

HALLIBURTON

Sperry Drilling

END OF WELL REPORT

For

Anadarko Petroleum Corp.

Highway 160 38N-2HZ

Sec. 2-T1N-R66W

Weld County, CO

Job #900754414

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SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Anadarko Petroleum Corp
WELL:	Highway 160-38N-2HZ
FIELD:	Wattenberg
RIG:	Ensign 132
LEGALS:	Sec 2-T1N-R66W
COUNTY:	Weld
STATE:	Colorado
CAL. METHOD:	Minimum Curvature
MAG. DECL. APPLIED:	8.55°
VERTICAL SEC. DIR. :	178.580

SSDS Job Number :	900754414
Start Date of Job :	12-Nov-13
End Date of Job :	20-Nov-13
Lead Directional Driller:	Dan Dietrich
Other SSDS DD's :	Omar Dominguez
SSDS MWD Engineers :	Matt Busche
	Aleksey Treskov
	Patrick McGee

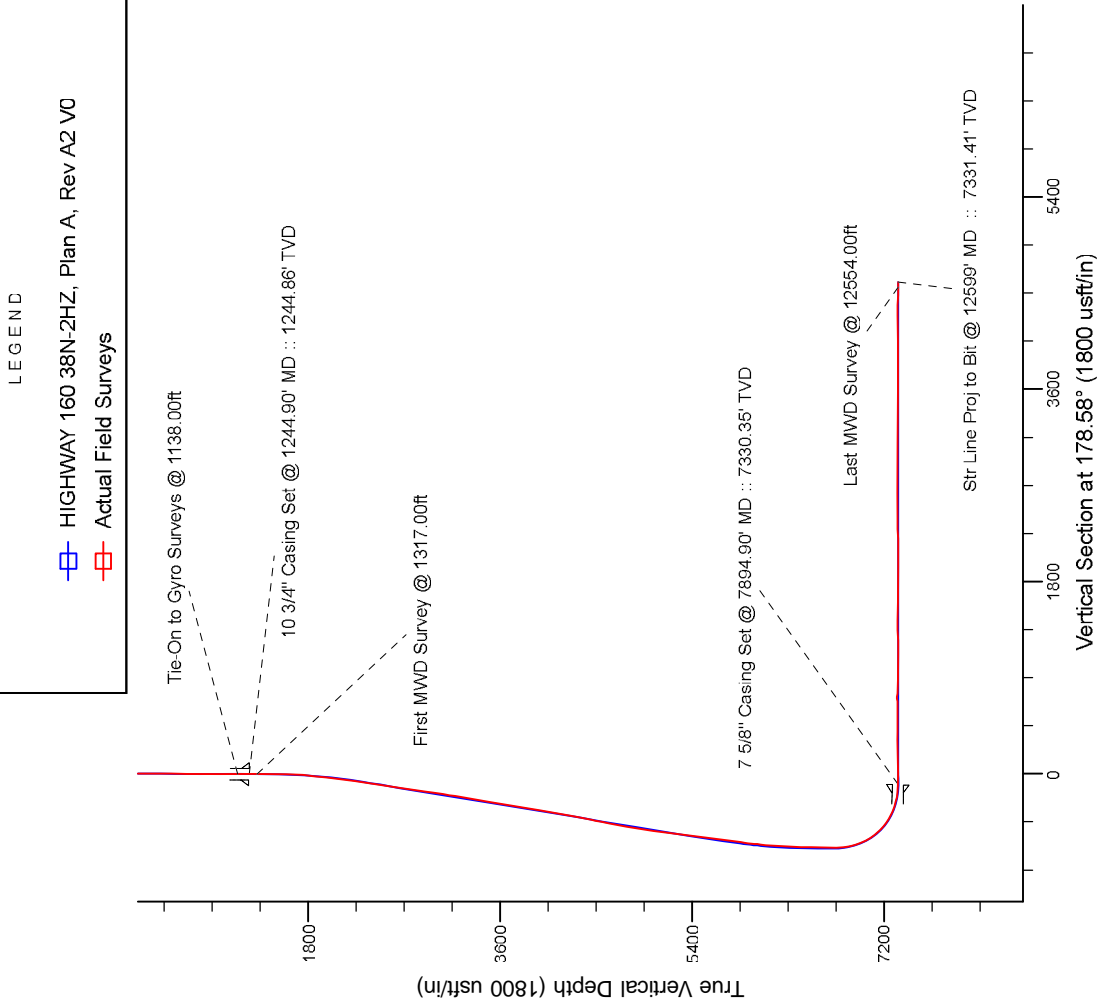
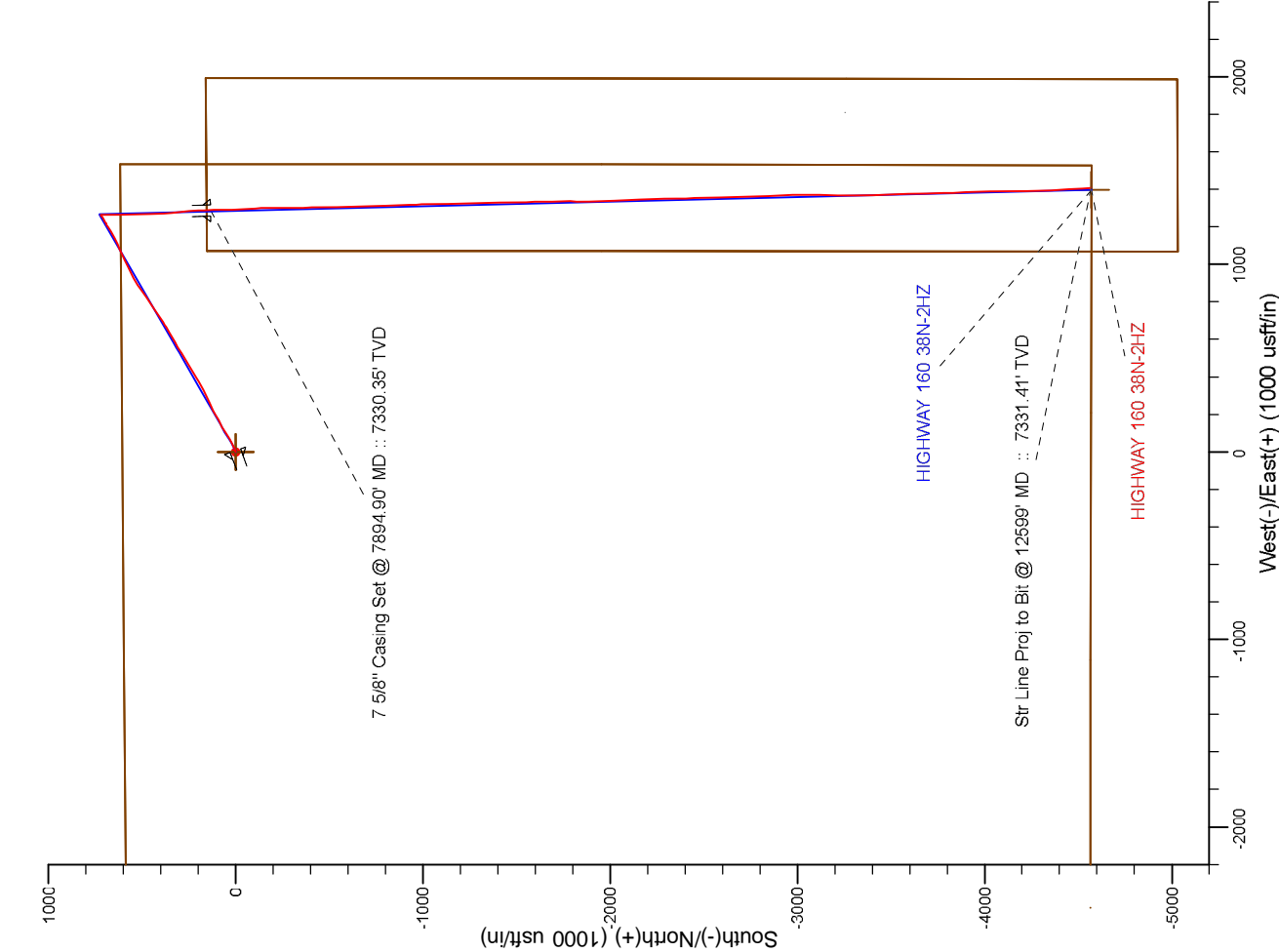
	Main Hole		1st Side Track		2nd Side Track		3rd Side Track		4th Side Track	
				Tie On		Tie On		Tie On		Tie On
Tie-On Point	1138.00	Gyro								Tie On
First Survey	1317.00	MWD								
KOP Depth	6953.00	MWD			KOP-ST1		KOP-ST2		KOP-ST3	KOP-ST4
Last Survey Depth Bit Extrapolation to TD	12554.00	MWD								
	12599.00	T.D.								

The following personnel listed below, certify the above survey information to be accurate to the their knowledge. :

Print Name : Dan Dietrich	Print Name : Omar Dominguez	Print Name :
Sign Name : 	Sign Name : 	Sign Name :
Print Name : Patrick McGee	Print Name : Aleksey Treskov	Print Name :
Sign Name : 	Sign Name : 	Sign Name :

Examples of Survey Types:	Tie On to Surface Casing (Assumed Vertical), Tie On to existing MWD Survey (prior drilled hole) Sperry Sun Drilling Services (SSDS) Measurement While Drilling (MWD) Survey's Sperry Sun Drilling Services (SSDS) Electronic Survey System (ESS) Survey's Gyro Survey's ; Provided by third party vendor, or by Sperry Sun Drilling Services (SSDS) Single Shot (SS) Survey's ; Provided by Sperry Sun Drilling Services (SSDS) or third party vendor.
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Project: Weld County, CO (NAD 83)
Site: Sec. 2-T1N-R66W
Well: HIGHWAY 160 38N-2HZ
Wellbore: Plan A
Design: Actual Field Surveys



7" Casing: ~482.43' FNL, ~243.93' FEL
Lat/Long: 40.086065 N, -104.735709 E
State Planes - CO Northern: 1,275,119.60' N, 3,213,846.13' E
Location: Sec. 2-T1N-R66W

BHL: ~3.67' FSL, ~119.47' FEL
Lat/Long: 40.073159 N, -104.735280 E
State Planes - CO Northern: 1,270,419.75' N, 3,214,006.72' E
Location: Sec. 2-T1N-R66W

WELL DETAILS: HIGHWAY 160 38N-2HZ
Ground Level: 5102.00
RKB = 13' @ 5115.00usft (Ensign 132)
Design: Actual Field Surveys (HIGHWAY 160 38N-2HZ/Plan A)
Created By: Clint Eshelman
Reviewed: _____
Date: 11/20/2013
Date: _____

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 2-T1N-R66W

HIGHWAY 160 38N-2HZ

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

20 November, 2013

Well Coordinates: 1,274,974.29 N, 3,212,558.72 E (40° 05' 08.51" N, 104° 44' 25.13" W)

Ground Level: 5,102.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well HIGHWAY 160 38N-2HZ

RKB =13' @ 5115.00usft (Ensign 132)

N

True

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Design Report for HIGHWAY 160 38N-2HZ - Actual Field 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
13.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00
113.00	0.25	64.09	113.00	0.10	0.20	-0.09	0.25
213.00	0.21	31.19	213.00	0.35	0.49	-0.34	0.14
313.00	0.20	11.80	313.00	0.68	0.62	-0.66	0.07
413.00	0.21	101.20	413.00	0.81	0.83	-0.79	0.29
513.00	0.21	70.66	513.00	0.84	1.19	-0.81	0.11
613.00	0.44	62.36	613.00	1.07	1.70	-1.03	0.23
713.00	0.48	61.31	712.99	1.45	2.41	-1.39	0.04
813.00	0.56	97.08	812.99	1.59	3.26	-1.51	0.33
913.00	0.58	91.40	912.98	1.52	4.25	-1.42	0.06
1,013.00	0.74	68.22	1,012.98	1.75	5.36	-1.62	0.31
1,113.00	0.69	72.98	1,112.97	2.16	6.53	-2.00	0.08
1,138.00	0.57	68.51	1,137.97	2.25	6.79	-2.09	0.52
Tie-On to Gyro Surveys @ 1138.00ft							
1,244.90	0.71	69.73	1,244.86	2.68	7.91	-2.48	0.13
10 3/4" Casing Set @ 1244.90' MD :: 1244.86' TVD							
1,317.00	0.81	70.31	1,316.95	3.01	8.81	-2.79	0.13
First MWD Survey @ 1317.00ft							
1,412.00	0.64	86.98	1,411.95	3.26	9.97	-3.01	0.28
1,508.00	2.74	70.18	1,507.90	4.07	12.67	-3.75	2.22
1,569.00	3.99	66.31	1,568.79	5.41	15.98	-5.02	2.08
1,661.00	5.79	62.20	1,660.46	8.87	23.02	-8.29	1.99
1,752.00	7.90	60.97	1,750.80	14.04	32.55	-13.23	2.32
1,844.00	9.83	62.99	1,841.70	20.68	45.07	-19.55	2.12
1,935.00	12.28	63.11	1,931.00	28.58	60.63	-27.07	2.69
2,027.00	14.55	59.67	2,020.49	38.84	79.33	-36.87	2.61
2,119.00	15.84	55.37	2,109.27	51.82	99.64	-49.33	1.86
2,211.00	17.36	57.46	2,197.44	66.34	121.54	-63.30	1.77
2,303.00	17.89	63.74	2,285.13	79.97	145.79	-76.33	2.14
2,394.00	17.84	61.30	2,371.74	92.85	170.55	-88.59	0.82
2,485.00	17.87	61.84	2,458.36	106.13	195.09	-101.27	0.18
2,577.00	17.25	61.71	2,546.07	119.26	219.54	-113.78	0.68
2,669.00	18.61	64.72	2,633.60	131.99	244.83	-125.89	1.79
2,760.00	19.87	63.70	2,719.52	145.05	271.83	-138.27	1.43
2,852.00	19.39	63.06	2,806.17	158.89	299.46	-151.42	0.57
2,944.00	18.88	63.73	2,893.09	172.40	326.42	-164.26	0.60
3,036.00	19.02	60.73	2,980.10	186.32	352.84	-177.52	1.07
3,127.00	18.61	60.80	3,066.24	200.65	378.45	-191.21	0.45
3,188.00	18.41	60.86	3,124.08	210.09	395.36	-200.23	0.33
3,249.00	18.04	59.50	3,182.02	219.58	411.92	-209.30	0.92
3,311.00	18.64	58.80	3,240.87	229.58	428.66	-218.89	1.03
3,406.00	17.66	57.09	3,331.15	245.28	453.75	-233.96	1.17
3,501.00	19.35	58.26	3,421.23	261.39	479.23	-249.43	1.82
3,596.00	19.65	59.68	3,510.78	277.73	506.40	-265.09	0.59
3,691.00	18.84	57.22	3,600.48	294.10	533.09	-280.80	1.21
3,786.00	18.12	60.12	3,690.58	309.76	558.80	-295.82	1.23
3,882.00	18.27	58.50	3,781.78	325.06	584.57	-310.48	0.55
3,977.00	18.57	60.05	3,871.91	340.40	610.37	-325.17	0.60
4,072.00	18.69	59.68	3,961.93	355.63	636.62	-339.75	0.18

Design Report for HIGHWAY 160 38N-2HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,167.00	20.44	59.17	4,051.45	371.82	664.01	-355.25	1.85
4,262.00	19.00	56.75	4,140.87	388.80	691.19	-371.55	1.74
4,389.00	19.01	55.40	4,260.95	411.88	725.50	-393.78	0.35
4,453.00	19.30	54.44	4,321.41	423.95	742.68	-405.42	0.67
4,548.00	21.18	57.86	4,410.54	442.21	769.99	-423.00	2.34
4,643.00	19.74	55.98	4,499.55	460.32	797.82	-440.41	1.67
4,738.00	18.25	53.49	4,589.37	478.15	823.08	-457.60	1.79
4,834.00	17.88	54.11	4,680.64	495.73	847.10	-474.59	0.43
4,929.00	17.25	53.67	4,771.21	512.62	870.26	-490.90	0.68
5,024.00	17.27	57.98	4,861.94	528.45	893.57	-506.14	1.35
5,119.00	18.30	61.57	4,952.40	543.03	918.64	-520.09	1.58
5,214.00	18.56	65.23	5,042.53	556.46	945.48	-532.86	1.25
5,341.00	18.13	62.69	5,163.08	574.00	981.40	-549.50	0.71
5,404.00	17.81	63.77	5,223.00	582.75	998.75	-557.82	0.73
5,500.00	18.30	65.80	5,314.28	595.42	1,025.66	-569.82	0.83
5,595.00	19.02	66.46	5,404.28	607.71	1,053.46	-581.42	0.79
5,690.00	18.44	66.27	5,494.25	619.94	1,081.41	-592.95	0.61
5,785.00	16.68	65.40	5,584.82	631.67	1,107.56	-604.03	1.87
5,848.00	17.69	64.14	5,645.01	639.61	1,124.39	-611.55	1.71
5,912.00	17.00	62.66	5,706.10	648.14	1,141.46	-619.66	1.28
5,975.00	16.82	61.02	5,766.37	656.79	1,157.61	-627.90	0.81
6,070.00	15.55	60.58	5,857.61	669.70	1,180.73	-640.24	1.34
6,166.00	13.34	55.33	5,950.57	682.33	1,201.05	-652.35	2.67
6,261.00	10.76	61.34	6,043.47	692.82	1,217.85	-662.42	3.02
6,356.00	8.99	56.88	6,137.06	701.13	1,231.85	-670.39	2.03
6,451.00	6.25	62.66	6,231.22	707.56	1,242.66	-676.55	2.99
6,546.00	5.05	54.33	6,325.75	712.37	1,250.65	-681.16	1.53
6,641.00	4.01	48.91	6,420.46	716.99	1,256.55	-685.63	1.18
6,736.00	2.35	47.64	6,515.31	720.49	1,260.49	-689.03	1.75
6,831.00	0.93	52.41	6,610.27	722.27	1,262.54	-690.76	1.50
6,885.00	0.41	51.04	6,664.26	722.66	1,263.04	-691.14	0.96
6,926.00	0.31	21.18	6,705.26	722.86	1,263.19	-691.33	0.51
6,973.00	1.57	167.10	6,752.26	722.35	1,263.38	-690.82	3.90
7,021.00	5.37	174.51	6,800.16	719.47	1,263.75	-687.93	7.96
7,068.00	8.72	177.55	6,846.80	713.72	1,264.11	-682.17	7.17
7,116.00	12.68	176.26	6,893.95	704.82	1,264.61	-673.27	8.26
7,161.00	17.19	175.98	6,937.42	693.26	1,265.40	-661.69	10.02
7,211.00	21.69	179.60	6,984.56	676.64	1,265.98	-645.06	9.31
7,256.00	26.77	182.85	7,025.59	658.19	1,265.53	-626.62	11.67
7,304.00	32.11	177.86	7,067.38	634.62	1,265.47	-603.07	12.23
7,351.00	36.55	179.00	7,106.18	608.13	1,266.18	-576.57	9.54
7,399.00	41.31	178.81	7,143.51	577.99	1,266.76	-546.42	9.92
7,446.00	47.65	180.01	7,177.03	545.07	1,267.08	-513.51	13.61
7,494.00	52.25	179.34	7,207.91	508.34	1,267.30	-476.78	9.64
7,541.00	57.46	178.50	7,234.95	469.93	1,268.03	-438.36	11.18
7,589.00	62.71	177.04	7,258.88	428.37	1,269.66	-396.78	11.25
7,636.00	66.70	175.85	7,278.96	385.97	1,272.30	-354.32	8.79
7,684.00	72.51	174.96	7,295.68	341.15	1,275.91	-309.42	12.23
7,732.00	76.18	175.59	7,308.63	295.09	1,279.72	-263.29	7.75
7,779.00	79.56	175.81	7,318.51	249.28	1,283.16	-217.40	7.21
7,827.00	82.84	176.91	7,325.85	201.94	1,286.17	-170.01	7.20

Design Report for HIGHWAY 160 38N-2HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
7,858.00	86.21	177.91	7,328.81	171.12	1,287.56	-139.16	11.34
7,894.90	89.00	178.70	7,330.35	134.27	1,288.65	-102.30	7.86
7 5/8" Casing Set @ 7894.90' MD :: 7330.35' TVD							
7,913.00	90.37	179.09	7,330.45	116.18	1,289.00	-84.20	7.86
8,008.00	90.03	177.03	7,330.12	21.24	1,292.22	10.79	2.20
8,104.00	90.34	177.05	7,329.81	-74.63	1,297.17	106.75	0.32
8,199.00	90.46	179.74	7,329.14	-169.58	1,299.84	201.74	2.83
8,294.00	90.18	178.45	7,328.61	-264.57	1,301.34	296.74	1.39
8,389.00	90.46	179.73	7,328.08	-359.55	1,302.84	391.73	1.38
8,484.00	90.93	178.44	7,326.93	-454.53	1,304.36	486.72	1.45
8,579.00	90.52	179.68	7,325.73	-549.51	1,305.92	581.70	1.37
8,674.00	91.02	178.85	7,324.45	-644.49	1,307.14	676.69	1.02
8,769.00	87.72	177.53	7,325.50	-739.42	1,310.14	771.66	3.74
8,865.00	87.90	177.82	7,329.17	-835.27	1,314.03	867.58	0.36
8,960.00	88.80	177.95	7,331.90	-930.17	1,317.53	962.53	0.96
9,055.00	89.97	179.72	7,332.92	-1,025.14	1,319.47	1,057.52	2.23
9,150.00	91.02	178.11	7,332.10	-1,120.11	1,321.26	1,152.51	2.02
9,245.00	90.96	177.32	7,330.46	-1,215.02	1,325.05	1,247.49	0.83
9,341.00	91.20	179.49	7,328.65	-1,310.96	1,327.72	1,343.46	2.27
9,436.00	88.61	179.11	7,328.81	-1,405.95	1,328.88	1,438.45	2.76
9,531.00	89.66	178.88	7,330.24	-1,500.92	1,330.55	1,533.43	1.13
9,626.00	89.38	177.60	7,331.04	-1,595.87	1,333.47	1,628.42	1.38
9,721.00	90.52	179.36	7,331.12	-1,690.83	1,335.99	1,723.42	2.21
9,817.00	89.60	180.58	7,331.02	-1,786.83	1,336.04	1,819.39	1.59
9,912.00	88.92	178.61	7,332.25	-1,881.81	1,336.71	1,914.36	2.19
10,007.00	90.40	178.73	7,332.81	-1,976.78	1,338.91	2,009.36	1.56
10,102.00	90.86	178.02	7,331.76	-2,071.74	1,341.61	2,104.35	0.89
10,197.00	90.99	176.68	7,330.23	-2,166.62	1,346.00	2,199.31	1.42
10,292.00	90.34	178.41	7,329.13	-2,261.52	1,350.07	2,294.29	1.95
10,387.00	90.59	179.95	7,328.36	-2,356.51	1,351.43	2,389.27	1.64
10,482.00	90.65	178.83	7,327.33	-2,451.50	1,352.44	2,484.26	1.18
10,578.00	91.33	177.55	7,325.67	-2,547.43	1,355.47	2,580.24	1.51
10,673.00	89.88	178.05	7,324.67	-2,642.35	1,359.12	2,675.22	1.61
10,768.00	89.66	179.38	7,325.05	-2,737.33	1,361.25	2,770.22	1.42
10,863.00	89.63	176.84	7,325.64	-2,832.27	1,364.38	2,865.21	2.67
10,958.00	89.41	177.54	7,326.43	-2,927.15	1,369.04	2,960.17	0.77
11,053.00	89.11	179.01	7,327.66	-3,022.09	1,371.90	3,055.16	1.58
11,148.00	89.57	182.04	7,328.75	-3,117.07	1,371.03	3,150.09	3.23
11,244.00	90.65	181.36	7,328.57	-3,213.03	1,368.18	3,245.95	1.33
11,339.00	90.25	179.98	7,327.82	-3,308.02	1,367.07	3,340.88	1.51
11,434.00	89.81	177.00	7,327.77	-3,402.97	1,369.57	3,435.87	3.17
11,529.00	90.00	177.61	7,327.93	-3,497.87	1,374.04	3,530.84	0.67
11,624.00	89.75	180.56	7,328.14	-3,592.84	1,375.55	3,625.83	3.12
11,719.00	89.66	178.15	7,328.63	-3,687.83	1,376.62	3,720.81	2.54
11,814.00	89.32	178.70	7,329.47	-3,782.79	1,379.23	3,815.81	0.68
11,909.00	89.85	176.88	7,330.16	-3,877.71	1,382.90	3,910.79	2.00
12,004.00	89.85	177.34	7,330.41	-3,972.59	1,387.69	4,005.76	0.48
12,099.00	90.06	179.97	7,330.49	-4,067.55	1,389.92	4,100.75	2.78
12,194.00	90.83	179.50	7,329.75	-4,162.55	1,390.36	4,195.73	0.95
12,289.00	91.45	178.74	7,327.86	-4,257.52	1,391.81	4,290.70	1.03
12,385.00	88.52	177.36	7,327.88	-4,353.45	1,395.08	4,386.69	3.37

Design Report for HIGHWAY 160 38N-2HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
12,480.00	88.86	176.29	7,330.06	-4,448.28	1,400.34	4,481.61	1.18
12,554.00	89.57	175.63	7,331.07	-4,522.09	1,405.55	4,555.53	1.31
Last MWD Survey @ 12554.00ft							
12,599.00	89.57	175.63	7,331.41	-4,566.95	1,408.98	4,600.47	0.00
Str Line Proj to Bit @ 12599' MD :: 7331.41' TVD							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,138.00	1,137.97	2.25	6.79	Tie-On to Gyro Surveys @ 1138.00ft
1,317.00	1,316.95	3.01	8.81	First MWD Survey @ 1317.00ft
12,554.00	7,331.07	-4,522.09	1,405.55	Last MWD Survey @ 12554.00ft
12,599.00	7,331.41	-4,566.95	1,408.98	Str Line Proj to Bit @ 12599' MD :: 7331.41' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	178.58	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
13.00	1,138.00	MS Energy Gyro Svys	NS-GYRO-MS
1,317.00	7,913.00	MWD Vertical/Build	MWD+SC
8,008.00	12,554.00	MWD Lateral Surveys	MWD+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,244.90	1,244.86	10 3/4" Casing Set @ 1244.90' MD :: 1244.86' TVD	10-3/4	13-1/2
7,894.90	7,330.35	7 5/8" Casing Set @ 7894.90' MD :: 7330.35' TVD	7-5/8	9-7/8

Design Report for HIGHWAY 160 38N-2HZ - Actual Field 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
HIGHWAY 160 38N-2H - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,274,974.30	3,212,558.72	40.085696	-104.740314
Point 1				0.00	155.00	1,072.59	1,275,138.47	3,213,629.90	
Point 2				0.00	160.38	1,992.62	1,275,151.74	3,214,549.82	
Point 3				0.00	-3,260.91	1,990.51	1,271,730.69	3,214,577.02	
Point 4				0.00	-5,028.48	1,987.23	1,269,963.22	3,214,588.88	
Point 5				0.00	-5,030.06	1,067.19	1,269,953.76	3,213,668.92	
Point 6				0.00	-1,953.71	1,072.25	1,273,029.92	3,213,647.63	
Point 7				0.00	155.00	1,072.59	1,275,138.47	3,213,629.90	
HIGHWAY 160 38N-2H - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,274,974.30	3,212,558.72	40.085696	-104.740314
Point 1				0.00	576.87	-3,753.62	1,275,518.97	3,208,800.44	
Point 2				0.00	597.80	-1,110.40	1,275,562.54	3,211,443.29	
Point 3				0.00	618.66	1,532.67	1,275,606.04	3,214,085.98	
Point 4				0.00	-1,953.48	1,532.28	1,273,034.09	3,214,107.62	
Point 5				0.00	-3,262.48	1,530.50	1,271,725.18	3,214,117.05	
Point 6				0.00	-4,570.87	1,528.45	1,270,416.87	3,214,126.21	
Point 7				0.00	-4,568.52	208.81	1,270,407.91	3,212,806.65	
Point 8				0.00	-4,565.77	-1,110.63	1,270,399.36	3,211,487.29	
Point 9				0.00	-4,563.30	-2,430.09	1,270,390.53	3,210,167.91	
Point 10				0.00	-4,560.71	-3,749.44	1,270,381.81	3,208,848.64	
Point 11				0.00	-1,955.48	-3,734.14	1,272,986.98	3,208,841.62	
Point 12				0.00	576.87	-3,753.62	1,275,518.97	3,208,800.44	
HIGHWAY 160 38N-2H - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,274,974.30	3,212,558.72	40.085696	-104.740314
HIGHWAY 160 38N-2H - actual wellpath misses target center by 10.93usft at 12599.00usft MD (7331.41 TVD, -4566.95 N, 1408.98 E) - Point	0.00	0.00	7,330.00	-4,569.63	1,398.48	1,270,416.99	3,213,996.24	40.073152	-104.735317

Directional Difficulty Index

Average Dogleg over Survey:	1.98 °/100usft	Maximum Dogleg over Survey:	13.61 °/100usft at 7,446.00 usft
Net Tortousity applicable to Plans:	0.61 °/100usft	Directional Difficulty Index:	6.461

Audit Info

North Reference Sheet for Sec. 2-T1N-R66W - HIGHWAY 160 38N-2HZ - 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' @ 5115.00usft (Ensign 132). Northing and Easting are relative to HIGHWAY 160 38N-2HZ

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: 0.99996097

Grid Coordinates of Well: 1,274,974.29 usft N, 3,212,558.72 usft E

Geographical Coordinates of Well: 40° 05' 08.51" N, 104° 44' 25.13" W

Grid Convergence at Surface is: 0.49°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,599.00usft
the Bottom Hole Displacement is 4,779.36usft in the Direction of 162.85° (True).

Magnetic Convergence at surface is: -8.05° (14 October 2013, , BGGM2013)

