

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 25-T3N-R66W

Camp 28N-25HZ

Plan A Rev 0

Survey: Sperry MWD

Sperry Drilling Services

Standard Report

13 January, 2012

TD Date : 3rd Jan, 2012

Well Coordinates: 1,313,252.68 N, 3,215,772.11 E (40° 11' 26.50" N, 104° 43' 39.50" W)

Ground Level: 5,002.00 ft

Local Coordinate Origin:

Centered on Well Camp 28N-25HZ

Viewing Datum:

RKB 25' @ 5027.00ft (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: 431

HALLIBURTON

Survey Report for Camp 28N-25HZ - Sperry MWD

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
825.00	0.37	315.77	824.98	1.88	-3.64	1.60	0.00
884.00	0.25	254.79	883.98	1.98	-3.90	1.68	0.56
9 5/8" Casing							
920.00	0.36	221.54	919.98	1.88	-4.05	1.57	0.56
1,016.00	0.29	257.43	1,015.98	1.60	-4.48	1.26	0.22
1,108.00	0.38	258.79	1,107.98	1.49	-5.01	1.11	0.10
1,199.00	0.37	298.33	1,198.97	1.57	-5.57	1.14	0.28
1,291.00	0.50	281.77	1,290.97	1.79	-6.22	1.32	0.20
1,382.00	0.65	306.51	1,381.97	2.18	-7.02	1.64	0.31
1,474.00	0.53	310.72	1,473.96	2.77	-7.77	2.17	0.14
1,566.00	1.00	311.96	1,565.95	3.58	-8.69	2.92	0.51
1,657.00	0.75	200.35	1,656.95	3.56	-9.48	2.83	1.60
1,749.00	1.85	172.52	1,748.92	1.52	-9.50	0.80	1.34
1,841.00	1.23	164.23	1,840.89	-0.90	-9.04	-1.58	0.71
1,932.00	1.22	171.97	1,931.87	-2.80	-8.64	-3.45	0.18
2,024.00	1.09	168.83	2,023.85	-4.63	-8.33	-5.25	0.16
2,115.00	1.12	171.12	2,114.83	-6.36	-8.03	-6.95	0.06
2,207.00	1.36	165.29	2,206.81	-8.30	-7.61	-8.85	0.29
2,298.00	1.42	151.98	2,297.78	-10.34	-6.81	-10.83	0.36
2,390.00	1.56	151.67	2,389.75	-12.45	-5.68	-12.85	0.15
2,485.00	1.80	147.93	2,484.71	-14.85	-4.27	-15.13	0.28
2,581.00	1.86	139.44	2,580.66	-17.32	-2.46	-17.45	0.29
2,676.00	3.60	134.92	2,675.55	-20.59	0.66	-20.49	1.84
2,771.00	3.73	138.46	2,770.36	-25.01	4.82	-24.58	0.27
2,867.00	5.76	144.00	2,866.02	-31.25	9.72	-30.42	2.17
2,962.00	8.23	142.01	2,960.31	-40.46	16.71	-39.09	2.61
3,058.00	9.37	145.42	3,055.18	-52.31	25.38	-50.25	1.31
3,153.00	10.47	148.20	3,148.76	-66.02	34.31	-63.24	1.26
3,248.00	9.28	143.75	3,242.35	-79.53	43.39	-76.03	1.49
3,344.00	10.05	145.74	3,336.99	-92.70	52.68	-88.46	0.87
3,439.00	8.46	146.37	3,430.75	-105.37	61.22	-100.45	1.68
3,535.00	9.81	149.61	3,525.53	-118.30	69.27	-112.74	1.50
3,631.00	10.15	151.43	3,620.08	-132.79	77.45	-126.56	0.48
3,726.00	11.78	147.07	3,713.34	-148.28	86.73	-141.31	1.92
3,821.00	11.31	144.62	3,806.42	-164.01	97.39	-156.19	0.71
3,917.00	11.77	142.88	3,900.48	-179.50	108.75	-170.77	0.60
4,012.00	11.14	149.17	3,993.59	-195.10	119.30	-185.54	1.47
4,107.00	11.66	147.59	4,086.71	-211.09	129.15	-200.74	0.64
4,203.00	12.51	147.78	4,180.59	-228.08	139.90	-216.86	0.89
4,298.00	11.43	147.06	4,273.52	-244.68	150.50	-232.62	1.15
4,394.00	10.30	143.89	4,367.80	-259.60	160.73	-246.72	1.33
4,489.00	10.07	149.90	4,461.30	-273.64	169.90	-260.04	1.14
4,585.00	9.49	145.75	4,555.91	-287.45	178.57	-273.15	0.95
4,680.00	10.46	155.19	4,649.48	-301.75	186.59	-286.80	2.00
4,775.00	9.85	152.58	4,742.99	-316.79	193.95	-301.24	0.80
4,871.00	10.31	154.27	4,837.51	-331.82	201.46	-315.66	0.57
4,966.00	9.77	154.73	4,931.05	-346.77	208.60	-330.03	0.57
5,062.00	10.27	147.67	5,025.59	-361.36	216.65	-343.98	1.38
5,157.00	9.60	150.36	5,119.17	-375.41	225.10	-357.34	0.86
5,253.00	10.78	148.84	5,213.65	-390.05	233.70	-371.29	1.26

Survey Report for Camp 28N-25HZ - Sperry MWD

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,348.00	10.33	144.33	5,307.05	-404.57	243.27	-385.05	0.99
5,443.00	9.37	141.81	5,400.64	-417.57	253.01	-397.27	1.11
5,538.00	10.05	143.37	5,494.28	-430.30	262.74	-409.23	0.77
5,634.00	8.92	141.99	5,588.97	-442.88	272.32	-421.06	1.20
5,729.00	9.25	149.73	5,682.78	-455.28	280.71	-432.79	1.33
5,824.00	8.45	145.52	5,776.65	-467.63	288.51	-444.51	1.08
5,919.00	7.66	147.92	5,870.71	-478.75	295.82	-455.05	0.90
6,014.00	6.63	145.31	5,964.97	-488.62	302.31	-464.40	1.14
6,110.00	5.02	146.80	6,060.47	-496.69	307.76	-472.04	1.68
6,205.00	4.12	152.63	6,155.17	-503.20	311.61	-478.24	1.06
6,300.00	3.68	147.19	6,249.95	-508.80	314.83	-483.57	0.60
6,396.00	3.64	149.32	6,345.76	-514.01	318.05	-488.53	0.15
6,455.00	2.28	159.27	6,404.68	-516.72	319.42	-491.12	2.46
6,491.00	1.38	151.68	6,440.66	-517.77	319.88	-492.14	2.58
6,506.00	0.94	141.50	6,455.66	-518.02	320.04	-492.38	3.22
KOP @ 6506							
6,522.00	0.56	113.83	6,471.65	-518.16	320.20	-492.50	3.22
6,554.00	1.26	12.19	6,503.65	-517.88	320.41	-492.21	4.62
6,586.00	3.04	0.01	6,535.63	-516.68	320.49	-491.01	5.71
6,618.00	5.37	8.79	6,567.54	-514.35	320.72	-488.67	7.53
6,649.00	7.43	13.66	6,598.34	-510.97	321.41	-485.25	6.87
6,681.00	10.41	10.83	6,629.95	-506.12	322.44	-480.33	9.41
6,713.00	13.17	8.50	6,661.28	-499.68	323.53	-473.82	8.75
6,744.00	15.92	7.28	6,691.28	-491.96	324.59	-466.05	8.93
6,776.00	18.46	7.49	6,721.85	-482.59	325.80	-456.61	7.94
6,808.00	21.13	6.96	6,751.95	-471.84	327.16	-445.79	8.36
6,840.00	23.95	7.98	6,781.51	-459.68	328.76	-433.54	8.90
6,871.00	26.70	7.16	6,809.53	-446.53	330.51	-420.30	8.94
6,903.00	30.66	6.51	6,837.59	-431.29	332.33	-404.96	12.41
6,935.00	33.90	5.03	6,864.65	-414.29	334.04	-387.88	10.42
6,967.00	37.18	3.89	6,890.68	-395.74	335.48	-369.29	10.46
6,999.00	41.08	2.48	6,915.50	-375.58	336.59	-349.10	12.50
7,031.00	44.19	0.70	6,939.04	-353.92	337.18	-327.46	10.42
7,062.00	47.62	0.29	6,960.61	-331.66	337.37	-305.25	11.11
7,094.00	51.70	359.75	6,981.32	-307.28	337.37	-280.93	12.81
7,126.00	55.52	358.95	7,000.30	-281.52	337.08	-255.27	12.11
7,157.00	58.89	358.64	7,017.09	-255.48	336.53	-229.34	10.90
7,189.00	63.59	358.74	7,032.48	-227.44	335.89	-201.43	14.69
7,221.00	65.67	359.61	7,046.19	-198.53	335.47	-172.63	6.95
7,253.00	68.12	359.01	7,058.75	-169.10	335.12	-143.32	7.85
7,285.00	69.77	359.05	7,070.24	-139.24	334.61	-113.58	5.16
7,316.00	70.68	358.72	7,080.73	-110.08	334.04	-84.54	3.10
7,348.00	71.66	359.50	7,091.06	-79.79	333.57	-54.38	3.83
7,380.00	72.69	359.47	7,100.85	-49.33	333.30	-24.03	3.22
7,412.00	72.74	359.36	7,110.36	-18.78	332.99	6.42	0.36
7,444.00	72.69	358.91	7,119.87	11.77	332.53	36.85	1.35
7,476.00	72.72	358.62	7,129.38	42.32	331.87	67.26	0.87
7,508.00	71.19	358.69	7,139.30	72.74	331.15	97.53	4.79
7,539.00	69.97	358.22	7,149.60	101.96	330.37	126.61	4.19
7,571.00	68.61	358.04	7,160.92	131.88	329.39	156.37	4.28
7,603.00	68.31	357.70	7,172.67	161.62	328.28	185.95	1.36

Survey Report for Camp 28N-25HZ - Sperry MWD

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,635.00	68.73	357.44	7,184.39	191.37	327.02	215.52	1.51
7,667.00	68.56	356.70	7,196.04	221.14	325.50	245.08	2.22
7,699.00	70.63	354.90	7,207.20	251.04	323.30	274.74	8.34
7,731.00	74.53	355.03	7,216.77	281.45	320.62	304.86	12.19
7,762.00	79.61	355.97	7,223.71	311.56	318.25	334.70	16.65
7,774.00	80.86	355.92	7,225.74	323.36	317.41	346.40	10.42
7,808.00	83.24	356.96	7,230.44	356.97	315.33	379.75	7.64
7" Casing							
7,845.00	85.84	358.09	7,233.96	393.76	313.74	416.32	7.64
7,877.00	86.05	358.35	7,236.23	425.66	312.75	448.06	1.04
7,972.00	88.77	359.00	7,240.52	520.53	310.55	542.49	2.94
8,067.00	90.31	358.96	7,241.28	615.51	308.86	637.07	1.62
8,162.00	90.18	358.81	7,240.88	710.49	307.01	731.64	0.21
8,258.00	90.40	358.73	7,240.39	806.47	304.95	827.19	0.24
8,353.00	90.00	357.63	7,240.06	901.42	301.94	921.64	1.23
8,448.00	90.52	358.00	7,239.63	996.35	298.31	1,016.03	0.67
8,544.00	89.78	358.41	7,239.38	1,092.30	295.31	1,111.48	0.88
8,639.00	89.97	0.69	7,239.58	1,187.29	294.56	1,206.14	2.41
8,734.00	90.00	355.69	7,239.61	1,282.21	291.56	1,300.57	5.26
8,829.00	89.85	355.32	7,239.73	1,376.92	284.12	1,394.44	0.42
8,924.00	90.28	1.87	7,239.62	1,471.84	281.79	1,488.91	6.91
9,020.00	89.04	358.95	7,240.19	1,567.82	282.47	1,584.68	3.30
9,115.00	88.74	354.27	7,242.04	1,662.61	276.86	1,678.77	4.94
9,210.00	88.77	351.70	7,244.10	1,756.87	265.26	1,771.88	2.70
9,306.00	89.17	359.83	7,245.83	1,852.51	258.18	1,866.72	8.48
9,401.00	88.77	358.29	7,247.54	1,947.48	256.62	1,961.30	1.67
9,496.00	88.30	355.26	7,249.97	2,042.29	251.28	2,055.43	3.23
9,592.00	88.89	356.71	7,252.32	2,138.02	244.56	2,150.38	1.63
9,687.00	88.83	0.61	7,254.21	2,232.96	242.34	2,244.88	4.10
9,783.00	90.74	3.42	7,254.57	2,328.89	245.71	2,340.79	3.54
9,878.00	89.66	3.99	7,254.24	2,423.68	251.85	2,435.78	1.29
9,974.00	87.93	3.54	7,256.26	2,519.45	258.16	2,531.75	1.86
10,070.00	86.82	3.84	7,260.65	2,615.15	264.33	2,627.64	1.20
10,165.00	86.79	3.81	7,265.95	2,709.79	270.65	2,722.49	0.04
10,261.00	86.61	3.98	7,271.48	2,805.41	277.17	2,818.33	0.26
10,357.00	86.79	4.55	7,277.00	2,900.99	284.29	2,914.17	0.62
10,452.00	86.88	4.41	7,282.25	2,995.55	291.70	3,009.03	0.18
10,548.00	87.22	4.22	7,287.19	3,091.15	298.92	3,104.90	0.41
10,643.00	87.50	4.00	7,291.56	3,185.81	305.72	3,199.80	0.37
10,738.00	87.75	4.08	7,295.50	3,280.49	312.40	3,294.71	0.28
10,833.00	87.16	2.49	7,299.72	3,375.24	317.84	3,389.60	1.78
10,928.00	87.44	0.48	7,304.19	3,470.09	320.30	3,484.37	2.13
11,024.00	87.53	0.54	7,308.41	3,566.00	321.16	3,580.07	0.11
11,119.00	88.80	0.39	7,311.45	3,660.94	321.93	3,674.80	1.35
11,214.00	88.80	0.01	7,313.44	3,755.92	322.26	3,769.53	0.40
11,309.00	88.95	0.13	7,315.30	3,850.90	322.37	3,864.25	0.20
11,404.00	88.86	359.58	7,317.12	3,945.89	322.13	3,958.94	0.59
11,499.00	88.46	359.11	7,319.34	4,040.85	321.05	4,053.56	0.65
11,595.00	88.24	358.87	7,322.10	4,136.80	319.36	4,149.10	0.34
11,604.00	88.30	359.01	7,322.38	4,145.79	319.19	4,158.06	1.69
11,658.00	88.30	359.01	7,323.98	4,199.76	318.26	4,211.80	0.00

Survey Report for Camp 28N-25HZ - Sperry MWD

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
11658 Projection to bit							

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
884.00	883.98	1.98	-3.90	9 5/8" Casing
6,506.00	6,455.66	-518.02	320.04	KOP @ 6506
7,808.00	7,230.44	356.97	315.33	7" Casing
11,658.00	7,323.98	4,199.76	318.16	11658 Projection to bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
User	No Target (Freehand)	4.33	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
125.00	825.00	MS Energy GYRO Surveys	NS-GYRO-MS
825.00	11,658.00	Sperry MWD	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
884.00	883.98	9 5/8"	9-5/8	12-1/4

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
Camp 28N-25HZ_SHL	0.00	0.00	0.00	0.03	0.00	1,313,252.71	3,215,772.11	40° 11' 26.504 N	104° 43' 39.498 W
- survey misses target center by 824.99ft at 825.00ft MD (824.98 TVD, 1.88 N, -3.64 E)									
- Point									
Camp 28N-25HZ_BHL	0.00	0.00	7,272.00	4,206.06	318.44	1,317,461.17	3,216,053.90	40° 12' 8.068 N	104° 43' 35.394 W
- survey misses target center by 52.36ft at 11658.00ft MD (7323.98 TVD, 4199.76 N, 318.26 E)									
- Point									
Camp 2 Pad_Section L	0.00	0.00	-41.00	-110.63	-1,529.81	1,313,128.73	3,214,243.39	40° 11' 25.410 N	104° 43' 59.210 W
- survey misses target center by 1758.35ft at 825.00ft MD (824.98 TVD, 1.88 N, -3.64 E)									
- Polygon									
Camp 2 Pad_Setback	0.00	0.00	-41.00	-110.63	-1,529.81	1,313,128.73	3,214,243.39	40° 11' 25.410 N	104° 43' 59.210 W
- survey misses target center by 1758.35ft at 825.00ft MD (824.98 TVD, 1.88 N, -3.64 E)									
- Polygon									

North Reference Sheet for Sec. 25-T3N-R66W - Camp 28N-25HZ - Plan A Rev 0

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' @ 5027.00ft (H&P 308). Northing and Easting are relative to Camp 28N-25HZ

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° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995739

Grid Coordinates of Well: 1,313,252.68 ft N, 3,215,772.11 ft E

Geographical Coordinates of Well: 40° 11' 26.50" N, 104° 43' 39.50" W

Grid Convergence at Surface is: 0.50°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,658.00ft
the Bottom Hole Displacement is 4,211.80ft in the Direction of 4.33° (True).

Magnetic Convergence at surface is: -8.23° (14 January 2012, , BGGM2011)

