HALLIBURTON

Sperry Drilling

END OF WELL REPORT

For

Anadarko Petroleum Corp.

Underhill 28N-17HZ
Sec. 17-T1N-R67W
Weld County, CO

Job #900550718

TABLE OF CONTENTS

Section 1

Contents: Surveys

SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Anadarko Petroleum Corp.
WELL:	Underhill 28N-17HN
FIELD:	Wattenberg
RIG:	Xtreme 22
LEGALS:	Sec. 17-T1N-R67W
COUNTY:	Weld
STATE:	CO
CAL. METHOD:	Min Curvature
MAG. DECL. APPLIED:	8.657
VERTICAL SEC. DIR. :	359.810

SSDS Job Number :	900550718
Start Date of Job	7/30/2013
End Date of Job :	8/9/2013
Lead Directional Driller:	T. Onyekwelu
	C. Hopwood
Other SSDS DD's :	J. Suitter
SSDS MWD Engineers :	Clay Wass
	R. Edgington

	Main Hole ==========>		1st Side Track ==========>		2nd Side Track ==========>		3rd Side Track ==========>		4th Side Track ==========>	
	795.00	Tie On		Tie On		Tie On		Tie On		Tie On
First Survey Depth										
Last Survey Depth										
KOP Depth/Sidetrack MD	7106.00	KOP		KOP-ST1		KOP-ST2		KOP-ST3		KOP-ST4
First Survey Depth	957.00	MWD		MWD		MWD		MWD		MWD
Last Survey Depth	12067.00	MWD		MWD		MWD		MWD		MWD
Bit Extrapolation to TD	12120.00	T.D.		T.D.		T.D.		T.D.		T.D.

The following Sperry Sun Drilling Services personnel listed below, do certify the above survey information to be accurate :

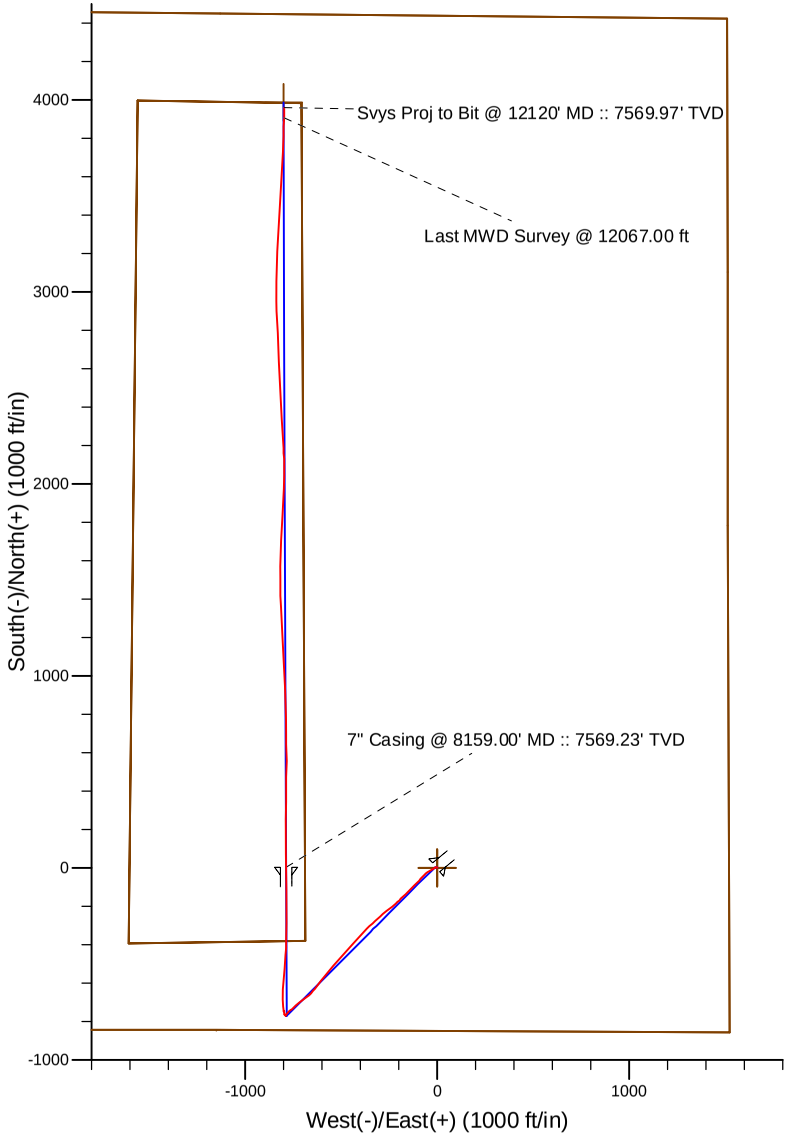
Print Name :	T. Onyekwelu	Print Name :	Clay Wass	Print Name : J. Suitter
Sign Name :		Sign Name :		Sign Name :
Print Name :	C. Hopwood	Print Name :	R. Edgington	Print Name :
Sign Name :		Sign Name :		Sign Name :

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.

Project: Weld County, CO (NAD 83)
Site: Sec. 17-T1N-R67W
Well: UNDERHILL 28N-17HZ
Wellbore: Plan A
Design: Actual Field Surveys

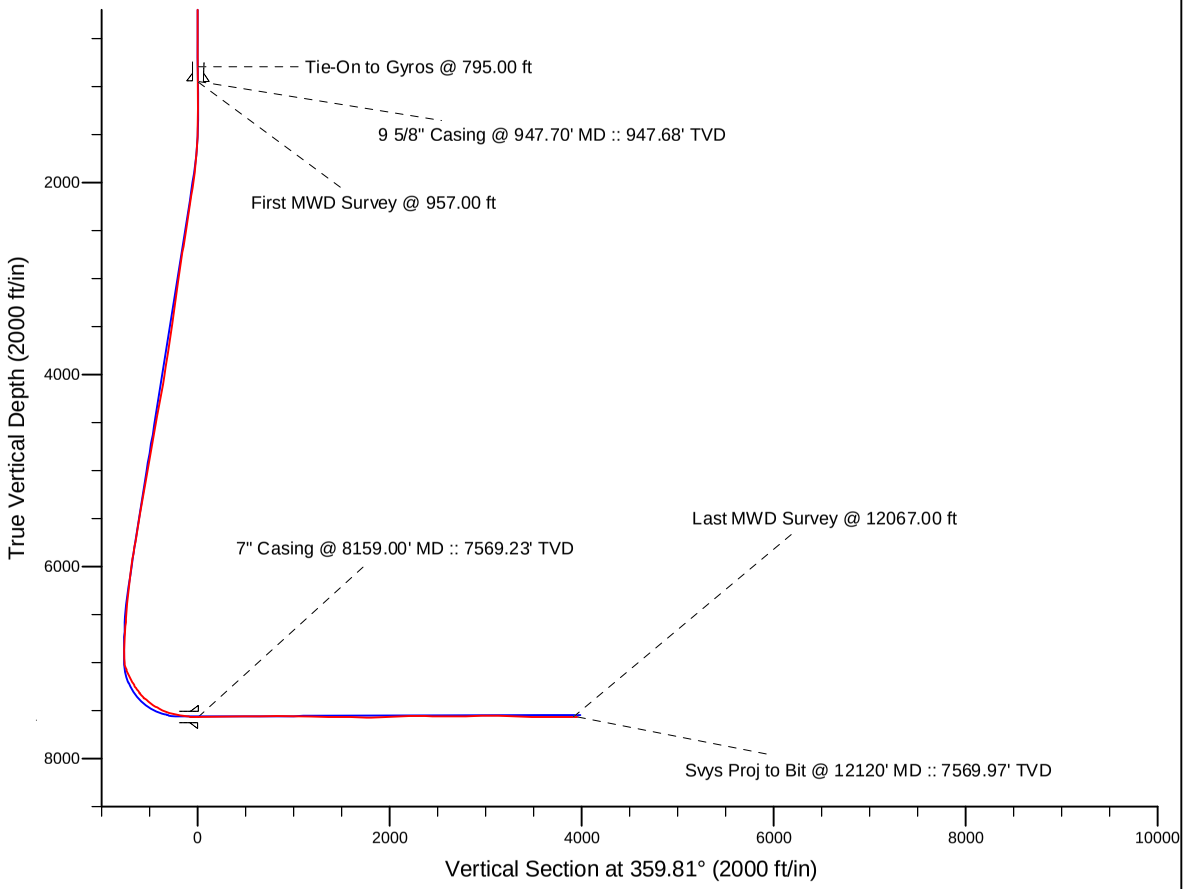
Anadarko Petroleum Corporation

HALLIBURTON
Sperry Drilling



LEGEND

UNDERHILL 28N-17HZ, Plan A, Rev A0 - Proposal V0
Actual Field Surveys



7" Casing:	~847.62' FSL, ~2306.39' FEL
Lat/Long:	40.046126 N, -104.913296 E
State Planes - CO Northern:	1,260,192.88' N, 3,164,254.78' E
Location:	Sec. 17-T1N-R67W
BHL:	~486.41' FNL, ~2308.11' FEL
Lat/Long:	40.056988 N, -104.913335 E
State Planes - CO Northern:	1,264,149.37' N, 3,164,217.89' E
Location:	Sec. 17-T1N-R67W

WELL DETAILS: UNDERHILL 28N-17HZ

Ground Level: 5112.00
RKB @ 13' @ 5125.00ft (Xtreme 22)

Design: Actual Field Surveys (UNDERHILL 28N-17HZ/Plan A)

Created By: Clint Eshelman Date: 08/30/2013
Reviewed: _____ Date: _____

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)
Sec. 17-T1N-R67W
UNDERHILL 28N-17HZ

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

30 August, 2013

Well Coordinates: 1,260,196.11 N, 3,165,041.00 E (40° 02' 46.04" N, 104° 54' 37.76" W)
Ground Level: 5,112.00 ft

Local Coordinate Origin:	Centered on Well UNDERHILL 28N-17HZ
Viewing Datum:	RKB @ 13' @ 5125.00ft (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 UNDERHILL 28N-17HZ - 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
13.00	0.00	0.00	13.00	0.00	0.00	0.00	0.00
113.00	0.49	319.21	113.00	0.32	-0.28	0.32	0.49
213.00	0.23	344.72	213.00	0.84	-0.61	0.84	0.30
313.00	0.10	277.02	313.00	1.05	-0.75	1.05	0.21
413.00	0.66	268.52	412.99	1.04	-1.41	1.05	0.56
513.00	0.41	306.11	512.99	1.24	-2.28	1.24	0.42
613.00	0.32	41.37	612.99	1.66	-2.38	1.67	0.54
713.00	0.18	269.23	712.99	1.87	-2.36	1.87	0.46
795.00	0.45	307.68	794.99	2.06	-2.74	2.07	0.40
Tie-On to Gyros @ 795.00 ft							
947.70	0.06	229.80	947.68	2.38	-3.27	2.39	0.29
9 5/8" Casing @ 947.70' MD :: 947.68' TVD							
957.00	0.06	203.28	956.98	2.37	-3.28	2.38	0.29
First MWD Survey @ 957.00 ft							
1,020.00	0.11	323.16	1,019.98	2.39	-3.33	2.40	0.24
1,211.00	0.22	314.93	1,210.98	2.79	-3.69	2.81	0.06
1,305.00	1.77	255.53	1,304.97	2.56	-5.23	2.58	1.78
1,401.00	3.02	248.37	1,400.88	1.26	-9.01	1.29	1.34
1,591.00	7.07	240.64	1,590.11	-6.32	-23.86	-6.24	2.16
1,778.00	8.48	237.72	1,775.39	-19.33	-45.55	-19.18	0.78
1,961.00	10.60	221.03	1,955.88	-39.24	-68.02	-39.01	1.89
2,145.00	12.89	224.98	2,136.02	-66.53	-93.64	-66.22	1.32
2,327.00	12.98	224.00	2,313.40	-95.59	-122.18	-95.18	0.13
2,510.00	12.15	223.10	2,492.02	-124.44	-149.62	-123.94	0.47
2,694.00	12.91	230.42	2,671.64	-151.67	-178.70	-151.08	0.96
2,876.00	11.08	221.29	2,849.68	-177.77	-205.91	-177.09	1.45
3,059.00	13.05	232.16	3,028.65	-203.67	-233.84	-202.89	1.64
3,242.00	12.71	232.15	3,207.05	-228.69	-266.05	-227.81	0.19
3,425.00	11.73	228.15	3,385.90	-253.46	-295.80	-252.48	0.71
3,609.00	11.33	228.83	3,566.19	-277.83	-323.34	-276.76	0.23
3,792.00	12.99	226.20	3,745.08	-303.91	-351.72	-302.74	0.96
3,975.00	13.27	221.66	3,923.30	-333.83	-380.53	-332.57	0.58
4,158.00	14.60	222.33	4,100.91	-366.58	-410.02	-365.22	0.73
4,341.00	12.93	221.36	4,278.64	-399.00	-439.08	-397.54	0.92
4,513.00	14.42	223.73	4,445.77	-428.92	-466.60	-427.37	0.93
4,684.00	12.94	222.58	4,611.91	-458.40	-494.28	-456.76	0.88
4,855.00	12.99	220.02	4,778.55	-487.22	-519.59	-485.49	0.34
5,027.00	13.17	220.37	4,946.09	-516.95	-544.72	-515.14	0.11
5,198.00	12.28	219.19	5,112.89	-545.89	-568.82	-544.00	0.54
5,370.00	12.30	221.15	5,280.95	-573.86	-592.44	-571.89	0.24
5,541.00	11.93	217.80	5,448.14	-601.54	-615.26	-599.50	0.46
5,712.00	12.67	217.38	5,615.21	-630.41	-637.47	-628.29	0.44
5,969.00	14.30	232.18	5,865.20	-672.28	-679.67	-670.03	1.48
6,141.00	12.09	230.12	6,032.65	-696.86	-710.28	-694.50	1.31
6,312.00	9.81	229.14	6,200.52	-717.88	-735.04	-715.44	1.34
6,483.00	8.48	229.24	6,369.34	-735.64	-755.61	-733.13	0.78
6,655.00	6.20	230.65	6,539.92	-749.81	-772.40	-747.25	1.33
6,826.00	3.69	209.66	6,710.29	-760.45	-782.27	-757.85	1.79
6,997.00	2.39	229.96	6,881.05	-767.53	-787.72	-764.91	0.98

Design Report for UNDERHILL 28N-17HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,040.00	3.36	229.93	6,923.99	-768.91	-789.37	-766.29	2.26
7,083.00	3.94	318.93	6,966.93	-768.61	-791.31	-765.98	11.93
7,126.00	8.41	335.23	7,009.68	-764.64	-793.60	-762.00	11.06
7,169.00	16.34	346.38	7,051.65	-755.89	-796.34	-753.25	19.18
7,212.00	25.05	353.06	7,091.84	-740.94	-798.87	-738.29	20.96
7,254.00	26.00	355.88	7,129.74	-722.94	-800.61	-720.28	3.67
7,297.00	26.59	355.44	7,168.29	-703.94	-802.05	-701.28	1.45
7,340.00	28.83	357.45	7,206.36	-683.99	-803.28	-681.32	5.64
7,383.00	31.56	2.10	7,243.53	-662.38	-803.33	-659.71	8.36
7,426.00	35.24	3.33	7,279.42	-638.74	-802.19	-636.08	8.70
7,469.00	36.71	4.96	7,314.22	-613.55	-800.36	-610.89	4.08
7,511.00	42.27	4.85	7,346.62	-586.95	-798.08	-584.30	13.24
7,554.00	49.09	4.01	7,376.64	-556.29	-795.72	-553.65	15.92
7,597.00	50.93	4.04	7,404.28	-523.43	-793.41	-520.80	4.28
7,640.00	55.28	3.52	7,430.09	-489.13	-791.14	-486.50	10.16
7,683.00	58.69	1.94	7,453.51	-453.12	-789.44	-450.50	8.51
7,726.00	61.56	2.61	7,474.93	-415.86	-787.95	-413.25	6.81
7,769.00	63.80	2.84	7,494.66	-377.71	-786.14	-375.10	5.23
7,811.00	69.11	1.74	7,511.43	-339.25	-784.61	-336.64	12.87
7,854.00	73.08	0.24	7,525.36	-298.58	-783.91	-295.98	9.80
7,897.00	75.83	0.19	7,536.89	-257.16	-783.75	-254.56	6.40
7,940.00	77.92	359.89	7,546.65	-215.29	-783.73	-212.69	4.91
7,983.00	79.59	359.78	7,555.04	-173.11	-783.85	-170.51	3.89
8,026.00	81.75	359.40	7,562.01	-130.69	-784.15	-128.08	5.10
8,069.00	86.36	359.09	7,566.46	-87.93	-784.72	-85.33	10.74
8,122.00	88.70	358.86	7,568.74	-34.99	-785.66	-32.39	4.44
8,159.00	89.79	359.32	7,569.23	2.00	-786.25	4.61	3.18
7" Casing @ 8159.00' MD :: 7569.23' TVD							
8,200.00	90.99	359.82	7,568.95	43.00	-786.56	45.60	3.18
8,286.00	91.36	359.81	7,567.19	128.98	-786.84	131.58	0.43
8,372.00	90.49	0.59	7,565.80	214.96	-786.54	217.57	1.36
8,457.00	91.17	0.99	7,564.57	299.95	-785.37	302.55	0.93
8,543.00	89.51	359.88	7,564.06	385.94	-784.71	388.54	2.32
8,629.00	90.12	0.53	7,564.34	471.94	-784.41	474.53	1.04
8,714.00	90.74	0.03	7,563.70	556.93	-783.99	559.53	0.94
8,800.00	91.61	359.77	7,561.94	642.91	-784.14	645.51	1.06
8,886.00	90.74	358.62	7,560.17	728.88	-785.35	731.48	1.68
8,971.00	91.17	358.19	7,558.76	813.84	-787.71	816.45	0.72
9,057.00	90.19	358.81	7,557.74	899.80	-789.97	902.42	1.35
9,228.00	87.22	356.14	7,561.60	1,070.56	-797.49	1,073.20	2.34
9,403.00	88.95	356.51	7,567.45	1,245.09	-808.70	1,247.77	1.01
9,574.00	90.00	359.11	7,569.02	1,415.94	-815.24	1,418.64	1.64
9,745.00	89.38	0.40	7,569.94	1,586.94	-815.97	1,589.63	0.84
9,917.00	88.89	3.61	7,572.54	1,758.79	-809.95	1,761.46	1.89
10,088.00	92.60	2.42	7,570.31	1,929.50	-800.96	1,932.15	2.28
10,260.00	93.16	359.96	7,561.67	2,101.23	-797.39	2,103.87	1.47
10,431.00	88.89	356.10	7,558.61	2,272.03	-803.27	2,274.69	3.37
10,603.00	88.08	356.53	7,563.16	2,443.62	-814.32	2,446.30	0.53
10,774.00	91.24	358.06	7,564.17	2,614.40	-822.39	2,617.11	2.05
10,946.00	91.54	356.93	7,560.00	2,786.18	-829.90	2,788.92	0.68
11,118.00	91.42	359.17	7,555.56	2,958.01	-835.75	2,960.77	1.30

Design Report for UNDERHILL 28N-17HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11,289.00	87.71	1.61	7,556.86	3,128.96	-834.59	3,131.71	2.60
11,461.00	88.15	3.23	7,563.07	3,300.69	-827.33	3,303.41	0.98
11,632.00	88.52	3.51	7,568.04	3,471.32	-817.29	3,474.01	0.27
11,803.00	90.00	3.35	7,570.25	3,641.99	-807.06	3,644.65	0.87
11,975.00	90.12	1.84	7,570.07	3,813.81	-799.27	3,816.44	0.88
12,067.00	90.00	0.55	7,569.97	3,905.79	-797.35	3,908.41	1.41
Last MWD Survey @ 12067.00 ft							
12,120.00	90.00	0.55	7,569.97	3,958.79	-796.84	3,961.41	0.00
Svys Proj to Bit @ 12120' MD :: 7569.97' TVD							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
795.00	794.99	2.06	-2.74	Tie-On to Gyros @ 795.00 ft
957.00	956.98	2.37	-3.28	First MWD Survey @ 957.00 ft
12,067.00	7,569.97	3,905.79	-797.35	Last MWD Survey @ 12067.00 ft
12,120.00	7,569.97	3,958.79	-796.84	Svys Proj to Bit @ 12120' MD :: 7569.97' TVD

Vertical Section Information

	Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User		No Target (Freehand)	359.81	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
13.00	795.00	MS Gyros	NS-GYRO-MS
795.00	7,511.00	MWD Vertical/Build	MWD+SC
7,511.00	12,067.00	MWD Lateral	MWD+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
947.70	947.68	9 5/8" Casing @ 947.70' MD :: 947.68' TVD	9-5/8	13-1/2
8,159.00	7,569.23	7" Casing @ 8159.00' MD :: 7569.23' TVD	7	8-3/4

Design Report for UNDERHILL 28N-17HZ - Actual Field Surveys

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
UNDERHILL 28N-17	0.00	0.00	0.00	0.00	0.00	1,260,196.11	3,165,041.00	40.046121	-104.910488
- actual wellpath hits target center - Point									
UNDERHILL 28N-17	0.00	0.00	0.00	0.00	0.00	1,260,196.11	3,165,041.00	40.046121	-104.910488
- actual wellpath hits target center - Polygon									
Point 1				-3,768.22	4,472.21	1,264,643.00	3,161,243.27		
Point 2				-1,129.29	4,448.24	1,264,636.58	3,163,882.20		
Point 3				190.56	4,436.37	1,264,633.48	3,165,202.05		
Point 4				1,510.37	4,424.38	1,264,630.27	3,166,521.87		
Point 5				1,513.17	3,104.30	1,263,310.28	3,166,533.44		
Point 6				1,515.98	1,784.17	1,261,990.25	3,166,545.03		
Point 7				1,522.27	-855.63	1,259,350.65	3,166,568.87		
Point 8				-1,149.87	-844.09	1,259,344.42	3,163,896.81		
Point 9				-1,817.97	-842.48	1,259,341.59	3,163,228.73		
Point 10				-2,486.05	-841.13	1,259,338.50	3,162,560.69		
Point 11				-3,822.06	-838.21	1,259,332.54	3,161,224.73		
Point 12				-3,808.54	489.67	1,260,660.43	3,161,229.43		
Point 13				-3,795.11	1,817.40	1,261,988.17	3,161,234.03		
Point 14				-3,768.22	4,472.21	1,264,643.00	3,161,243.27		
UNDERHILL 28N-17	0.00	0.00	7,549.00	3,985.38	-799.76	1,264,175.93	3,164,214.79	40.057061	-104.913345
- actual wellpath misses target center by 33.99ft at 12120.00ft MD (7569.97 TVD, 3958.79 N, -796.84 E) - Point									
UNDERHILL 28N-17	0.00	0.00	0.00	0.00	0.00	1,260,196.11	3,165,041.00	40.046121	-104.910488
- actual wellpath hits target center - Polygon									
Point 1				-1,558.24	3,997.49	1,264,183.00	3,163,456.27		
Point 2				-704.68	3,984.08	1,264,175.27	3,164,309.87		
Point 3				-686.70	-380.92	1,259,810.65	3,164,356.87		
Point 4				-1,605.97	-392.91	1,259,792.54	3,163,437.73		
Point 5				-1,558.24	3,997.49	1,264,183.00	3,163,456.27		

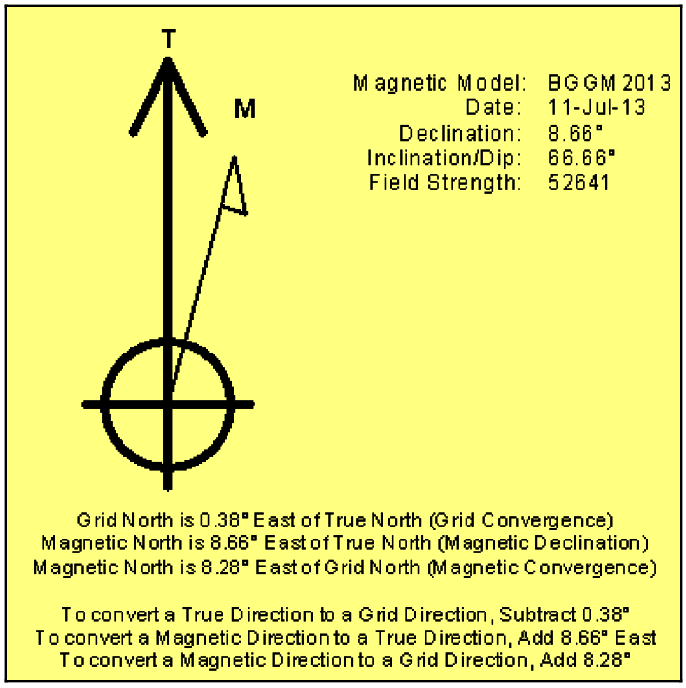
North Reference Sheet for Sec. 17-T1N-R67W - UNDERHILL 28N-17HZ - Plan A

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' @ 5125.00ft (Xtreme 22). Northing and Easting are relative to UNDERHILL 28N-17HZ
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: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996319

Grid Coordinates of Well: 1,260,196.11 ft N, 3,165,041.00 ft E
Geographical Coordinates of Well: 40° 02' 46.04" N, 104° 54' 37.76" W
Grid Convergence at Surface is: 0.38°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,120.00ft
the Bottom Hole Displacement is 4,038.19ft in the Direction of 348.62° (True).

Magnetic Convergence at surface is: -8.28° (11 July 2013, , BGGM2013)



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)
Sec. 17-T1N-R67W
UNDERHILL 28N-17HZ

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Geodetic Report

30 August, 2013

Well Coordinates: 1,260,196.11 N, 3,165,041.00 E (40° 02' 46.04" N, 104° 54' 37.76" W)
Ground Level: 5,112.00 ft

Local Coordinate Origin:	Centered on Well UNDERHILL 28N-17HZ
Viewing Datum:	RKB @ 13' @ 5125.00ft (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 UNDERHILL 28N-17HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Geographic Coordinates Latitude (ft)	Geographic Coordinates Longitude (ft)	UTM Coordinates Northing (ft)	UTM Coordinates Easting (ft)
0.00	0.00	0.00	0.00	0.00	0.00	40.046121	-104.910488	1,260,196.11	3,165,041.00
13.00	0.00	0.00	13.00	0.00	0.00	40.046121	-104.910488	1,260,196.11	3,165,041.00
113.00	0.49	319.21	113.00	0.32	-0.28	40.046122	-104.910489	1,260,196.43	3,165,040.72
213.00	0.23	344.72	213.00	0.84	-0.61	40.046123	-104.910490	1,260,196.94	3,165,040.38
313.00	0.10	277.02	313.00	1.05	-0.75	40.046124	-104.910491	1,260,197.15	3,165,040.24
413.00	0.66	268.52	412.99	1.04	-1.41	40.046124	-104.910493	1,260,197.14	3,165,039.58
513.00	0.41	306.11	512.99	1.24	-2.28	40.046124	-104.910496	1,260,197.33	3,165,038.71
613.00	0.32	41.37	612.99	1.66	-2.38	40.046125	-104.910497	1,260,197.75	3,165,038.60
713.00	0.18	269.23	712.99	1.87	-2.36	40.046126	-104.910496	1,260,197.96	3,165,038.63
795.00	0.45	307.68	794.99	2.06	-2.74	40.046127	-104.910498	1,260,198.15	3,165,038.24
947.70	0.06	229.80	947.68	2.38	-3.27	40.046127	-104.910500	1,260,198.46	3,165,037.71
957.00	0.06	203.28	956.98	2.37	-3.28	40.046127	-104.910500	1,260,198.46	3,165,037.71
1,020.00	0.11	323.16	1,019.98	2.39	-3.33	40.046127	-104.910500	1,260,198.47	3,165,037.66
1,211.00	0.22	314.93	1,210.98	2.79	-3.69	40.046129	-104.910501	1,260,198.88	3,165,037.28
1,305.00	1.77	255.53	1,304.97	2.56	-5.23	40.046128	-104.910507	1,260,198.63	3,165,035.75
1,401.00	3.02	248.37	1,400.88	1.26	-9.01	40.046124	-104.910520	1,260,197.30	3,165,031.97
1,591.00	7.07	240.64	1,590.11	-6.32	-23.86	40.046104	-104.910573	1,260,189.63	3,165,017.18
1,778.00	8.48	237.72	1,775.39	-19.33	-45.55	40.046068	-104.910651	1,260,176.48	3,164,995.58
1,961.00	10.60	221.03	1,955.88	-39.24	-68.02	40.046013	-104.910731	1,260,156.42	3,164,973.25
2,145.00	12.89	224.98	2,136.02	-66.53	-93.64	40.045938	-104.910822	1,260,128.96	3,164,947.81
2,327.00	12.98	224.00	2,313.40	-95.59	-122.18	40.045858	-104.910924	1,260,099.71	3,164,919.45
2,510.00	12.15	223.10	2,492.02	-124.44	-149.62	40.045779	-104.911022	1,260,070.68	3,164,892.21
2,694.00	12.91	230.42	2,671.64	-151.67	-178.70	40.045705	-104.911126	1,260,043.26	3,164,863.32
2,876.00	11.08	221.29	2,849.68	-177.77	-205.91	40.045633	-104.911223	1,260,016.98	3,164,836.28
3,059.00	13.05	232.16	3,028.65	-203.67	-233.84	40.045562	-104.911323	1,259,990.90	3,164,808.53
3,242.00	12.71	232.15	3,207.05	-228.69	-266.05	40.045493	-104.911438	1,259,965.66	3,164,776.48
3,425.00	11.73	228.15	3,385.90	-253.46	-295.80	40.045425	-104.911545	1,259,940.70	3,164,746.90
3,609.00	11.33	228.83	3,566.19	-277.83	-323.34	40.045358	-104.911643	1,259,916.14	3,164,719.52
3,792.00	12.99	226.20	3,745.08	-303.91	-351.72	40.045287	-104.911744	1,259,889.88	3,164,691.32
3,975.00	13.27	221.66	3,923.30	-333.83	-380.53	40.045204	-104.911847	1,259,859.76	3,164,662.71
4,158.00	14.60	222.33	4,100.91	-366.58	-410.02	40.045115	-104.911952	1,259,826.83	3,164,633.44
4,341.00	12.93	221.36	4,278.64	-399.00	-439.08	40.045026	-104.912056	1,259,794.21	3,164,604.59
4,513.00	14.42	223.73	4,445.77	-428.92	-466.60	40.044943	-104.912155	1,259,764.11	3,164,577.27
4,684.00	12.94	222.58	4,611.91	-458.40	-494.28	40.044863	-104.912253	1,259,734.44	3,164,549.79
4,855.00	12.99	220.02	4,778.55	-487.22	-519.59	40.044783	-104.912344	1,259,705.46	3,164,524.67
5,027.00	13.17	220.37	4,946.09	-516.95	-544.72	40.044702	-104.912434	1,259,675.56	3,164,499.75
5,198.00	12.28	219.19	5,112.89	-545.89	-568.82	40.044622	-104.912520	1,259,646.47	3,164,475.84
5,370.00	12.30	221.15	5,280.95	-573.86	-592.44	40.044546	-104.912604	1,259,618.34	3,164,452.41
5,541.00	11.93	217.80	5,448.14	-601.54	-615.26	40.044470	-104.912685	1,259,590.51	3,164,429.78
5,712.00	12.67	217.38	5,615.21	-630.41	-637.47	40.044390	-104.912765	1,259,561.50	3,164,407.75
5,969.00	14.30	232.18	5,865.20	-672.28	-679.67	40.044275	-104.912916	1,259,519.35	3,164,365.83
6,141.00	12.09	230.12	6,032.65	-696.86	-710.28	40.044208	-104.913025	1,259,494.57	3,164,335.39

Design Report for UNDERHILL 28N-17HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Geographic Coordinates Latitude (ft)	Geographic Coordinates Longitude (ft)	UTM Coordinates Northing (ft)	UTM Coordinates Easting (ft)
6,312.00	9.81	229.14	6,200.52	-717.88	-735.04	40.044150	-104.913113	1,259,473.39	3,164,310.77
6,483.00	8.48	229.24	6,369.34	-735.64	-755.61	40.044101	-104.913187	1,259,455.49	3,164,290.32
6,655.00	6.20	230.65	6,539.92	-749.81	-772.40	40.044063	-104.913247	1,259,441.21	3,164,273.63
6,826.00	3.69	209.66	6,710.29	-760.45	-782.27	40.044033	-104.913282	1,259,430.50	3,164,263.83
6,997.00	2.39	229.96	6,881.05	-767.53	-787.72	40.044014	-104.913301	1,259,423.39	3,164,258.42
7,040.00	3.36	229.93	6,923.99	-768.91	-789.37	40.044010	-104.913307	1,259,421.99	3,164,256.78
7,083.00	3.94	318.93	6,966.93	-768.61	-791.31	40.044011	-104.913314	1,259,422.28	3,164,254.85
7,126.00	8.41	335.23	7,009.68	-764.64	-793.60	40.044022	-104.913322	1,259,426.24	3,164,252.53
7,169.00	16.34	346.38	7,051.65	-755.89	-796.34	40.044046	-104.913332	1,259,434.97	3,164,249.73
7,212.00	25.05	353.06	7,091.84	-740.94	-798.87	40.044087	-104.913341	1,259,449.90	3,164,247.10
7,254.00	26.00	355.88	7,129.74	-722.94	-800.61	40.044136	-104.913347	1,259,467.89	3,164,245.24
7,297.00	26.59	355.44	7,168.29	-703.94	-802.05	40.044188	-104.913353	1,259,486.88	3,164,243.67
7,340.00	28.83	357.45	7,206.36	-683.99	-803.28	40.044243	-104.913357	1,259,506.82	3,164,242.31
7,383.00	31.56	2.10	7,243.53	-662.38	-803.33	40.044303	-104.913357	1,259,528.43	3,164,242.12
7,426.00	35.24	3.33	7,279.42	-638.74	-802.19	40.044367	-104.913353	1,259,552.07	3,164,243.10
7,469.00	36.71	4.96	7,314.22	-613.55	-800.36	40.044437	-104.913347	1,259,577.27	3,164,244.76
7,511.00	42.27	4.85	7,346.62	-586.95	-798.08	40.044510	-104.913338	1,259,603.89	3,164,246.87
7,554.00	49.09	4.01	7,376.64	-556.29	-795.72	40.044594	-104.913330	1,259,634.56	3,164,249.02
7,597.00	50.93	4.04	7,404.28	-523.43	-793.41	40.044684	-104.913322	1,259,667.43	3,164,251.12
7,640.00	55.28	3.52	7,430.09	-489.13	-791.14	40.044778	-104.913314	1,259,701.75	3,164,253.15
7,683.00	58.69	1.94	7,453.51	-453.12	-789.44	40.044877	-104.913308	1,259,737.77	3,164,254.62
7,726.00	61.56	2.61	7,474.93	-415.86	-787.95	40.044979	-104.913302	1,259,775.03	3,164,255.85
7,769.00	63.80	2.84	7,494.66	-377.71	-786.14	40.045084	-104.913296	1,259,813.20	3,164,257.42
7,811.00	69.11	1.74	7,511.43	-339.25	-784.61	40.045190	-104.913290	1,259,851.66	3,164,258.69
7,854.00	73.08	0.24	7,525.36	-298.58	-783.91	40.045301	-104.913288	1,259,892.33	3,164,259.12
7,897.00	75.83	0.19	7,536.89	-257.16	-783.75	40.045415	-104.913287	1,259,933.75	3,164,259.00
7,940.00	77.92	359.89	7,546.65	-215.29	-783.73	40.045530	-104.913287	1,259,975.62	3,164,258.75
7,983.00	79.59	359.78	7,555.04	-173.11	-783.85	40.045646	-104.913288	1,260,017.79	3,164,258.35
8,026.00	81.75	359.40	7,562.01	-130.69	-784.15	40.045762	-104.913289	1,260,060.22	3,164,257.76
8,069.00	86.36	359.09	7,566.46	-87.93	-784.72	40.045879	-104.913291	1,260,102.96	3,164,256.91
8,122.00	88.70	358.86	7,568.74	-34.99	-785.66	40.046025	-104.913294	1,260,155.89	3,164,255.61
8,159.00	89.79	359.32	7,569.23	2.00	-786.25	40.046126	-104.913296	1,260,192.88	3,164,254.78
8,200.00	90.99	359.82	7,568.95	43.00	-786.56	40.046239	-104.913297	1,260,233.87	3,164,254.20
8,286.00	91.36	359.81	7,567.19	128.98	-786.84	40.046475	-104.913298	1,260,319.85	3,164,253.35
8,372.00	90.49	0.59	7,565.80	214.96	-786.54	40.046711	-104.913297	1,260,405.83	3,164,253.08
8,457.00	91.17	0.99	7,564.57	299.95	-785.37	40.046944	-104.913293	1,260,490.81	3,164,253.68
8,543.00	89.51	359.88	7,564.06	385.94	-784.71	40.047180	-104.913291	1,260,576.81	3,164,253.76
8,629.00	90.12	0.53	7,564.34	471.94	-784.41	40.047416	-104.913290	1,260,662.80	3,164,253.50
8,714.00	90.74	0.03	7,563.70	556.93	-783.99	40.047650	-104.913288	1,260,747.79	3,164,253.35
8,800.00	91.61	359.77	7,561.94	642.91	-784.14	40.047886	-104.913289	1,260,833.77	3,164,252.63
8,886.00	90.74	358.62	7,560.17	728.88	-785.35	40.048122	-104.913293	1,260,919.73	3,164,250.85
8,971.00	91.17	358.19	7,558.76	813.84	-787.71	40.048355	-104.913302	1,261,004.66	3,164,247.92

Design Report for UNDERHILL 28N-17HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Geographic Coordinates Latitude (ft)	Geographic Coordinates Longitude (ft)	UTM Coordinates Northing (ft)	UTM Coordinates Easting (ft)
9,057.00	90.19	358.81	7,557.74	899.80	-789.97	40.048591	-104.913310	1,261,090.60	3,164,245.10
9,228.00	87.22	356.14	7,561.60	1,070.56	-797.49	40.049060	-104.913337	1,261,261.30	3,164,236.43
9,403.00	88.95	356.51	7,567.45	1,245.09	-808.70	40.049539	-104.913377	1,261,435.75	3,164,224.06
9,574.00	90.00	359.11	7,569.02	1,415.94	-815.24	40.050008	-104.913400	1,261,606.55	3,164,216.40
9,745.00	89.38	0.40	7,569.94	1,586.94	-815.97	40.050477	-104.913403	1,261,777.52	3,164,214.53
9,917.00	88.89	3.61	7,572.54	1,758.79	-809.95	40.050949	-104.913381	1,261,949.41	3,164,219.40
10,088.00	92.60	2.42	7,570.31	1,929.50	-800.96	40.051417	-104.913349	1,262,120.17	3,164,227.26
10,260.00	93.16	359.96	7,561.67	2,101.23	-797.39	40.051889	-104.913336	1,262,291.92	3,164,229.68
10,431.00	88.89	356.10	7,558.61	2,272.03	-803.27	40.052358	-104.913357	1,262,462.67	3,164,222.67
10,603.00	88.08	356.53	7,563.16	2,443.62	-814.32	40.052829	-104.913397	1,262,634.17	3,164,210.48
10,774.00	91.24	358.06	7,564.17	2,614.40	-822.39	40.053298	-104.913426	1,262,804.88	3,164,201.28
10,946.00	91.54	356.93	7,560.00	2,786.18	-829.90	40.053769	-104.913453	1,262,976.61	3,164,192.62
11,118.00	91.42	359.17	7,555.56	2,958.01	-835.75	40.054241	-104.913473	1,263,148.39	3,164,185.63
11,289.00	87.71	1.61	7,556.86	3,128.96	-834.59	40.054710	-104.913469	1,263,319.33	3,164,185.65
11,461.00	88.15	3.23	7,563.07	3,300.69	-827.33	40.055181	-104.913443	1,263,491.10	3,164,191.77
11,632.00	88.52	3.51	7,568.04	3,471.32	-817.29	40.055650	-104.913408	1,263,661.79	3,164,200.68
11,803.00	90.00	3.35	7,570.25	3,641.99	-807.06	40.056118	-104.913371	1,263,832.52	3,164,209.78
11,975.00	90.12	1.84	7,570.07	3,813.81	-799.27	40.056590	-104.913343	1,264,004.38	3,164,216.42
12,067.00	90.00	0.55	7,569.97	3,905.79	-797.35	40.056843	-104.913336	1,264,096.37	3,164,217.73
12,120.00	90.00	0.55	7,569.97	3,958.79	-796.84	40.056988	-104.913335	1,264,149.37	3,164,217.89

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
795.00	794.99	2.06	-2.74	Tie-On to Gyros @ 795.00 ft
957.00	956.98	2.37	-3.28	First MWD Survey @ 957.00 ft
12,067.00	7,569.97	3,905.79	-797.35	Last MWD Survey @ 12067.00 ft
12,120.00	7,569.97	3,958.79	-796.84	Svys Proj to Bit @ 12120' MD :: 7569.97' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	359.81	Slot	0.00	0.00	0.00

Design Report for UNDERHILL 28N-17HZ - Actual Field Surveys

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
13.00	795.00	MS Gyros	NS-GYRO-MS
795.00	7,511.00	MWD Vertical/Build	MWD+SC
7,511.00	12,067.00	MWD Lateral	MWD+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
947.70	947.68	9 5/8" Casing @ 947.70' MD :: 947.68' TVD	9-5/8	13-1/2
8,159.00	7,569.23	7" Casing @ 8159.00' MD :: 7569.23' TVD	7	8-3/4

Targets for Plan A

Shape	Target Name	TVD (ft)	Northing (ft)	Easting (ft)	+N/-S ft	+E/-W ft	Created	Updated
Point	UNDERHILL 28N-17HZ_SHL	0.00	1,260,196.11	3,165,041.00	0.00	0.00	7/11/2013	7/25/2013
Polygon	UNDERHILL 28N-17HZ_SEC	0.00	1,260,196.11	3,165,041.00	0.00	0.00	7/11/2013	7/25/2013
Point	UNDERHILL 28N-17HZ_BHL	7,549.00	1,264,175.93	3,164,214.79	3,985.38	-799.76	7/11/2013	7/11/2013
Polygon	UNDERHILL 28N-17HZ_LD	0.00	1,260,196.11	3,165,041.00	0.00	0.00	7/11/2013	7/25/2013

North Reference Sheet for Sec. 17-T1N-R67W - UNDERHILL 28N-17HZ - 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' @ 5125.00ft (Xtreme 22). Northing and Easting are relative to UNDERHILL 28N-17HZ
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: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99996319

Grid Coordinates of Well: 1,260,196.11 ft N, 3,165,041.00 ft E
Geographical Coordinates of Well: 40° 02' 46.04" N, 104° 54' 37.76" W
Grid Convergence at Surface is: 0.38°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,120.00ft
the Bottom Hole Displacement is 4,038.19ft in the Direction of 348.62° (True).
Magnetic Convergence at surface is: -8.28° (11 July 2013, , BGGM2013)