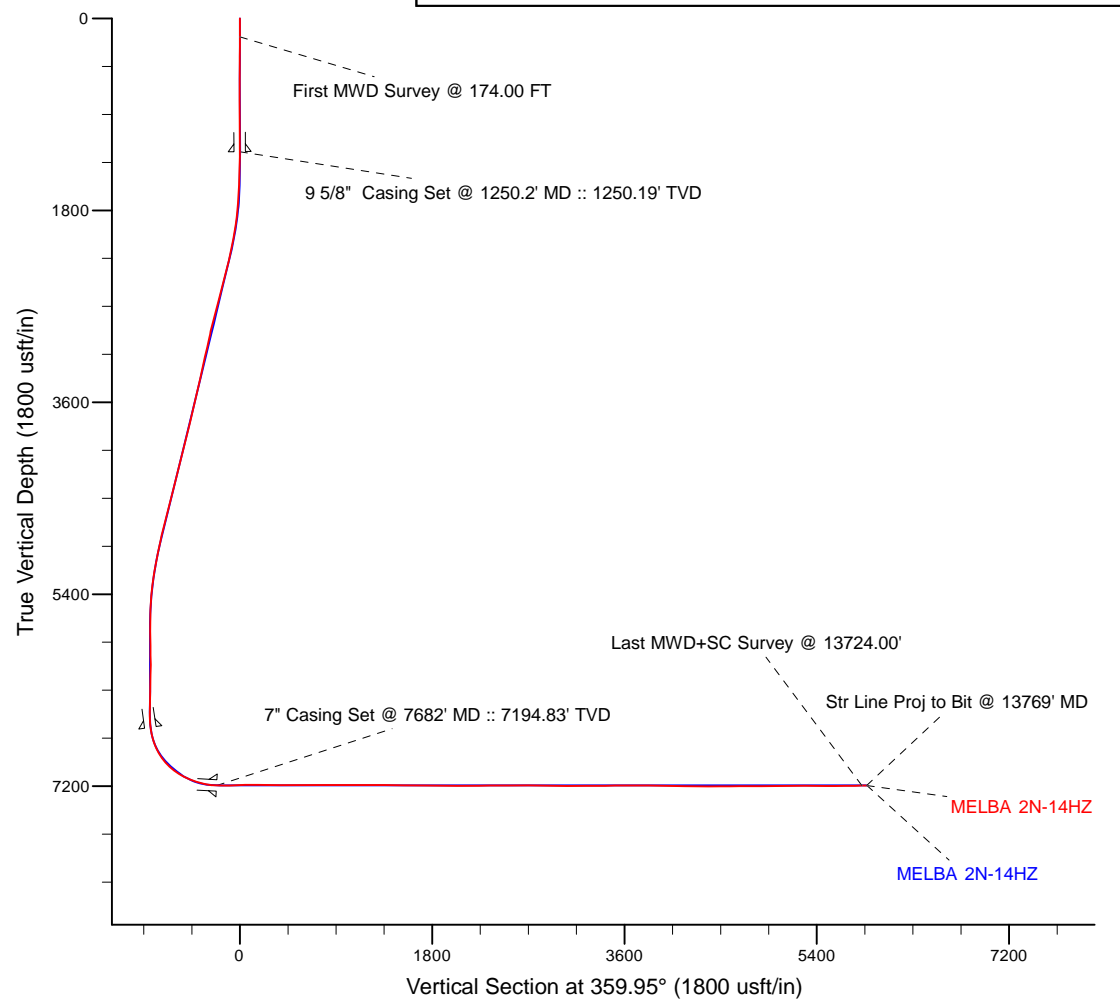


Project: Weld County, CO (NAD 83)
 Site: Sec. 23-T3N-R66W
 Well: MELBA 2N-14HZ
 Wellbore: Plan A
 Design: Actual Surveys



LEGEND

- ✕ MELBA 2N-14HZ, Plan A, Rev A1 V0
- ▣ Actual Surveys



7" Casing: ~832.49' FNL, ~2298.21' FEL
 Lat/Long: 40.215561 N, -104.743027 E
 State Planes - CO Northern: 1,322,273.47' N, 3,211,395.94' E
 Location: Sec. 23-T3N-R66W

BHL: ~0.77' FNL, ~2324.33' FEL
 Lat/Long: 40.232265 N, -104.743140 E
 State Planes - CO Northern: 1,328,357.91' N, 3,211,312.36' E
 Location: Sec. 14-T3N-R66W

WELL DETAILS: MELBA 2N-14HZ	
Ground Level:	4960.00
RKB=13' @ 4973.00usft (Ensign 123)	
Design: Actual Surveys (MELBA 2N-14HZ/Plan A)	
Created By: Katie Benner	Date: 8/29/2014
Reviewed: _____	Date: _____

SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

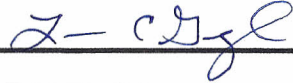


OPERATOR:	Anadarko Petroleum
WELL:	Melba 2N-14HZ
FIELD:	Wattenberg
RIG:	Ensign 123
LEGALS:	Sec. 23-T3N-R66W
COUNTY:	Weld
STATE:	Colorado
CAL. METHOD:	Min. Curv.
MAG. DECL. APPLIED:	8.4999
VERTICAL SEC. DIR. :	359.950

SSDS Job Number :	901205065
Start Date of Job :	4/9/2014
End Date of Job :	5/6/2014
Lead Directional Driller:	Bryan Seghetti/Levi George
DD	John Rizzuti
Other SSDS DD's :	0
SSDS MWD Engineers :	James Tilley/EvanPonder
MWD Trainee :	Matt Henderson
	0

Geo Pilot Engineer :

	Main Hole =====>	1st Side Track =====>	2nd Side Track =====>	3rd Side Track =====>	4th Side Track =====>
Surface Casing	1250'		Tie On		Tie On
First Wireline Survey		SS	MWD		
Last Wireline Survey		SS			
KOP Depth/Sidetrack MD	6688.00	KOP	KOP-ST1	KOP-ST2	KOP-ST3
MWD Tie-on	0'	Surface			
First MWD Survey Depth	174'	MWD	MWD	MWD	MWD
Last MWD Survey Depth	13724'	MWD	MWD	MWD	MWD
Bit Extrapolation @ TD	13769'	T.D.	T.D.	T.D.	T.D.

The following Sperry Drilling Services personnel, certify the above survey information to be accurate to the best of our knowledge:

Print Name :	Bryan Seghetti	Print Name : Levi George	Print Name :
Sign Name :		Sign Name : 	Sign Name :
Print Name :	James Tilley	Print Name : Evan Ponder	Print Name :
Sign Name :		Sign Name : 	Sign Name :

Examples of Survey Types:	TieOn	Tie On to Surface Casing (Assumed Vertical), Tie On to existing MWD Survey (prior drilled hole)
	MWD	Sperry-Sun Drilling Services (SSDS) Measurement While Drilling (MWD) Survey's
	ESS	Sperry-Sun Drilling Services (SSDS) Electronic Survey System (ESS) Survey's
	Gyro	Gyro Survey's ; Provided by third party vendor, or by Sperry-Sun Drilling Services (SSDS)
	SS	Single Shot (SS) Survey's ; Provided by Sperry-Sun Drilling Services (SSDS) or third party vendor.

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 23-T3N-R66W

MELBA 2N-14HZ

Job# 901205065:: API:05-123-39001

Plan A

Design: Actual Surveys

Sperry Drilling Services

Standard Report

28 August, 2014

Surface UWI : Job# 901205065:: API:05-123-39001

Well Coordinates: 1,322,497.20 N, 3,211,928.72 E (40° 12' 58.19" N, 104° 44' 28.00" W)

Ground Level: 4,960.00 usft

Local Coordinate Origin:

Centered on Well MELBA 2N-14HZ

Viewing Datum:

RKB=13' @ 4973.00usft (Ensign 123)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
174.00	0.43	205.75	174.00	-0.59	-0.28	-0.59	0.25
267.00	0.37	195.51	267.00	-1.19	-0.52	-1.19	0.10
361.00	0.19	214.45	360.99	-1.61	-0.68	-1.61	0.21
423.00	0.18	228.14	422.99	-1.76	-0.82	-1.76	0.07
516.00	0.19	243.28	515.99	-1.93	-1.06	-1.93	0.05
610.00	0.22	232.86	609.99	-2.11	-1.35	-2.11	0.05
703.00	0.19	211.82	702.99	-2.35	-1.57	-2.35	0.09
735.00	0.17	229.78	734.99	-2.42	-1.63	-2.42	0.19
829.00	0.16	235.89	828.99	-2.59	-1.85	-2.58	0.02
924.00	0.09	209.42	923.99	-2.73	-1.99	-2.72	0.09
1,018.00	0.03	278.72	1,017.99	-2.79	-2.06	-2.78	0.09
1,113.00	0.07	292.88	1,112.99	-2.76	-2.13	-2.76	0.04
1,207.00	0.03	184.85	1,206.99	-2.76	-2.19	-2.76	0.09
Last Surface Survey @ 1207.00'							
1,229.00	0.03	328.73	1,228.99	-2.76	-2.19	-2.76	0.26
First MWD Survey after Surface @ 1229.00'							
1,250.20	0.03	352.81	1,250.19	-2.75	-2.20	-2.75	0.06
9 5/8" Casing Set @ 1250.2' MD :: 1250.19' TVD							
1,286.00	0.03	36.35	1,285.99	-2.74	-2.19	-2.74	0.06
1,349.00	0.33	137.94	1,348.99	-2.86	-2.06	-2.86	0.54
1,444.00	1.44	215.23	1,443.98	-4.04	-2.56	-4.04	1.48
1,540.00	2.62	216.70	1,539.92	-6.78	-4.57	-6.78	1.23
1,634.00	3.25	211.48	1,633.80	-10.78	-7.25	-10.77	0.73
1,727.00	5.23	199.30	1,726.54	-17.03	-10.03	-17.02	2.33
1,821.00	6.71	203.50	1,820.03	-26.11	-13.63	-26.10	1.64
1,852.00	7.14	202.21	1,850.80	-29.55	-15.08	-29.54	1.47
1,883.00	8.44	205.66	1,881.51	-33.39	-16.80	-33.37	4.45
1,914.00	8.69	204.73	1,912.17	-37.56	-18.76	-37.55	0.92
1,945.00	8.93	204.28	1,942.80	-41.88	-20.73	-41.87	0.81
1,976.00	10.04	207.96	1,973.38	-46.46	-22.99	-46.44	4.08
2,007.00	10.42	209.70	2,003.88	-51.29	-25.64	-51.26	1.58
2,101.00	12.00	209.32	2,096.09	-67.19	-34.64	-67.16	1.68
2,194.00	14.06	213.67	2,186.69	-85.02	-45.64	-84.98	2.45
2,288.00	16.05	214.09	2,277.46	-105.29	-59.25	-105.24	2.12
2,381.00	17.33	213.57	2,366.54	-127.48	-74.12	-127.41	1.39
2,475.00	17.18	212.46	2,456.31	-150.86	-89.31	-150.78	0.38
2,569.00	17.05	210.08	2,546.15	-174.50	-103.67	-174.41	0.76
2,662.00	16.37	214.09	2,635.22	-197.15	-117.85	-197.05	1.44
2,756.00	16.71	213.09	2,725.33	-219.44	-132.65	-219.33	0.47
2,850.00	17.59	212.23	2,815.15	-242.78	-147.60	-242.65	0.97
2,943.00	16.73	213.39	2,904.01	-265.84	-162.47	-265.70	1.00
3,036.00	14.79	211.05	2,993.51	-287.19	-175.96	-287.04	2.19
3,130.00	15.03	216.20	3,084.35	-307.31	-189.34	-307.14	1.43
3,224.00	14.72	211.38	3,175.21	-327.34	-202.76	-327.16	1.36
3,314.00	15.53	211.09	3,262.09	-347.42	-214.94	-347.23	0.90
3,404.00	14.82	213.78	3,348.95	-367.30	-227.56	-367.11	1.11
3,494.00	15.08	213.37	3,435.90	-386.65	-240.40	-386.44	0.31
3,584.00	15.12	212.34	3,522.80	-406.34	-253.12	-406.12	0.30
3,674.00	15.17	211.26	3,609.67	-426.33	-265.51	-426.09	0.32

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
3,764.00	15.35	209.72	3,696.50	-446.74	-277.52	-446.50	0.49
3,854.00	14.73	213.23	3,783.42	-466.65	-289.70	-466.40	1.22
3,944.00	15.82	213.59	3,870.24	-486.45	-302.76	-486.18	1.22
4,034.00	15.86	212.37	3,956.82	-507.05	-316.13	-506.78	0.37
4,124.00	16.99	212.64	4,043.14	-528.51	-329.80	-528.22	1.26
4,214.00	18.01	212.53	4,128.98	-551.32	-344.38	-551.01	1.13
4,304.00	17.10	214.51	4,214.79	-573.95	-359.36	-573.64	1.21
4,394.00	16.94	210.43	4,300.85	-596.16	-373.50	-595.83	1.34
4,484.00	16.02	213.01	4,387.15	-617.88	-386.90	-617.54	1.31
4,574.00	16.76	213.12	4,473.49	-639.16	-400.76	-638.81	0.82
4,664.00	17.36	212.84	4,559.53	-661.31	-415.13	-660.95	0.67
4,754.00	16.40	211.86	4,645.65	-683.38	-429.12	-683.01	1.11
4,844.00	15.89	211.77	4,732.10	-704.65	-442.31	-704.26	0.57
4,934.00	16.44	212.38	4,818.55	-725.88	-455.62	-725.48	0.64
5,024.00	14.27	213.73	4,905.33	-745.86	-468.60	-745.45	2.44
5,114.00	14.74	214.33	4,992.46	-764.54	-481.22	-764.12	0.55
5,204.00	12.63	212.21	5,079.90	-782.33	-492.92	-781.90	2.41
5,294.00	11.34	212.84	5,167.94	-798.09	-502.96	-797.65	1.44
5,384.00	9.65	210.08	5,256.43	-812.05	-511.54	-811.60	1.96
5,473.00	7.31	211.11	5,344.45	-823.35	-518.21	-822.90	2.63
5,563.00	4.76	203.16	5,433.94	-831.69	-522.64	-831.23	2.97
5,653.00	3.30	220.68	5,523.72	-837.09	-525.79	-836.63	2.10
5,743.00	1.42	236.13	5,613.64	-839.67	-528.41	-839.21	2.19
5,923.00	1.15	326.91	5,793.61	-839.40	-531.25	-838.94	1.02
6,013.00	1.09	321.36	5,883.59	-837.98	-532.27	-837.51	0.14
6,102.00	0.86	60.70	5,972.59	-836.99	-532.22	-836.53	1.68
6,192.00	0.94	71.13	6,062.58	-836.42	-530.93	-835.96	0.20
6,282.00	1.08	165.43	6,152.57	-837.00	-530.02	-836.54	1.65
6,372.00	1.12	181.43	6,242.55	-838.70	-529.83	-838.24	0.34
6,462.00	1.13	186.30	6,332.53	-840.46	-529.95	-840.00	0.11
6,552.00	1.29	186.47	6,422.51	-842.35	-530.16	-841.89	0.18
6,642.00	1.07	190.27	6,512.49	-844.19	-530.42	-843.72	0.26
6,687.00	0.98	238.16	6,557.49	-844.80	-530.83	-844.34	1.86
6,732.00	4.04	350.18	6,602.45	-843.44	-531.42	-842.98	10.00
6,777.00	7.96	358.82	6,647.20	-838.76	-531.76	-838.30	8.91
6,780.00	8.18	359.22	6,650.17	-838.34	-531.76	-837.88	7.64
5 1/2"							
6,822.00	11.32	3.22	6,691.56	-831.24	-531.57	-830.77	7.64
6,867.00	14.62	7.48	6,735.40	-821.19	-530.59	-820.73	7.63
6,912.00	18.17	8.61	6,778.57	-808.62	-528.80	-808.16	7.92
6,957.00	22.03	6.19	6,820.82	-793.29	-526.83	-792.83	8.77
7,002.00	24.36	5.77	6,862.18	-775.66	-524.99	-775.20	5.19
7,047.00	30.84	3.83	6,902.04	-754.90	-523.29	-754.44	14.54
7,092.00	35.75	2.07	6,939.64	-730.24	-522.04	-729.78	11.12
7,137.00	41.19	0.93	6,974.86	-702.26	-521.32	-701.81	12.19
7,154.00	43.56	359.95	6,987.42	-690.81	-521.24	-690.35	14.47
7,184.00	46.30	358.38	7,008.65	-669.62	-521.55	-669.17	9.85
7,229.00	51.41	355.38	7,038.26	-635.81	-523.43	-635.35	12.41
7,274.00	53.32	354.82	7,065.73	-600.30	-526.48	-599.84	4.36
7,319.00	58.61	355.72	7,090.91	-563.15	-529.54	-562.69	11.87
7,364.00	63.09	356.00	7,112.83	-523.96	-532.38	-523.50	9.97

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
7,409.00	67.12	357.28	7,131.77	-483.22	-534.76	-482.76	9.32
7,454.00	70.13	358.54	7,148.17	-441.35	-536.28	-440.89	7.18
7,499.00	73.19	359.20	7,162.32	-398.65	-537.12	-398.18	6.94
7,544.00	75.54	359.73	7,174.45	-355.32	-537.53	-354.85	5.34
7,589.00	78.87	0.55	7,184.42	-311.45	-537.42	-310.98	7.61
7,634.00	83.64	1.90	7,191.26	-266.99	-536.47	-266.53	11.01
7,648.00	85.19	2.16	7,192.62	-253.07	-535.97	-252.60	11.22
7,682.00	87.04	2.14	7,194.92	-219.17	-534.70	-218.71	5.44
7" Casing Set @ 7682' MD :: 7194.83' TVD							
7,725.00	89.38	2.12	7,196.26	-176.23	-533.10	-175.76	5.44
7,756.00	90.25	2.40	7,196.36	-145.25	-531.88	-144.79	2.95
7,819.00	92.13	2.14	7,195.06	-82.32	-529.38	-81.86	3.01
7,850.00	93.20	1.96	7,193.61	-51.37	-528.28	-50.91	3.50
7,881.00	93.33	1.90	7,191.85	-20.44	-527.23	-19.98	0.46
7,912.00	93.11	1.72	7,190.11	10.50	-526.26	10.95	0.92
7,944.00	92.25	1.13	7,188.61	42.45	-525.46	42.91	3.26
7,975.00	90.99	0.87	7,187.74	73.43	-524.92	73.89	4.15
8,006.00	90.19	1.09	7,187.42	104.43	-524.39	104.88	2.68
8,037.00	89.08	0.60	7,187.61	135.42	-523.93	135.88	3.91
8,068.00	89.20	0.41	7,188.08	166.42	-523.66	166.87	0.72
8,162.00	89.17	0.45	7,189.42	260.40	-522.95	260.86	0.05
8,255.00	89.17	0.88	7,190.76	353.39	-521.87	353.84	0.46
8,349.00	90.09	359.70	7,191.37	447.38	-521.40	447.84	1.59
8,442.00	90.28	359.70	7,191.07	540.38	-521.89	540.84	0.20
8,532.00	90.34	359.58	7,190.58	630.38	-522.45	630.83	0.15
8,622.00	89.85	359.02	7,190.43	720.37	-523.55	720.83	0.83
8,712.00	90.15	359.33	7,190.43	810.36	-524.85	810.82	0.48
8,802.00	90.31	358.95	7,190.07	900.35	-526.20	900.81	0.46
8,892.00	89.69	359.17	7,190.07	990.34	-527.67	990.80	0.73
8,982.00	90.09	359.11	7,190.24	1,080.33	-529.02	1,080.79	0.45
9,072.00	90.37	359.09	7,189.88	1,170.31	-530.44	1,170.78	0.31
9,162.00	90.00	359.99	7,189.59	1,260.31	-531.16	1,260.77	1.08
9,252.00	89.20	0.58	7,190.22	1,350.31	-530.71	1,350.77	1.10
9,342.00	89.04	0.67	7,191.60	1,440.29	-529.73	1,440.75	0.20
9,432.00	89.17	359.89	7,193.01	1,530.28	-529.29	1,530.74	0.88
9,522.00	89.14	359.79	7,194.34	1,620.27	-529.54	1,620.73	0.12
9,611.00	89.45	359.30	7,195.43	1,709.26	-530.25	1,709.72	0.65
9,701.00	89.57	359.13	7,196.20	1,799.25	-531.48	1,799.71	0.23
9,791.00	89.51	359.03	7,196.92	1,889.23	-532.93	1,889.69	0.13
9,881.00	89.51	359.03	7,197.69	1,979.21	-534.45	1,979.68	0.00
9,971.00	89.88	359.98	7,198.17	2,069.21	-535.23	2,069.67	1.13
Last MWD+IFR Survey @ 9971.00'							
10,061.00	91.20	0.99	7,197.32	2,159.20	-534.47	2,159.66	1.85
10,196.00	90.22	0.37	7,195.65	2,294.18	-532.87	2,294.64	0.86
10,241.00	90.65	0.59	7,195.31	2,339.17	-532.49	2,339.64	1.07
10,331.00	90.19	0.49	7,194.65	2,429.17	-531.64	2,429.63	0.52
10,421.00	89.54	0.47	7,194.86	2,519.16	-530.89	2,519.62	0.72
10,511.00	89.88	0.55	7,195.32	2,609.16	-530.09	2,609.62	0.39
10,601.00	90.28	0.61	7,195.19	2,699.15	-529.17	2,699.61	0.45
10,691.00	90.00	359.88	7,194.97	2,789.15	-528.79	2,789.61	0.87
10,871.00	88.95	359.48	7,196.62	2,969.14	-529.79	2,969.60	0.62

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
10,961.00	88.98	359.38	7,198.25	3,059.12	-530.69	3,059.58	0.12
11,051.00	90.25	359.69	7,198.85	3,149.11	-531.42	3,149.57	1.45
11,141.00	90.68	359.41	7,198.12	3,239.11	-532.13	3,239.57	0.57
11,231.00	90.68	359.48	7,197.05	3,329.10	-533.00	3,329.56	0.08
11,321.00	89.94	358.54	7,196.57	3,419.08	-534.55	3,419.54	1.33
11,411.00	90.31	358.16	7,196.37	3,509.04	-537.15	3,509.51	0.59
11,501.00	90.46	358.12	7,195.77	3,598.99	-540.07	3,599.46	0.17
11,680.00	89.78	358.03	7,195.39	3,777.89	-546.08	3,778.36	0.38
11,770.00	89.35	359.05	7,196.07	3,867.86	-548.37	3,868.33	1.23
11,860.00	89.26	0.43	7,197.17	3,957.85	-548.78	3,958.32	1.54
11,950.00	88.61	1.42	7,198.84	4,047.82	-547.33	4,048.29	1.32
12,040.00	89.04	1.39	7,200.68	4,137.77	-545.12	4,138.24	0.48
12,130.00	89.35	1.50	7,201.95	4,227.73	-542.85	4,228.21	0.37
12,220.00	89.69	1.85	7,202.70	4,317.69	-540.22	4,318.16	0.54
12,310.00	90.00	1.38	7,202.95	4,407.65	-537.69	4,408.12	0.63
12,400.00	90.25	1.03	7,202.75	4,497.63	-535.79	4,498.10	0.48
12,490.00	90.43	1.26	7,202.22	4,587.61	-533.99	4,588.08	0.32
12,580.00	90.49	359.48	7,201.49	4,677.61	-533.41	4,678.07	1.98
12,670.00	90.65	359.36	7,200.60	4,767.60	-534.32	4,768.06	0.22
12,760.00	89.78	359.30	7,200.26	4,857.59	-535.38	4,858.06	0.97
12,850.00	90.40	359.32	7,200.12	4,947.58	-536.46	4,948.05	0.69
12,940.00	90.89	358.85	7,199.11	5,037.56	-537.90	5,038.03	0.75
13,030.00	90.68	357.91	7,197.87	5,127.52	-540.44	5,127.99	1.07
13,120.00	90.52	358.00	7,196.93	5,217.46	-543.65	5,217.93	0.20
13,210.00	89.38	358.43	7,197.01	5,307.41	-546.46	5,307.89	1.35
13,300.00	89.57	358.39	7,197.83	5,397.37	-548.95	5,397.85	0.22
13,390.00	89.91	358.27	7,198.24	5,487.33	-551.58	5,487.81	0.40
13,480.00	90.09	357.69	7,198.24	5,577.28	-554.75	5,577.76	0.67
13,570.00	90.46	357.85	7,197.81	5,667.21	-558.25	5,667.69	0.45
13,660.00	90.93	357.92	7,196.72	5,757.14	-561.57	5,757.63	0.53
13,724.00	91.11	357.42	7,195.58	5,821.08	-564.17	5,821.57	0.83
Last MWD+SC Survey @ 13724.00'							
13,769.00	91.11	357.42	7,194.71	5,866.02	-566.20	5,866.51	0.00
Str Line Proj to Bit @ 13769' MD ::							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,207.00	1,206.99	-2.76	-2.19	Last Surface Survey @ 1207.00'
1,229.00	1,228.99	-2.76	-2.19	First MWD Survey after Surface @ 1229.00'
9,971.00	7,198.17	2,069.21	-535.23	Last MWD+IFR Survey @ 9971.00'
13,724.00	7,195.58	5,821.08	-564.17	Last MWD+SC Survey @ 13724.00'
13,769.00	7,194.71	5,866.02	-566.20	Str Line Proj to Bit @ 13769' MD ::

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	359.95	Slot	0.00	0.00	0.00

Design Report for MELBA 2N-14HZ - Actual Surveys**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
174.00	1,207.00	MWD Surveys-Surface	MWD+IFR1+SC
1,229.00	7,648.00	MWD Surveys-Intermediate	MWD+IFR1+SC
7,725.00	9,971.00	MWD IFR Corrected Lateral Surveys	MWD+IFR1+SC
10,061.00	13,724.00	MWD+SC Only Lateral Surveys	MWD+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,250.20	1,250.19	9 5/8" Casing Set @ 1250.2' MD :: 1250.19' TVD	9-5/8	13-1/2
7,682.00	7,194.92	7" Casing Set @ 7682' MD :: 7194.83' TVD	7	8-3/4
6,780.00	6,650.17	5 1/2"	5-1/2	6

Design Report for MELBA 2N-14HZ - Actual Surveys**Wellbore Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
MELBA 2N-14HZ SHL - actual wellpath misses target center by 0.02usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Point	0.00	0.00	0.00	0.02	0.00	1,322,497.22	3,211,928.72	40.216163	-104.741112
MELBA 2N-14HZ LD - actual wellpath misses target center by 0.02usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	0.00	0.02	0.00	1,322,497.22	3,211,928.72	40.216163	-104.741112
Point 1				0.00	-253.01	-428.56	1,322,240.56	3,211,502.36	
Point 2				0.00	-261.76	-1,348.63	1,322,223.94	3,210,582.43	
Point 3				0.00	3,221.28	-1,351.32	1,325,706.68	3,210,549.94	
Point 4				0.00	5,857.33	-1,357.58	1,328,342.47	3,210,521.12	
Point 5				0.00	6,720.69	-1,358.79	1,329,205.75	3,210,512.52	
Point 6				0.00	6,724.81	-438.75	1,329,217.74	3,211,432.45	
Point 7				0.00	-253.01	-428.56	1,322,240.56	3,211,502.36	
MELBA 2-23 Pad Sec. - actual wellpath misses target center by 90.23usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E) - Polygon	0.00	0.00	-2.00	0.77	90.21	1,322,498.74	3,212,018.91	40.216165	-104.740789
Point 1				-2.00	-4,628.25	1,636.80	1,317,884.86	3,213,695.19	
Point 2				-2.00	-4,627.85	-996.34	1,317,862.73	3,211,062.25	
Point 3				-2.00	-4,628.05	-3,629.19	1,317,840.00	3,208,429.61	
Point 4				-2.00	-2,079.54	-3,632.23	1,320,388.28	3,208,404.76	
Point 5				-2.00	597.74	-3,634.72	1,323,065.32	3,208,379.36	
Point 6				-2.00	3,193.94	-3,638.83	1,325,661.28	3,208,353.04	
Point 7				-2.00	5,838.13	-3,642.86	1,328,305.23	3,208,326.38	
Point 8				-2.00	5,861.68	-987.76	1,328,351.50	3,210,981.07	
Point 9				-2.00	5,896.60	1,667.99	1,328,409.14	3,213,636.31	
Point 10				-2.00	3,258.09	1,673.16	1,325,770.89	3,213,664.06	
Point 11				-2.00	633.24	1,684.86	1,323,146.34	3,213,698.22	
Point 12				-2.00	-2,014.41	1,649.96	1,320,498.61	3,213,685.98	
Point 13				-2.00	-4,628.25	1,636.80	1,317,884.86	3,213,695.19	
Point 14				-2.00	-2,014.41	1,649.96	1,320,498.61	3,213,685.98	
Point 15				-2.00	633.24	1,684.86	1,323,146.34	3,213,698.22	
Point 16				-2.00	609.49	-975.36	1,323,099.83	3,211,038.41	
Point 17				-2.00	597.74	-3,634.72	1,323,065.32	3,208,379.36	
Point 18				-2.00	-2,079.54	-3,632.23	1,320,388.28	3,208,404.76	
Point 19				-2.00	-4,628.05	-3,629.19	1,317,840.00	3,208,429.61	
MELBA 2N-14HZ BHL - actual wellpath misses target center by 73.37usft at 13766.44usft MD (7194.76 TVD, 5863.47 N, -566.08 E) - Point	0.00	0.00	7,193.00	5,866.73	-492.81	1,328,359.25	3,211,385.74	40.232267	-104.742877
MELBA 2N-14HZ BHL - actual wellpath misses target center by 33.43usft at 13768.24usft MD (7194.72 TVD, 5865.26 N, -566.16 E) - Point	0.00	0.00	7,193.00	5,866.73	-532.81	1,328,358.91	3,211,345.74	40.232267	-104.743020
Farley 28N-23HZ Line - actual wellpath misses target center by 107.03usft at 7976.52usft MD (7187.71 TVD, 74.95 N, -524.90 E) - Point	0.00	0.00	7,242.00	77.09	-617.11	1,322,569.00	3,211,311.00	40.216374	-104.743322

Directional Difficulty Index

Average Dogleg over Survey:	1.49 °/100usft	Maximum Dogleg over Survey:	14.54 °/100usft at 7,047.00 usft
Net Tortosity applicable to Plans:	0.61 °/100usft	Directional Difficulty Index:	6.483

Audit Info

North Reference Sheet for Sec. 23-T3N-R66W - MELBA 2N-14HZ - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB=13' @ 4973.00usft (Ensign 123). Northing and Easting are relative to MELBA 2N-14HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995703

Grid Coordinates of Well: 1,322,497.20 usft N, 3,211,928.72 usft E

Geographical Coordinates of Well: 40° 12' 58.19" N, 104° 44' 28.00" W

Grid Convergence at Surface is: 0.49°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,769.00usft the Bottom Hole Displacement is 5,893.28usft in the Direction of 354.49° (True).

Magnetic Convergence at surface is: -8.01° (15 April 2014, , BGGM2013)

Magnetic Model: BGGM2013
 Date: 15-Apr-14
 Declination: 8.50°
 Inclination/Dip: 66.80°
 Field Strength: 52655

Grid North is 0.49° East of True North (Grid Convergence)
 Magnetic North is 8.50° East of True North (Magnetic Declination)
 Magnetic North is 8.01° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 0.49°
 To convert a Magnetic Direction to a True Direction, Add 8.50° East
 To convert a Magnetic Direction to a Grid Direction, Add 8.01°

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 23-T3N-R66W

MELBA 2N-14HZ

Job# 901205065:: API:05-123-39001

Plan A

Design: Actual Surveys

Sperry Drilling Services

Geodetic Report

28 August, 2014

Well Coordinates: 1,322,497.20 N, 3,211,928.72 E (40° 12' 58.19" N, 104° 44' 28.00" W)

Ground Level: 4,960.00 usft

Local Coordinate Origin:

Centered on Well MELBA 2N-14HZ

Viewing Datum:

RKB=13' @ 4973.00usft (Ensign 123)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	40.216163	-104.741112	1,322,497.20	3,211,928.72
174.00	0.43	205.75	174.00	-0.59	-0.28	40.216161	-104.741113	1,322,496.61	3,211,928.44
267.00	0.37	195.51	267.00	-1.19	-0.52	40.216160	-104.741114	1,322,496.00	3,211,928.21
361.00	0.19	214.45	360.99	-1.61	-0.68	40.216159	-104.741115	1,322,495.58	3,211,928.05
423.00	0.18	228.14	422.99	-1.76	-0.82	40.216158	-104.741115	1,322,495.43	3,211,927.92
516.00	0.19	243.28	515.99	-1.93	-1.06	40.216158	-104.741116	1,322,495.26	3,211,927.67
610.00	0.22	232.86	609.99	-2.11	-1.35	40.216157	-104.741117	1,322,495.08	3,211,927.39
703.00	0.19	211.82	702.99	-2.35	-1.57	40.216157	-104.741118	1,322,494.84	3,211,927.17
735.00	0.17	229.78	734.99	-2.42	-1.63	40.216156	-104.741118	1,322,494.76	3,211,927.10
829.00	0.16	235.89	828.99	-2.59	-1.85	40.216156	-104.741119	1,322,494.60	3,211,926.89
924.00	0.09	209.42	923.99	-2.73	-1.99	40.216156	-104.741119	1,322,494.46	3,211,926.75
1,018.00	0.03	278.72	1,017.99	-2.79	-2.06	40.216155	-104.741120	1,322,494.39	3,211,926.69
1,113.00	0.07	292.88	1,112.99	-2.76	-2.13	40.216155	-104.741120	1,322,494.42	3,211,926.61
1,207.00	0.03	184.85	1,206.99	-2.76	-2.19	40.216155	-104.741120	1,322,494.42	3,211,926.55
1,229.00	0.03	328.73	1,228.99	-2.76	-2.19	40.216155	-104.741120	1,322,494.42	3,211,926.55
1,250.20	0.03	352.81	1,250.19	-2.75	-2.20	40.216155	-104.741120	1,322,494.43	3,211,926.55
1,286.00	0.03	36.35	1,285.99	-2.74	-2.19	40.216155	-104.741120	1,322,494.44	3,211,926.55
1,349.00	0.33	137.94	1,348.99	-2.86	-2.06	40.216155	-104.741120	1,322,494.32	3,211,926.68
1,444.00	1.44	215.23	1,443.98	-4.04	-2.56	40.216152	-104.741121	1,322,493.14	3,211,926.19
1,540.00	2.62	216.70	1,539.92	-6.78	-4.57	40.216144	-104.741129	1,322,490.38	3,211,924.20
1,634.00	3.25	211.48	1,633.80	-10.78	-7.25	40.216133	-104.741138	1,322,486.36	3,211,921.56
1,727.00	5.23	199.30	1,726.54	-17.03	-10.03	40.216116	-104.741148	1,322,480.09	3,211,918.84
1,821.00	6.71	203.50	1,820.03	-26.11	-13.63	40.216091	-104.741161	1,322,470.98	3,211,915.31
1,852.00	7.14	202.21	1,850.80	-29.55	-15.08	40.216082	-104.741166	1,322,467.52	3,211,913.89
1,883.00	8.44	205.66	1,881.51	-33.39	-16.80	40.216071	-104.741172	1,322,463.67	3,211,912.21
1,914.00	8.69	204.73	1,912.17	-37.56	-18.76	40.216060	-104.741179	1,322,459.48	3,211,910.28
1,945.00	8.93	204.28	1,942.80	-41.88	-20.73	40.216048	-104.741186	1,322,455.14	3,211,908.35
1,976.00	10.04	207.96	1,973.38	-46.46	-22.99	40.216035	-104.741195	1,322,450.54	3,211,906.13
2,007.00	10.42	209.70	2,003.88	-51.29	-25.64	40.216022	-104.741204	1,322,445.70	3,211,903.52
2,101.00	12.00	209.32	2,096.09	-67.19	-34.64	40.215979	-104.741236	1,322,429.72	3,211,894.66
2,194.00	14.06	213.67	2,186.69	-85.02	-45.64	40.215930	-104.741276	1,322,411.79	3,211,883.81
2,288.00	16.05	214.09	2,277.46	-105.29	-59.25	40.215874	-104.741324	1,322,391.41	3,211,870.37
2,381.00	17.33	213.57	2,366.54	-127.48	-74.12	40.215813	-104.741378	1,322,369.10	3,211,855.70
2,475.00	17.18	212.46	2,456.31	-150.86	-89.31	40.215749	-104.741432	1,322,345.59	3,211,840.70
2,569.00	17.05	210.08	2,546.15	-174.50	-103.67	40.215684	-104.741483	1,322,321.83	3,211,826.55
2,662.00	16.37	214.09	2,635.22	-197.15	-117.85	40.215622	-104.741534	1,322,299.06	3,211,812.57
2,756.00	16.71	213.09	2,725.33	-219.44	-132.65	40.215561	-104.741587	1,322,276.64	3,211,797.95
2,850.00	17.59	212.23	2,815.15	-242.78	-147.60	40.215497	-104.741641	1,322,253.18	3,211,783.20
2,943.00	16.73	213.39	2,904.01	-265.84	-162.47	40.215433	-104.741694	1,322,229.99	3,211,768.54
3,036.00	14.79	211.05	2,993.51	-287.19	-175.96	40.215375	-104.741742	1,322,208.52	3,211,755.23
3,130.00	15.03	216.20	3,084.35	-307.31	-189.34	40.215319	-104.741790	1,322,188.30	3,211,742.02
3,224.00	14.72	211.38	3,175.21	-327.34	-202.76	40.215264	-104.741838	1,322,168.15	3,211,728.77

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
3,314.00	15.53	211.09	3,262.09	-347.42	-214.94	40.215209	-104.741882	1,322,147.97	3,211,716.77
3,404.00	14.82	213.78	3,348.95	-367.30	-227.56	40.215155	-104.741927	1,322,127.98	3,211,704.32
3,494.00	15.08	213.37	3,435.90	-386.65	-240.40	40.215102	-104.741973	1,322,108.52	3,211,691.65
3,584.00	15.12	212.34	3,522.80	-406.34	-253.12	40.215048	-104.742019	1,322,088.72	3,211,679.10
3,674.00	15.17	211.26	3,609.67	-426.33	-265.51	40.214993	-104.742063	1,322,068.63	3,211,666.88
3,764.00	15.35	209.72	3,696.50	-446.74	-277.52	40.214937	-104.742106	1,322,048.12	3,211,655.04
3,854.00	14.73	213.23	3,783.42	-466.65	-289.70	40.214882	-104.742150	1,322,028.10	3,211,643.03
3,944.00	15.82	213.59	3,870.24	-486.45	-302.76	40.214828	-104.742196	1,322,008.20	3,211,630.15
4,034.00	15.86	212.37	3,956.82	-507.05	-316.13	40.214771	-104.742244	1,321,987.48	3,211,616.95
4,124.00	16.99	212.64	4,043.14	-528.51	-329.80	40.214712	-104.742293	1,321,965.91	3,211,603.46
4,214.00	18.01	212.53	4,128.98	-551.32	-344.38	40.214650	-104.742345	1,321,942.98	3,211,589.08
4,304.00	17.10	214.51	4,214.79	-573.95	-359.36	40.214587	-104.742399	1,321,920.22	3,211,574.30
4,394.00	16.94	210.43	4,300.85	-596.16	-373.50	40.214527	-104.742450	1,321,897.89	3,211,560.35
4,484.00	16.02	213.01	4,387.15	-617.88	-386.90	40.214467	-104.742498	1,321,876.06	3,211,547.13
4,574.00	16.76	213.12	4,473.49	-639.16	-400.76	40.214408	-104.742547	1,321,854.66	3,211,533.46
4,664.00	17.36	212.84	4,559.53	-661.31	-415.13	40.214348	-104.742599	1,321,832.39	3,211,519.28
4,754.00	16.40	211.86	4,645.65	-683.38	-429.12	40.214287	-104.742649	1,321,810.20	3,211,505.48
4,844.00	15.89	211.77	4,732.10	-704.65	-442.31	40.214229	-104.742696	1,321,788.82	3,211,492.47
4,934.00	16.44	212.38	4,818.55	-725.88	-455.62	40.214170	-104.742744	1,321,767.48	3,211,479.35
5,024.00	14.27	213.73	4,905.33	-745.86	-468.60	40.214116	-104.742790	1,321,747.38	3,211,466.54
5,114.00	14.74	214.33	4,992.46	-764.54	-481.22	40.214064	-104.742835	1,321,728.60	3,211,454.08
5,204.00	12.63	212.21	5,079.90	-782.33	-492.92	40.214015	-104.742877	1,321,710.72	3,211,442.53
5,294.00	11.34	212.84	5,167.94	-798.09	-502.96	40.213972	-104.742913	1,321,694.87	3,211,432.62
5,384.00	9.65	210.08	5,256.43	-812.05	-511.54	40.213934	-104.742944	1,321,680.84	3,211,424.16
5,473.00	7.31	211.11	5,344.45	-823.35	-518.21	40.213903	-104.742968	1,321,669.48	3,211,417.60
5,563.00	4.76	203.16	5,433.94	-831.69	-522.64	40.213880	-104.742984	1,321,661.10	3,211,413.24
5,653.00	3.30	220.68	5,523.72	-837.09	-525.79	40.213865	-104.742995	1,321,655.68	3,211,410.13
5,743.00	1.42	236.13	5,613.64	-839.67	-528.41	40.213858	-104.743004	1,321,653.07	3,211,407.54
5,923.00	1.15	326.91	5,793.61	-839.40	-531.25	40.213859	-104.743014	1,321,653.32	3,211,404.70
6,013.00	1.09	321.36	5,883.59	-837.98	-532.27	40.213863	-104.743018	1,321,654.73	3,211,403.66
6,102.00	0.86	60.70	5,972.59	-836.99	-532.22	40.213865	-104.743018	1,321,655.72	3,211,403.70
6,192.00	0.94	71.13	6,062.58	-836.42	-530.93	40.213867	-104.743013	1,321,656.30	3,211,404.98
6,282.00	1.08	165.43	6,152.57	-837.00	-530.02	40.213865	-104.743010	1,321,655.73	3,211,405.90
6,372.00	1.12	181.43	6,242.55	-838.70	-529.83	40.213861	-104.743009	1,321,654.03	3,211,406.11
6,462.00	1.13	186.30	6,332.53	-840.46	-529.95	40.213856	-104.743010	1,321,652.27	3,211,406.00
6,552.00	1.29	186.47	6,422.51	-842.35	-530.16	40.213851	-104.743011	1,321,650.38	3,211,405.81
6,642.00	1.07	190.27	6,512.49	-844.19	-530.42	40.213846	-104.743011	1,321,648.54	3,211,405.56
6,687.00	0.98	238.16	6,557.49	-844.80	-530.83	40.213844	-104.743013	1,321,647.92	3,211,405.16
6,732.00	4.04	350.18	6,602.45	-843.44	-531.42	40.213848	-104.743015	1,321,649.27	3,211,404.55
6,777.00	7.96	358.82	6,647.20	-838.76	-531.76	40.213861	-104.743016	1,321,653.95	3,211,404.18
6,780.00	8.18	359.22	6,650.17	-838.34	-531.76	40.213862	-104.743016	1,321,654.37	3,211,404.17
6,822.00	11.32	3.22	6,691.56	-831.24	-531.57	40.213881	-104.743016	1,321,661.48	3,211,404.30

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
6,867.00	14.62	7.48	6,735.40	-821.19	-530.59	40.213909	-104.743012	1,321,671.53	3,211,405.20
6,912.00	18.17	8.61	6,778.57	-808.62	-528.80	40.213943	-104.743006	1,321,684.12	3,211,406.88
6,957.00	22.03	6.19	6,820.82	-793.29	-526.83	40.213985	-104.742999	1,321,699.46	3,211,408.71
7,002.00	24.36	5.77	6,862.18	-775.66	-524.99	40.214034	-104.742992	1,321,717.11	3,211,410.41
7,047.00	30.84	3.83	6,902.04	-754.90	-523.29	40.214091	-104.742986	1,321,737.88	3,211,411.93
7,092.00	35.75	2.07	6,939.64	-730.24	-522.04	40.214158	-104.742981	1,321,762.55	3,211,412.97
7,137.00	41.19	0.93	6,974.86	-702.26	-521.32	40.214235	-104.742979	1,321,790.53	3,211,413.44
7,154.00	43.56	359.95	6,987.42	-690.81	-521.24	40.214267	-104.742979	1,321,801.99	3,211,413.43
7,184.00	46.30	358.38	7,008.65	-669.62	-521.55	40.214325	-104.742980	1,321,823.16	3,211,412.93
7,229.00	51.41	355.38	7,038.26	-635.81	-523.43	40.214418	-104.742986	1,321,856.96	3,211,410.77
7,274.00	53.32	354.82	7,065.73	-600.30	-526.48	40.214515	-104.742997	1,321,892.44	3,211,407.42
7,319.00	58.61	355.72	7,090.91	-563.15	-529.54	40.214617	-104.743008	1,321,929.56	3,211,404.04
7,364.00	63.09	356.00	7,112.83	-523.96	-532.38	40.214725	-104.743018	1,321,968.72	3,211,400.87
7,409.00	67.12	357.28	7,131.77	-483.22	-534.76	40.214837	-104.743027	1,322,009.44	3,211,398.13
7,454.00	70.13	358.54	7,148.17	-441.35	-536.28	40.214951	-104.743032	1,322,051.29	3,211,396.25
7,499.00	73.19	359.20	7,162.32	-398.65	-537.12	40.215069	-104.743035	1,322,093.98	3,211,395.05
7,544.00	75.54	359.73	7,174.45	-355.32	-537.53	40.215188	-104.743037	1,322,137.30	3,211,394.27
7,589.00	78.87	0.55	7,184.42	-311.45	-537.42	40.215308	-104.743037	1,322,181.18	3,211,394.01
7,634.00	83.64	1.90	7,191.26	-266.99	-536.47	40.215430	-104.743033	1,322,225.63	3,211,394.58
7,648.00	85.19	2.16	7,192.62	-253.07	-535.97	40.215468	-104.743031	1,322,239.56	3,211,394.95
7,682.00	87.04	2.14	7,194.92	-219.17	-534.70	40.215561	-104.743027	1,322,273.47	3,211,395.94
7,725.00	89.38	2.12	7,196.26	-176.23	-533.10	40.215679	-104.743021	1,322,316.42	3,211,397.17
7,756.00	90.25	2.40	7,196.36	-145.25	-531.88	40.215764	-104.743017	1,322,347.41	3,211,398.12
7,819.00	92.13	2.14	7,195.06	-82.32	-529.38	40.215937	-104.743008	1,322,410.36	3,211,400.08
7,850.00	93.20	1.96	7,193.61	-51.37	-528.28	40.216022	-104.743004	1,322,441.31	3,211,400.92
7,881.00	93.33	1.90	7,191.85	-20.44	-527.23	40.216107	-104.743000	1,322,472.25	3,211,401.70
7,912.00	93.11	1.72	7,190.11	10.50	-526.26	40.216192	-104.742997	1,322,503.19	3,211,402.41
7,944.00	92.25	1.13	7,188.61	42.45	-525.46	40.216279	-104.742994	1,322,535.15	3,211,402.93
7,975.00	90.99	0.87	7,187.74	73.43	-524.92	40.216365	-104.742992	1,322,566.13	3,211,403.21
8,006.00	90.19	1.09	7,187.42	104.43	-524.39	40.216450	-104.742990	1,322,597.13	3,211,403.48
8,037.00	89.08	0.60	7,187.61	135.42	-523.93	40.216535	-104.742988	1,322,628.13	3,211,403.67
8,068.00	89.20	0.41	7,188.08	166.42	-523.66	40.216620	-104.742987	1,322,659.12	3,211,403.68
8,162.00	89.17	0.45	7,189.42	260.40	-522.95	40.216878	-104.742985	1,322,753.11	3,211,403.58
8,255.00	89.17	0.88	7,190.76	353.39	-521.87	40.217133	-104.742981	1,322,846.09	3,211,403.86
8,349.00	90.09	359.70	7,191.37	447.38	-521.40	40.217391	-104.742979	1,322,940.08	3,211,403.53
8,442.00	90.28	359.70	7,191.07	540.38	-521.89	40.217646	-104.742981	1,323,033.07	3,211,402.25
8,532.00	90.34	359.58	7,190.58	630.38	-522.45	40.217893	-104.742983	1,323,123.06	3,211,400.91
8,622.00	89.85	359.02	7,190.43	720.37	-523.55	40.218140	-104.742987	1,323,213.03	3,211,399.04
8,712.00	90.15	359.33	7,190.43	810.36	-524.85	40.218387	-104.742992	1,323,303.00	3,211,396.98
8,802.00	90.31	358.95	7,190.07	900.35	-526.20	40.218634	-104.742996	1,323,392.97	3,211,394.86
8,892.00	89.69	359.17	7,190.07	990.34	-527.67	40.218881	-104.743002	1,323,482.94	3,211,392.61
8,982.00	90.09	359.11	7,190.24	1,080.33	-529.02	40.219128	-104.743007	1,323,572.91	3,211,390.49

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
9,072.00	90.37	359.09	7,189.88	1,170.31	-530.44	40.219375	-104.743012	1,323,662.88	3,211,388.31
9,162.00	90.00	359.99	7,189.59	1,260.31	-531.16	40.219623	-104.743014	1,323,752.86	3,211,386.81
9,252.00	89.20	0.58	7,190.22	1,350.31	-530.71	40.219870	-104.743013	1,323,842.86	3,211,386.49
9,342.00	89.04	0.67	7,191.60	1,440.29	-529.73	40.220117	-104.743009	1,323,932.84	3,211,386.70
9,432.00	89.17	359.89	7,193.01	1,530.28	-529.29	40.220364	-104.743008	1,324,022.82	3,211,386.37
9,522.00	89.14	359.79	7,194.34	1,620.27	-529.54	40.220611	-104.743009	1,324,112.80	3,211,385.35
9,611.00	89.45	359.30	7,195.43	1,709.26	-530.25	40.220855	-104.743011	1,324,201.78	3,211,383.88
9,701.00	89.57	359.13	7,196.20	1,799.25	-531.48	40.221102	-104.743015	1,324,291.75	3,211,381.88
9,791.00	89.51	359.03	7,196.92	1,889.23	-532.93	40.221349	-104.743021	1,324,381.72	3,211,379.66
9,881.00	89.51	359.03	7,197.69	1,979.21	-534.45	40.221596	-104.743026	1,324,471.68	3,211,377.37
9,971.00	89.88	359.98	7,198.17	2,069.21	-535.23	40.221843	-104.743029	1,324,561.66	3,211,375.82
10,061.00	91.20	0.99	7,197.32	2,159.20	-534.47	40.222090	-104.743026	1,324,651.65	3,211,375.81
10,196.00	90.22	0.37	7,195.65	2,294.18	-532.87	40.222460	-104.743020	1,324,786.63	3,211,376.26
10,241.00	90.65	0.59	7,195.31	2,339.17	-532.49	40.222584	-104.743019	1,324,831.63	3,211,376.25
10,331.00	90.19	0.49	7,194.65	2,429.17	-531.64	40.222831	-104.743016	1,324,921.62	3,211,376.33
10,421.00	89.54	0.47	7,194.86	2,519.16	-530.89	40.223078	-104.743013	1,325,011.62	3,211,376.31
10,511.00	89.88	0.55	7,195.32	2,609.16	-530.09	40.223325	-104.743011	1,325,101.61	3,211,376.35
10,601.00	90.28	0.61	7,195.19	2,699.15	-529.17	40.223572	-104.743007	1,325,191.61	3,211,376.49
10,691.00	90.00	359.88	7,194.97	2,789.15	-528.79	40.223819	-104.743006	1,325,281.60	3,211,376.10
10,871.00	88.95	359.48	7,196.62	2,969.14	-529.79	40.224313	-104.743010	1,325,461.57	3,211,373.56
10,961.00	88.98	359.38	7,198.25	3,059.12	-530.69	40.224560	-104.743013	1,325,551.53	3,211,371.89
11,051.00	90.25	359.69	7,198.85	3,149.11	-531.42	40.224807	-104.743015	1,325,641.51	3,211,370.39
11,141.00	90.68	359.41	7,198.12	3,239.11	-532.13	40.225054	-104.743018	1,325,731.49	3,211,368.91
11,231.00	90.68	359.48	7,197.05	3,329.10	-533.00	40.225301	-104.743021	1,325,821.47	3,211,367.27
11,321.00	89.94	358.54	7,196.57	3,419.08	-534.55	40.225548	-104.743027	1,325,911.43	3,211,364.95
11,411.00	90.31	358.16	7,196.37	3,509.04	-537.15	40.225795	-104.743036	1,326,001.36	3,211,361.59
11,501.00	90.46	358.12	7,195.77	3,598.99	-540.07	40.226042	-104.743046	1,326,091.28	3,211,357.89
11,680.00	89.78	358.03	7,195.39	3,777.89	-546.08	40.226533	-104.743068	1,326,270.11	3,211,350.35
11,770.00	89.35	359.05	7,196.07	3,867.86	-548.37	40.226780	-104.743076	1,326,360.05	3,211,347.29
11,860.00	89.26	0.43	7,197.17	3,957.85	-548.78	40.227027	-104.743078	1,326,450.03	3,211,346.11
11,950.00	88.61	1.42	7,198.84	4,047.82	-547.33	40.227274	-104.743072	1,326,540.01	3,211,346.79
12,040.00	89.04	1.39	7,200.68	4,137.77	-545.12	40.227521	-104.743064	1,326,629.98	3,211,348.23
12,130.00	89.35	1.50	7,201.95	4,227.73	-542.85	40.227768	-104.743056	1,326,719.95	3,211,349.73
12,220.00	89.69	1.85	7,202.70	4,317.69	-540.22	40.228015	-104.743047	1,326,809.92	3,211,351.59
12,310.00	90.00	1.38	7,202.95	4,407.65	-537.69	40.228262	-104.743038	1,326,899.90	3,211,353.36
12,400.00	90.25	1.03	7,202.75	4,497.63	-535.79	40.228509	-104.743031	1,326,989.89	3,211,354.48
12,490.00	90.43	1.26	7,202.22	4,587.61	-533.99	40.228756	-104.743025	1,327,079.88	3,211,355.51
12,580.00	90.49	359.48	7,201.49	4,677.61	-533.41	40.229003	-104.743023	1,327,169.87	3,211,355.32
12,670.00	90.65	359.36	7,200.60	4,767.60	-534.32	40.229250	-104.743026	1,327,259.84	3,211,353.64
12,760.00	89.78	359.30	7,200.26	4,857.59	-535.38	40.229497	-104.743030	1,327,349.82	3,211,351.81
12,850.00	90.40	359.32	7,200.12	4,947.58	-536.46	40.229744	-104.743034	1,327,439.80	3,211,349.96
12,940.00	90.89	358.85	7,199.11	5,037.56	-537.90	40.229991	-104.743039	1,327,529.76	3,211,347.75

Design Report for MELBA 2N-14HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
13,030.00	90.68	357.91	7,197.87	5,127.52	-540.44	40.230238	-104.743048	1,327,619.69	3,211,344.44
13,120.00	90.52	358.00	7,196.93	5,217.46	-543.65	40.230485	-104.743059	1,327,709.59	3,211,340.46
13,210.00	89.38	358.43	7,197.01	5,307.41	-546.46	40.230732	-104.743069	1,327,799.51	3,211,336.89
13,300.00	89.57	358.39	7,197.83	5,397.37	-548.95	40.230979	-104.743078	1,327,889.44	3,211,333.62
13,390.00	89.91	358.27	7,198.24	5,487.33	-551.58	40.231226	-104.743088	1,327,979.38	3,211,330.23
13,480.00	90.09	357.69	7,198.24	5,577.28	-554.75	40.231473	-104.743099	1,328,069.29	3,211,326.28
13,570.00	90.46	357.85	7,197.81	5,667.21	-558.25	40.231719	-104.743112	1,328,159.18	3,211,322.01
13,660.00	90.93	357.92	7,196.72	5,757.14	-561.57	40.231966	-104.743124	1,328,249.07	3,211,317.92
13,724.00	91.11	357.42	7,195.58	5,821.08	-564.17	40.232142	-104.743133	1,328,312.98	3,211,314.77
13,769.00	91.11	357.42	7,194.71	5,866.02	-566.20	40.232265	-104.743140	1,328,357.91	3,211,312.36

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,207.00	1,206.99	-2.76	-2.19	Last Surface Survey @ 1207.00'
1,229.00	1,228.99	-2.76	-2.19	First MWD Survey after Surface @ 1229.00'
9,971.00	7,198.17	2,069.21	-535.23	Last MWD+IFR Survey @ 9971.00'
13,724.00	7,195.58	5,821.08	-564.17	Last MWD+SC Survey @ 13724.00'
13,769.00	7,194.71	5,866.02	-566.20	Str Line Proj to Bit @ 13769' MD ::

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	359.95	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
174.00	1,207.00	MWD Surveys-Surface	MWD+IFR1+SC
1,229.00	7,648.00	MWD Surveys-Intermediate	MWD+IFR1+SC
7,725.00	9,971.00	MWD IFR Corrected Lateral Surveys	MWD+IFR1+SC
10,061.00	13,724.00	MWD+SC Only Lateral Surveys	MWD+SC

Design Report for MELBA 2N-14HZ - Actual Surveys

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,250.20	1,250.19	9 5/8" Casing Set @ 1250.2' MD :: 1250.19' TVD	9-5/8	13-1/2
7,682.00	7,194.92	7" Casing Set @ 7682' MD :: 7194.83' TVD	7	8-3/4
6,780.00	6,650.17	5 1/2"	5-1/2	6

Design Targets

Shape	Target Name	TVD (usft)	Northing (usft)	Easting (usft)	+N/-S usft	+E/-W usft	Created	Updated
Polygon	MELBA 2N-14HZ LD	0.00	1,322,497.22	3,211,928.72	0.02	0.00	3/31/2014	3/31/2014
Polygon	MELBA 2-23 Pad Sec. Lin	-2.00	1,322,498.74	3,212,018.91	0.77	90.21	3/31/2014	3/31/2014

Directional Difficulty Index

Average Dogleg over Survey:	1.49 °/100usft	Maximum Dogleg over Survey:	14.54 °/100usft at 7,047.00 usft
Net Tortousity applicable to Plans:	0.61 °/100usft	Directional Difficulty Index:	6.483

Audit Info

North Reference Sheet for Sec. 23-T3N-R66W - MELBA 2N-14HZ - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB=13' @ 4973.00usft (Ensign 123). Northing and Easting are relative to MELBA 2N-14HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995703

Grid Coordinates of Well: 1,322,497.20 usft N, 3,211,928.72 usft E

Geographical Coordinates of Well: 40° 12' 58.19" N, 104° 44' 28.00" W

Grid Convergence at Surface is: 0.49°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,769.00usft

the Bottom Hole Displacement is 5,893.28usft in the Direction of 354.49° (True).

Magnetic Convergence at surface is: -8.01° (15 April 2014, , BGGM2013)

