

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 5-T8N-R66W

Christner 8-66-5-3H

Plan A Rev 5 SideTrack

Survey: Sperry MWD Surveys (Sidetrack)

Sperry Drilling Services Standard Report

09 December, 2011

Well Coordinates: 1,497,026.32 N, 3,192,649.20 E (40° 41' 44.37" N, 104° 48' 18.90" W)

Ground Level: 5,192.00 ft

Local Coordinate Origin:

Centered on Well Christner 8-66-5-3H

Viewing Datum:

RKB 25' @ 5217.00ft (H&P 308)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 43I

HALLIBURTON

SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET


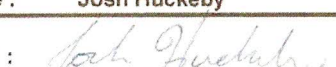
OPERATOR:	Anadarko Pet
WELL:	Christner 8-66-5-3H
FIELD:	DJ Basin
RIG:	H & P 308
LEGALS:	Sec 5 T8N R66W
COUNTY:	Weld
STATE:	Colorado
CAL. METHOD:	Min. Curv.
MAG. DECL. APPLIED:	8.82
VERTICAL SEC. DIR. :	183.530

SSDS Job Number :	8257111
Start Date of Job :	10/22/2011
End Date of Job :	11/7/2011
Lead Directional Driller:	Mike Robert
	Roy Shryack
Other SSDS DD's :	
SSDS MWD Engineers :	Josh Huckleby
	Ryan Elliott
	0

Geo Pilot Engineer :

	Main Hole =====>		1st Side Track =====>		2nd Side Track =====>		3rd Side Track =====>		4th Side Track =====>	
Surface	961.00	Tie-on	6717.00	Tie On		Tie On		Tie On		Tie On
Wireline survey		SS		MWD						
Wireline survey		SS								
KOP Depth/Sidetrack MD	981.00	KOP	6801.00	KOP-ST1		KOP-ST2		KOP-ST3		KOP-ST4
MWD Tie-on										
First MWD Survey Depth	1047.00	MWD	6749.00	MWD		MWD		MWD		MWD
Last MWD Survey Depth	7419.00	MWD	11375.00	MWD		MWD		MWD		MWD
Bit Extrapolation @ TD	7491.00	T.D.	11420.00	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 :	Mike Robert	Print Name :	Roy Shryack	Print Name :	
Sign Name :		Sign Name :		Sign Name :	
Print Name :	Josh Huckleby	Print Name :	Ryan Elliott	Print Name :	0
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.

Survey Report for Christner 8-66-5-3H - Sperry MWD Surveys (Sidetrack)

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,717.00	5.70	183.526	6,704.59	99.90	-41.00	-97.18	0.00
Tie-On SideTrack to Original Hole at 6717.00 ft							
6,749.00	0.81	179.926	6,736.53	98.08	-41.10	-95.37	15.27
First Sperry MWD Survey (ST1) at 6749.00 ft							
6,781.00	1.01	184.616	6,768.53	97.58	-41.12	-94.86	0.66
6,812.00	2.41	193.262	6,799.51	96.67	-41.29	-93.94	4.60
6,844.00	4.32	199.887	6,831.45	94.88	-41.86	-92.12	6.09
6,876.00	5.50	196.956	6,863.34	92.28	-42.72	-89.47	3.77
6,908.00	6.64	184.701	6,895.16	88.97	-43.32	-86.13	5.38
6,939.00	8.53	174.937	6,925.89	84.89	-43.26	-82.06	7.35
6,971.00	10.27	171.592	6,957.45	79.70	-42.63	-76.92	5.71
7,003.00	12.17	171.904	6,988.84	73.54	-41.74	-70.83	5.92
7,035.00	14.36	172.735	7,019.99	66.27	-40.76	-63.63	6.87
7,066.00	17.34	174.415	7,049.81	57.86	-39.83	-55.29	9.73
7,098.00	20.22	176.145	7,080.10	47.59	-38.99	-45.10	9.18
7,130.00	22.46	177.427	7,109.90	35.96	-38.35	-33.53	7.16
7,160.00	25.26	179.475	7,137.34	23.84	-38.03	-21.45	9.71
7,192.00	28.01	179.643	7,165.94	9.49	-37.92	-7.14	8.60
7,224.00	31.47	181.433	7,193.72	-6.37	-38.08	8.71	11.18
7,256.00	33.14	182.619	7,220.77	-23.46	-38.69	25.80	5.56
7,288.00	32.30	181.155	7,247.69	-40.75	-39.26	43.09	3.59
7,319.00	31.80	180.586	7,273.97	-57.20	-39.51	59.52	1.90
7,351.00	33.53	181.753	7,300.90	-74.46	-39.87	76.78	5.76
7,383.00	37.45	183.568	7,326.95	-93.02	-40.75	95.35	12.69
7,414.00	41.47	185.034	7,350.88	-112.66	-42.23	115.05	13.30
7,446.00	45.93	184.907	7,374.01	-134.68	-44.15	137.14	13.94
7,478.00	50.10	184.554	7,395.41	-158.38	-46.11	160.92	13.07
7,509.00	54.75	184.019	7,414.31	-182.88	-47.94	185.48	15.06
7,541.00	59.76	184.710	7,431.61	-209.70	-49.99	212.39	15.74
7,573.00	64.60	183.927	7,446.54	-237.92	-52.12	240.67	15.27
7,604.00	69.62	184.186	7,458.60	-266.39	-54.14	269.22	16.23
7,636.00	75.03	184.463	7,468.31	-296.78	-56.44	299.70	16.91
7,668.00	80.53	184.848	7,475.08	-327.94	-58.98	330.95	17.24
7,699.00	83.57	183.774	7,479.37	-358.55	-61.28	361.65	10.40
7,731.00	86.03	182.947	7,482.27	-390.37	-63.15	393.52	8.09
7,771.40	88.99	182.609	7,484.03	-430.68	-65.11	433.87	7.38
7" Int. Casing Shoe at 7771.40 ft							
7,802.00	91.24	182.353	7,483.96	-461.24	-66.43	464.46	7.38
7,898.00	93.33	181.839	7,480.14	-557.10	-69.94	560.35	2.25
7,992.00	96.31	181.289	7,472.23	-650.72	-72.50	653.95	3.22
8,087.00	96.00	181.331	7,462.04	-745.15	-74.66	748.33	0.33
8,183.00	95.94	181.887	7,452.06	-840.59	-77.34	843.76	0.58
8,278.00	90.25	182.248	7,446.93	-935.35	-80.76	938.55	6.01
8,373.00	89.63	182.805	7,447.03	-1,030.26	-84.95	1,033.53	0.88
8,468.00	88.33	182.913	7,448.72	-1,125.12	-89.68	1,128.51	1.37
8,563.00	88.58	183.047	7,451.28	-1,219.96	-94.62	1,223.47	0.30
8,659.00	87.16	182.058	7,454.85	-1,315.79	-98.89	1,319.39	1.80
8,754.00	88.02	181.921	7,458.84	-1,410.65	-102.19	1,414.27	0.92
8,849.00	87.41	181.555	7,462.63	-1,505.53	-105.07	1,509.14	0.76
8,944.00	87.28	181.437	7,467.03	-1,600.40	-107.55	1,603.98	0.18

Survey Report for Christner 8-66-5-3H - Sperry MWD Surveys (Sidetrack)

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
9,040.00	89.26	182.460	7,469.93	-1,696.29	-110.81	1,699.89	2.32
9,135.00	91.36	182.899	7,469.42	-1,791.18	-115.25	1,794.88	2.26
9,231.00	90.00	183.235	7,468.28	-1,887.03	-120.38	1,890.86	1.46
9,326.00	88.58	183.284	7,469.46	-1,981.87	-125.79	1,985.85	1.50
9,422.00	87.10	183.165	7,473.08	-2,077.65	-131.18	2,081.78	1.55
9,517.00	88.21	183.677	7,476.98	-2,172.40	-136.85	2,176.70	1.29
9,613.00	89.69	184.256	7,478.74	-2,268.15	-143.49	2,272.68	1.66
9,708.00	88.70	185.008	7,480.07	-2,362.82	-151.16	2,367.65	1.31
9,803.00	94.33	185.596	7,477.55	-2,457.35	-159.93	2,462.53	5.95
9,898.00	95.19	186.263	7,469.67	-2,551.51	-169.71	2,557.12	1.15
9,993.00	96.37	184.910	7,460.10	-2,645.58	-178.91	2,651.57	1.88
10,088.00	95.57	184.862	7,450.23	-2,739.72	-186.96	2,746.03	0.84
10,183.00	93.65	185.163	7,442.59	-2,834.04	-195.23	2,840.69	2.05
10,278.00	94.08	185.346	7,436.19	-2,928.43	-203.91	2,935.43	0.50
10,374.00	93.15	185.110	7,430.14	-3,023.84	-212.64	3,031.19	1.00
10,469.00	91.85	183.271	7,425.99	-3,118.49	-219.58	3,126.09	2.37
10,564.00	89.75	182.512	7,424.66	-3,213.35	-224.37	3,221.07	2.35
10,660.00	90.49	183.475	7,424.45	-3,309.22	-229.38	3,317.06	1.27
10,755.00	87.53	182.296	7,426.09	-3,404.07	-234.16	3,412.03	3.36
10,851.00	86.17	182.204	7,431.37	-3,499.85	-237.92	3,507.86	1.42
10,946.00	85.12	182.646	7,438.59	-3,594.49	-241.93	3,602.57	1.20
11,041.00	89.20	181.983	7,443.30	-3,689.27	-245.76	3,697.41	4.35
11,136.00	88.39	181.115	7,445.30	-3,784.22	-248.33	3,792.33	1.25
11,231.00	90.56	182.133	7,446.17	-3,879.17	-251.02	3,887.26	2.52
11,327.00	90.99	182.229	7,444.88	-3,975.09	-254.68	3,983.23	0.46
11,375.00	91.67	182.325	7,443.77	-4,023.04	-256.58	4,031.20	1.42
Final Sperry MWD Survey (ST1) at 11375.00 ft							
11,420.00	91.67	182.320	7,442.46	-4,067.98	-258.40	4,076.17	0.01
Straight Line Projection to TD (ST1) at 11420.00 ft							

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
6,717.00	6,704.59	99.90	-41.00	Tie-On SideTrack to Original Hole at 6717.00 ft
6,749.00	6,736.53	98.08	-41.10	First Sperry MWD Survey (ST1) at 6749.00 ft
7,771.40	7,484.03	-430.68	-65.11	7" Int. Casing Shoe at 7771.40 ft
11,375.00	7,443.77	-4,023.04	-256.58	Final Sperry MWD Survey (ST1) at 11375.00 ft
11,420.00	7,442.46	-4,067.98	-258.40	Straight Line Projection to TD (ST1) at 11420.00 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Christner 8-66-5-3H_Plan A-5_BHL Tgt	183.533	Slot	0.00	0.00	0.00

Survey Report for Christner 8-66-5-3H - Sperry MWD Surveys (Sidetrack)**Survey tool program**

From (ft)	To (ft)	Survey/Plan	Survey Tool
1,047.00	7,471.00	Sperry MWD Surveys (Original Hole)	MWD
6,749.00	11,420.00	Sperry MWD Surveys (Sidetrack)	MWD

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
Christner 8-66-5-3H_	0.00	0.00	0.00	0.00	0.00	1,497,026.32	3,192,649.20	40.695658	-104.805250
- survey misses target center by 6705.46ft at 6717.00ft MD (6704.59 TVD, 99.90 N, -41.00 E)									
- Point									
Christner 8-66-5-3H_	0.00	0.00	0.00	0.00	0.00	1,497,026.32	3,192,649.20	40.695658	-104.805250
- survey misses target center by 6705.46ft at 6717.00ft MD (6704.59 TVD, 99.90 N, -41.00 E)									
- Polygon									
Christner 8-66-5-3H_	0.00	0.00	0.00	0.00	0.00	1,497,026.32	3,192,649.20	40.695658	-104.805250
- survey misses target center by 6705.46ft at 6717.00ft MD (6704.59 TVD, 99.90 N, -41.00 E)									
- Polygon									
Christner 8-66-5-3H_	0.00	0.00	7,471.90	-4,083.40	-252.11	1,492,941.13	3,192,429.10	40.684450	-104.806159
- survey misses target center by 33.83ft at 11420.00ft MD (7442.46 TVD, -4067.98 N, -258.40 E)									
- Point									

North Reference Sheet for Sec. 5-T8N-R66W - Christner 8-66-5-3H - Plan A Rev 5 SideTrack

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

Vertical Depths are relative to RKB 25' @ 5217.00ft (H&P 308). Northing and Easting are relative to Christner 8-66-5-3H

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: 0.99998695

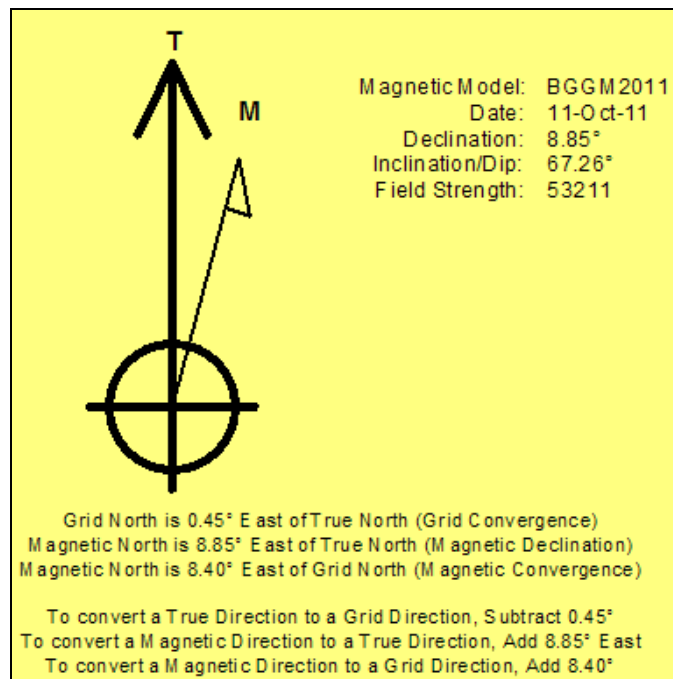
Grid Coordinates of Well: 1,497,026.32 ft N, 3,192,649.20 ft E

Geographical Coordinates of Well: 40° 41' 44.37" N, 104° 48' 18.90" W

Grid Convergence at Surface is: 0.45°

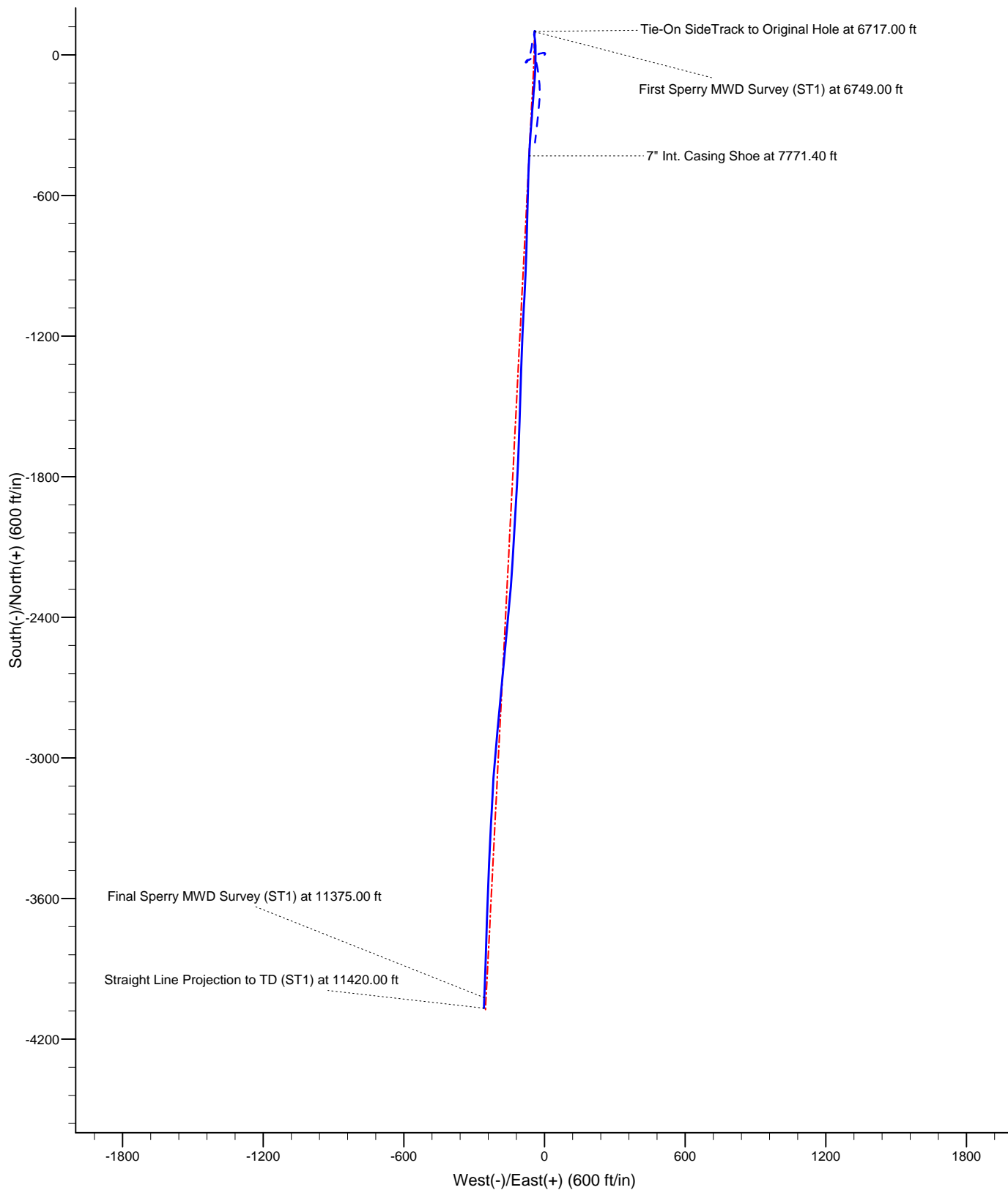
Based upon Minimum Curvature type calculations, at a Measured Depth of 11,420.00ft
the Bottom Hole Displacement is 4,076.18ft in the Direction of 183.63° (True).

Magnetic Convergence at surface is: -8.40° (11 October 2011, , BGGM2011)



LEGEND

- Christner 8-66-5-3H, Plan A Rev 5 SideTrack, Plan A Rev 5 ST Proposal V0
- - - Christner 8-66-5-3H, Plan A Rev 5 SideTrack, Sperry MWD Surveys (Original Hole)
- Sperry MWD Surveys (Sidetrack)



Project: Weld County, CO (NAD 83)
Site: Sec. 5-T8N-R66W
Well: Christner 8-66-5-3H

Anadarko Petroleum Corp.

