

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 2-T1N-R68W

Pinnacle 2-2HZ

Plan A Rev 1

Design: Sperry MWD Survey

Standard Survey Report

01 June, 2011

HALLIBURTON

Sperry Drilling

SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Anadarko
WELL:	Pinnacle 2-2HZ
FIELD:	Wattenberg
RIG:	Xtreme 8
LEGALS:	
COUNTY:	Weld
STATE:	Colorado
CAL. METHOD:	Minimum Curvature
MAG. DECL. APPLIED:	8.93
VERTICAL SEC. DIR. :	358.730

SSDS Job Number :	8058542
Start Date of Job :	4/8/2011
End Date of Job :	4/21/2011
Lead Directional Driller:	Justen Koenen
Other SSDS DD's :	Paul Jevne
SSDS MWD Engineers :	Nick Willette

	Main Hole =====>	1st Side Track =====>	2nd Side Track =====>	3rd Side Track =====>	4th Side Track =====>
ESS Survey					
First Survey Depth	25.00	Tie On	Tie On	Tie On	Tie On
Last Survey Depth	880.00				
KOP Depth/Sidetrack MD	6800.00	KOP	KOP-ST1	KOP-ST2	KOP-ST3
First Survey Depth	957.00	MWD	MWD	MWD	MWD
Last Survey Depth	11979.00	MWD	MWD	MWD	MWD
Bit Extrapolation to TD	12015.00	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 : Justen Koenen Print Name : Nick Willette Print Name :

Sign Name : *JK* Sign Name : *Nick Willette* Sign Name :

Print Name : Paul Jevne Print Name : Mario Schonsberg Print Name :

Sign Name : *Paul Jevne* Sign Name : *Mario Schonsberg* 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.

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Pinnacle 2-2HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
Site:	Sec. 2-T1N-R68W	MD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
Well:	Pinnacle 2-2HZ	North Reference:	True
Wellbore:	Plan A Rev 1	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Survey	Database:	EDM 2003.16 Single User Db

Project	Weld County, CO (NAD 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	Sec. 2-T1N-R68W				
Site Position:		Northing:	1,270,229.92ft	Latitude:	40.073947
From:	Lat/Long	Easting:	3,148,783.22ft	Longitude:	-104.968343
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.34 °

Well	Pinnacle 2-2HZ					
Well Position	+N-S	0.00 ft	Northing:	1,270,229.92 ft	Latitude:	40.073947
	+E/-W	0.00 ft	Easting:	3,148,783.22 ft	Longitude:	-104.968343
Position Uncertainty		0.00 ft	Wellhead Elevation:	5,006.00 ft	Ground Level:	5,006.00 ft

Wellbore	Plan A Rev 1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	4/16/2011	8.93	66.77	52,930

Design	Sperry MWD Survey			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.00
Vertical Section:	Depth From (TVD) (ft)	+N-S (ft)	+E-W (ft)	Direction (°)
	0.00	0.00	0.00	358.728

Survey Program	Date	6/1/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
25.00	12,015.00	Sperry MWD Surveys (Plan A Rev 1)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25.00	0.90	2.160	25.00	0.20	0.01	0.20	3.60	3.60	0.00	
First Gyro Survey at 25.00 ft										
115.00	0.90	23.960	114.99	1.55	0.32	1.54	0.38	0.00	24.22	
175.00	0.90	15.260	174.98	2.43	0.64	2.42	0.23	0.00	-14.50	
265.00	0.80	4.760	264.97	3.74	0.87	3.72	0.21	-0.11	-11.67	
355.00	0.80	343.560	354.96	4.97	0.75	4.95	0.33	0.00	-23.56	
445.00	0.80	335.460	444.95	6.14	0.31	6.14	0.13	0.00	-9.00	
535.00	0.90	316.760	534.94	7.23	-0.43	7.24	0.33	0.11	-20.78	
625.00	1.10	315.860	624.93	8.37	-1.52	8.40	0.22	0.22	-1.00	
715.00	0.90	335.660	714.92	9.63	-2.41	9.68	0.44	-0.22	22.00	
805.00	1.10	276.060	804.91	10.37	-3.56	10.44	1.12	0.22	-66.22	
880.00	1.00	265.760	879.89	10.39	-4.93	10.50	0.28	-0.13	-13.73	

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Site:	Sec. 2-T1N-R68W	MD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
Well:	Pinnacle 2-2HZ	North Reference:	True
Wellbore:	Plan A Rev 1	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Survey	Database:	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Final Gyro Survey at 880.00 ft									
957.00	0.93	231.650	956.88	9.96	-6.09	10.09	0.74	-0.09	-44.30
First Sperry MWD Survey at 957.00 ft									
1,049.00	2.18	204.800	1,048.85	7.90	-7.41	8.07	1.54	1.36	-29.18
1,142.00	3.87	198.250	1,141.71	3.32	-9.14	3.52	1.85	1.82	-7.04
1,234.00	4.02	204.700	1,233.50	-2.56	-11.46	-2.31	0.51	0.16	7.01
1,324.00	4.44	200.720	1,323.25	-8.69	-14.01	-8.37	0.57	0.47	-4.42
1,415.00	5.02	207.990	1,413.94	-15.50	-17.12	-15.11	0.92	0.64	7.99
1,505.00	4.52	208.240	1,503.63	-22.10	-20.65	-21.63	0.56	-0.56	0.28
1,593.00	4.84	215.870	1,591.34	-28.16	-24.46	-27.61	0.79	0.36	8.67
1,680.00	3.82	219.330	1,678.09	-33.38	-28.45	-32.74	1.21	-1.17	3.98
1,769.00	2.66	202.520	1,766.95	-37.58	-31.12	-36.88	1.67	-1.30	-18.89
1,858.00	2.17	186.710	1,855.87	-41.16	-32.11	-40.44	0.92	-0.55	-17.76
1,946.00	2.28	179.730	1,943.80	-44.56	-32.30	-43.84	0.33	0.12	-7.93
2,034.00	1.74	175.270	2,031.75	-47.65	-32.18	-46.92	0.64	-0.61	-5.07
2,122.00	2.31	181.250	2,119.69	-50.75	-32.11	-50.03	0.69	0.65	6.80
2,210.00	1.89	187.220	2,207.63	-53.96	-32.33	-53.23	0.54	-0.48	6.78
2,298.00	2.84	191.670	2,295.56	-57.54	-32.95	-56.79	1.10	1.08	5.06
2,388.00	1.84	178.130	2,385.48	-61.17	-33.36	-60.41	1.26	-1.11	-15.04
2,477.00	3.12	172.920	2,474.40	-65.00	-33.01	-64.25	1.46	1.44	-5.85
2,566.00	2.75	169.010	2,563.28	-69.50	-32.30	-68.76	0.47	-0.42	-4.39
2,654.00	2.24	156.290	2,651.20	-73.14	-31.21	-72.43	0.85	-0.58	-14.45
2,742.00	1.64	149.920	2,739.15	-75.81	-29.89	-75.13	0.72	-0.68	-7.24
2,830.00	2.12	152.610	2,827.10	-78.34	-28.51	-77.69	0.55	0.55	3.06
2,918.00	3.19	155.000	2,915.00	-82.01	-26.72	-81.39	1.22	1.22	2.72
3,008.00	2.53	162.430	3,004.89	-86.17	-25.07	-85.59	0.84	-0.73	8.26
3,096.00	2.56	178.490	3,092.81	-89.99	-24.43	-89.42	0.81	0.03	18.25
3,186.00	3.22	170.270	3,182.69	-94.49	-23.95	-93.93	0.86	0.73	-9.13
3,273.00	2.79	178.790	3,269.57	-99.01	-23.49	-98.47	0.71	-0.49	9.79
3,363.00	2.14	193.800	3,359.49	-102.83	-23.84	-102.28	1.01	-0.72	16.68
3,452.00	2.40	174.560	3,448.42	-106.30	-24.06	-105.74	0.90	0.29	-21.62
3,540.00	2.75	165.760	3,536.33	-110.18	-23.37	-109.64	0.60	0.40	-10.00
3,627.00	3.07	165.070	3,623.22	-114.46	-22.26	-113.94	0.37	0.37	-0.79
3,715.00	1.97	180.370	3,711.13	-118.25	-21.66	-117.74	1.45	-1.25	17.39
3,803.00	2.57	176.180	3,799.06	-121.73	-21.54	-121.22	0.71	0.68	-4.76
3,892.00	3.55	162.210	3,887.94	-126.34	-20.56	-125.86	1.38	1.10	-15.70
3,979.00	2.72	165.540	3,974.81	-130.91	-19.22	-130.45	0.98	-0.95	3.83
4,068.00	2.28	164.790	4,063.72	-134.66	-18.23	-134.22	0.50	-0.49	-0.84
4,156.00	2.78	166.720	4,151.64	-138.43	-17.28	-138.01	0.58	0.57	2.19
4,246.00	2.40	169.560	4,241.54	-142.40	-16.44	-142.00	0.45	-0.42	3.16
4,335.00	2.33	175.670	4,330.47	-146.04	-15.97	-145.65	0.29	-0.08	6.87
4,422.00	2.68	167.830	4,417.38	-149.79	-15.40	-149.41	0.56	0.40	-9.01
4,512.00	1.94	185.270	4,507.31	-153.37	-15.10	-152.99	1.13	-0.82	19.38
4,600.00	1.89	187.340	4,595.26	-156.29	-15.42	-155.91	0.10	-0.06	2.35
4,689.00	2.34	203.970	4,684.20	-159.40	-16.35	-159.00	0.85	0.51	18.69
4,775.00	2.56	202.450	4,770.12	-162.78	-17.79	-162.35	0.27	0.26	-1.77
4,862.00	3.06	204.850	4,857.02	-166.69	-19.51	-166.21	0.59	0.57	2.76
4,950.00	2.92	197.610	4,944.90	-170.95	-21.18	-170.44	0.46	-0.16	-8.23
5,040.00	2.46	202.150	5,034.80	-174.93	-22.60	-174.38	0.56	-0.51	5.04
5,129.00	3.03	180.920	5,123.70	-179.05	-23.36	-178.49	1.30	0.64	-23.85
5,219.00	3.08	171.060	5,213.57	-183.82	-23.02	-183.26	0.59	0.06	-10.96
5,307.00	2.61	175.530	5,301.46	-188.15	-22.50	-187.60	0.59	-0.53	5.08
5,393.00	2.71	175.840	5,387.37	-192.13	-22.20	-191.59	0.12	0.12	0.36
5,481.00	2.08	171.350	5,475.29	-195.78	-21.81	-195.25	0.75	-0.72	-5.10

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Well:	Pinnacle 2-2HZ	North Reference:	True
Wellbore:	Plan A Rev 1	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Survey	Database:	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
5,568.00	1.95	171.920	5,562.24	-198.81	-21.36	-198.29	0.15	-0.15	0.66
5,656.00	2.95	169.180	5,650.16	-202.52	-20.72	-202.01	1.14	1.14	-3.11
5,746.00	2.81	160.050	5,740.05	-206.86	-19.54	-206.38	0.53	-0.16	-10.14
5,834.00	2.14	157.700	5,827.96	-210.41	-18.18	-209.96	0.77	-0.76	-2.67
5,922.00	1.88	172.490	5,915.91	-213.36	-17.37	-212.93	0.66	-0.30	16.81
6,010.00	2.81	178.920	6,003.84	-216.95	-17.14	-216.52	1.10	1.06	7.31
6,098.00	2.44	177.520	6,091.74	-220.98	-17.01	-220.55	0.43	-0.42	-1.59
6,186.00	1.68	225.280	6,179.69	-223.76	-17.85	-223.31	2.05	-0.86	54.27
6,274.00	1.27	225.300	6,267.66	-225.35	-19.46	-224.87	0.47	-0.47	0.02
6,361.00	1.73	182.740	6,354.63	-227.34	-20.21	-226.84	1.34	0.53	-48.92
6,449.00	2.62	167.260	6,442.57	-230.63	-19.83	-230.13	1.20	1.01	-17.59
6,537.00	2.36	161.440	6,530.49	-234.31	-18.81	-233.84	0.41	-0.30	-6.61
6,625.00	1.66	152.780	6,618.43	-237.16	-17.65	-236.71	0.86	-0.80	-9.84
6,711.00	2.41	157.270	6,704.38	-239.94	-16.38	-239.51	0.89	0.87	5.22
6,741.00	2.34	158.400	6,734.35	-241.09	-15.91	-240.68	0.28	-0.23	3.77
6,800.00	0.75	71.340	6,793.33	-242.08	-15.10	-241.69	4.10	-2.69	-147.56
6,830.00	3.72	21.860	6,823.31	-241.12	-14.55	-240.74	10.94	9.90	-164.93
6,859.00	7.60	20.300	6,852.16	-238.45	-13.54	-238.09	13.39	13.38	-5.38
6,888.00	11.16	13.970	6,880.77	-233.92	-12.19	-233.59	12.76	12.28	-21.83
6,918.00	14.80	8.710	6,910.00	-227.31	-10.91	-227.02	12.74	12.13	-17.53
6,948.00	17.36	6.360	6,938.82	-219.08	-9.83	-218.81	8.80	8.53	-7.83
6,977.00	19.87	5.770	6,966.31	-209.87	-8.86	-209.62	8.68	8.66	-2.03
7,006.00	21.64	5.310	6,993.42	-199.64	-7.87	-199.42	6.13	6.10	-1.59
7,036.00	22.00	4.440	7,021.27	-188.53	-6.92	-188.33	1.61	1.20	-2.90
7,065.00	23.11	4.780	7,048.05	-177.45	-6.03	-177.27	3.85	3.83	1.17
7,094.00	24.54	7.120	7,074.58	-165.80	-4.81	-165.65	5.91	4.93	8.07
7,124.00	26.27	9.730	7,101.68	-153.07	-2.91	-152.97	6.87	5.77	8.70
7,153.00	27.72	9.890	7,127.52	-140.10	-0.67	-140.05	5.01	5.00	0.55
7,182.00	29.10	7.970	7,153.03	-126.47	1.47	-126.47	5.71	4.76	-6.62
7,212.00	31.19	6.970	7,178.97	-111.54	3.42	-111.58	7.16	6.97	-3.33
7,240.00	32.16	7.080	7,202.80	-96.94	5.22	-97.04	3.47	3.46	0.39
7,268.00	33.67	7.330	7,226.30	-81.85	7.13	-81.99	5.41	5.39	0.89
7,297.00	35.89	7.650	7,250.12	-65.45	9.29	-65.64	7.68	7.66	1.10
7,326.00	39.02	8.390	7,273.14	-47.99	11.75	-48.24	10.90	10.79	2.55
7,355.00	41.17	7.880	7,295.32	-29.50	14.39	-29.81	7.50	7.41	-1.76
7,385.00	43.51	5.770	7,317.50	-9.44	16.78	-9.81	9.12	7.80	-7.03
7,414.00	46.06	4.980	7,338.08	10.90	18.69	10.48	9.00	8.79	-2.72
7,443.00	48.52	5.310	7,357.75	32.12	20.61	31.65	8.52	8.48	1.14
7,472.00	51.46	6.500	7,376.39	54.21	22.90	53.69	10.61	10.14	4.10
7,501.00	53.96	6.790	7,393.96	77.12	25.57	76.54	8.66	8.62	1.00
7,529.00	56.28	7.400	7,409.97	99.92	28.40	99.26	8.48	8.29	2.18
7,559.00	58.82	6.400	7,426.07	125.05	31.44	124.32	8.92	8.47	-3.33
7,588.00	61.57	6.070	7,440.48	150.06	34.17	149.26	9.53	9.48	-1.14
7,617.00	63.82	5.870	7,453.78	175.69	36.85	174.83	7.78	7.76	-0.69
7,647.00	65.88	5.240	7,466.53	202.71	39.48	201.79	7.12	6.87	-2.10
7,676.00	66.43	4.760	7,478.25	229.14	41.79	228.15	2.43	1.90	-1.66
7,705.00	67.52	4.870	7,489.60	255.73	44.03	254.69	3.77	3.76	0.38
7,735.00	69.30	4.820	7,500.64	283.53	46.39	282.43	5.94	5.93	-0.17
7,764.00	72.07	5.680	7,510.23	310.78	48.89	309.61	9.95	9.55	2.97
7,793.00	73.97	6.290	7,518.70	338.36	51.79	337.13	6.85	6.55	2.10
7,823.00	79.47	6.120	7,525.58	367.38	54.94	366.07	18.34	18.33	-0.57
7,835.00	81.10	6.440	7,527.61	379.13	56.24	377.79	13.84	13.58	2.67
7,873.00	83.32	7.465	7,532.76	416.50	60.79	415.05	6.42	5.84	2.70
7" Intermediate Casing									

Halliburton Company

Survey Report



Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Pinnacle 2-2HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
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7,890.00	84.31	7.920	7,534.59	433.25	63.06	431.74	6.42	5.84	2.68
7,934.00	85.18	7.760	7,538.62	476.65	69.03	475.01	2.01	1.98	-0.36
7,979.00	86.17	6.900	7,542.02	521.16	74.76	519.37	2.91	2.20	-1.91
8,024.00	87.10	6.090	7,544.66	565.79	79.84	563.88	2.74	2.07	-1.80
8,069.00	88.58	5.500	7,546.35	610.53	84.38	608.51	3.54	3.29	-1.31
8,112.00	89.26	3.200	7,547.16	653.39	87.64	651.29	5.58	1.58	-5.35
8,155.00	90.12	0.710	7,547.40	696.37	89.11	694.22	6.13	2.00	-5.79
8,198.00	90.99	0.320	7,546.98	739.36	89.49	737.19	2.22	2.02	-0.91
8,241.00	90.06	359.530	7,546.59	782.36	89.44	780.18	2.84	-2.16	-1.84
8,285.00	90.12	358.900	7,546.52	826.35	88.83	824.18	1.44	0.14	-1.43
8,330.00	91.48	357.020	7,545.89	871.32	87.23	869.17	5.16	3.02	-4.18
8,374.00	90.49	355.880	7,545.13	915.23	84.51	913.12	3.43	-2.25	-2.59
8,417.00	90.37	353.060	7,544.81	958.02	80.36	956.00	6.56	-0.28	-6.56
8,462.00	90.31	349.610	7,544.54	1,002.50	73.59	1,000.62	7.67	-0.13	-7.67
8,507.00	89.88	346.370	7,544.47	1,046.51	64.22	1,044.82	7.26	-0.96	-7.20
8,550.00	90.19	348.140	7,544.44	1,088.45	54.74	1,086.96	4.18	0.72	4.12
8,595.00	90.43	350.060	7,544.20	1,132.63	46.23	1,131.33	4.30	0.53	4.27
8,639.00	90.49	352.260	7,543.84	1,176.11	39.47	1,174.94	5.00	0.14	5.00
8,684.00	90.37	354.000	7,543.51	1,220.78	34.08	1,219.72	3.88	-0.27	3.87
8,729.00	90.74	355.700	7,543.07	1,265.59	30.05	1,264.62	3.87	0.82	3.78
8,774.00	90.49	354.280	7,542.59	1,310.42	26.12	1,309.52	3.20	-0.56	-3.16
8,819.00	91.73	354.370	7,541.72	1,355.19	21.67	1,354.37	2.76	2.76	0.20
8,864.00	92.47	354.260	7,540.07	1,399.94	17.21	1,399.21	1.66	1.64	-0.24
8,908.00	91.98	354.030	7,538.36	1,443.67	12.73	1,443.04	1.23	-1.11	-0.52
8,951.00	90.99	354.100	7,537.24	1,486.43	8.28	1,485.88	2.31	-2.30	0.16
8,996.00	91.17	354.550	7,536.40	1,531.20	3.83	1,530.74	1.08	0.40	1.00
9,039.00	90.74	354.250	7,535.68	1,573.99	-0.36	1,573.61	1.22	-1.00	-0.70
9,082.00	90.25	353.910	7,535.31	1,616.76	-4.80	1,616.47	1.39	-1.14	-0.79
9,127.00	90.49	353.990	7,535.02	1,661.51	-9.54	1,661.31	0.56	0.53	0.18
9,172.00	90.80	354.190	7,534.51	1,706.26	-14.17	1,706.16	0.82	0.69	0.44
9,217.00	89.88	353.490	7,534.24	1,751.00	-19.00	1,750.99	2.57	-2.04	-1.56
9,262.00	89.81	352.750	7,534.37	1,795.68	-24.39	1,795.78	1.65	-0.16	-1.64
9,307.00	90.37	352.580	7,534.29	1,840.31	-30.14	1,840.52	1.30	1.24	-0.38
9,350.00	90.00	352.130	7,534.16	1,882.93	-35.86	1,883.26	1.35	-0.86	-1.05
9,393.00	90.80	352.350	7,533.86	1,925.53	-41.66	1,925.98	1.93	1.86	0.51
9,436.00	91.05	353.130	7,533.16	1,968.18	-47.10	1,968.74	1.90	0.58	1.81
9,479.00	90.99	353.940	7,532.40	2,010.90	-51.94	2,011.56	1.89	-0.14	1.88
9,523.00	91.79	354.220	7,531.33	2,054.65	-56.47	2,055.40	1.93	1.82	0.64
9,568.00	91.11	354.860	7,530.19	2,099.43	-60.75	2,100.26	2.07	-1.51	1.42
9,612.00	91.17	354.860	7,529.31	2,143.25	-64.70	2,144.16	0.14	0.14	0.00
9,657.00	90.25	355.400	7,528.76	2,188.08	-68.52	2,189.06	2.37	-2.04	1.20
9,700.00	90.43	355.760	7,528.50	2,230.95	-71.83	2,232.00	0.94	0.42	0.84
9,743.00	91.17	355.750	7,527.90	2,273.83	-75.01	2,274.93	1.72	1.72	-0.02
9,787.00	90.56	355.870	7,527.24	2,317.71	-78.23	2,318.87	1.41	-1.39	0.27
9,832.00	90.00	356.190	7,527.02	2,362.60	-81.34	2,363.82	1.43	-1.24	0.71
9,876.00	90.99	356.740	7,526.64	2,406.51	-84.05	2,407.79	2.57	2.25	1.25
9,919.00	90.49	357.510	7,526.08	2,449.45	-86.21	2,450.76	2.13	-1.16	1.79
9,963.00	90.62	356.500	7,525.66	2,493.39	-88.51	2,494.74	2.31	0.30	-2.30
10,007.00	89.88	356.090	7,525.46	2,537.30	-91.35	2,538.70	1.92	-1.68	-0.93
10,052.00	90.37	355.510	7,525.37	2,582.18	-94.65	2,583.64	1.69	1.09	-1.29
10,095.00	89.63	356.240	7,525.37	2,625.07	-97.74	2,626.59	2.42	-1.72	1.70
10,139.00	89.32	356.310	7,525.77	2,668.97	-100.60	2,670.55	0.72	-0.70	0.16
10,182.00	90.99	356.410	7,525.65	2,711.88	-103.33	2,713.51	3.89	3.88	0.23
10,227.00	90.62	356.360	7,525.02	2,756.79	-106.17	2,758.47	0.83	-0.82	-0.11

Halliburton Company

Survey Report

HALLIBURTON
 Sperry Drilling

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Pinnacle 2-2HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
Site:	Sec. 2-T1N-R68W	MD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
Well:	Pinnacle 2-2HZ	North Reference:	True
Wellbore:	Plan A Rev 1	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Survey	Database:	EDM 2003.16 Single User Db

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,272.00	89.14	356.530	7,525.11	2,801.70	-108.96	2,803.43	3.31	-3.29	0.38
10,316.00	89.94	355.650	7,525.47	2,845.60	-111.96	2,847.38	2.70	1.82	-2.00
10,360.00	91.30	356.400	7,524.99	2,889.49	-115.01	2,891.33	3.53	3.09	1.70
10,404.00	89.94	356.840	7,524.52	2,933.41	-117.60	2,935.29	3.25	-3.09	1.00
10,448.00	89.26	357.690	7,524.82	2,977.35	-119.70	2,979.28	2.47	-1.55	1.93
10,492.00	89.69	358.650	7,525.23	3,021.33	-121.11	3,023.27	2.39	0.98	2.18
10,537.00	90.56	358.970	7,525.13	3,066.32	-122.04	3,068.27	2.06	1.93	0.71
10,580.00	90.93	359.760	7,524.57	3,109.31	-122.52	3,111.27	2.03	0.86	1.84
10,624.00	90.62	1.120	7,523.97	3,153.31	-122.18	3,155.24	3.17	-0.70	3.09
10,669.00	89.94	1.930	7,523.75	3,198.29	-120.98	3,200.19	2.35	-1.51	1.80
10,713.00	90.68	2.380	7,523.52	3,242.26	-119.33	3,244.11	1.97	1.68	1.02
10,756.00	90.74	2.220	7,522.98	3,285.22	-117.60	3,287.02	0.40	0.14	-0.37
10,801.00	89.57	2.790	7,522.86	3,330.17	-115.63	3,331.92	2.89	-2.60	1.27
10,844.00	90.19	2.210	7,522.95	3,373.13	-113.76	3,374.83	1.97	1.44	-1.35
10,888.00	89.88	1.960	7,522.92	3,417.10	-112.16	3,418.75	0.91	-0.70	-0.57
10,932.00	88.58	1.520	7,523.52	3,461.08	-110.82	3,462.69	3.12	-2.95	-1.00
10,977.00	89.07	0.770	7,524.44	3,506.06	-109.92	3,507.64	1.99	1.09	-1.67
11,020.00	89.13	0.080	7,525.11	3,549.05	-109.60	3,550.61	1.61	0.14	-1.60
11,064.00	89.26	0.520	7,525.73	3,593.05	-109.37	3,594.59	1.04	0.30	1.00
11,107.00	90.19	359.990	7,525.94	3,636.05	-109.18	3,637.57	2.49	2.16	-1.23
11,152.00	90.12	359.320	7,525.82	3,681.04	-109.45	3,682.57	1.50	-0.16	-1.49
11,195.00	89.57	0.110	7,525.93	3,724.04	-109.67	3,725.56	2.24	-1.28	1.84
11,240.00	89.69	359.300	7,526.22	3,769.04	-109.90	3,770.55	1.82	0.27	-1.80
11,284.00	90.62	0.020	7,526.10	3,813.04	-110.16	3,814.55	2.67	2.11	1.64
11,328.00	91.17	0.820	7,525.42	3,857.03	-109.84	3,858.52	2.21	1.25	1.82
11,371.00	90.49	0.320	7,524.79	3,900.03	-109.41	3,901.49	1.96	-1.58	-1.16
11,416.00	90.31	359.830	7,524.48	3,945.02	-109.35	3,946.48	1.16	-0.40	-1.09
11,459.00	90.87	358.790	7,524.04	3,988.02	-109.87	3,989.47	2.75	1.30	-2.42
11,504.00	90.56	358.380	7,523.48	4,033.00	-110.98	4,034.47	1.14	-0.69	-0.91
11,547.00	90.80	358.310	7,522.97	4,075.98	-112.22	4,077.47	0.58	0.56	-0.16
11,590.00	90.80	358.730	7,522.36	4,118.96	-113.33	4,120.46	0.98	0.00	0.98
11,633.00	90.86	359.700	7,521.74	4,161.95	-113.92	4,163.46	2.26	0.14	2.26
11,677.00	91.48	359.100	7,520.84	4,205.94	-114.38	4,207.44	1.96	1.41	-1.36
11,721.00	90.12	359.330	7,520.23	4,249.93	-114.98	4,251.44	3.13	-3.09	0.52
11,765.00	90.80	0.700	7,519.88	4,293.93	-114.97	4,295.42	3.48	1.55	3.11
11,809.00	91.11	1.650	7,519.14	4,337.91	-114.07	4,339.38	2.27	0.70	2.16
11,853.00	90.06	1.320	7,518.69	4,381.89	-112.93	4,383.32	2.50	-2.39	-0.75
11,897.00	90.80	1.780	7,518.36	4,425.88	-111.74	4,427.27	1.98	1.68	1.05
11,941.00	91.24	2.710	7,517.58	4,469.84	-110.02	4,471.18	2.34	1.00	2.11
11,979.00	90.86	2.470	7,516.88	4,507.79	-108.30	4,509.08	1.18	-1.00	-0.63
Final Sperry MWD Survey at 11979.00 ft									
12,015.00	90.86	2.470	7,516.34	4,543.75	-106.75	4,545.00	0.00	0.00	0.00
Straight Line Projection to TD at 12015.00 ft - Pinnacle 2-2HZ Plan A Rev 1 BH Tgt									

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Pinnacle 2-2HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
Site:	Sec. 2-T1N-R68W	MD Reference:	RKB 17' @ 5023.00ft (Extreme 8)
Well:	Pinnacle 2-2HZ	North Reference:	True
Wellbore:	Plan A Rev 1	Survey Calculation Method:	Minimum Curvature
Design:	Sperry MWD Survey	Database:	EDM 2003.16 Single User Db

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
Pinnacle 2-2HZ 460' S - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,270,229.92	3,148,783.22	40.073947	-104.968343
Point 1			0.00	4,549.00	1,558.00	1,274,788.00	3,150,313.86		
Point 2			0.00	154.00	1,558.00	1,270,393.25	3,150,340.21		
Point 3			0.00	154.00	-2,750.00	1,270,367.42	3,146,032.46		
Point 4			0.00	4,549.00	-2,750.00	1,274,762.17	3,146,006.11		
Pinnacle 2-2HZ Sectic - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,270,229.92	3,148,783.22	40.073947	-104.968343
Point 1			0.00	5,009.00	2,018.00	1,275,250.73	3,150,771.08		
Point 2			0.00	-306.00	2,018.00	1,269,936.03	3,150,802.94		
Point 3			0.00	-306.00	-3,210.00	1,269,904.69	3,145,575.24		
Point 4			0.00	5,009.00	-3,210.00	1,275,219.39	3,145,543.37		
Pinnacle 2-2HZ 460' S - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,270,229.92	3,148,783.22	40.073947	-104.968343
Point 1			0.00	154.00	-156.78	1,270,382.97	3,148,625.53		
Point 2			0.00	4,550.00	-154.10	1,274,778.74	3,148,601.85		
Pinnacle 2-2HZ Cente - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,270,229.92	3,148,783.22	40.073947	-104.968343
Point 1			0.00	-306.00	-616.78	1,269,920.24	3,148,168.31		
Point 2			0.00	5,010.00	-614.10	1,275,235.95	3,148,139.12		
Pinnacle 2-2HZ Plan / - actual wellpath misses target center by 10.38ft at 12015.00ft MD (7516.34 TVD, 4543.75 N, -106.75 E) - Point	0.00	0.00	7,510.00	4,549.63	-101.01	1,274,778.69	3,148,654.94	40.086436	-104.968704

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,873.00	7,532.76	7" Intermediate Casing	7	8-3/4

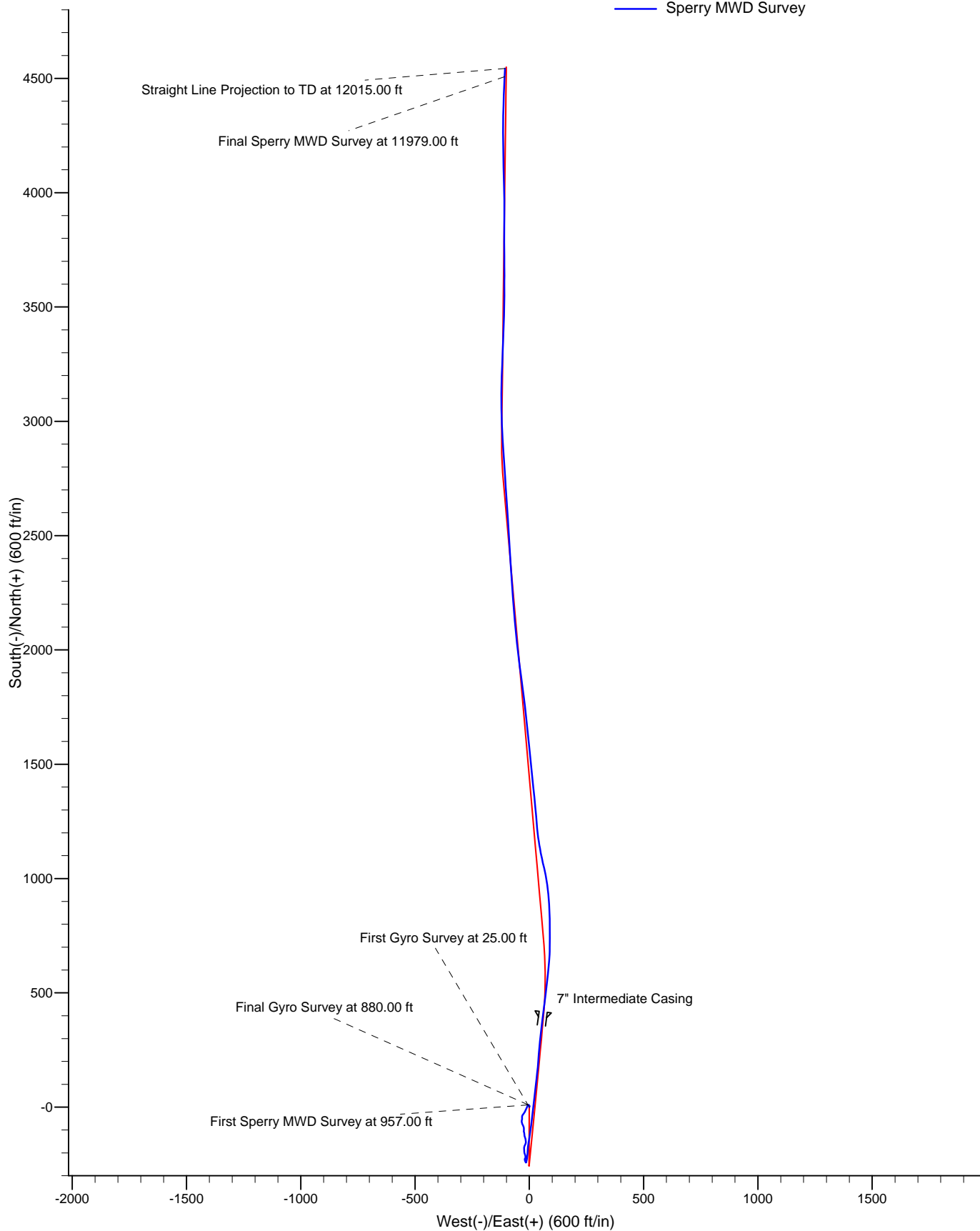
Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
25.00	25.00	0.20	0.01	First Gyro Survey at 25.00 ft
880.00	879.89	10.39	-4.93	Final Gyro Survey at 880.00 ft
957.00	956.88	9.96	-6.09	First Sperry MWD Survey at 957.00 ft
11,979.00	7,516.88	4,507.79	-108.30	Final Sperry MWD Survey at 11979.00 ft
12,015.00	7,516.34	4,543.75	-106.75	Straight Line Projection to TD at 12015.00 ft

Checked By: _____ Approved By: _____ Date: _____

LEGEND

- Pinnacle 2-2HZ, Plan A Rev 1, Plan A Rev 1 Proposal VO
- Sperry MWD Survey



Project: Weld County, CO (NAD 83)
Site: Sec. 2-T1N-R68W
Well: Pinnacle 2-2HZ

Anadarko Petroleum Corp.



LEGEND

- Pinnacle 2-2HZ, Plan A Rev 1, Plan A Rev 1 Proposal V0
- Sperry MWD Survey

