

HALLIBURTON

Sperry Drilling

END OF WELL REPORT

For

Anadarko Petroleum Corp.

*Cook 36N-3HZ
Sec. 10-T2N-R65W
Weld County, CO*

API: 05-123-35873

Job #9680551

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SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Anadarko
WELL:	Cook 36N-3HZ
FIELD:	DJ Basin
RIG:	H & P 308
LEGALS:	Sec. 10-T2N-R65W
COUNTY:	Weld
STATE:	Co
CAL. METHOD:	True North
MAG. DECL. APPLIED:	8.65
VERTICAL SEC. DIR. :	1.600

SSDS Job Number :	9680551
Start Date of Job :	10/10/2012
End Date of Job :	10/19/2012
Lead Directional Driller:	Jordan Timbs
Directional Driller	Herschell Gaddy
Directional Trainee	0
SSDS MWD Engineers :	Larry Keeney
MWD :	Drew Perry
MWD Trainee	0

	Main Hole =====>		1st Side Track =====>		2nd Side Track =====>		3rd Side Track =====>		4th Side Track =====>	
Surface Casing	955.00	Tie-on		Tie On		Tie On		Tie On		Tie On
First Wireline Survey	125.00	Gyro		MWD						
Last Wireline Survey	915.00	Gyro								
KOP Depth/Sidetrack MD	6383.00	KOP		KOP-ST1		KOP-ST2		KOP-ST3		KOP-ST4
MWD Tie-on	915.00	Gyro								
First MWD Survey Depth	1014.00	MWD		MWD		MWD		MWD		MWD
Last MWD Survey Depth	11985.00	MWD		MWD		MWD		MWD		MWD
Bit Extrapolation @ TD	12034.00	T.D.		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 : Jordan Timbs Print Name : Larry Keeney Print Name : 0

Sign Name :  Sign Name :  Sign Name :

Print Name : Herschell Gaddy Print Name : Drew Perry 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.

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 10-T2N-R65W

Cook 36N-3HZ

Plan D Rev 0

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

29 October, 2012

Well Coordinates: 1,297,730.71 N, 3,237,802.96 E (40° 08' 51.12" N, 104° 38' 57.54" W)

Ground Level: 4,869.00 ft

Local Coordinate Origin:

Centered on Well Cook 36N-3HZ

Viewing Datum:

RKB=25ft @ 4894.00ft (HP 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

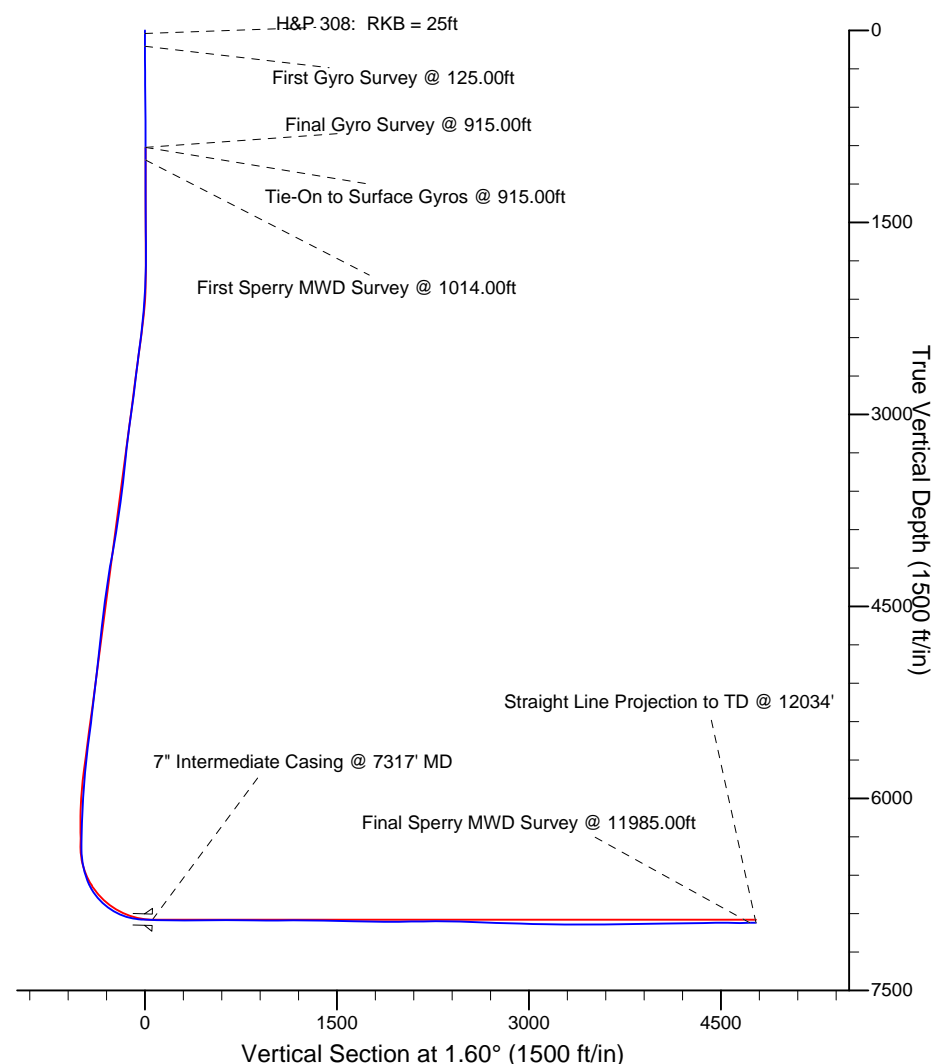
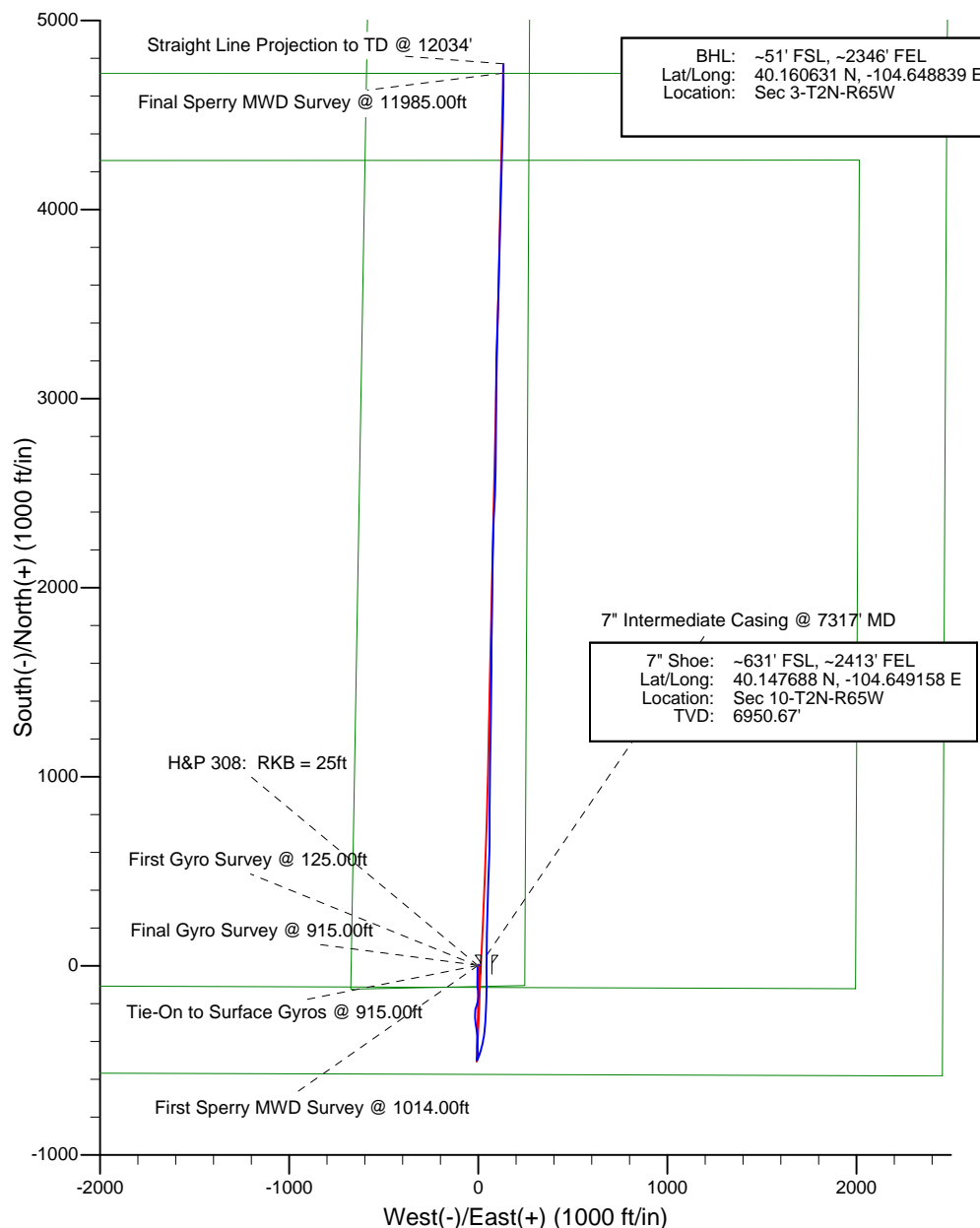
Project: Weld County, CO (NAD 83)
Site: Sec. 10-T2N-R65W
Well: Cook 36N-3HZ



HALLIBURTON
Sperry Drilling

LEGEND

- Cook 36N-3HZ, Plan D Rev 0, Plan D Rev 0 Proposal V0
- Actual Field Surveys



Design Report for Cook 36N-3HZ - 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
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00
H&P 308: RKB = 25ft							
125.00	0.17	268.53	125.00	0.00	-0.15	-0.01	0.17
First Gyro Survey @ 125.00ft							
225.00	0.13	11.78	225.00	0.10	-0.27	0.10	0.24
325.00	0.39	347.19	325.00	0.55	-0.33	0.54	0.28
425.00	0.52	357.00	425.00	1.33	-0.42	1.32	0.15
525.00	0.54	349.41	524.99	2.25	-0.54	2.23	0.07
625.00	0.38	322.19	624.99	2.97	-0.83	2.95	0.27
725.00	0.13	275.11	724.99	3.25	-1.14	3.21	0.31
825.00	0.27	52.99	824.99	3.40	-1.07	3.37	0.38
915.00	0.27	57.24	914.99	3.64	-0.72	3.62	0.02
Final Gyro Survey @ 915.00ft - Tie-On to Surface Gyros @ 915.00ft							
1,014.00	0.28	93.70	1,013.98	3.75	-0.28	3.74	0.17
First Sperry MWD Survey @ 1014.00ft							
1,106.00	0.46	120.65	1,105.98	3.55	0.26	3.55	0.27
1,199.00	0.36	49.66	1,198.98	3.55	0.80	3.57	0.52
1,291.00	0.39	6.99	1,290.98	4.04	1.06	4.07	0.30
1,383.00	0.34	10.70	1,382.98	4.62	1.15	4.65	0.06
1,475.00	0.56	357.90	1,474.97	5.34	1.19	5.37	0.26
1,567.00	0.49	319.46	1,566.97	6.09	0.91	6.11	0.38
1,660.00	0.28	337.92	1,659.97	6.60	0.57	6.61	0.26
1,752.00	0.44	337.92	1,751.97	7.14	0.35	7.14	0.17
1,845.00	0.93	215.50	1,844.96	6.85	-0.22	6.84	1.32
1,937.00	2.39	194.09	1,936.92	4.39	-1.12	4.35	1.70
2,029.00	3.72	185.50	2,028.79	-0.45	-1.87	-0.50	1.52
2,122.00	3.37	182.78	2,121.61	-6.18	-2.30	-6.24	0.42
2,216.00	4.71	188.95	2,215.38	-12.75	-3.03	-12.83	1.50
2,311.00	6.23	177.99	2,309.94	-21.76	-3.46	-21.85	1.93
2,406.00	7.01	180.39	2,404.31	-32.71	-3.31	-32.79	0.87
2,501.00	8.02	178.66	2,498.49	-45.13	-3.20	-45.20	1.09
2,595.00	6.70	182.22	2,591.72	-57.16	-3.26	-57.23	1.49
2,690.00	7.62	183.15	2,685.98	-68.99	-3.82	-69.07	0.98
2,785.00	6.09	179.82	2,780.29	-80.32	-4.15	-80.40	1.66
2,879.00	8.30	180.22	2,873.55	-92.09	-4.16	-92.17	2.35
2,974.00	7.97	175.21	2,967.59	-105.51	-3.64	-105.57	0.82
3,069.00	7.32	176.66	3,061.75	-118.12	-2.73	-118.15	0.71
3,163.00	7.46	174.85	3,154.97	-130.17	-1.84	-130.17	0.29
3,258.00	5.56	175.34	3,249.35	-140.90	-0.91	-140.87	2.00
3,353.00	7.11	177.04	3,343.77	-151.36	-0.23	-151.31	1.64
3,447.00	6.12	172.05	3,437.14	-162.14	0.76	-162.05	1.22
3,542.00	5.94	192.63	3,531.63	-171.95	0.39	-171.87	2.27
3,637.00	7.59	191.06	3,625.96	-182.90	-1.89	-182.88	1.75
3,731.00	9.35	192.73	3,718.93	-196.45	-4.76	-196.50	1.89
3,826.00	7.76	200.30	3,812.88	-209.99	-8.69	-210.15	2.05
3,921.00	8.29	196.69	3,906.95	-222.56	-12.88	-222.84	0.77
4,015.00	10.81	187.23	3,999.64	-237.80	-15.94	-238.16	3.15
4,110.00	11.27	179.47	4,092.89	-255.93	-16.97	-256.30	1.64
4,205.00	9.20	176.71	4,186.37	-272.79	-16.45	-273.14	2.24

Design Report for Cook 36N-3HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
4,299.00	8.38	173.25	4,279.27	-287.10	-15.22	-287.41	1.04
4,394.00	7.95	175.74	4,373.31	-300.52	-13.91	-300.79	0.59
4,489.00	7.29	172.28	4,467.47	-313.05	-12.62	-313.28	0.85
4,585.00	7.21	171.21	4,562.70	-325.04	-10.88	-325.21	0.16
4,678.00	7.09	172.06	4,654.98	-336.49	-9.19	-336.61	0.17
4,773.00	6.62	169.37	4,749.30	-347.68	-7.37	-347.75	0.60
4,867.00	5.66	168.38	4,842.76	-357.54	-5.44	-357.56	1.03
4,962.00	6.68	177.74	4,937.21	-367.65	-4.28	-367.63	1.50
5,057.00	5.93	177.32	5,031.63	-378.08	-3.83	-378.04	0.79
5,151.00	7.83	183.64	5,124.95	-389.32	-4.01	-389.28	2.17
5,246.00	6.99	183.25	5,219.16	-401.55	-4.75	-401.52	0.89
5,341.00	5.54	183.59	5,313.59	-411.90	-5.36	-411.89	1.53
5,436.00	7.06	179.86	5,408.01	-422.31	-5.64	-422.31	1.66
5,531.00	7.33	171.43	5,502.27	-434.14	-4.72	-434.11	1.15
5,626.00	7.75	174.54	5,596.45	-446.51	-3.21	-446.43	0.62
5,721.00	5.74	170.29	5,690.78	-457.57	-1.80	-457.44	2.18
5,816.00	5.70	184.51	5,785.32	-466.96	-1.37	-466.82	1.49
5,911.00	4.79	187.93	5,879.92	-475.59	-2.28	-475.47	1.01
6,006.00	3.60	199.32	5,974.66	-482.33	-3.82	-482.25	1.52
6,101.00	3.23	204.68	6,069.49	-487.58	-5.92	-487.56	0.51
6,196.00	2.02	194.39	6,164.39	-491.63	-7.46	-491.65	1.36
6,291.00	1.41	167.53	6,259.35	-494.40	-7.62	-494.42	1.05
6,323.00	1.71	168.15	6,291.34	-495.25	-7.44	-495.26	0.94
6,386.00	1.58	142.01	6,354.31	-496.85	-6.71	-496.85	1.20
6,418.00	1.72	70.46	6,386.30	-497.04	-5.99	-497.01	6.04
6,450.00	3.59	43.32	6,418.27	-496.15	-4.84	-496.09	6.89
6,482.00	5.51	30.99	6,450.17	-494.10	-3.37	-494.01	6.70
6,513.00	7.85	24.31	6,480.96	-490.90	-1.73	-490.76	7.94
6,545.00	10.42	21.58	6,512.55	-486.22	0.24	-486.02	8.14
6,577.00	13.04	20.27	6,543.88	-480.14	2.55	-479.88	8.23
6,608.00	15.75	19.52	6,573.90	-472.89	5.17	-472.56	8.76
6,640.00	18.39	18.69	6,604.49	-464.01	8.24	-463.60	8.28
6,672.00	21.19	17.11	6,634.59	-453.70	11.56	-453.20	8.91
6,703.00	24.61	16.09	6,663.15	-442.14	15.00	-441.55	11.11
6,735.00	28.43	14.40	6,691.78	-428.36	18.74	-427.67	12.17
6,767.00	31.63	12.45	6,719.48	-412.78	22.44	-411.99	10.45
6,799.00	35.80	10.22	6,746.09	-395.37	25.91	-394.49	13.59
6,830.00	39.67	9.27	6,770.60	-376.67	29.12	-375.71	12.62
6,862.00	42.95	7.12	6,794.64	-355.77	32.12	-354.73	11.17
6,894.00	46.90	5.61	6,817.29	-333.31	34.61	-332.22	12.78
6,925.00	51.00	4.58	6,837.64	-310.03	36.68	-308.89	13.46
6,957.00	54.27	4.22	6,857.06	-284.68	38.63	-283.49	10.26
6,989.00	58.21	2.66	6,874.84	-258.13	40.22	-256.91	12.96
7,021.00	61.58	1.47	6,890.89	-230.47	41.21	-229.23	11.01
7,053.00	65.35	1.50	6,905.18	-201.85	41.95	-200.60	11.78
7,084.00	69.42	2.36	6,917.10	-173.26	42.92	-171.99	13.38
7,116.00	73.53	0.84	6,927.27	-142.94	43.76	-141.66	13.61
7,148.00	77.48	0.15	6,935.28	-111.96	44.03	-110.69	12.52
7,180.00	81.87	359.88	6,941.01	-80.49	44.03	-79.23	13.74
7,257.00	87.26	359.87	6,948.30	-3.86	43.87	-2.64	7.00
7,317.00	88.21	0.65	6,950.67	56.09	44.14	57.30	2.05

Design Report for Cook 36N-3HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7" Intermediate Casing @ 7317' MD							
7,352.00	88.77	1.10	6,951.59	91.07	44.67	92.28	2.05
7,447.00	89.45	1.29	6,953.07	186.04	46.65	187.27	0.74
7,541.00	89.91	1.53	6,953.59	280.01	48.96	281.27	0.55
7,636.00	90.59	1.89	6,953.18	374.97	51.80	376.26	0.81
7,731.00	90.09	1.57	6,952.61	469.92	54.67	471.26	0.62
7,825.00	90.52	2.14	6,952.11	563.87	57.71	565.26	0.76
7,920.00	90.12	1.05	6,951.58	658.83	60.35	660.26	1.22
8,015.00	88.98	359.95	6,952.33	753.82	61.18	755.23	1.67
8,109.00	89.63	0.04	6,953.47	847.81	61.17	849.19	0.70
8,204.00	89.26	0.19	6,954.39	942.81	61.37	944.15	0.42
8,299.00	89.78	0.79	6,955.18	1,037.80	62.18	1,039.13	0.84
8,393.00	90.06	0.90	6,955.32	1,131.79	63.56	1,133.12	0.32
8,488.00	90.37	1.13	6,954.96	1,226.77	65.25	1,228.12	0.41
8,583.00	90.40	1.38	6,954.32	1,321.75	67.33	1,323.11	0.27
8,677.00	88.64	0.29	6,955.11	1,415.73	68.70	1,417.09	2.20
8,772.00	88.55	0.40	6,957.44	1,510.70	69.27	1,512.04	0.15
8,867.00	88.61	0.39	6,959.79	1,605.67	69.92	1,606.99	0.06
8,961.00	88.12	0.87	6,962.47	1,699.62	70.96	1,700.94	0.73
9,056.00	89.17	1.06	6,964.72	1,794.58	72.56	1,795.91	1.12
9,151.00	90.12	0.34	6,965.31	1,889.57	73.72	1,890.89	1.25
9,245.00	90.74	0.64	6,964.60	1,983.57	74.52	1,984.87	0.73
9,340.00	91.57	0.52	6,962.69	2,078.54	75.48	2,079.84	0.88
9,435.00	89.57	1.43	6,961.74	2,173.52	77.10	2,174.82	2.31
9,530.00	90.46	1.35	6,961.72	2,268.49	79.40	2,269.82	0.94
9,625.00	90.06	2.94	6,961.29	2,363.42	82.96	2,364.81	1.73
9,720.00	88.55	2.63	6,962.44	2,458.29	87.57	2,459.78	1.62
9,815.00	87.25	0.84	6,965.92	2,553.18	90.45	2,554.71	2.33
9,910.00	87.32	1.11	6,970.42	2,648.06	92.06	2,649.60	0.29
10,005.00	88.64	0.39	6,973.77	2,742.99	93.31	2,744.53	1.58
10,100.00	88.40	0.24	6,976.22	2,837.96	93.83	2,839.47	0.30
10,195.00	88.49	0.15	6,978.80	2,932.92	94.15	2,934.41	0.13
10,290.00	88.61	0.74	6,981.21	3,027.89	94.89	3,029.36	0.63
10,385.00	88.89	0.18	6,983.28	3,122.86	95.65	3,124.31	0.66
10,480.00	88.98	1.16	6,985.04	3,217.84	96.76	3,219.28	1.04
10,575.00	89.94	1.63	6,985.94	3,312.80	99.08	3,314.28	1.13
10,671.00	90.03	1.95	6,985.96	3,408.76	102.07	3,410.28	0.35
10,766.00	90.25	1.84	6,985.73	3,503.70	105.22	3,505.28	0.26
10,861.00	90.46	1.57	6,985.14	3,598.66	108.04	3,600.27	0.36
10,956.00	90.31	1.50	6,984.51	3,693.62	110.59	3,695.27	0.17
11,051.00	90.95	1.95	6,983.46	3,788.58	113.45	3,790.27	0.82
11,147.00	91.17	1.05	6,981.68	3,884.52	115.96	3,886.25	0.96
11,242.00	91.29	1.24	6,979.65	3,979.48	117.86	3,981.22	0.24
11,337.00	90.68	1.57	6,978.01	4,074.44	120.19	4,076.21	0.73
11,432.00	91.51	1.54	6,976.20	4,169.39	122.76	4,171.19	0.87
11,528.00	90.62	2.13	6,974.41	4,265.32	125.84	4,267.17	1.11
11,623.00	90.28	1.16	6,973.67	4,360.28	128.56	4,362.17	1.08
11,718.00	90.03	1.30	6,973.41	4,455.25	130.60	4,457.16	0.30
11,813.00	89.97	0.86	6,973.41	4,550.24	132.39	4,552.16	0.47
11,908.00	89.91	359.97	6,973.51	4,645.23	133.08	4,647.14	0.94
11,985.00	90.49	0.17	6,973.24	4,722.23	133.18	4,724.11	0.80

Design Report for Cook 36N-3HZ - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
Final Sperry MWD Survey @ 11985.00ft							
12,034.00	90.49	0.17	6,972.82	4,771.23	133.32	4,773.09	0.00
Straight Line Projection to TD @ 12034'							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
25.00	25.00	0.00	0.00	H&P 308: RKB = 25ft
125.00	125.00	0.00	-0.15	First Gyro Survey @ 125.00ft
915.00	914.99	3.64	-0.72	Final Gyro Survey @ 915.00ft
915.00	914.99	3.64	-0.72	Tie-On to Surface Gyros @ 915.00ft
1,014.00	1,013.98	3.75	-0.28	First Sperry MWD Survey @ 1014.00ft
11,985.00	6,973.24	4,722.23	133.18	Final Sperry MWD Survey @ 11985.00ft
12,034.00	6,972.82	4,771.23	133.32	Straight Line Projection to TD @ 12034'

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/-S (ft)	+E/-W (ft)	
Target	Cook 36N-3HZ_BHL revised	1.60	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
25.00	915.00	Surface Gyros	NS-GYRO-MS
915.00	7,180.00	Sperry MWD Surveys - Vert/Build	MWD+SC
7,257.00	11,985.00	Sperry MWD Surveys - Lateral	MWD+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,317.00		7" Intermediate Casing @ 7317' MD	7	8-3/4

Design Report for Cook 36N-3HZ - 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
Cook 36N-3HZ_Set1	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			2,023.26	5,182.33	1,302,931.99	3,239,776.33			
Point 2			2,045.49	7,369.87	1,305,119.55	3,239,777.57			
Point 3			2,080.11	9,391.67	1,307,141.51	3,239,792.79			
Point 4			-104.33	9,405.61	1,307,134.49	3,237,608.41			
Point 5			-2,290.44	9,419.56	1,307,127.47	3,235,422.36			
Point 6			-2,310.40	7,374.47	1,305,082.37	3,235,422.02			
Point 7			-2,331.90	5,179.72	1,302,887.60	3,235,421.57			
Point 8			-153.56	5,181.02	1,302,909.80	3,237,599.71			
Cook 36N-3HZ_BHL	0.00	0.00	6,948.00	5,181.40	133.04	1,302,912.92	3,237,886.28	40.161757	-104.648840
- actual wellpath misses target center by 410.92ft at 12034.00ft MD (6972.82 TVD, 4771.23 N, 133.32 E)									
- Point									
Cook 36N-3HZ_WPI	0.00	0.00	6,948.88	638.41	42.00	1,298,369.46	3,237,838.83	40.149286	-104.649166
- actual wellpath misses target center by 18.14ft at 7899.09ft MD (6951.64 TVD, 637.93 N, 59.93 E)									
- Point									
Cook 36N-3HZ_SHL	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Point									
Cook 36N-3HZ_Lan	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			-576.22	5,557.21	1,303,281.90	3,237,173.48			
Point 2			-673.43	-122.54	1,297,601.72	3,237,130.76			
Point 3			246.88	-103.41	1,297,629.67	3,238,050.81			
Point 4			274.87	5,602.81	1,303,335.66	3,238,024.06			
Cook 36N-3HZ_Set2	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			1,995.32	-120.20	1,297,629.66	3,239,799.25			
Point 2			2,005.64	2,069.23	1,299,818.99	3,239,788.57			
Point 3			2,015.98	4,262.29	1,302,011.96	3,239,777.87			
Point 4			-164.04	4,260.98	1,301,989.74	3,237,598.06			
Point 5			-2,343.31	4,259.67	1,301,967.52	3,235,418.99			
Point 6			-2,376.38	2,064.46	1,299,772.19	3,235,406.98			
Point 7			-2,420.43	-105.79	1,297,601.71	3,235,383.75			
Point 8			-212.70	-112.96	1,297,615.72	3,237,591.36			
Cook 36N-3HZ_Sec	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			-2,796.45	4,719.42	1,302,422.89	3,234,961.48			
Point 2			2,478.62	4,722.59	1,302,476.66	3,240,236.06			
Cook 36N-3HZ_Sec2	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			2,454.48	-581.72	1,297,172.58	3,240,262.80			
Point 2			2,465.67	2,069.73	1,299,823.91	3,240,248.56			
Point 3			2,478.62	4,722.59	1,302,476.66	3,240,236.06			
Point 4			2,505.45	7,369.47	1,305,123.56	3,240,237.49			
Point 5			2,548.00	9,848.79	1,307,603.08	3,240,256.26			
Point 6			-99.08	9,865.77	1,307,594.66	3,237,609.24			
Point 7			-2,746.10	9,882.48	1,307,585.98	3,234,962.30			
Point 8			-2,770.55	7,374.76	1,305,078.24	3,234,961.90			
Point 9			-2,796.45	4,719.42	1,302,422.89	3,234,961.48			
Point 10			-2,836.46	2,063.96	1,299,767.28	3,234,946.94			
Point 11			-2,889.86	-564.29	1,297,138.74	3,234,918.76			
Point 12			-217.82	-572.96	1,297,155.71	3,237,590.65			
Cook 36N-3HZ_BHL	0.00	0.00	6,948.00	4,771.40	133.04	1,302,502.96	3,237,890.21	40.160632	-104.648840
- actual wellpath misses target center by 24.82ft at 12034.00ft MD (6972.82 TVD, 4771.23 N, 133.32 E)									

Design Report for Cook 36N-3HZ - Actual Field Surveys

- Point

North Reference Sheet for Sec. 10-T2N-R65W - Cook 36N-3HZ - Plan D 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=25ft @ 4894.00ft (HP 308). Northing and Easting are relative to Cook 36N-3HZ

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: 0.99995846

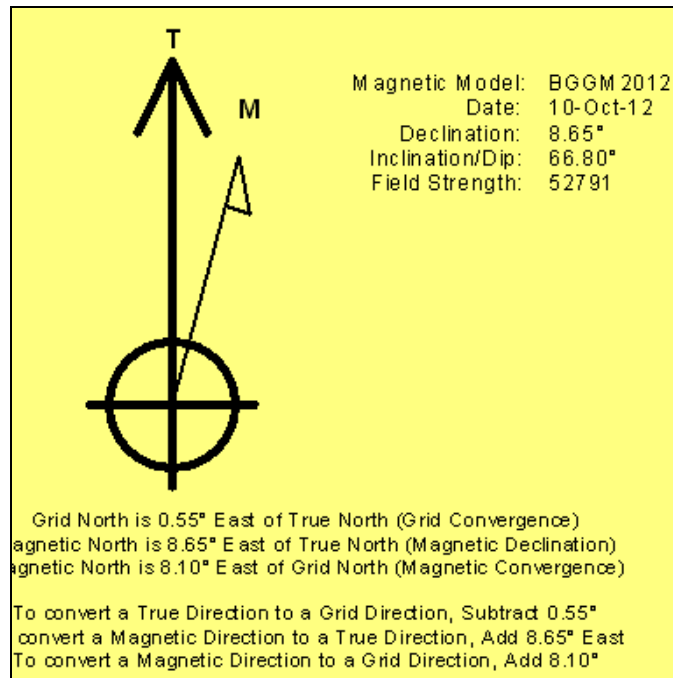
Grid Coordinates of Well: 1,297,730.71 ft N, 3,237,802.96 ft E

Geographical Coordinates of Well: 40° 08' 51.12" N, 104° 38' 57.54" W

Grid Convergence at Surface is: 0.55°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,034.00ft
the Bottom Hole Displacement is 4,773.09ft in the Direction of 1.60° (True).

Magnetic Convergence at surface is: -8.10° (10 October 2012, , BGGM2012)



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 10-T2N-R65W

Cook 36N-3HZ

Plan D Rev 0

Design: Actual Field Surveys

Survey Report - Geographic

29 October, 2012

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 36N-3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 36N-3HZ	North Reference:	True
Wellbore:	Plan D Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	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. 10-T2N-R65W				
Site Position:		Northing:	1,297,730.72 ft	Latitude:	40.147534
From:	Lat/Long	Easting:	3,237,802.96 ft	Longitude:	-104.649316
Position Uncertainty:	0.00 ft	Slot Radius:	"	Grid Convergence:	0.55 °

Well	Cook 36N-3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,297,730.71 ft	Latitude:	40.147534
	+E/-W	0.00 ft	Easting:	3,237,802.96 ft	Longitude:	-104.649316
Position Uncertainty		3.28 ft	Wellhead Elevation:	ft	Ground Level:	4,869.00 ft

Wellbore	Plan D Rev 0				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2012-10-10	8.65	66.80	52,791

Design	Actual Field Surveys				
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	1.60	

Survey Program	Date	2012-10-29			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
25.00	915.00	Surface Gyros (Plan D Rev 0)	NS-GYRO-MS	North sensing gyrocompassing m/s	
915.00	7,180.00	Sperry MWD Surveys - Vert/Build (Plan D	MWD+SC	Fixed:v2:standard dec & axial correction	
7,257.00	11,985.00	Sperry MWD Surveys - Lateral (Plan D Re	MWD+SC	Fixed:v2:standard dec & axial correction	

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 36N-3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 36N-3HZ	North Reference:	True
Wellbore:	Plan D Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
25.00	0.00	0.00	25.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
H&P 308: RKB = 25ft									
125.00	0.17	268.53	125.00	0.00	-0.15	1,297,730.70	3,237,802.81	40.147534	-104.649317
First Gyro Survey @ 125.00ft									
225.00	0.13	11.78	225.00	0.10	-0.27	1,297,730.81	3,237,802.68	40.147534	-104.649317
325.00	0.39	347.19	325.00	0.55	-0.33	1,297,731.25	3,237,802.62	40.147535	-104.649317
425.00	0.52	357.00	425.00	1.33	-0.42	1,297,732.03	3,237,802.52	40.147538	-104.649318
525.00	0.54	349.41	524.99	2.25	-0.54	1,297,732.95	3,237,802.40	40.147540	-104.649318
625.00	0.38	322.19	624.99	2.97	-0.83	1,297,733.67	3,237,802.10	40.147542	-104.649319
725.00	0.13	275.11	724.99	3.25	-1.14	1,297,733.94	3,237,801.78	40.147543	-104.649320
825.00	0.27	52.99	824.99	3.40	-1.07	1,297,734.09	3,237,801.86	40.147543	-104.649320
915.00	0.27	57.24	914.99	3.64	-0.72	1,297,734.34	3,237,802.20	40.147544	-104.649319
Final Gyro Survey @ 915.00ft - Tie-On to Surface Gyros @ 915.00ft									
1,014.00	0.28	93.70	1,013.98	3.75	-0.28	1,297,734.45	3,237,802.64	40.147544	-104.649317
First Sperry MWD Survey @ 1014.00ft									
1,106.00	0.46	120.65	1,105.98	3.55	0.26	1,297,734.26	3,237,803.18	40.147544	-104.649315
1,199.00	0.36	49.66	1,198.98	3.55	0.80	1,297,734.26	3,237,803.73	40.147544	-104.649313
1,291.00	0.39	6.99	1,290.98	4.04	1.06	1,297,734.76	3,237,803.98	40.147545	-104.649312
1,383.00	0.34	10.70	1,382.98	4.62	1.15	1,297,735.34	3,237,804.06	40.147547	-104.649312
1,475.00	0.56	357.90	1,474.97	5.34	1.19	1,297,736.06	3,237,804.09	40.147549	-104.649312
1,567.00	0.49	319.46	1,566.97	6.09	0.91	1,297,736.80	3,237,803.81	40.147551	-104.649313
1,660.00	0.28	337.92	1,659.97	6.60	0.57	1,297,737.31	3,237,803.46	40.147552	-104.649314
1,752.00	0.44	337.92	1,751.97	7.14	0.35	1,297,737.85	3,237,803.24	40.147554	-104.649315
1,845.00	0.93	215.50	1,844.96	6.85	-0.22	1,297,737.56	3,237,802.67	40.147553	-104.649317
1,937.00	2.39	194.09	1,936.92	4.39	-1.12	1,297,735.08	3,237,801.79	40.147546	-104.649320
2,029.00	3.72	185.50	2,028.79	-0.45	-1.87	1,297,730.24	3,237,801.09	40.147533	-104.649323
2,122.00	3.37	182.78	2,121.61	-6.18	-2.30	1,297,724.50	3,237,800.72	40.147517	-104.649324
2,216.00	4.71	188.95	2,215.38	-12.75	-3.03	1,297,717.93	3,237,800.05	40.147499	-104.649327
2,311.00	6.23	177.99	2,309.94	-21.76	-3.46	1,297,708.92	3,237,799.71	40.147474	-104.649328
2,406.00	7.01	180.39	2,404.31	-32.71	-3.31	1,297,697.97	3,237,799.96	40.147444	-104.649328
2,501.00	8.02	178.66	2,498.49	-45.13	-3.20	1,297,685.55	3,237,800.19	40.147410	-104.649327
2,595.00	6.70	182.22	2,591.72	-57.16	-3.26	1,297,673.52	3,237,800.25	40.147377	-104.649328
2,690.00	7.62	183.15	2,685.98	-68.99	-3.82	1,297,661.68	3,237,799.80	40.147345	-104.649330
2,785.00	6.09	179.82	2,780.29	-80.32	-4.15	1,297,650.35	3,237,799.58	40.147313	-104.649331
2,879.00	8.30	180.22	2,873.55	-92.09	-4.16	1,297,638.58	3,237,799.68	40.147281	-104.649331
2,974.00	7.97	175.21	2,967.59	-105.51	-3.64	1,297,625.17	3,237,800.33	40.147244	-104.649329
3,069.00	7.32	176.66	3,061.75	-118.12	-2.73	1,297,612.57	3,237,801.36	40.147210	-104.649326
3,163.00	7.46	174.85	3,154.97	-130.17	-1.84	1,297,600.53	3,237,802.37	40.147177	-104.649323
3,258.00	5.56	175.34	3,249.35	-140.90	-0.91	1,297,589.81	3,237,803.40	40.147147	-104.649319
3,353.00	7.11	177.04	3,343.77	-151.36	-0.23	1,297,579.35	3,237,804.18	40.147118	-104.649317
3,447.00	6.12	172.05	3,437.14	-162.14	0.76	1,297,568.59	3,237,805.27	40.147089	-104.649313
3,542.00	5.94	192.63	3,531.63	-171.95	0.39	1,297,558.78	3,237,804.99	40.147062	-104.649315
3,637.00	7.59	191.06	3,625.96	-182.90	-1.89	1,297,547.80	3,237,802.82	40.147032	-104.649323
3,731.00	9.35	192.73	3,718.93	-196.45	-4.76	1,297,534.23	3,237,800.08	40.146995	-104.649333
3,826.00	7.76	200.30	3,812.88	-209.99	-8.69	1,297,520.65	3,237,796.28	40.146958	-104.649347
3,921.00	8.29	196.69	3,906.95	-222.56	-12.88	1,297,508.04	3,237,792.21	40.146923	-104.649362
4,015.00	10.81	187.23	3,999.64	-237.80	-15.94	1,297,492.77	3,237,789.30	40.146881	-104.649373
4,110.00	11.27	179.47	4,092.89	-255.93	-16.97	1,297,474.64	3,237,788.44	40.146831	-104.649377
4,205.00	9.20	176.71	4,186.37	-272.79	-16.45	1,297,457.78	3,237,789.12	40.146785	-104.649375
4,299.00	8.38	173.25	4,279.27	-287.10	-15.22	1,297,443.49	3,237,790.49	40.146746	-104.649370
4,394.00	7.95	175.74	4,373.31	-300.52	-13.91	1,297,430.08	3,237,791.92	40.146709	-104.649366
4,489.00	7.29	172.28	4,467.47	-313.05	-12.62	1,297,417.56	3,237,793.34	40.146675	-104.649361
4,585.00	7.21	171.21	4,562.70	-325.04	-10.88	1,297,405.59	3,237,795.20	40.146642	-104.649355
4,678.00	7.09	172.06	4,654.98	-336.49	-9.19	1,297,394.16	3,237,796.99	40.146610	-104.649349

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 36N-3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 36N-3HZ	North Reference:	True
Wellbore:	Plan D Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude	
4,773.00	6.62	169.37	4,749.30	-347.68	-7.37	1,297,382.99	3,237,798.92	40.146580	-104.649342	
4,867.00	5.66	168.38	4,842.76	-357.54	-5.44	1,297,373.14	3,237,800.95	40.146552	-104.649335	
4,962.00	6.68	177.74	4,937.21	-367.65	-4.28	1,297,363.04	3,237,802.20	40.146525	-104.649331	
5,057.00	5.93	177.32	5,031.63	-378.08	-3.83	1,297,352.63	3,237,802.75	40.146496	-104.649330	
5,151.00	7.83	183.64	5,124.95	-389.32	-4.01	1,297,341.38	3,237,802.68	40.146465	-104.649330	
5,246.00	6.99	183.25	5,219.16	-401.55	-4.75	1,297,329.15	3,237,802.06	40.146432	-104.649333	
5,341.00	5.54	183.59	5,313.59	-411.90	-5.36	1,297,318.79	3,237,801.54	40.146403	-104.649335	
5,436.00	7.06	179.86	5,408.01	-422.31	-5.64	1,297,308.38	3,237,801.37	40.146375	-104.649336	
5,531.00	7.33	171.43	5,502.27	-434.14	-4.72	1,297,296.56	3,237,802.40	40.146342	-104.649333	
5,626.00	7.75	174.54	5,596.45	-446.51	-3.21	1,297,284.20	3,237,804.03	40.146308	-104.649327	
5,721.00	5.74	170.29	5,690.78	-457.57	-1.80	1,297,273.16	3,237,805.55	40.146278	-104.649322	
5,816.00	5.70	184.51	5,785.32	-466.96	-1.37	1,297,263.78	3,237,806.07	40.146252	-104.649321	
5,911.00	4.79	187.93	5,879.92	-475.59	-2.28	1,297,255.14	3,237,805.23	40.146228	-104.649324	
6,006.00	3.60	199.32	5,974.66	-482.33	-3.82	1,297,248.38	3,237,803.76	40.146210	-104.649330	
6,101.00	3.23	204.68	6,069.49	-487.58	-5.92	1,297,243.11	3,237,801.71	40.146196	-104.649337	
6,196.00	2.02	194.39	6,164.39	-491.63	-7.46	1,297,239.04	3,237,800.22	40.146184	-104.649343	
6,291.00	1.41	167.53	6,259.35	-494.40	-7.62	1,297,236.28	3,237,800.08	40.146177	-104.649343	
6,323.00	1.71	168.15	6,291.34	-495.25	-7.44	1,297,235.43	3,237,800.27	40.146174	-104.649343	
6,386.00	1.58	142.01	6,354.31	-496.85	-6.71	1,297,233.83	3,237,801.01	40.146170	-104.649340	
6,418.00	1.72	70.46	6,386.30	-497.04	-5.99	1,297,233.65	3,237,801.74	40.146170	-104.649337	
6,450.00	3.59	43.32	6,418.27	-496.15	-4.84	1,297,234.55	3,237,802.87	40.146172	-104.649333	
6,482.00	5.51	30.99	6,450.17	-494.10	-3.37	1,297,236.61	3,237,804.33	40.146178	-104.649328	
6,513.00	7.85	24.31	6,480.96	-490.90	-1.73	1,297,239.83	3,237,805.94	40.146186	-104.649322	
6,545.00	10.42	21.58	6,512.55	-486.22	0.24	1,297,244.54	3,237,807.86	40.146199	-104.649315	
6,577.00	13.04	20.27	6,543.88	-480.14	2.55	1,297,250.64	3,237,810.11	40.146216	-104.649307	
6,608.00	15.75	19.52	6,573.90	-472.89	5.17	1,297,257.91	3,237,812.66	40.146236	-104.649298	
6,640.00	18.39	18.69	6,604.49	-464.01	8.24	1,297,266.81	3,237,815.64	40.146260	-104.649287	
6,672.00	21.19	17.11	6,634.59	-453.70	11.56	1,297,277.15	3,237,818.87	40.146289	-104.649275	
6,703.00	24.61	16.09	6,663.15	-442.14	15.00	1,297,288.75	3,237,822.19	40.146320	-104.649262	
6,735.00	28.43	14.40	6,691.78	-428.36	18.74	1,297,302.57	3,237,825.80	40.146358	-104.649249	
6,767.00	31.63	12.45	6,719.48	-412.78	22.44	1,297,318.18	3,237,829.36	40.146401	-104.649236	
6,799.00	35.80	10.22	6,746.09	-395.37	25.91	1,297,335.62	3,237,832.66	40.146449	-104.649223	
6,830.00	39.67	9.27	6,770.60	-376.67	29.12	1,297,354.35	3,237,835.68	40.146500	-104.649212	
6,862.00	42.95	7.12	6,794.64	-355.77	32.12	1,297,375.28	3,237,838.48	40.146557	-104.649201	
6,894.00	46.90	5.61	6,817.29	-333.31	34.61	1,297,397.75	3,237,840.76	40.146619	-104.649192	
6,925.00	51.00	4.58	6,837.64	-310.03	36.68	1,297,421.05	3,237,842.61	40.146683	-104.649185	
6,957.00	54.27	4.22	6,857.06	-284.68	38.63	1,297,446.42	3,237,844.31	40.146752	-104.649178	
6,989.00	58.21	2.66	6,874.84	-258.13	40.22	1,297,472.99	3,237,845.64	40.146825	-104.649172	
7,021.00	61.58	1.47	6,890.89	-230.47	41.21	1,297,500.65	3,237,846.37	40.146901	-104.649169	
7,053.00	65.35	1.50	6,905.18	-201.85	41.95	1,297,529.27	3,237,846.84	40.146980	-104.649166	
7,084.00	69.42	2.36	6,917.10	-173.26	42.92	1,297,557.87	3,237,847.53	40.147058	-104.649162	
7,116.00	73.53	0.84	6,927.27	-142.94	43.76	1,297,588.20	3,237,848.08	40.147142	-104.649159	
7,148.00	77.48	0.15	6,935.28	-111.96	44.03	1,297,619.18	3,237,848.05	40.147227	-104.649159	
7,180.00	81.87	359.88	6,941.01	-80.49	44.03	1,297,650.65	3,237,847.76	40.147313	-104.649158	
7,257.00	87.26	359.87	6,948.30	-3.86	43.87	1,297,727.26	3,237,846.85	40.147523	-104.649159	
7,317.00	88.21	0.65	6,950.67	56.09	44.14	1,297,787.21	3,237,846.55	40.147688	-104.649158	
7" Intermediate Casing @ 7317' MD										
7,352.00	88.77	1.10	6,951.59	91.07	44.67	1,297,822.20	3,237,846.75	40.147784	-104.649156	
7,447.00	89.45	1.29	6,953.07	186.04	46.65	1,297,917.18	3,237,847.82	40.148045	-104.649149	
7,541.00	89.91	1.53	6,953.59	280.01	48.96	1,298,011.16	3,237,849.23	40.148303	-104.649141	
7,636.00	90.59	1.89	6,953.18	374.97	51.80	1,298,106.14	3,237,851.15	40.148563	-104.649131	
7,731.00	90.09	1.57	6,952.61	469.92	54.67	1,298,201.11	3,237,853.11	40.148824	-104.649120	
7,825.00	90.52	2.14	6,952.11	563.87	57.71	1,298,295.08	3,237,855.25	40.149082	-104.649110	
7,920.00	90.12	1.05	6,951.58	658.83	60.35	1,298,390.06	3,237,856.98	40.149342	-104.649100	
8,015.00	88.98	359.95	6,952.33	753.82	61.18	1,298,485.05	3,237,856.90	40.149603	-104.649097	

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 36N-3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 36N-3HZ	North Reference:	True
Wellbore:	Plan D Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
8,109.00	89.63	0.04	6,953.47	847.81	61.17	1,298,579.03	3,237,855.99	40.149861	-104.649097
8,204.00	89.26	0.19	6,954.39	942.81	61.37	1,298,674.02	3,237,855.27	40.150122	-104.649096
8,299.00	89.78	0.79	6,955.18	1,037.80	62.18	1,298,769.01	3,237,855.17	40.150383	-104.649094
8,393.00	90.06	0.90	6,955.32	1,131.79	63.56	1,298,863.01	3,237,855.66	40.150641	-104.649089
8,488.00	90.37	1.13	6,954.96	1,226.77	65.25	1,298,958.00	3,237,856.43	40.150901	-104.649083
8,583.00	90.40	1.38	6,954.32	1,321.75	67.33	1,299,052.98	3,237,857.60	40.151162	-104.649075
8,677.00	88.64	0.29	6,955.11	1,415.73	68.70	1,299,146.97	3,237,858.07	40.151420	-104.649070
8,772.00	88.55	0.40	6,957.44	1,510.70	69.27	1,299,241.94	3,237,857.73	40.151681	-104.649068
8,867.00	88.61	0.39	6,959.79	1,605.67	69.92	1,299,336.90	3,237,857.47	40.151942	-104.649066
8,961.00	88.12	0.87	6,962.47	1,699.62	70.96	1,299,430.86	3,237,857.60	40.152199	-104.649062
9,056.00	89.17	1.06	6,964.72	1,794.58	72.56	1,299,525.83	3,237,858.29	40.152460	-104.649056
9,151.00	90.12	0.34	6,965.31	1,889.57	73.72	1,299,620.82	3,237,858.54	40.152721	-104.649052
9,245.00	90.74	0.64	6,964.60	1,983.57	74.52	1,299,714.81	3,237,858.44	40.152979	-104.649049
9,340.00	91.57	0.52	6,962.69	2,078.54	75.48	1,299,809.79	3,237,858.49	40.153240	-104.649046
9,435.00	89.57	1.43	6,961.74	2,173.52	77.10	1,299,904.77	3,237,859.20	40.153500	-104.649040
9,530.00	90.46	1.35	6,961.72	2,268.49	79.40	1,299,999.76	3,237,860.59	40.153761	-104.649032
9,625.00	90.06	2.94	6,961.29	2,363.42	82.96	1,300,094.71	3,237,863.24	40.154022	-104.649019
9,720.00	88.55	2.63	6,962.44	2,458.29	87.57	1,300,189.62	3,237,866.94	40.154282	-104.649003
9,815.00	87.25	0.84	6,965.92	2,553.18	90.45	1,300,284.53	3,237,868.90	40.154542	-104.648992
9,910.00	87.32	1.11	6,970.42	2,648.06	92.06	1,300,379.42	3,237,869.61	40.154803	-104.648987
10,005.00	88.64	0.39	6,973.77	2,742.99	93.31	1,300,474.35	3,237,869.94	40.155064	-104.648982
10,100.00	88.40	0.24	6,976.22	2,837.96	93.83	1,300,569.31	3,237,869.55	40.155324	-104.648980
10,195.00	88.49	0.15	6,978.80	2,932.92	94.15	1,300,664.27	3,237,868.96	40.155585	-104.648979
10,290.00	88.61	0.74	6,981.21	3,027.89	94.89	1,300,759.24	3,237,868.79	40.155846	-104.648977
10,385.00	88.89	0.18	6,983.28	3,122.86	95.65	1,300,854.21	3,237,868.64	40.156106	-104.648974
10,480.00	88.98	1.16	6,985.04	3,217.84	96.76	1,300,949.19	3,237,868.84	40.156367	-104.648970
10,575.00	89.94	1.63	6,985.94	3,312.80	99.08	1,301,044.17	3,237,870.24	40.156628	-104.648962
10,671.00	90.03	1.95	6,985.96	3,408.76	102.07	1,301,140.14	3,237,872.32	40.156891	-104.648951
10,766.00	90.25	1.84	6,985.73	3,503.70	105.22	1,301,235.11	3,237,874.55	40.157152	-104.648940
10,861.00	90.46	1.57	6,985.14	3,598.66	108.04	1,301,330.09	3,237,876.47	40.157412	-104.648929
10,956.00	90.31	1.50	6,984.51	3,693.62	110.59	1,301,425.07	3,237,878.10	40.157673	-104.648920
11,051.00	90.95	1.95	6,983.46	3,788.58	113.45	1,301,520.04	3,237,880.05	40.157934	-104.648910
11,147.00	91.17	1.05	6,981.68	3,884.52	115.96	1,301,616.00	3,237,881.64	40.158197	-104.648901
11,242.00	91.29	1.24	6,979.65	3,979.48	117.86	1,301,710.97	3,237,882.63	40.158458	-104.648894
11,337.00	90.68	1.57	6,978.01	4,074.44	120.19	1,301,805.94	3,237,884.05	40.158718	-104.648886
11,432.00	91.51	1.54	6,976.20	4,169.39	122.76	1,301,900.91	3,237,885.71	40.158979	-104.648877
11,528.00	90.62	2.13	6,974.41	4,265.32	125.84	1,301,996.86	3,237,887.86	40.159242	-104.648866
11,623.00	90.28	1.16	6,973.67	4,360.28	128.56	1,302,091.83	3,237,889.68	40.159503	-104.648856
11,718.00	90.03	1.30	6,973.41	4,455.25	130.60	1,302,186.82	3,237,890.81	40.159764	-104.648849
11,813.00	89.97	0.86	6,973.41	4,550.24	132.39	1,302,281.81	3,237,891.69	40.160024	-104.648842
11,908.00	89.91	359.97	6,973.51	4,645.23	133.08	1,302,376.81	3,237,891.46	40.160285	-104.648840
11,985.00	90.49	0.17	6,973.24	4,722.23	133.18	1,302,453.80	3,237,890.82	40.160497	-104.648840
Final Sperry MWD Survey @ 11985.00ft									
12,034.00	90.49	0.17	6,972.82	4,771.23	133.32	1,302,502.80	3,237,890.50	40.160631	-104.648839
Straight Line Projection to TD @ 12034'									

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 36N-3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 36N-3HZ	North Reference:	True
Wellbore:	Plan D Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Cook 36N-3HZ_Setba	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	5,182.33	2,023.26	1,302,931.99	3,239,776.33		
Point 2			0.00	7,369.87	2,045.49	1,305,119.55	3,239,777.57		
Point 3			0.00	9,391.67	2,080.11	1,307,141.51	3,239,792.79		
Point 4			0.00	9,405.61	-104.33	1,307,134.49	3,237,608.41		
Point 5			0.00	9,419.56	-2,290.44	1,307,127.47	3,235,422.36		
Point 6			0.00	7,374.47	-2,310.40	1,305,082.37	3,235,422.02		
Point 7			0.00	5,179.72	-2,331.90	1,302,887.60	3,235,421.57		
Point 8			0.00	5,181.02	-153.56	1,302,909.80	3,237,599.71		
Cook 36N-3HZ_BHL	0.00	0.00	6,948.00	5,181.40	133.04	1,302,912.92	3,237,886.28	40.161757	-104.648840
- actual wellpath misses target center by 410.92ft at 12034.00ft MD (6972.82 TVD, 4771.23 N, 133.32 E)									
- Point									
Cook 36N-3HZ_WPtg	0.00	0.00	6,948.88	638.41	42.00	1,298,369.46	3,237,838.83	40.149286	-104.649166
- actual wellpath misses target center by 18.14ft at 7899.09ft MD (6951.64 TVD, 637.93 N, 59.93 E)									
- Point									
Cook 36N-3HZ_SHL	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Point									
Cook 36N-3HZ_Land	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	5,557.21	-576.22	1,303,281.90	3,237,173.48		
Point 2			0.00	-122.54	-673.43	1,297,601.72	3,237,130.76		
Point 3			0.00	-103.41	246.88	1,297,629.67	3,238,050.81		
Point 4			0.00	5,602.81	274.87	1,303,335.66	3,238,024.06		
Cook 36N-3HZ_Setba	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	-120.20	1,995.32	1,297,629.66	3,239,799.25		
Point 2			0.00	2,069.23	2,005.64	1,299,818.99	3,239,788.57		
Point 3			0.00	4,262.29	2,015.98	1,302,011.96	3,239,777.87		
Point 4			0.00	4,260.98	-164.04	1,301,989.74	3,237,598.06		
Point 5			0.00	4,259.67	-2,343.31	1,301,967.52	3,235,418.99		
Point 6			0.00	2,064.46	-2,376.38	1,299,772.19	3,235,406.98		
Point 7			0.00	-105.79	-2,420.43	1,297,601.71	3,235,383.75		
Point 8			0.00	-112.96	-212.70	1,297,615.72	3,237,591.36		
Cook 36N-3HZ_Sec 3	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	4,719.42	-2,796.45	1,302,422.89	3,234,961.48		
Point 2			0.00	4,722.59	2,478.62	1,302,476.66	3,240,236.06		
Cook 36N-3HZ_Sectic	0.00	0.00	0.00	0.00	0.00	1,297,730.71	3,237,802.96	40.147534	-104.649316
- actual wellpath hits target center									
- Polygon									
Point 1			0.00	-581.72	2,454.48	1,297,172.58	3,240,262.80		
Point 2			0.00	2,069.73	2,465.67	1,299,823.91	3,240,248.56		
Point 3			0.00	4,722.59	2,478.62	1,302,476.66	3,240,236.06		
Point 4			0.00	7,369.47	2,505.45	1,305,123.56	3,240,237.49		
Point 5			0.00	9,848.79	2,548.00	1,307,603.08	3,240,256.26		
Point 6			0.00	9,865.77	-99.08	1,307,594.66	3,237,609.24		
Point 7			0.00	9,882.48	-2,746.10	1,307,585.98	3,234,962.30		
Point 8			0.00	7,374.76	-2,770.55	1,305,078.24	3,234,961.90		
Point 9			0.00	4,719.42	-2,796.45	1,302,422.89	3,234,961.48		

Halliburton Company

Survey Report - Geographic

Company:	Anadarko Petroleum Corp.	Local Co-ordinate Reference:	Well Cook 36N-3HZ
Project:	Weld County, CO (NAD 83)	TVD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Site:	Sec. 10-T2N-R65W	MD Reference:	RKB=25ft @ 4894.00ft (HP 308)
Well:	Cook 36N-3HZ	North Reference:	True
Wellbore:	Plan D Rev 0	Survey Calculation Method:	Minimum Curvature
Design:	Actual Field Surveys	Database:	EDM 2003.16 Single User Db

Point 10	0.00	2,063.96	-2,836.46	1,299,767.28	3,234,946.94		
Point 11	0.00	-564.29	-2,889.86	1,297,138.74	3,234,918.76		
Point 12	0.00	-572.96	-217.82	1,297,155.71	3,237,590.65		
Cook 36N-3HZ_BHL r	0.00	0.00	6,948.00	4,771.40	133.04	1,302,502.96	3,237,890.21
- actual wellpath misses target center by 24.82ft at 12034.00ft MD (6972.82 TVD, 4771.23 N, 133.32 E)							
- Point							

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,317.00	6,950.67	7" Intermediate Casing @ 7317' MD	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	0.00	0.00	H&P 308: RKB = 25ft
125.00	125.00	0.00	-0.15	First Gyro Survey @ 125.00ft
915.00	914.99	3.64	-0.72	Final Gyro Survey @ 915.00ft
915.00	914.99	3.64	-0.72	Tie-On to Surface Gyros @ 915.00ft
1,014.00	1,013.98	3.75	-0.28	First Sperry MWD Survey @ 1014.00ft
11,985.00	6,973.24	4,722.23	133.18	Final Sperry MWD Survey @ 11985.00ft
12,034.00	6,972.82	4,771.23	133.32	Straight Line Projection to TD @ 12034'

Checked By: _____ Approved By: _____ Date: _____

Section 2

Contents: Proposal Data

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 10-T2N-R65W

Cook 36N-3HZ

Plan D Rev 0

Plan: Plan D Rev 0 Proposal

Sperry Drilling Services

Proposal Report

08 October, 2012

Well Coordinates: 1,297,730.71 N, 3,237,802.96 E (40° 08' 51.12" N, 104° 38' 57.54" W)

Ground Level: 4,869.00 ft

Local Coordinate Origin:

Centered on Well Cook 36N-3HZ

Viewing Datum:

RKB=25ft @ 4894.00ft (HP 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

Project: Weld County, CO (NAD 83)
Site: Sec. 10-T2N-R65W
Well: Cook 36N-3HZ
Wellbore: Plan D Rev 0
Design: Plan D Rev 0 Proposal

Anadarko Petroleum Corp.

HALLIBURTON
Sperry Drilling

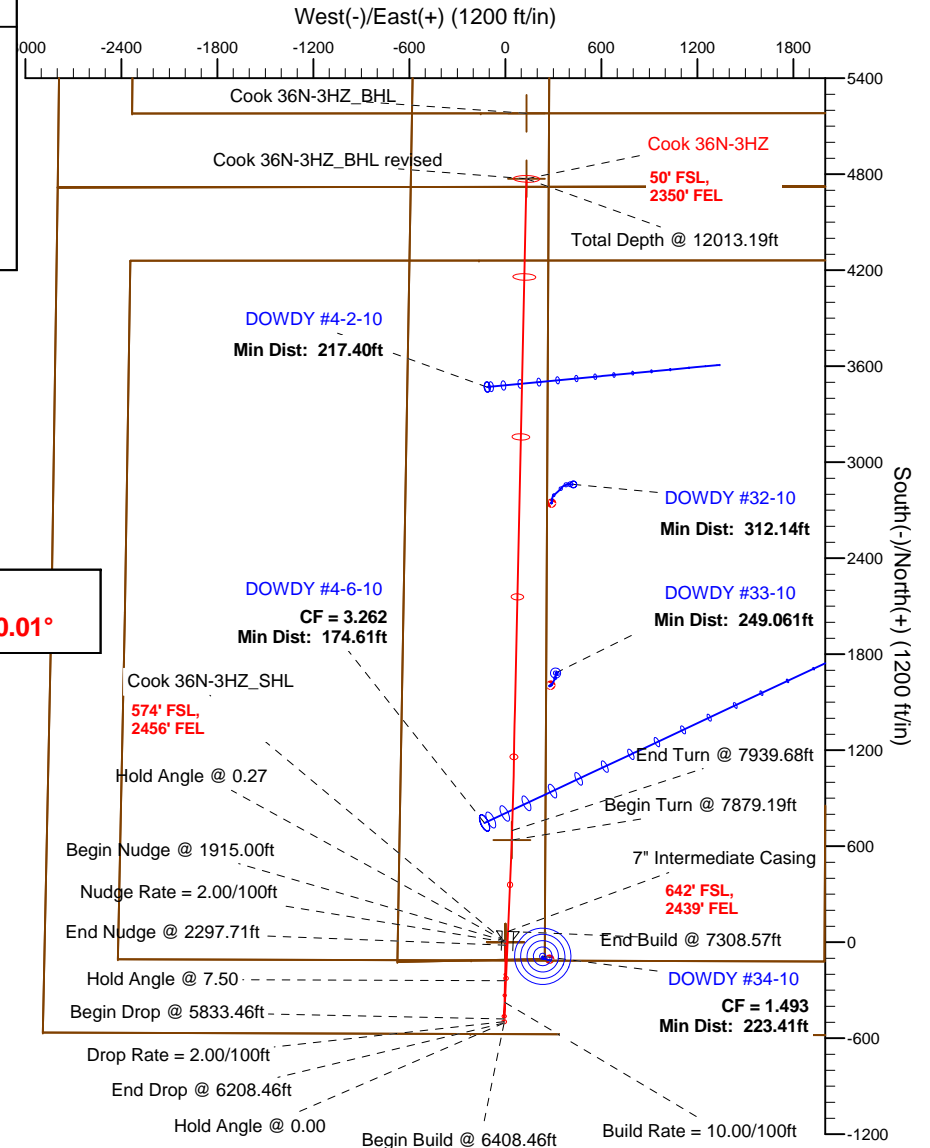
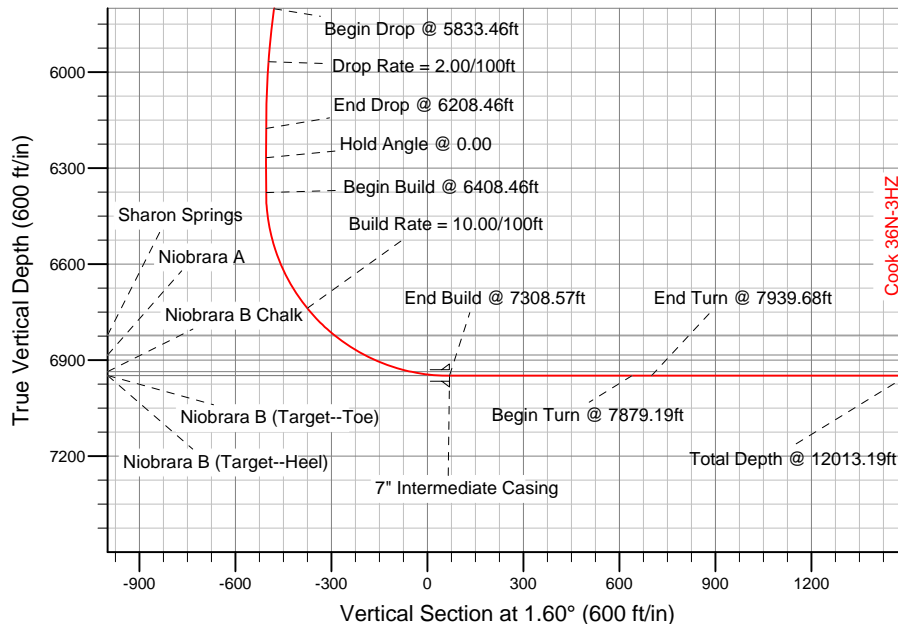
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	915.00	0.27	57.24	914.99	3.64	-0.72	0.00	0.00	3.62	
2	1915.00	0.27	57.24	1914.97	6.19	3.24	0.00	0.00	6.28	
3	2297.71	7.50	181.25	2296.62	-18.33	3.46	2.00	125.68	-18.23	
4	5833.46	7.50	181.25	5802.11	-479.73	-6.61	0.00	0.00	-479.73	
5	6208.46	0.00	0.00	6176.04	-504.23	-7.14	2.00	180.00	-504.23	
6	6408.46	0.00	0.00	6376.04	-504.23	-7.14	0.00	0.00	-504.23	
7	7308.57	90.01	2.46	6949.00	68.32	17.48	10.00	2.46	68.78	
8	7879.19	90.01	2.46	6948.88	638.41	42.00	0.00	0.00	639.33	Cook 36N-3HZ_WPtgt 1
9	7939.68	90.01	1.25	6948.87	698.86	43.96	2.00	-89.98	699.82	
10	12013.19	90.01	1.25	6948.00	4771.40	133.04	0.00	0.00	4773.25	Cook 36N-3HZ_BHL revised

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Cook 36N-3HZ_Land Spacing Unit	0.00	0.00	0.00	40.147534	-104.649316	Polygon
Cook 36N-3HZ_Sec 3/10 Line	0.00	0.00	0.00	40.147534	-104.649316	Polygon
Cook 36N-3HZ_Section Lines	0.00	0.00	0.00	40.147534	-104.649316	Polygon
Cook 36N-3HZ_Setback Lines Sec 10	0.00	0.00	0.00	40.147534	-104.649316	Polygon
Cook 36N-3HZ_Setback Lines Sec 3	0.00	0.00	0.00	40.147534	-104.649316	Polygon
Cook 36N-3HZ_SHL	0.00	0.00	0.00	40.147534	-104.649316	Point
Cook 36N-3HZ_BHL	6948.00	5181.40	133.04	40.161757	-104.648840	Point
Cook 36N-3HZ_BHL revised	6948.00	4771.40	133.04	40.160632	-104.648840	Point
Cook 36N-3HZ_WPtgt 1	6948.88	638.41	42.00	40.149286	-104.649166	Point

Target Line:
6948.83' TVDkb @ 0° VS Drilling 90.01°

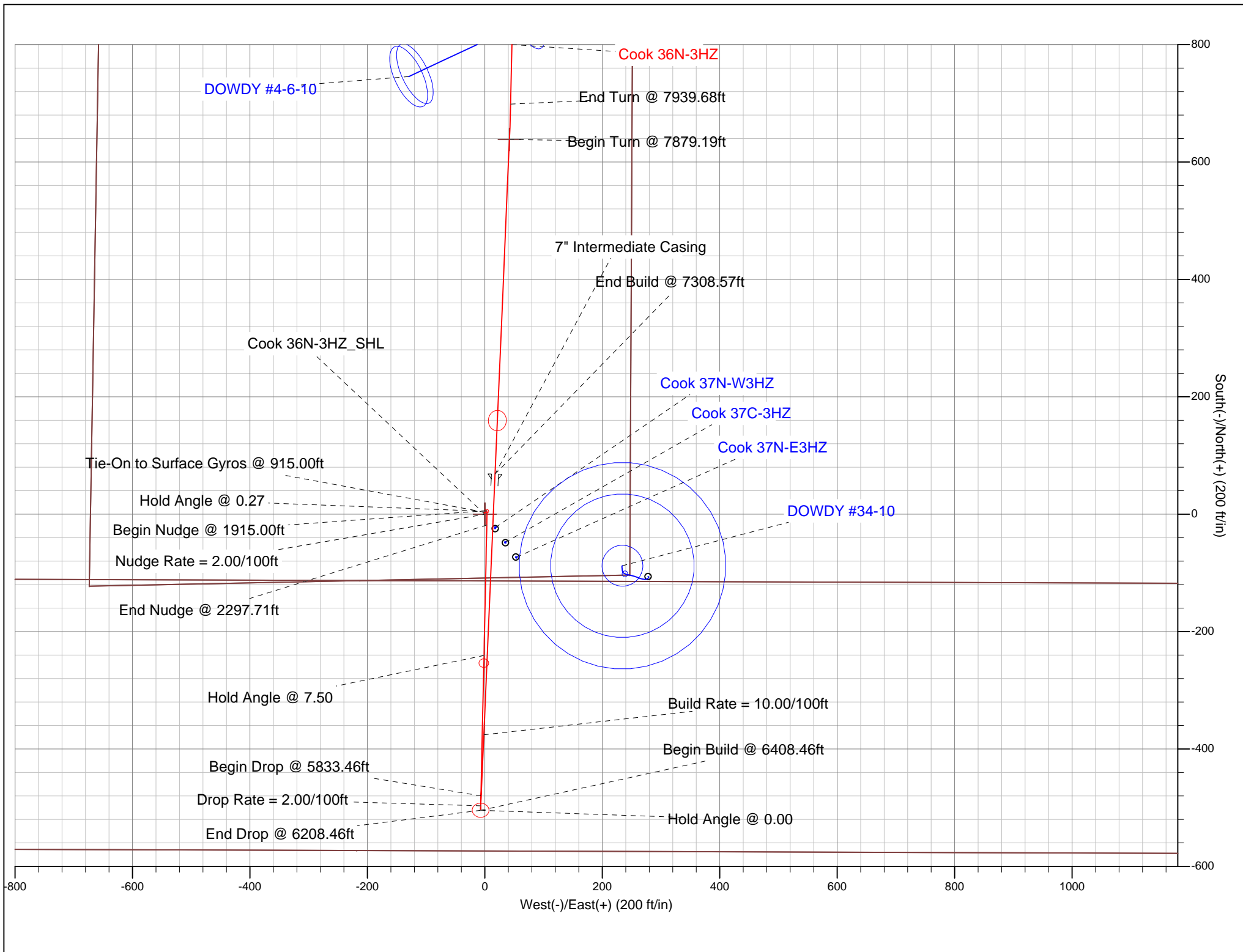


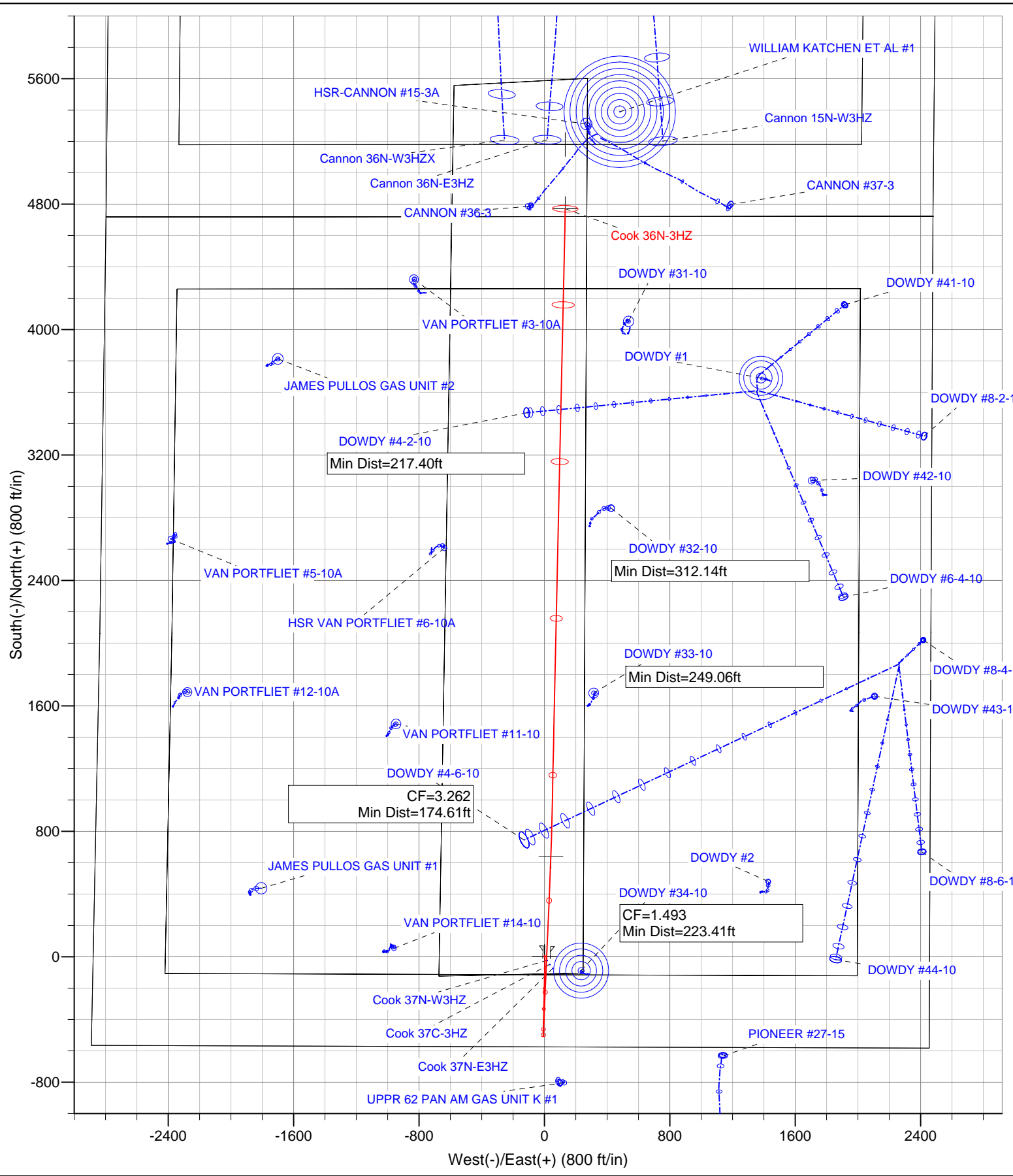
WELL DETAILS: Cook 36N-3HZ

Ground Level: 4869.00 RKB=25ft @ 4894.00ft (HP 308)

Plan: Plan D Rev 0 Proposal (Cook 36N-3HZ/Plan D Rev 0)

Created By: Fred Hartmann Date: 10/08/2012
Reviewed: Date:





Plan Report for Cook 36N-3HZ - Plan D Rev 0 Proposal

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)	Toolface Azimuth (°)
915.00	0.27	57.24	914.99	3.64	-0.72	3.62	0.00	0.00	0.00	0.00
Tie-On to Surface Gyros @ 915.00ft										
1,000.00	0.27	57.24	999.98	3.86	-0.38	3.84	0.00	0.00	0.00	0.00
1,100.00	0.27	57.24	1,099.98	4.11	0.01	4.11	0.00	0.00	0.00	0.00
1,200.00	0.27	57.24	1,199.98	4.37	0.41	4.38	0.00	0.00	0.00	0.00
1,300.00	0.27	57.24	1,299.98	4.62	0.81	4.64	0.00	0.00	0.00	0.00
1,400.00	0.27	57.24	1,399.98	4.88	1.20	4.91	0.00	0.00	0.00	0.00
1,500.00	0.27	57.24	1,499.98	5.13	1.60	5.17	0.00	0.00	0.00	0.00
Hold Angle @ 0.27										
1,600.00	0.27	57.24	1,599.98	5.39	2.00	5.44	0.00	0.00	0.00	0.00
1,700.00	0.27	57.24	1,699.98	5.64	2.39	5.71	0.00	0.00	0.00	0.00
1,800.00	0.27	57.24	1,799.98	5.90	2.79	5.97	0.00	0.00	0.00	0.00
1,900.00	0.27	57.24	1,899.97	6.15	3.18	6.24	0.00	0.00	0.00	0.00
1,915.00	0.27	57.24	1,914.97	6.19	3.24	6.28	0.00	0.00	0.00	0.00
Begin Nudge @ 1915.00ft										
2,000.00	1.56	174.83	1,999.96	5.15	3.52	5.24	2.00	1.52	138.34	125.68
2,100.00	3.55	179.38	2,099.86	0.70	3.67	0.80	2.00	1.99	4.55	8.09
Nudge Rate = 2.00/100ft										
2,200.00	5.55	180.66	2,199.54	-7.23	3.65	-7.13	2.00	2.00	1.28	3.55
2,297.71	7.50	181.25	2,296.61	-18.33	3.46	-18.23	2.00	2.00	0.61	2.27
End Nudge @ 2297.71ft										
2,300.00	7.50	181.25	2,298.88	-18.63	3.45	-18.53	0.00	0.00	0.00	1.68
2,400.00	7.50	181.25	2,398.03	-31.68	3.17	-31.58	0.00	0.00	0.00	0.00
2,500.00	7.50	181.25	2,497.17	-44.73	2.88	-44.63	0.00	0.00	0.00	0.00
2,600.00	7.50	181.25	2,596.32	-57.78	2.60	-57.68	0.00	0.00	0.00	0.00
2,700.00	7.50	181.25	2,695.46	-70.83	2.31	-70.73	0.00	0.00	0.00	0.00
2,800.00	7.50	181.25	2,794.61	-83.88	2.03	-83.79	0.00	0.00	0.00	0.00
2,900.00	7.50	181.25	2,893.75	-96.93	1.74	-96.84	0.00	0.00	0.00	0.00
3,000.00	7.50	181.25	2,992.89	-109.98	1.46	-109.89	0.00	0.00	0.00	0.00
3,100.00	7.50	181.25	3,092.04	-123.02	1.17	-122.94	0.00	0.00	0.00	0.00
3,200.00	7.50	181.25	3,191.18	-136.07	0.89	-136.00	0.00	0.00	0.00	0.00
3,300.00	7.50	181.25	3,290.33	-149.12	0.60	-149.05	0.00	0.00	0.00	0.00
3,400.00	7.50	181.25	3,389.47	-162.17	0.32	-162.10	0.00	0.00	0.00	0.00
3,500.00	7.50	181.25	3,488.62	-175.22	0.03	-175.15	0.00	0.00	0.00	0.00
3,600.00	7.50	181.25	3,587.76	-188.27	-0.25	-188.21	0.00	0.00	0.00	0.00
3,700.00	7.50	181.25	3,686.91	-201.32	-0.53	-201.26	0.00	0.00	0.00	0.00
3,800.00	7.50	181.25	3,786.05	-214.37	-0.82	-214.31	0.00	0.00	0.00	0.00
3,900.00	7.50	181.25	3,885.20	-227.42	-1.10	-227.36	0.00	0.00	0.00	0.00
3,981.50	7.50	181.25	3,966.00	-238.06	-1.34	-238.00	0.00	0.00	0.00	0.00
Parkman										
4,000.00	7.50	181.25	3,984.34	-240.47	-1.39	-240.42	0.00	0.00	0.00	0.00
Hold Angle @ 7.50										
4,100.00	7.50	181.25	4,083.48	-253.52	-1.67	-253.47	0.00	0.00	0.00	0.00
4,200.00	7.50	181.25	4,182.63	-266.57	-1.96	-266.52	0.00	0.00	0.00	0.00
4,300.00	7.50	181.25	4,281.77	-279.62	-2.24	-279.57	0.00	0.00	0.00	0.00
4,400.00	7.50	181.25	4,380.92	-292.67	-2.53	-292.63	0.00	0.00	0.00	0.00
4,500.00	7.50	181.25	4,480.06	-305.72	-2.81	-305.68	0.00	0.00	0.00	0.00
4,570.54	7.50	181.25	4,550.00	-314.92	-3.01	-314.88	0.00	0.00	0.00	0.00
Sussex										
4,600.00	7.50	181.25	4,579.21	-318.77	-3.10	-318.73	0.00	0.00	0.00	0.00
4,700.00	7.50	181.25	4,678.35	-331.82	-3.38	-331.78	0.00	0.00	0.00	0.00
4,800.00	7.50	181.25	4,777.50	-344.87	-3.67	-344.83	0.00	0.00	0.00	0.00
4,900.00	7.50	181.25	4,876.64	-357.92	-3.95	-357.89	0.00	0.00	0.00	0.00
5,000.00	7.50	181.25	4,975.78	-370.97	-4.24	-370.94	0.00	0.00	0.00	0.00
5,100.00	7.50	181.25	5,074.93	-384.02	-4.52	-383.99	0.00	0.00	0.00	0.00
5,200.00	7.50	181.25	5,174.07	-397.06	-4.81	-397.04	0.00	0.00	0.00	0.00
5,300.00	7.50	181.25	5,273.22	-410.11	-5.09	-410.10	0.00	0.00	0.00	0.00
5,400.00	7.50	181.25	5,372.36	-423.16	-5.38	-423.15	0.00	0.00	0.00	0.00

Plan Report for Cook 36N-3HZ - Plan D Rev 0 Proposal

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)	Toolface Azimuth (°)
5,500.00	7.50	181.25	5,471.51	-436.21	-5.66	-436.20	0.00	0.00	0.00	0.00
5,600.00	7.50	181.25	5,570.65	-449.26	-5.95	-449.25	0.00	0.00	0.00	0.00
5,700.00	7.50	181.25	5,669.80	-462.31	-6.23	-462.31	0.00	0.00	0.00	0.00
5,800.00	7.50	181.25	5,768.94	-475.36	-6.51	-475.36	0.00	0.00	0.00	0.00
5,833.46	7.50	181.25	5,802.11	-479.73	-6.61	-479.73	0.00	0.00	0.00	0.00
Begin Drop @ 5833.46ft										
5,900.00	6.17	181.25	5,868.18	-487.64	-6.78	-487.64	2.00	-2.00	0.00	180.00
6,000.00	4.17	181.25	5,967.77	-496.65	-6.98	-496.65	2.00	-2.00	0.00	180.00
Drop Rate = 2.00/100ft										
6,100.00	2.17	181.25	6,067.61	-502.18	-7.10	-502.18	2.00	-2.00	0.00	180.00
6,200.00	0.17	181.25	6,167.58	-504.22	-7.14	-504.22	2.00	-2.00	0.00	-180.00
6,208.46	0.00	0.00	6,176.04	-504.23	-7.14	-504.23	2.00	-2.00	0.00	180.00
End Drop @ 6208.46ft										
6,300.00	0.00	0.00	6,267.58	-504.23	-7.14	-504.23	0.00	0.00	0.00	0.00
Hold Angle @ 0.00										
6,400.00	0.00	0.00	6,367.58	-504.23	-7.14	-504.23	0.00	0.00	0.00	0.00
6,408.46	0.00	0.00	6,376.04	-504.23	-7.14	-504.23	0.00	0.00	0.00	0.00
Begin Build @ 6408.46ft										
6,500.00	9.15	2.46	6,467.20	-496.94	-6.83	-496.94	10.00	10.00	0.00	2.46
6,600.00	19.15	2.46	6,564.04	-472.54	-5.78	-472.52	10.00	10.00	0.00	0.00
6,700.00	29.15	2.46	6,655.17	-431.71	-4.03	-431.65	10.00	10.00	0.00	0.00
6,800.00	39.15	2.46	6,737.81	-375.69	-1.62	-375.59	10.00	10.00	0.00	0.00
Build Rate = 10.00/100ft										
6,900.00	49.15	2.46	6,809.47	-306.18	1.37	-306.03	10.00	10.00	0.00	0.00
6,919.55	51.11	2.46	6,822.00	-291.19	2.02	-291.02	10.00	10.00	0.00	0.00
Sharon Springs										
7,000.00	59.15	2.46	6,867.95	-225.30	4.85	-225.08	10.00	10.00	0.00	0.00
7,032.89	62.44	2.46	6,884.00	-196.62	6.09	-196.37	10.00	10.00	0.00	0.00
Niobrara A										
7,100.00	69.15	2.46	6,911.49	-135.50	8.71	-135.20	10.00	10.00	0.00	0.00
7,186.18	77.77	2.46	6,936.00	-53.04	12.26	-52.68	10.00	10.00	0.00	0.00
Niobrara B Chalk										
7,200.00	79.15	2.46	6,938.76	-39.51	12.84	-39.14	10.00	10.00	0.00	0.00
7,300.00	89.15	2.46	6,948.94	59.75	17.11	60.20	10.00	10.00	0.00	0.00
7,306.67	89.82	2.46	6,949.00	66.41	17.40	66.87	10.00	10.00	0.00	0.00
Niobrara B (Target-Heel)										
7,308.57	90.01	2.46	6,949.00	68.31	17.48	68.77	10.00	10.00	0.00	0.00
End Build @ 7308.57ft - 7" Intermediate Casing										
7,400.00	90.01	2.46	6,948.98	159.66	21.41	160.19	0.00	0.00	0.00	0.00
7,500.00	90.01	2.46	6,948.96	259.57	25.71	260.18	0.00	0.00	0.00	0.00
7,600.00	90.01	2.46	6,948.94	359.47	30.00	360.17	0.00	0.00	0.00	0.00
7,700.00	90.01	2.46	6,948.92	459.38	34.30	460.16	0.00	0.00	0.00	0.00
7,800.00	90.01	2.46	6,948.90	559.29	38.60	560.15	0.00	0.00	0.00	0.00
7,879.19	90.01	2.46	6,948.88	638.41	42.00	639.33	0.00	0.00	0.00	0.00
Begin Turn @ 7879.19ft - Cook 36N-3HZ_WPtgt 1										
7,900.00	90.01	2.05	6,948.88	659.20	42.82	660.14	2.00	0.00	-2.00	-89.98
7,939.68	90.01	1.25	6,948.87	698.86	43.96	699.82	2.00	0.00	-2.00	-89.98
End Turn @ 7939.68ft										
8,000.00	90.01	1.25	6,948.85	759.17	45.28	760.14	0.00	0.00	0.00	-89.98
8,100.00	90.01	1.25	6,948.83	859.14	47.47	860.13	0.00	0.00	0.00	0.00
8,200.00	90.01	1.25	6,948.81	959.12	49.65	960.13	0.00	0.00	0.00	0.00
8,300.00	90.01	1.25	6,948.79	1,059.10	51.84	1,060.13	0.00	0.00	0.00	0.00
8,400.00	90.01	1.25	6,948.77	1,159.07	54.03	1,160.13	0.00	0.00	0.00	0.00
8,500.00	90.01	1.25	6,948.75	1,259.05	56.21	1,260.13	0.00	0.00	0.00	0.00
8,600.00	90.01	1.25	6,948.73	1,359.02	58.40	1,360.12	0.00	0.00	0.00	0.00
8,700.00	90.01	1.25	6,948.71	1,459.00	60.59	1,460.12	0.00	0.00	0.00	0.00
8,800.00	90.01	1.25	6,948.68	1,558.98	62.77	1,560.12	0.00	0.00	0.00	0.00
8,900.00	90.01	1.25	6,948.66	1,658.95	64.96	1,660.12	0.00	0.00	0.00	0.00

Plan Report for Cook 36N-3HZ - Plan D Rev 0 Proposal

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)	Toolface Azimuth (°)
9,000.00	90.01	1.25	6,948.64	1,758.93	67.15	1,760.12	0.00	0.00	0.00	0.00
9,100.00	90.01	1.25	6,948.62	1,858.91	69.33	1,860.12	0.00	0.00	0.00	0.00
9,200.00	90.01	1.25	6,948.60	1,958.88	71.52	1,960.11	0.00	0.00	0.00	0.00
9,300.00	90.01	1.25	6,948.58	2,058.86	73.71	2,060.11	0.00	0.00	0.00	0.00
9,400.00	90.01	1.25	6,948.56	2,158.83	75.90	2,160.11	0.00	0.00	0.00	0.00
9,500.00	90.01	1.25	6,948.54	2,258.81	78.08	2,260.11	0.00	0.00	0.00	0.00
9,600.00	90.01	1.25	6,948.51	2,358.79	80.27	2,360.11	0.00	0.00	0.00	0.00
9,700.00	90.01	1.25	6,948.49	2,458.76	82.46	2,460.10	0.00	0.00	0.00	0.00
9,800.00	90.01	1.25	6,948.47	2,558.74	84.64	2,560.10	0.00	0.00	0.00	0.00
9,900.00	90.01	1.25	6,948.45	2,658.71	86.83	2,660.10	0.00	0.00	0.00	0.00
10,000.00	90.01	1.25	6,948.43	2,758.69	89.02	2,760.10	0.00	0.00	0.00	0.00
10,100.00	90.01	1.25	6,948.41	2,858.67	91.20	2,860.10	0.00	0.00	0.00	0.00
10,200.00	90.01	1.25	6,948.39	2,958.64	93.39	2,960.10	0.00	0.00	0.00	0.00
10,300.00	90.01	1.25	6,948.36	3,058.62	95.58	3,060.09	0.00	0.00	0.00	0.00
10,400.00	90.01	1.25	6,948.34	3,158.59	97.76	3,160.09	0.00	0.00	0.00	0.00
10,500.00	90.01	1.25	6,948.32	3,258.57	99.95	3,260.09	0.00	0.00	0.00	0.00
10,600.00	90.01	1.25	6,948.30	3,358.55	102.14	3,360.09	0.00	0.00	0.00	0.00
10,700.00	90.01	1.25	6,948.28	3,458.52	104.32	3,460.09	0.00	0.00	0.00	0.00
10,800.00	90.01	1.25	6,948.26	3,558.50	106.51	3,560.08	0.00	0.00	0.00	0.00
10,900.00	90.01	1.25	6,948.24	3,658.47	108.70	3,660.08	0.00	0.00	0.00	0.00
11,000.00	90.01	1.25	6,948.22	3,758.45	110.88	3,760.08	0.00	0.00	0.00	0.00
11,100.00	90.01	1.25	6,948.19	3,858.43	113.07	3,860.08	0.00	0.00	0.00	0.00
11,200.00	90.01	1.25	6,948.17	3,958.40	115.26	3,960.08	0.00	0.00	0.00	0.00
11,300.00	90.01	1.25	6,948.15	4,058.38	117.44	4,060.08	0.00	0.00	0.00	0.00
11,400.00	90.01	1.25	6,948.13	4,158.36	119.63	4,160.07	0.00	0.00	0.00	0.00
11,500.00	90.01	1.25	6,948.11	4,258.33	121.82	4,260.07	0.00	0.00	0.00	0.00
11,600.00	90.01	1.25	6,948.09	4,358.31	124.00	4,360.07	0.00	0.00	0.00	0.00
11,700.00	90.01	1.25	6,948.07	4,458.28	126.19	4,460.07	0.00	0.00	0.00	0.00
11,800.00	90.01	1.25	6,948.05	4,558.26	128.38	4,560.07	0.00	0.00	0.00	0.00
11,900.00	90.01	1.25	6,948.02	4,658.24	130.56	4,660.06	0.00	0.00	0.00	0.00
12,000.00	90.01	1.25	6,948.00	4,758.21	132.75	4,760.06	0.00	0.00	0.00	0.00
12,013.19	90.01	1.25	6,948.00	4,771.40	133.04	4,773.25	0.00	0.00	0.00	0.00

Total Depth @ 12013.19ft - Niobrara B (Target--Toe) - Cook 36N-3HZ_BHL revised

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
915.00	914.99	3.64	-0.72	Tie-On to Surface Gyros @ 915.00ft
1,500.00	1,499.98	5.13	1.60	Hold Angle @ 0.27
1,915.00	1,914.97	6.19	3.24	Begin Nudge @ 1915.00ft
2,100.00	2,099.86	0.70	3.67	Nudge Rate = 2.00/100ft
2,297.71	2,296.61	-18.33	3.46	End Nudge @ 2297.71ft
4,000.00	3,984.34	-240.47	-1.39	Hold Angle @ 7.50
5,833.46	5,802.11	-479.73	-6.61	Begin Drop @ 5833.46ft
6,000.00	5,967.77	-496.65	-6.98	Drop Rate = 2.00/100ft
6,208.46	6,176.04	-504.23	-7.14	End Drop @ 6208.46ft
6,300.00	6,267.58	-504.23	-7.14	Hold Angle @ 0.00
6,408.46	6,376.04	-504.23	-7.14	Begin Build @ 6408.46ft
6,800.00	6,737.81	-375.69	-1.62	Build Rate = 10.00/100ft
7,308.57	6,949.00	68.31	17.48	End Build @ 7308.57ft
7,879.19	6,948.88	638.41	42.00	Begin Turn @ 7879.19ft
7,939.68	6,948.87	698.86	43.96	End Turn @ 7939.68ft
12,013.19	6,948.00	4,771.40	133.04	Total Depth @ 12013.19ft

Plan Report for Cook 36N-3HZ - Plan D Rev 0 Proposal

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Cook 36N-3HZ_BHL revised	1.60	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
25.00	915.00	Surface Gyros	NS-GYRO-MS
915.00	7,308.57	Plan D Rev 0 Proposal	MWD+SC
7,308.57	12,013.19	Plan D Rev 0 Proposal	MWD+SC

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,308.57	6,949.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,981.50	3,966.00	Parkman		0.00	
4,570.54	4,550.00	Sussex		0.00	
6,919.55	6,822.00	Sharon Springs		0.00	51.11
7,032.89	6,884.00	Niobrara A		0.00	62.44
7,186.18	6,936.00	Niobrara B Chalk		0.00	77.77
7,306.67	6,949.00	Niobrara B (Target--Heel)		0.00	90.01
12,013.19	6,948.00	Niobrara B (Target--Toe)		0.00	90.01

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Cook 36N-3HZ_Setback Lines Sec 3	0.00	0.00	0.00	Polygon
Cook 36N-3HZ_BHL	6,948.00	5,181.40	133.04	Point
Cook 36N-3HZ_WPtgt 1	6,948.88	638.41	42.00	Point
Cook 36N-3HZ_SHL	0.00	0.00	0.00	Point
Cook 36N-3HZ_Land Spacing Unit	0.00	0.00	0.00	Polygon
Cook 36N-3HZ_Setback Lines Sec 10	0.00	0.00	0.00	Polygon
Cook 36N-3HZ_Sec 3/10 Line	0.00	0.00	0.00	Polygon
Cook 36N-3HZ_Section Lines	0.00	0.00	0.00	Polygon
Cook 36N-3HZ_BHL revised	6,948.00	4,771.40	133.04	Point

North Reference Sheet for Sec. 10-T2N-R65W - Cook 36N-3HZ - Plan D Rev 0

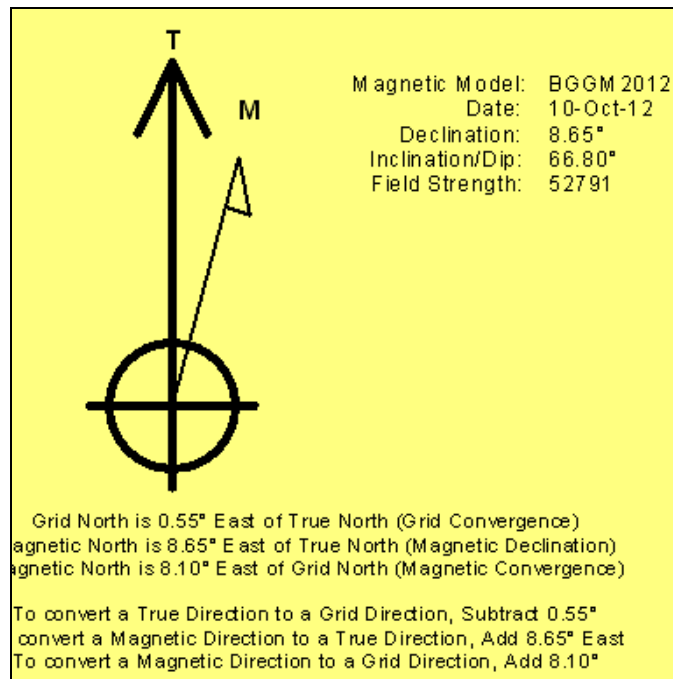
All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
Vertical Depths are relative to RKB=25ft @ 4894.00ft (HP 308). Northing and Easting are relative to Cook 36N-3HZ
Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)
Central Meridian is -105.50°, Longitude Origin:0.000000°, Latitude Origin:40.783333°
False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995846

Grid Coordinates of Well: 1,297,730.71 ft N, 3,237,802.96 ft E
Geographical Coordinates of Well: 40° 08' 51.12" N, 104° 38' 57.54" W
Grid Convergence at Surface is: 0.55°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,013.19ft
the Bottom Hole Displacement is 4,773.25ft in the Direction of 1.60° (True).

Magnetic Convergence at surface is: -8.10° (10 October 2012, , BGGM2012)



Section 3

Contents: BHA Reports, BHA Schematics, Motor Performance Reports, &
Survey & Drilling Parameters.

WELL INFORMATION

BHA Report

IADC Rig BHA#
Run# 0100

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

Date In : 10/12/2012 **MD In (ft)** : 965 **TVD In (ft)** : 965 **Date Out** : 10/14/2012 **MD Out (ft)** : 6690 **TVD Out (ft)** : 6651

BIT DATA

Bit Number	: 2	Nozzles	: 5x15
Bit Size (in)	: 8.750	TFA (in2)	: 0.8690
Manufacturer	: Baker / Hughes Christensen	Dull Grade In	: NEW
Model	: DP505F	Dull Grade Out	: 1-1-WT-A-X-X-NO-BHA
Serial Number	: 7141159		

MOTOR DATA

Motor Number	: 1	Bend (deg)	: 1.83
OD (in)	: 6.750	Nozzles (32nd)	: 0.0
Manufacturer	: Sperry Drilling	Avg Diff Press	: 449.50
Model	: SperryDrill	Cumul Cir Hrs	: 38.45
Serial Number	: 675-1202		

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbpf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	PDC	7141159	6.000	1.750	8.750	52.19	P 3-1/2" REG	0.90	
2	6 3/4" SperryDrill Lobe 6/7 - 5.0 stg	675-1202	6.750	4.498		87.63	B 4-1/2" IF	27.04	
3	6 3/4" Flex Collar	11801345	6.820	2.875		102.37	B 4-1/2" IF	30.93	
4	6 3/4" Hang-off Sub	11341349	6.890	2.850		105.32	B 4-1/2" IF	6.03	
5	6 3/4" Pony Collar	10956241	6.810	2.875		102.01	B 4-1/2" IF	19.53	
6	6 3/4" Flex Collar	11964456	6.860	2.875		103.84	B 4-1/2" IF	31.08	
7	6 3/4" X-Over Sub	11522012	6.820	2.938		101.40	B 4-1/2" IF	2.83	
8	21 Jts 4.5" DP		4.500	3.826		19.09		664.88	
9	X-Over Sub		6.500	2.500		96.36		4.00	
10	45 Jts 4" HWDP		4.000	2.563		29.70		1384.98	
Total:								2172.2	

PERFORMANCE Section A

Parameter	Min	Max	Avg	Activity	Hours	BHA Weight (klb)	
WOB (klb) :	3	28	16	Drilling :	27.88	in Air (Total) :	11.72
RPM (rpm) :	25	75	69	Reaming :	0.52	in Mud (Total) :	N/A
Flow (gpm) :	420	600	540	Circ-Other :	10.05	in Air (Bel Jars) :	N/A
SPP (psig) :	1294	3700	2598	Total :	38.45	in Mud (Bel Jars) :	N/A

BHA WEIGHT CALCULATION MESSAGE

Jar not found. Could not calculate weight below jars. Mud Weight not valid could not calculate BHA weight in mud.

PERFORMANCE Section B

	In	Out	Distance (ft)	ROP (fph)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	0.26	23.18	Oriented : 872	63	n/a	n/a	3.22
Azimuth (deg)	76.00	16.48	Rotating : 4853	346	-1.03	0.94	1.03
*Values are interpolated/extrapolated			Total : 5725	205	0.40	0.00	0.40

SURVEY STATIONS

	Depth (ft)	Inclination (deg)	Azimuth (deg)
Start	1014.00	0.28	93.70
Final	6672.00	21.19	17.11

COMMENTS

Probe to Bit = 50.00'
 Bit to Gamma = 53.43'
 Rev per gal = 0.29
 Flow Range = 300-600 gal
 Bit to Bend = 3.02'
 Float OD = 3.5"
 RFO = 106.44 deg
 Theoretical Build Rates = 23.00'

OBJECTIVES

One-run straight hole and curve.

RESULTS

Pulled motor in curve for insufficient build rates.

RECOMMENDATIONS

OTHER

BHA Schematic

Anadarko Petroleum Corp.

Cook 36N-3HZ

IADC Rig BHA # :

Run # : 100

Drillstring : Drillstring

COMPONENT DATA

OD (in)	Length (ft)	Description
6.000	0.90	PDC (Gauge: 8.750 in)
6.750	27.04	6 3/4" SperryDrill Lobe 6/7 - 5.0 stg
6.820	30.93	6 3/4" Flex Collar
6.890	6.03	6 3/4" Hang-off Sub
6.810	19.53	6 3/4" Pony Collar
6.860	31.08	6 3/4" Flex Collar
6.820	2.83	6 3/4" X-Over Sub
4.500	664.88	21 Jts 4.5" DP
6.500	4.00	X-Over Sub
4.000	1384.98	45 Jts 4" HWDP

*Pos: Measured as distance from bottom of the component.

6 3/4" X-Over Sub



6 3/4" Flex Collar

6 3/4" Pony Collar

6 3/4" Hang-off Sub

6 3/4" Flex Collar

6 3/4" SperryDrill Lobe
6/7 - 5.0 stg

PDC



WELL INFORMATION

Motor Performance Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

SUMMARY

BHA Number : **Depth In/Out (ft)** : 965.00 / 6690.00
Run Number : 0100 **Date In/Out** : 10/12/2012 / 10/14/2012
Bit Number : 2 **Hole Size (in)** : 8.750

MOTOR CONFIGURATION

	DFB (ft)	Component	Yes/No	Type	Value
Upper Stab		1 Sleeve Stab	No		
Lower Stab	3.92	2 Bent Housing	Yes	Fixed	1.83° bend
		3 Bent Housing Pad	No		
Motor Top		4 2nd Bent Housing	No		
Stab Top		5 Sleeve Stab	No		
2nd Bend	27.94	6 Motor Top	Yes		
Pad		7 Lower String Stab	No		
Bend (Housing)		8 Upper String Stab	No		
Sleeve Tool					

MOTOR PARAMETERS

Serial Number : 675-1202 **Lobe Config** : 6:7
Motor Run # : 1 **Stat Elastomer** : Nitrile
OD (in) : 6.750 **ID (in)** : 4.498 **Short Brg Pack** : Yes
Flex Collar Used : Yes **Arr** **Ret**
Rotor Nozzle (32nd) : 0.000 **Pick Up Sub** : Yes No
Bit Box Protr : Yes No

MOTOR RUN DATA

Directional Driller(s) : Jesse Kysar, Jordan Timbs

Application Details : Medium Radius

Max Dogleg While Rotating (°/100' : 2.10 **RPM** : 75.00 **Motor Stalled** : No
Max Dogleg Overpulled In (°/100' : **Force (klb)** : **Float Valve** : Yes
Max Dogleg Pushed Through (°/100' : **Force (klb)** : **DP Filter** : Yes

Inc Start/End	(deg)	:	0.261 / 23.175	Interval Oriented / Rot.	(ft)	:	872.00 / 4853.00
Hole Azimuth Start / End	(deg)	:	76.004 / 16.483	Directional Perf Ori / Rot	('°/100')	:	3.22 / 1.03
Jarring Occurred	:						

HOURS

Existing Hrs	:	0.00	Circ Hrs	:	10.05	Total Hrs This Run	:	38.45
Drilling Hrs	:	27.88	Reaming Hrs	:	0.52	New Cumulative Hrs	:	38.45

DRILLING DATA

	Diff Press (psig)	RPM	Rotn Torque (ft-lb)	Drag Up/Down (klb)	WOB (klb)	ROP Oriented (fph)	ROP Rotated (fph)
Avg	449.50	69	3691.76	99.88 / 86.54	16.46	63	346
Max	550.00	75	9700.00	158.00 / 118.00	28.00	200	800

PRE-RUN TESTS

Motor Tested Pre-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No			
Bearing Leakage Observed	:	No			

POST-RUN TESTS

Motor Tested Post-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No	Fluid Flushed	:	No
Bearing Leakage Observed	:	No	Fluid Used	:	
DriveShaft Rotated to Drain Mud	:	No			

MUD DATA

Type	:		Mud Wt (ppg)	:	
Name	:		pH	:	
% Oil / Water	:	/	% Solid	:	
DH Temp Avg / Max (degF)	:	146.85 / 154.00	% Sand	:	
SPP Start / End (gpm)	:	1294.00 / 3700.00	PV (cP)	:	
Flow Rate Avg / Max (gpm)	:	540.28 / 600.00	YP (lbf2)	:	
Chloride Content (ppm)	:				

BIT DATA

Bit Number	: 2	Nozzles	: 5x15
Bit Size (in)	: 8.750	TFA (in2)	: 0.8690
Manufacturer	: Baker / Hughes Christensen	Gauge Length (in)	: 0.200
Model	: DP505F	Dull Grade In	: NEW
Serial Number	: 7141159	Dull Grade Out	: 1-1-WT-A-X-X-NO-BHA
Existing Bit Hrs	: 0.00	Existing Ream Hrs	: 0.00
Cum Drilling Hrs	: 27.88	Cum Ream Hrs	: 0.52

PERFORMANCE

Service Interrupt	: No	Trip For Failure	: No
LIH	: No	Service Interrupt Hrs	:
Problem Date	: 10/13/2012		

COMMENTS

Pulled motor in curve for insufficient build rates. Bit graded 1 inner, 1 outer.

WELL INFORMATION
Drilling Activity

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

North Ref : True
Declination (deg) : 8.65
Vert Sec Dir (deg) : 1.60

SURVEY										STEERING				DRILLING PARAMETERS					
Measured Depth	Incl Angle	Azi Dir	Vertical Depth	Vertical Section	Coordinates		DLS	Build Rate	Turn Rate	Slide/Rotate		Tool Face		RPM	WOB	Flow Rate	Stand Pipe	ROP	Comment
(ft)	(deg)	(deg)	(ft)	(ft)	N/S (ft)	E/W (ft)	(°/100')	(°/100')	(°/100')	From (ft)	To (ft)	(deg)			(klb)	(gpm)	(psig)	(fph)	Run
915.0	0.27	57.24	914.99	0.00	3.64	-0.72	0.00	0.00	0.00										100
965.0										965	971	ROT		25	3	500	1294	200	100
971.0										971	1064	ROT		65	5	600	1530	400	100
1014.0	0.28	93.70	1013.99	3.74	3.75	-0.28	0.17	0.01	0.00										100
1064.0										1064	1156	ROT		70	5	594	1890	600	100
1106.0	0.46	120.65	1105.99	3.55	3.55	0.26	0.27	0.20	0.00										100
1156.0										1156	1249	ROT		70	8	600	2300	800	100
1199.0	0.36	49.66	1198.99	3.57	3.55	0.80	0.52	-0.11	0.00										100
1249.0										1249	1341	ROT		70	8	600	2300	800	100
1291.0	0.39	6.99	1290.98	4.07	4.04	1.06	0.30	0.03	0.00										100
1341.0										1341	1433	ROT		70	10	420	1650	700	100
1383.0	0.34	10.70	1382.98	4.65	4.62	1.15	0.06	-0.05	0.00										100
1433.0										1433	1525	ROT		70	10	420	1650	700	100
1475.0	0.56	357.90	1474.98	5.37	5.34	1.18	0.26	0.24	0.00										100
1525.0										1525	1617	ROT		70	10	420	1650	700	100
1567.0	0.49	319.46	1566.98	6.11	6.09	0.91	0.38	-0.08	0.00										100
1617.0										1617	1710	ROT		70	10	420	1650	700	100
1660.0	0.28	337.92	1659.97	6.62	6.60	0.57	0.26	-0.23	0.00										100
1710.0										1710	1802	ROT		70	10	420	1650	700	100
1752.0	0.44	337.92	1751.97	7.14	7.14	0.35	0.17	0.17	0.00										100
1802.0										1802	1814	185M			4	420	1430	180	100

SURVEY										STEERING				DRILLING PARAMETERS					
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)		RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment Run
					N/S (ft)	E/W (ft)				From (ft)	To (ft)								
1814.0										1814	1895	ROT		70	10	420	1650	700	100
1845.0	0.93	215.50	1844.97	6.85	6.85	-0.22	1.32	0.53	0.00										100
1895.0										1895	1910	175M			6	420	1430	180	100
1910.0										1910	1987	ROT		70	10	420	1650	700	100
1937.0	2.39	194.09	1936.93	4.35	4.39	-1.12	1.70	1.59	0.00										100
1987.0										1987	2002	170M			7	420	1430	180	100
2002.0										2002	2079	ROT		70	17	420	1650	700	100
2029.0	3.72	185.50	2028.79	-0.50	-0.45	-1.87	1.52	1.45	0.00										100
2079.0										2079	2172	ROT		70	18	420	1650	700	100
2122.0	3.37	182.78	2121.62	-6.24	-6.18	-2.30	0.42	-0.38	0.00										100
2172.0										2172	2188	170M			8	420	1430	180	100
2188.0										2188	2266	ROT		70	19	420	1650	700	100
2216.0	4.71	188.95	2215.38	-12.83	-12.75	-3.03	1.50	1.43	0.00										100
2266.0										2266	2284	-30G			8	420	1650	180	100
2284.0										2284	2361	ROT		70	19	420	2000	700	100
2311.0	6.23	177.99	2309.95	-21.84	-21.76	-3.46	1.93	1.60	0.00										100
2361.0										2361	2377	-15G			10	420	1650	200	100
2377.0										2377	2456	ROT		70	19	600	3100	600	100
2406.0	7.01	180.39	2404.31	-32.79	-32.71	-3.32	0.87	0.82	2.53										100
2456.0										2456	2472	-20G			15	600	1650	200	100
2472.0										2472	2551	ROT		60	19	600	3100	600	100
2501.0	8.02	178.66	2498.50	-45.20	-45.13	-3.20	1.09	1.06	-1.82										100
2551.0										2551	2645	ROT		60	19	600	3100	600	100
2595.0	6.70	182.22	2591.72	-57.23	-57.16	-3.26	1.49	-1.40	3.79										100
2645.0										2645	2665	-20G			15	600	1650	200	100
2665.0										2665	2740	ROT		70	19	600	3100	600	100
2690.0	7.62	183.15	2685.98	-69.07	-68.99	-3.82	0.98	0.97	0.98										100
2740.0										2740	2835	ROT		70	19	600	3100	600	100
2785.0	6.09	179.82	2780.30	-80.40	-80.32	-4.15	1.66	-1.61	-3.51										100
2835.0										2835	2857	-25G			15	600	1650	200	100
2857.0										2857	2929	ROT		70	19	600	3100	600	100
2879.0	8.30	180.22	2873.55	-92.17	-92.09	-4.16	2.35	2.35	0.43										100

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)	RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment		
					N/S (ft)	E/W (ft)				From (ft)	To (ft)							Run		
2929.0										2929	3024	ROT		70	19	600	3100	600	100	
2974.0	7.97	175.21	2967.60	-105.57	-105.51	-3.64	0.82	-0.35	-5.27										100	
3024.0										3024	3119	ROT		70	19	600	3100	600	100	
3069.0	7.32	176.66	3061.75	-118.15	-118.12	-2.73	0.71	-0.68	1.53										100	
3119.0										3119	3213	ROT		70	19	600	3100	600	100	
3163.0	7.46	174.85	3154.97	-130.17	-130.17	-1.84	0.29	0.15	-1.93										100	
3213.0										3213	3308	ROT		70	19	600	3100	600	100	
3258.0	5.56	175.34	3249.35	-140.87	-140.90	-0.91	2.00	-2.00	0.52										100	
3308.0										3308	3330	15G			15	600	1650	200	100	
3330.0										3330	3403	ROT		70	19	600	3100	600	100	
3353.0	7.11	177.04	3343.77	-151.31	-151.36	-0.23	1.64	1.63	1.79										100	
3403.0										3403	3427	0G			15	600	1650	200	100	
3427.0										3427	3497	ROT		70	19	600	3100	600	100	
3447.0	6.12	172.05	3437.15	-162.05	-162.13	0.76	1.22	-1.05	-5.31										100	
3497.0										3497	3522	40G			15	600	1650	200	100	
3522.0										3522	3592	ROT		70	19	600	3100	600	100	
3542.0	5.94	192.63	3531.63	-171.87	-171.95	0.39	2.27	-0.19	21.66										100	
3592.0										3592	3618	-20G			15	600	1650	200	100	
3618.0										3618	3687	ROT		70	19	600	3100	600	100	
3637.0	7.59	191.06	3625.97	-182.88	-182.90	-1.89	1.75	1.74	-1.65										100	
3687.0										3687	3715	-20G			15	600	1650	200	100	
3715.0										3715	3781	ROT		70	19	600	3100	600	100	
3731.0	9.35	192.73	3718.94	-196.50	-196.44	-4.77	1.89	1.87	1.78										100	
3781.0										3781	3876	ROT		70	28	577	3650	475	100	
3826.0	7.76	200.30	3812.88	-210.15	-209.99	-8.69	2.05	-1.67	7.97										100	
3876.0										3876	3906	-45G			15	600	1650	200	100	
3906.0										3906	3971	ROT		70	28	577	3650	475	100	
3921.0	8.29	196.69	3906.95	-222.84	-222.56	-12.88	0.77	0.56	-3.80										100	
3971.0										3971	4004	-50G			15	600	1650	200	100	
4004.0										4004	4065	ROT		70	28	577	3650	475	100	
4015.0	10.81	187.23	3999.65	-238.16	-237.80	-15.94	3.15	2.68	-10.06										100	
4065.0										4065	4075	-90G			15	600	1650	200	100	

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)	RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment		
					N/S (ft)	E/W (ft)				From (ft)	To (ft)							Run		
4075.0										4075	4165	ROT		70	28	577	3650	400	100	
4110.0	11.27	179.47	4092.89	-256.30	-255.93	-16.98	1.64	0.48	-8.17										100	
4165.0										4165	4255	ROT		70	28	577	3650	400	100	
4205.0	9.20	176.71	4186.38	-273.14	-272.79	-16.45	2.24	-2.18	-2.91										100	
4255.0										4255	4728	ROT		70	25	595	3700	450	100	
4299.0	8.38	173.25	4279.27	-287.41	-287.10	-15.22	1.04	-0.87	-3.68										100	
4394.0	7.95	175.74	4373.31	-300.79	-300.52	-13.92	0.59	-0.45	2.62										100	
4489.0	7.29	172.28	4467.47	-313.28	-313.05	-12.62	0.85	-0.69	-3.64										100	
4585.0	7.21	171.21	4562.70	-325.21	-325.04	-10.88	0.16	-0.08	-1.11										100	
4678.0	7.09	172.06	4654.98	-336.61	-336.49	-9.19	0.17	-0.13	0.91										100	
4728.0										4728	4918	ROT		70	25	595	3700	450	100	
4773.0	6.62	169.37	4749.30	-347.75	-347.68	-7.37	0.60	-0.49	-2.83										100	
4867.0	5.66	168.38	4842.76	-357.56	-357.54	-5.44	1.03	-1.02	-1.05										100	
4918.0										4918	4940	30G			15	600	1650	200	100	
4940.0										4940	5107	ROT		70	25	595	3700	450	100	
4962.0	6.68	177.74	4937.21	-367.63	-367.65	-4.28	1.50	1.07	9.85										100	
5057.0	5.93	177.32	5031.64	-378.04	-378.08	-3.83	0.79	-0.79	-0.44										100	
5107.0										5107	5132	15G			11	571	3275	100	100	
5132.0										5132	5391	ROT		70	24	571	3650	350	100	
5151.0	7.83	183.64	5124.96	-389.28	-389.32	-4.01	2.17	2.02	6.72										100	
5246.0	6.99	183.25	5219.16	-401.52	-401.55	-4.75	0.89	-0.88	-0.41										100	
5341.0	5.54	183.59	5313.59	-411.89	-411.90	-5.37	1.53	-1.53	0.36										100	
5391.0										5391	5416	0G			11	571	3275	100	100	
5416.0										5416	5486	ROT		70	24	571	3650	350	100	
5436.0	7.06	179.86	5408.02	-422.30	-422.31	-5.64	1.66	1.60	-3.93										100	
5486.0										5486	5512	0G			15	571	3275	80	100	
5512.0										5512	5581	ROT		70	24	571	3650	300	100	
5531.0	7.33	171.43	5502.27	-434.10	-434.14	-4.72	1.15	0.28	-8.87										100	
5581.0										5581	5596	20G			15	571	3275	100	100	
5596.0										5596	5677	ROT		70	24	571	3650	300	100	
5626.0	7.75	174.54	5596.45	-446.43	-446.51	-3.21	0.62	0.44	3.27										100	
5677.0										5677	5771	ROT		70	24	571	3650	300	100	

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)	RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment		
					N/S (ft)	E/W (ft)				From (ft)	To (ft)							Run		
5721.0	5.74	170.29	5690.79	-457.44	-457.57	-1.80	2.18	-2.12	-4.47									100		
5771.0										5771	5791	30G			15	571	3275	80	100	
5791.0										5791	5867	ROT		70	24	571	3650	350	100	
5816.0	5.70	184.51	5785.32	-466.81	-466.96	-1.37	1.49	-0.04	14.97									100		
5867.0										5867	5882	20G			15	571	3275	80	100	
5882.0										5882	5962	ROT		70	24	571	3650	350	100	
5911.0	4.79	187.93	5879.92	-475.47	-475.59	-2.29	1.01	-0.96	0.00									100		
5962.0										5962	5969	0G			15	571	3275	80	100	
5969.0										5969	6056	ROT		70	24	571	3650	350	100	
6006.0	3.60	199.32	5974.67	-482.25	-482.33	-3.82	1.52	-1.25	0.00									100		
6056.0										6056	6151	ROT		75	24	571	3650	350	100	
6101.0	3.23	204.68	6069.50	-487.55	-487.58	-5.92	0.51	-0.39	0.00									100		
6151.0										6151	6161	25M			15	571	3275	80	100	
6161.0										6161	6246	ROT		75	20	571	3650	350	100	
6196.0	2.02	194.39	6164.40	-491.65	-491.63	-7.46	1.36	-1.27	0.00									100		
6246.0										6246	6256	15M			15	571	3275	80	100	
6256.0										6256	6341	ROT		75	20	571	3650	350	100	
6291.0	1.41	167.53	6259.35	-494.42	-494.40	-7.62	1.05	-0.64	0.00									100		
6323.0	1.71	168.15	6291.34	-495.26	-495.25	-7.44	0.94	0.94	0.00									100		
6341.0										6341	6436	360M			15	420	2200	50	100	
6386.0	1.58	142.01	6354.32	-496.85	-496.85	-6.71	1.20	-0.21	0.00									100		
6418.0	1.72	70.46	6386.31	-497.01	-497.04	-5.99	6.04	0.44	0.00									100		
6436.0										6436	6468	360M			15	420	2200	50	100	
6450.0	3.59	43.32	6418.27	-496.09	-496.15	-4.85	6.89	5.84	0.00									100		
6468.0										6468	6500	360M			15	420	2200	50	100	
6482.0	5.51	30.99	6450.17	-494.01	-494.10	-3.37	6.70	6.00	0.00									100		
6500.0										6500	6532	360M			15	420	2200	50	100	
6513.0	7.85	24.31	6480.96	-490.76	-490.90	-1.73	7.94	7.55	-21.55									100		
6532.0										6532	6563	-20G			15	420	2200	50	100	
6545.0	10.42	21.58	6512.55	-486.02	-486.22	0.23	8.14	8.03	-8.53									100		
6563.0										6563	6595	-10G			15	500	2200	50	100	
6577.0	13.04	20.27	6543.88	-479.88	-480.14	2.55	8.23	8.19	-4.09									100		

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)		RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment	
					N/S (ft)	E/W (ft)				From (ft)	To (ft)								Run	
6595.0										6595	6627	-10G			15	500	2200	50	100	
6608.0	15.75	19.52	6573.90	-472.56	-472.89	5.17	8.76	8.74	-2.42										100	
6627.0										6627	6690	-10G			16	500	3300	130	100	
6640.0	18.39	18.69	6604.49	-463.60	-464.01	8.24	8.28	8.25	-2.59										100	
6672.0	21.19	17.11	6634.60	-453.20	-453.70	11.56	8.91	8.75	-4.94										100	

WARRANTY

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WELL INFORMATION

BHA Report

IADC Rig BHA#
Run# 0200

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

Date In : 10/14/2012 **MD In (ft)** : 6690 **TVD In (ft)** : 6651 **Date Out** : 10/15/2012 **MD Out (ft)** : 7230 **TVD Out (ft)** : 6947

BIT DATA

Bit Number	: 2	Nozzles	: 5x15
Bit Size (in)	: 8.750	TFA (in2)	: 0.8690
Manufacturer	: Baker / Hughes Christensen	Dull Grade In	: NEW
Model	: DP505F	Dull Grade Out	: 1-1-WT-A-X-X-NO-TD
Serial Number	: 7141468		

MOTOR DATA

Motor Number	:	Bend (deg)	: 2.60
OD (in)	: 6.750	Nozzles (32nd)	: 0.0
Manufacturer	: Sperry Drilling	Avg Diff Press	: 200.00
Model	: SperryDrill	Cumul Cir Hrs	: 14.51
Serial Number	: 675-980		

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbpf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	PDC	7141468	6.000	1.750	8.750	52.19	P 4-1/2" REG	0.88	
2	6 3/4" SperryDrill Lobe 6/7 - 5.0 stg	675-980	6.750	4.498		87.63	B 4-1/2" IF	26.78	
3	6 3/4" Flex Collar	11801345	6.820	2.875		102.37	B 4-1/2" IF	30.93	
4	6 3/4" Hang-off Sub	11341349	6.890	2.850		105.32	B 4-1/2" IF	6.03	
5	6 3/4" Pony Collar	10956241	6.810	2.875		102.01	B 4-1/2" IF	19.53	
6	6 3/4" Flex Collar	11964456	6.860	2.875		103.84	B 4-1/2" IF	31.08	
7	6 3/4" X-Over Sub	11522012	6.820	2.938		101.40	B 4-1/2" IF	2.83	
8	21 Jts 4.5" DP		4.500	3.826		19.09		664.88	
9	X-Over Sub		6.500	2.500		96.36		4.00	
10	45 Jts 4" HWDP		4.000	2.563		29.70		1384.98	
Total:								2171.92	

PERFORMANCE Section A

Parameter	Min	Max	Avg	Activity	Hours	BHA Weight (klb)	
WOB (klb) :	20	20	20	Drilling :	10.57	in Air (Total) :	11.70
RPM (rpm) :	5	5	5	Reaming :	0.00	in Mud (Total) :	N/A
Flow (gpm) :	480	480	480	Circ-Other :	3.94	in Air (Bel Jars) :	N/A
SPP (psig) :	3250	3250	3250	Total :	14.51	in Mud (Bel Jars) :	N/A

BHA WEIGHT CALCULATION MESSAGE

Jar not found. Could not calculate weight below jars. Mud Weight not valid could not calculate BHA weight in mud.

PERFORMANCE Section B

	In	Out	Distance (ft)	ROP (fph)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	23.18	85.37	Oriented : 507	51	n/a	n/a	12.29
Azimuth (deg)	16.48	359.87	Rotating : 33	53	0.00	0.00	0.00
*Values are interpolated/extrapolated			Total : 540	51	11.52	-3.08	11.71

SURVEY STATIONS

	Depth (ft)	Inclination (deg)	Azimuth (deg)
Start	6703.00	24.61	16.09
Final	7180.00	81.87	359.88

COMMENTS

Probe to Bit = 50.00'
 Bit to Gamma = 53.15'
 Rev per gal = 0.29
 Flow Range = 300-600 gal
 Bit to Bend = 5.80'
 Float OD = 3.5"
 RFO = 95.22 deg

OBJECTIVES

Get 0.12 deg/ft outputs and TD curve

RESULTS

TD'd curve satisfactorily.

RECOMMENDATIONS

OTHER

BHA Schematic

Anadarko Petroleum Corp.

Cook 36N-3HZ

IADC Rig BHA # :

Run # : 200

Drillstring : Drillstring

COMPONENT DATA

OD (in)	Length (ft)	Description
6.000	0.88	PDC (Gauge: 8.750 in)
6.750	26.78	6 3/4" SperryDrill Lobe 6/7 - 5.0 stg
6.820	30.93	6 3/4" Flex Collar
6.890	6.03	6 3/4" Hang-off Sub
6.810	19.53	6 3/4" Pony Collar
6.860	31.08	6 3/4" Flex Collar
6.820	2.83	6 3/4" X-Over Sub
4.500	664.88	21 Jts 4.5" DP
6.500	4.00	X-Over Sub
4.000	1384.98	45 Jts 4" HWDP

*Pos: Measured as distance from bottom of the component.

6 3/4" X-Over Sub



6 3/4" Flex Collar

6 3/4" Pony Collar

6 3/4" Hang-off Sub

6 3/4" Flex Collar

6 3/4" SperryDrill Lobe
6/7 - 5.0 stg

PDC



WELL INFORMATION

Motor Performance Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

SUMMARY

BHA Number : **Depth In/Out (ft)** : 6690.00 / 7230.00
Run Number : 0200 **Date In/Out** : 10/14/2012 / 10/15/2012
Bit Number : 2 **Hole Size (in)** : 8.750

MOTOR CONFIGURATION

	DFB (ft)	Component	Yes/No	Type	Value
Upper Stab		1 Sleeve Stab	No		
Lower Stab	6.68	2 Bent Housing	Yes	Adjustable	2.60° bend
		3 Bent Housing Pad	No		
Motor Top		4 2nd Bent Housing	No		
Stab Top		5 Sleeve Stab	No		
2nd Bend	27.66	6 Motor Top	Yes		
Pad		7 Lower String Stab	No		
Bend (Housing)		8 Upper String Stab	No		
Sleeve Tool					

MOTOR PARAMETERS

Serial Number : 675-980 **Lobe Config** : 6:7
Motor Run # : **Stat Elastomer** : Nitrile
OD (in) : 6.750 **ID (in)** : 4.498 **Short Brg Pack** : Yes
Flex Collar Used : No **Arr** **Ret**
Rotor Nozzle (32nd) : 0.000 **Pick Up Sub** : Yes No
Bit Box Protr : Yes No

MOTOR RUN DATA

Directional Driller(s) : Jesse Kysar, Jordan Timbs

Application Details : Medium Radius

Max Dogleg While Rotating (°/100') : **RPM** : **Motor Stalled** : No
Max Dogleg Overpulled In (°/100') : **Force (klb)** : **Float Valve** : Yes
Max Dogleg Pushed Through (°/100') : **Force (klb)** : **DP Filter** : Yes

Inc Start/End	(deg)	:	23.175 / 85.37	Interval Oriented / Rot.	(ft)	:	507.00 / 33.00
Hole Azimuth Start / End	(deg)	:	16.483 / 359.874	Directional Perf Ori / Rot	('°/100')	:	12.29 / 0.00
Jarring Occurred		:				:	

HOURS

Existing Hrs	:	0.00	Circ Hrs	:	3.94	Total Hrs This Run	:	14.51
Drilling Hrs	:	10.57	Reaming Hrs	:	0.00	New Cumulative Hrs	:	14.51

DRILLING DATA

	Diff Press (psig)	RPM	Rotn Torque (ft-lb)	Drag Up/Down (klb)	WOB (klb)	ROP Oriented (fph)	ROP Rotated (fph)
Avg	200.00	5	1000.00	160.00 / 112.00	20.00	51	53
Max	200.00	5	1000.00	160.00 / 112.00	20.00	65	65

PRE-RUN TESTS

Motor Tested Pre-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No			
Bearing Leakage Observed	:	No			

POST-RUN TESTS

Motor Tested Post-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No	Fluid Flushed	:	No
Bearing Leakage Observed	:	No	Fluid Used	:	
DriveShaft Rotated to Drain Mud	:	No			

MUD DATA

Type	:		Mud Wt (ppg)	:	
Name	:		pH	:	
% Oil / Water	:	/	% Solid	:	
DH Temp Avg / Max (degF)	:	/	% Sand	:	
SPP Start / End (gpm)	:	3250.00 / 3250.00	PV (cP)	:	
Flow Rate Avg / Max (gpm)	:	480.00 / 480.00	YP (lbf/ft²)	:	
Chloride Content (ppm)	:				

BIT DATA

Bit Number	: 2	Nozzles	: 5x15
Bit Size (in)	: 8.750	TFA (in2)	: 0.8690
Manufacturer	: Baker / Hughes Christensen	Gauge Length (in)	: 0.200
Model	: DP505F	Dull Grade In	: NEW
Serial Number	: 7141468	Dull Grade Out	: 1-1-WT-A-X-X-NO-TD
Existing Bit Hrs	: 0.00	Existing Ream Hrs	: 0.00
Cum Drilling Hrs	: 10.57	Cum Ream Hrs	: 0.00

PERFORMANCE

Service Interrupt	: No	Trip For Failure	: No
LIH	: No	Service Interrupt Hrs	:
Problem Date	: 10/15/2012		

COMMENTS

TD curve with motor; performed satisfactorily.

WELL INFORMATION

Drilling Activity

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

North Ref : True
Declination (deg) : 8.65
Vert Sec Dir (deg) : 1.60

SURVEY										STEERING					DRILLING PARAMETERS					
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)		RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment	
					N/S (ft)	E/W (ft)				From (ft)	To (ft)								Run	
915.0	0.27	57.24	914.99	0.00	3.64	-0.72	0.00	0.00	0.00										200	
6690.0										6690	6722	-20G			20	480	3250	50	200	
6703.0	24.61	16.09	6663.15	-441.55	-442.14	15.00	11.11	11.03	-3.29										200	
6722.0										6722	6754	-20G			20	480	3250	50	200	
6735.0	28.43	14.40	6691.78	-427.67	-428.36	18.74	12.17	11.94	-5.28										200	
6754.0										6754	6785	-30G			20	480	3250	65	200	
6767.0	31.63	12.45	6719.48	-411.99	-412.78	22.44	10.45	10.00	-6.09										200	
6785.0										6785	6817	-30G			20	480	3250	65	200	
6799.0	35.80	10.22	6746.09	-394.49	-395.37	25.91	13.59	13.03	-6.97										200	
6817.0										6817	6848	-30G			20	480	3250	65	200	
6830.0	39.67	9.27	6770.61	-375.71	-376.67	29.12	12.62	12.48	-3.06										200	
6848.0										6848	6880	-30G			20	480	3250	65	200	
6862.0	42.95	7.12	6794.64	-354.73	-355.77	32.11	11.17	10.25	-6.72										200	
6880.0										6880	6912	-30G			20	480	3250	65	200	
6894.0	46.90	5.61	6817.29	-332.22	-333.31	34.61	12.78	12.34	-4.72										200	
6912.0										6912	6944	-30G			20	480	3250	65	200	
6925.0	51.00	4.58	6837.65	-308.89	-310.03	36.68	13.46	13.23	-3.32										200	
6944.0										6944	6947	ROT		5	20	480	3250	65	200	
6947.0										6947	6975	-30G			20	480	3250	65	200	
6957.0	54.27	4.22	6857.07	-283.49	-284.68	38.63	10.26	10.22	-1.13										200	
6975.0										6975	7004	-30G			20	480	3250	65	200	

SURVEY										STEERING				DRILLING PARAMETERS					
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)	RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment	
					N/S (ft)	E/W (ft)				From (ft)	To (ft)							Run	
6989.0	58.21	2.66	6874.85	-256.90	-258.13	40.22	12.96	12.31	-4.87									200	
7004.0										7004	7007	ROT		5	20	480	3250	65	200
7007.0										7007	7036	-30G			20	480	3250	65	200
7021.0	61.58	1.47	6890.90	-229.23	-230.47	41.21	11.01	10.53	-3.72									200	
7036.0										7036	7039	ROT		5	20	480	3250	65	200
7039.0										7039	7068	0G			20	480	3250	65	200
7053.0	65.35	1.50	6905.19	-200.60	-201.85	41.95	11.78	11.78	0.09									200	
7068.0										7068	7071	ROT		5	20	480	3250	65	200
7071.0										7071	7103	0G			20	480	3250	65	200
7084.0	69.42	2.36	6917.11	-171.99	-173.26	42.92	13.38	13.13	2.77									200	
7103.0										7103	7132	-20G			20	480	3250	65	200
7116.0	73.53	0.84	6927.27	-141.66	-142.94	43.76	13.61	12.84	-4.75									200	
7132.0										7132	7134	ROT		5	20	480	3250	65	200
7134.0										7134	7137	ROT		5	20	480	3250	65	200
7137.0										7137	7163	-20G			20	480	3250	65	200
7148.0	77.48	0.15	6935.28	-110.69	-111.96	44.02	12.52	12.34	-2.16									200	
7163.0										7163	7166	ROT		5	20	480	3250	65	200
7166.0										7166	7193	-10G			20	480	3250	65	200
7180.0	81.87	359.88	6941.01	-79.23	-80.49	44.03	13.74	13.72	-0.84									200	
7193.0										7193	7198	ROT		5	20	480	3250	65	200
7198.0										7198	7222	0G			20	480	3250	65	200
7222.0										7222	7230	ROT		5	20	480	3250	65	200

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WELL INFORMATION

BHA Report

IADC Rig BHA#
Run# 0300

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

Date In : 10/16/2012 **MD In (ft)** : 7230 **TVD In (ft)** : 6947 **Date Out** : 10/17/2012 **MD Out (ft)** : 8881 **TVD Out (ft)** : 6960

BIT DATA

Bit Number	: 4	Nozzles	: 5x14
Bit Size (in)	: 6.125	TFA (in2)	: 0.7517
Manufacturer	: Baker / Hughes Christensen	Dull Grade In	: NEW
Model	: DP405	Dull Grade Out	: 0-0-NO-A-X-I-PN-DTF
Serial Number	: 7032490		

MOTOR DATA

Motor Number	: 2	Bend (deg)	: 1.50
OD (in)	: 5.000	Nozzles (32nd)	: 0.0
Manufacturer	: Sperry Drilling	Avg Diff Press	: 511.46
Model	: GeoForce	Cumul Cir Hrs	: 22.71
Serial Number	: 500-312		

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbpf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	PDC	7032490	4.750	1.500	6.125	54.37	P 3-1/2" REG	0.89	
2	5" GeoForce Lobe 4/5 - 5.4 stg	500-312	5.000	3.120		52.94	B 3-1/2" IF	26.28	
3	Integral Blade	DR-9229	4.800	2.250	5.875	48.12	B 3-1/2" IF	5.03	28.78
4	Pin-Pin XOver	11623488	4.770	2.250		47.35	P 3-1/2" IF	1.20	
5	HOC	11750422	4.850	2.250		49.41	B 3-1/2" IF	31.63	
6	Integral Blade	DR-9729	4.810	2.250	5.875	48.38	B 3-1/2" IF	4.84	66.55
7	NMDC	11623336	4.670	2.250		44.82	B 3-1/2" IF	30.60	
8	X-Over Sub	11555873	4.670	2.500		41.65	B 3-1/2" IF	3.43	
9	57 Jts. 4" DP		4.000	3.240		18.03		1804.21	
10	Agitator	970454-5-13	5.010	2.000		56.48	B 4" XT39	10.77	
11	Shock Sub	1051781-9	5.020	2.000		56.48	B 4" XT39	11.14	
12	114 Jts. 4" DP		4.000	3.240		18.03		3612.78	
13	45 Jts. 4" HWDP		4.000	2.563		29.70		1384.98	
Total:								6927.78	

PERFORMANCE Section A

Parameter	Min	Max	Avg	Activity	Hours	BHA Weight (klb)	
WOB (klb) :	6	13	10	Drilling :	17.67	in Air (Total) :	5.05
RPM (rpm) :	45	70	65	Reaming :	2.12	in Mud (Total) :	N/A
Flow (gpm) :	250	300	296	Circ-Other :	2.92	in Air (Bel Jars) :	N/A
SPP (psig) :	2350	3525	3347	Total :	22.71	in Mud (Bel Jars) :	N/A

BHA WEIGHT CALCULATION MESSAGE

Jar not found. Could not calculate weight below jars. Mud Weight not valid could not calculate BHA weight in mud.

PERFORMANCE Section B

	In	Out	Distance (ft)	ROP (fph)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	85.37	88.45	Oriented : 86	67	n/a	n/a	1.78
Azimuth (deg)	359.87	0.53	Rotating : 1565	96	0.16	-0.05	0.16
*Values are interpolated/extrapolated			Total : 1651	93	0.19	0.04	0.19

SURVEY STATIONS

	Depth (ft)	Inclination (deg)	Azimuth (deg)
Start	7257.00	87.26	359.87
Final	8772.00	88.55	0.40

COMMENTS

Probe to Bit = 49.00'
 Bit to Gamma = 52.35'
 Rev per gal = 1.06
 Float OD = 3.5"
 Flow Range = 150-300 gal
 Bit to Bend = 5.20'
 RFO= 131.49 deg

OBJECTIVES

Drill lateral as per plan and geology.

RESULTS

TOOH for motor and bit.

RECOMMENDATIONS

OTHER

BHA Schematic

Anadarko Petroleum Corp.

Cook 36N-3HZ

IADC Rig BHA # :

Run # : 300

Drillstring : Drillstring

COMPONENT DATA

OD (in)	Length (ft)	Description
4.750	0.89	PDC (Gauge: 6.125 in)
5.000	26.28	5" GeoForce Lobe 4/5 - 5.4 stg
4.800	5.03	Integral Blade (Gauge: 5.875 in, Pos*: 1.61 ft)
4.770	1.20	Pin-Pin XOver
4.850	31.63	HOC
4.810	4.84	Integral Blade (Gauge: 5.875 in, Pos*: 1.52 ft)
4.670	30.60	NMDC
4.670	3.43	X-Over Sub
4.000	1804.21	57 Jts. 4" DP
5.010	10.77	Agitator
5.020	11.14	Shock Sub
4.000	3612.78	114 Jts. 4" DP
4.000	1384.98	45 Jts. 4" HWDP

*Pos: Measured as distance from bottom of the component.

X-Over Sub

NMDC

Integral Blade

HOC

Pin-Pin XOver

Integral Blade

5" GeoForce Lobe 4/5 - 5.4 stg

PDC



WELL INFORMATION

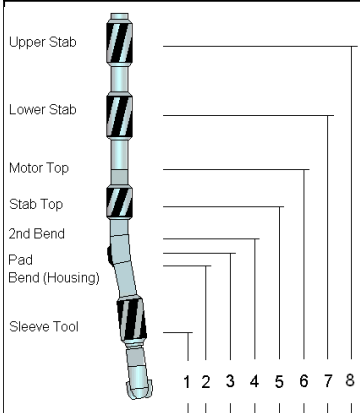
Motor Performance
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

SUMMARY

BHA Number : **Depth In/Out (ft)** : 7230.00 / 8881.00
Run Number : 0300 **Date In/Out** : 10/16/2012 / 10/17/2012
Bit Number : 4 **Hole Size (in)** : 6.125

MOTOR CONFIGURATION



	DFB (ft)	Component	Yes/No	Type	Value
1		Sleeve Stab	No		
2	6.09	Bent Housing	Yes	Fixed	1.50° bend
3		Bent Housing Pad	No		
4		2nd Bent Housing	No		
5		Sleeve Stab	No		
6	27.17	Motor Top	Yes		
7	28.78	Lower String Stab	Yes	Int	Gauge = 5.875 in
8	66.55	Upper String Stab	Yes	Int	Gauge = 5.875 in

MOTOR PARAMETERS

Serial Number : 500-312 **Lobe Config** : 4:5
Motor Run # : 2 **Stat Elastomer** : Nitrile
OD (in) : 5.000 **ID (in)** : 3.120 **Short Brg Pack** : Yes
Flex Collar Used : Yes **Arr** **Ret**
Rotor Nozzle (32nd) : 0.000 **Pick Up Sub** : Yes No
Bit Box Protr : Yes No

MOTOR RUN DATA

Directional Driller(s) : Jesse Kysar, Jordan Timbs

Application Details : Horizontal

Max Dogleg While Rotating (°/100') : **RPM** : **Motor Stalled** : No
Max Dogleg Overpulled In (°/100') : **Force (klb)** : **Float Valve** : Yes
Max Dogleg Pushed Through (°/100') : **Force (klb)** : **DP Filter** : Yes

Inc Start/End	(deg)	:	85.37 / 88.447	Interval Oriented / Rot.	(ft)	:	86.00 / 1565.00
Hole Azimuth Start / End	(deg)	:	359.874 / 0.526	Directional Perf Ori / Rot	('°/100')	:	1.78 / 0.16
Jarring Occurred		:				:	

HOURS

Existing Hrs	:	0.00	Circ Hrs	:	2.92	Total Hrs This Run	:	22.71
Drilling Hrs	:	17.67	Reaming Hrs	:	2.12	New Cumulative Hrs	:	22.71

DRILLING DATA

	Diff Press (psig)	RPM	Rotn Torque (ft-lb)	Drag Up/Down (klb)	WOB (klb)	ROP Oriented (fph)	ROP Rotated (fph)
Avg	511.46	65	6000.00	167.50 / 109.75	9.83	67	96
Max	550.00	70	8000.00	170.00 / 115.00	13.00	90	185

PRE-RUN TESTS

Motor Tested Pre-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No			
Bearing Leakage Observed	:	No			

POST-RUN TESTS

Motor Tested Post-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No	Fluid Flushed	:	No
Bearing Leakage Observed	:	No	Fluid Used	:	
DriveShaft Rotated to Drain Mud	:	No			

MUD DATA

Type	:		Mud Wt (ppg)	:	
Name	:		pH	:	
% Oil / Water	:	/	% Solid	:	
DH Temp Avg / Max (degF)	:	187.25 / 201.00	% Sand	:	
SPP Start / End (gpm)	:	2350.00 / 3525.00	PV (cP)	:	
Flow Rate Avg / Max (gpm)	:	295.50 / 300.00	YP (lbf/2)	:	
Chloride Content (ppm)	:				

BIT DATA

Bit Number	: 4	Nozzles	: 5x14
Bit Size (in)	: 6.125	TFA (in2)	: 0.7517
Manufacturer	: Baker / Hughes Christensen	Gauge Length (in)	: 0.270
Model	: DP405	Dull Grade In	: NEW
Serial Number	: 7032490	Dull Grade Out	: 0-0-NO-A-X-I-PN-DTF
Existing Bit Hrs	: 0.00	Existing Ream Hrs	: 0.00
Cum Drilling Hrs	: 17.67	Cum Ream Hrs	: 2.12

PERFORMANCE

Service Interrupt	: No	Trip For Failure	: No
LIH	: No	Service Interrupt Hrs	:
Problem Date	: 10/17/2012		

COMMENTS

We started the lateral off with low ROP (100 ft/hr) (usually drill out with a ROP of 200+) and erratic pressure. We thought it to be a mud problem and fixed the mud and pressure smoothed out a little, increasing ROP to 150 to 170 ft/hr. Drilled with 650 to 700 Differential, a diff we normally run, the motor never did stall, it would have sharp diff spikes to 700+ and drill off very fast. We think this is due to the variations in pressure. At 23:00 ROP started falling off back to 100 ROP. At 05:00 ROP fell to 70 ft/hr, then below 50 ft/hr by 07:00. This would indicate a bit issue to me, due to the steady fall of ROP. Then we started seeing stator rubber coming over the shakers. I think this failure is due to the harsh pressure fluctuation and not being able to control them.

WELL INFORMATION

Drilling Activity

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

North Ref : True
Declination (deg) : 8.65
Vert Sec Dir (deg) : 1.60

SURVEY										STEERING				DRILLING PARAMETERS					
Measured Depth	Incl Angle	Azi Dir	Vertical Depth	Vertical Section	Coordinates		DLS	Build Rate	Turn Rate	Slide/Rotate		Tool Face		RPM	WOB	Flow Rate	Stand Pipe	ROP	Comment
(ft)	(deg)	(deg)	(ft)	(ft)	N/S (ft)	E/W (ft)	(°/100')	(°/100')	(°/100')	From (ft)	To (ft)	(deg)			(klb)	(gpm)	(psig)	(fph)	Run
915.0	0.27	57.24	914.99	0.00	3.64	-0.72	0.00	0.00	0.00										300
7230.0										7230	7306	ROT		45	8	250	2350	120	300
7257.0	87.26	359.87	6948.30	-2.64	-3.86	43.86	7.00	7.00	-0.01										300
7306.0										7306	7321	25G			12	300	3175	80	300
7321.0										7321	7401	ROT		65	8	300	3475	100	300
7352.0	88.77	1.10	6951.60	92.28	91.07	44.67	2.05	1.59	1.29										300
7401.0										7401	7495	ROT		65	8	300	3475	100	300
7447.0	89.45	1.29	6953.07	187.27	186.04	46.65	0.74	0.72	0.20										300
7495.0										7495	7590	ROT		65	8	300	3475	100	300
7541.0	89.91	1.53	6953.60	281.27	280.01	48.96	0.55	0.49	0.26										300
7590.0										7590	7685	ROT		65	8	300	3475	110	300
7636.0	90.59	1.80	6953.18	376.27	374.97	51.72	0.77	0.72	0.28										300
7685.0										7685	7708	ROT		65	8	300	3475	140	300
7708.0										7708	7723	-150G			12	300	3175	90	300
7723.0										7723	7780	ROT		65	8	300	3475	140	300
7731.0	90.09	1.57	6952.62	471.26	469.93	54.52	0.58	-0.53	-0.24										300
7780.0										7780	7874	ROT		65	8	300	3475	140	300
7825.0	90.52	2.14	6952.12	565.26	563.87	57.56	0.76	0.46	0.61										300
7874.0										7874	7892	-140G			12	300	3000	60	300
7892.0										7892	7969	ROT		65	9	298	3475	185	300
7920.0	90.12	1.05	6951.59	660.26	658.83	60.20	1.22	-0.42	-1.15										300

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)		RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment	
					N/S (ft)	E/W (ft)				From (ft)	To (ft)								Run	
7969.0										7969	7989	-135G			12	300	3000	60	300	
7989.0										7989	8064	ROT		65	9	298	3475	185	300	
8015.0	88.98	359.95	6952.33	755.23	753.82	61.03	1.67	-1.20	-1.16										300	
8064.0										8064	8158	ROT		65	13	294	3450	140	300	
8109.0	89.63	0.04	6953.47	849.19	847.82	61.02	0.70	0.69	0.10										300	
8158.0										8158	8253	ROT		65	13	294	3450	140	300	
8204.0	89.26	0.19	6954.39	944.15	942.81	61.21	0.42	-0.39	0.16										300	
8253.0										8253	8348	ROT		65	13	294	3450	140	300	
8299.0	89.78	0.79	6955.19	1039.13	1037.80	62.03	0.84	0.55	0.63										300	
8348.0										8348	8442	ROT		65	13	294	3450	140	300	
8393.0	90.06	0.90	6955.32	1133.12	1131.79	63.41	0.32	0.30	0.12										300	
8442.0										8442	8537	ROT		65	10	295	3500	115	300	
8488.0	90.37	1.13	6954.96	1228.12	1226.78	65.10	0.41	0.33	0.24										300	
8537.0										8537	8632	ROT		65	10	295	3500	105	300	
8583.0	90.40	1.38	6954.33	1323.11	1321.75	67.18	0.27	0.03	0.26										300	
8632.0										8632	8650	-160G			12	295	3000	60	300	
8650.0										8650	8726	ROT		70	10	295	3500	105	300	
8677.0	88.64	0.29	6955.11	1417.10	1415.74	68.55	2.20	-1.87	-1.16										300	
8726.0										8726	8821	ROT		70	6	295	3525	50	300	
8772.0	88.55	0.40	6957.44	1512.05	1510.71	69.12	0.15	-0.09	0.12										300	
8821.0										8821	8881	ROT		70	6	295	3525	20	300	

WARRANTY

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WELL INFORMATION

BHA Report

IADC Rig BHA#
Run# 0400

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

Date In : 10/17/2012 **MD In (ft)** : 8881 **TVD In (ft)** : 6960 **Date Out** : 10/19/2012 **MD Out (ft)** : 12034 **TVD Out (ft)** : 6973

BIT DATA

Bit Number	: 4	Nozzles	: 5x15
Bit Size (in)	: 6.125	TFA (in2)	: 0.8629
Manufacturer	: HDBS	Dull Grade In	: NEW
Model	: FXD54	Dull Grade Out	: 1-1-WT-A-X-X-X-TD
Serial Number	: 11864686		

MOTOR DATA

Motor Number	:	Bend (deg)	: 1.50
OD (in)	: 5.000	Nozzles (32nd)	: 0.0
Manufacturer	: Sperry Drilling	Avg Diff Press	: 600.56
Model	: GeoForce	Cumul Cir Hrs	: 29.93
Serial Number	: 500-315		

COMPONENT DATA

Item #	Description	Serial Number	OD (in)	ID (in)	Gauge (in)	Weight (lbpf)	Top Connection	Length (ft)	Bit - Center Blade (ft)
1	PDC	11864686	4.480	1.500	6.125	54.37	P 3-1/2" REG	0.74	
2	5" GeoForce Lobe 4/5 - 5.4 stg	500-315	5.000	3.120		52.94	B 3-1/2" IF	26.28	
3	Integral Blade	DR-9229	4.800	2.250	5.875	48.12	B 3-1/2" IF	5.03	28.63
4	Pin-Pin XOver	11623488	4.770	2.250		47.35	P 3-1/2" IF	1.20	
5	HOC	11750422	4.850	2.250		49.41	B 3-1/2" IF	31.63	
6	Integral Blade	DR-9729	4.810	2.250	5.875	48.38	B 3-1/2" IF	4.84	66.40
7	NMDC	11623336	4.670	2.250		44.82	B 3-1/2" IF	30.60	
8	X-Over Sub	11555873	4.670	2.500		41.65	B 3-1/2" IF	3.43	
9	57 Jts. 4" DP		4.000	3.240		18.03		1804.21	
10	Agitator	970454-5-13	5.010	2.000		56.48	B 4" XT39	10.77	
11	Shock Sub	1051781-9	5.020	2.000		56.48	B 4" XT39	11.14	
12	114 Jts. 4" DP		4.000	3.240		18.03		3612.78	
13	45 Jts. 4" HWDP		4.000	2.563		29.70		1384.98	
Total:								6927.63	

PERFORMANCE Section A

Parameter	Min	Max	Avg	Activity	Hours	BHA Weight (klb)	
WOB (klb) :	8	21	12	Drilling :	21.66	in Air (Total) :	5.04
RPM (rpm) :	55	75	69	Reaming :	0.00	in Mud (Total) :	N/A
Flow (gpm) :	299	300	300	Circ-Other :	8.27	in Air (Bel Jars) :	N/A
SPP (psig) :	3250	3750	3654	Total :	29.93	in Mud (Bel Jars) :	N/A

BHA WEIGHT CALCULATION MESSAGE

Jar not found. Could not calculate weight below jars. Mud Weight not valid could not calculate BHA weight in mud.

PERFORMANCE Section B

	In	Out	Distance (ft)	ROP (fph)	Build (°/100')	Turn (°/100')	DLS (°/100')
Inclination (deg)	88.54	90.49	Oriented : 154	69	n/a	n/a	1.21
Azimuth (deg)	0.46	0.17	Rotating : 2999	154	0.43	-0.08	0.43
*Values are interpolated/extrapolated			Total : 3153	146	0.06	-0.01	0.06

SURVEY STATIONS

	Depth (ft)	Inclination (deg)	Azimuth (deg)
Start	8961.00	88.12	0.87
Final	12034.00	90.49	0.17

COMMENTS

Probe to Bit = 49.00'
 Bit to Gamma = 52.2'
 Rev per gal = 1.06
 Float OD = 3.5"
 Flow Range = 150-300 gal
 Bit to Bend = 5.14'
 RFO= 316.0 deg

OBJECTIVES

TD lateral while maintaining doglegs under 0.03 deg/ft.

RESULTS

Drilled well for the remainder of the lateral.

RECOMMENDATIONS

HDBS FXD54 is superior to any other 6-1/8" bit run on this rig.

OTHER

BHA Schematic

Anadarko Petroleum Corp.

Cook 36N-3HZ

IADC Rig BHA # :

Run # : 400

Drillstring : Drillstring

COMPONENT DATA

OD (in)	Length (ft)	Description
4.480	0.74	PDC (Gauge: 6.125 in)
5.000	26.28	5" GeoForce Lobe 4/5 - 5.4 stg
4.800	5.03	Integral Blade (Gauge: 5.875 in, Pos*: 1.61 ft)
4.770	1.20	Pin-Pin XOver
4.850	31.63	HOC
4.810	4.84	Integral Blade (Gauge: 5.875 in, Pos*: 1.52 ft)
4.670	30.60	NMDC
4.670	3.43	X-Over Sub
4.000	1804.21	57 Jts. 4" DP
5.010	10.77	Agitator
5.020	11.14	Shock Sub
4.000	3612.78	114 Jts. 4" DP
4.000	1384.98	45 Jts. 4" HWDP

*Pos: Measured as distance from bottom of the component.

X-Over Sub

NMDC

Integral Blade

HOC

Pin-Pin XOver

Integral Blade

5" GeoForce Lobe 4/5 - 5.4 stg

PDC



WELL INFORMATION

Motor Performance
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

SUMMARY

BHA Number : **Depth In/Out (ft)** : 8881.00 / 12034.00
Run Number : 0400 **Date In/Out** : 10/17/2012 / 10/19/2012
Bit Number : 4 **Hole Size (in)** : 6.125

MOTOR CONFIGURATION

	DFB (ft)	Component	Yes/No	Type	Value
Upper Stab		1 Sleeve Stab	No		
Lower Stab	5.88	2 Bent Housing	Yes	Fixed	1.50° bend
		3 Bent Housing Pad	No		
Motor Top		4 2nd Bent Housing	No		
Stab Top		5 Sleeve Stab	No		
2nd Bend	27.02	6 Motor Top	Yes		
Pad	28.63	7 Lower String Stab	Yes	Int	Gauge = 5.875 in
Bend (Housing)	66.40	8 Upper String Stab	Yes	Int	Gauge = 5.875 in
Sleeve Tool					

MOTOR PARAMETERS

Serial Number : 500-315 **Lobe Config** : 4:5
Motor Run # : **Stat Elastomer** : Nitrile
OD (in) : 5.000 **ID (in)** : 3.120 **Short Brg Pack** : Yes
Flex Collar Used : Yes **Arr** **Ret**
Rotor Nozzle (32nd) : 0.000 **Pick Up Sub** : Yes No
Bit Box Protr : Yes No

MOTOR RUN DATA

Directional Driller(s) : Jesse Kysar, Jordan Timbs, Herschell Gaddy

Application Details : Horizontal

Max Dogleg While Rotating (°/100') : 1.10 **RPM** : 65.00 **Motor Stalled** : No
Max Dogleg Overpulled In (°/100') : **Force (klb)** : **Float Valve** : Yes
Max Dogleg Pushed Through (°/100') : **Force (klb)** : **DP Filter** : Yes

Inc Start/End	(deg)	:	88.539 / 90.49	Interval Oriented / Rot.	(ft)	:	154.00 / 2999.00
Hole Azimuth Start / End	(deg)	:	0.46 / 0.17	Directional Perf Ori / Rot	('°/100')	:	1.21 / 0.43
Jarring Occurred		:				:	

HOURS

Existing Hrs	:	0.00	Circ Hrs	:	8.27	Total Hrs This Run	:	29.93
Drilling Hrs	:	21.66	Reaming Hrs	:	0.00	New Cumulative Hrs	:	29.93

DRILLING DATA

	Diff Press (psig)	RPM	Rotn Torque (ft-lb)	Drag Up/Down (klb)	WOB (klb)	ROP Oriented (fph)	ROP Rotated (fph)
Avg	600.56	69	7928.89	205.29 / 99.76	12.31	69	154
Max	625.00	75	10000.00	212.00 / 105.00	21.00	115	265

PRE-RUN TESTS

Motor Tested Pre-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No			
Bearing Leakage Observed	:	No			

POST-RUN TESTS

Motor Tested Post-Run	:	No	with Bit/MWD	:	No / No
Dump Sub Operating	:	No	Brg Play	:	
Flow 1 (gpm)	:		Pressure 1 (psig)	:	
Flow 2 (gpm)	:		Pressure 2 (psig)	:	
Driveshaft Rotation Observed	:	No	Fluid Flushed	:	No
Bearing Leakage Observed	:	No	Fluid Used	:	
DriveShaft Rotated to Drain Mud	:	No			

MUD DATA

Type	:		Mud Wt (ppg)	:	
Name	:		pH	:	
% Oil / Water	:	/	% Solid	:	
DH Temp Avg / Max (degF)	:	222.54 / 230.00	% Sand	:	
SPP Start / End (gpm)	:	3250.00 / 3750.00	PV (cP)	:	
Flow Rate Avg / Max (gpm)	:	299.98 / 300.00	YP (lbf/ft²)	:	
Chloride Content (ppm)	:				

BIT DATA

Bit Number	: 4	Nozzles	: 5x15
Bit Size (in)	: 6.125	TFA (in2)	: 0.8629
Manufacturer	: HDBS	Gauge Length (in)	: 0.160
Model	: FXD54	Dull Grade In	: NEW
Serial Number	: 11864686	Dull Grade Out	: 1-1-WT-A-X-X-X-TD
Existing Bit Hrs	: 0.00	Existing Ream Hrs	: 0.00
Cum Drilling Hrs	: 21.66	Cum Ream Hrs	: 0.00

PERFORMANCE

Service Interrupt	: No	Trip For Failure	: No
LIH	: No	Service Interrupt Hrs	:
Problem Date	: 10/19/2012		

COMMENTS

Drilled well for the remainder of the lateral.

WELL INFORMATION

Drilling Activity

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

North Ref : True
Declination (deg) : 8.65
Vert Sec Dir (deg) : 1.60

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)		RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment	
					N/S (ft)	E/W (ft)				From (ft)	To (ft)								Run	
915.0	0.27	57.24	914.99	0.00	3.64	-0.72	0.00	0.00	0.00										400	
8881.0										8881	8916	ROT		70	11	299	3475	180	400	
8916.0										8916	9010	ROT		70	8	300	3625	185	400	
8961.0	88.12	0.87	6962.48	1700.94	1699.63	70.80	0.73	-0.53	0.51										400	
9010.0										9010	9105	ROT		55	12	300	3675	200	400	
9056.0	89.17	1.06	6964.73	1795.91	1794.59	72.40	1.13	1.11	0.21										400	
9105.0										9105	9200	ROT		60	12	300	3675	210	400	
9151.0	90.12	0.34	6965.32	1890.89	1889.58	73.57	1.26	1.01	-0.76										400	
9200.0										9200	9294	ROT		70	12	300	3675	210	400	
9245.0	90.74	0.64	6964.61	1984.87	1983.57	74.37	0.73	0.66	0.31										400	
9294.0										9294	9389	ROT		70	11	300	3700	210	400	
9340.0	91.57	0.52	6962.69	2079.84	2078.55	75.33	0.88	0.87	-0.13										400	
9389.0										9389	9414	170G			15	300	3250	60	400	
9414.0										9414	9484	ROT		70	11	300	3700	225	400	
9435.0	89.57	1.43	6961.75	2174.82	2173.52	76.94	2.32	-2.11	0.96										400	
9484.0										9484	9579	ROT		70	9	300	3750	210	400	
9530.0	90.46	1.35	6961.72	2269.82	2268.49	79.25	0.94	0.94	-0.08										400	
9579.0										9579	9601	-170G			21	300	3400	115	400	
9601.0										9601	9674	ROT		70	9	300	3725	200	400	
9625.0	90.06	2.94	6961.29	2364.81	2363.42	82.81	1.72	-0.42	1.67										400	
9674.0										9674	9700	-160G			21	300	3400	115	400	

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)	RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment		
					N/S (ft)	E/W (ft)				From (ft)	To (ft)							Run		
9700.0										9700	9769	ROT		70	9	300	3725	200	400	
9720.0	88.55	2.63	6962.44	2459.78	2458.30	87.42	1.63	-1.59	-0.33										400	
9769.0										9769	9787	-130G			21	300	3400	115	400	
9787.0										9787	9864	ROT		70	9	300	3750	265	400	
9815.0	87.25	0.84	6965.92	2554.71	2553.19	90.29	2.33	-1.37	-1.89										400	
9864.0										9864	9959	ROT		70	9	300	3750	215	400	
9910.0	87.32	1.11	6970.42	2649.60	2648.07	91.91	0.30	0.07	0.29										400	
9959.0										9959	9977	-20G			18	300	3350	115	400	
9977.0										9977	10054	ROT		65	10	300	3750	230	400	
10005.0	88.64	0.39	6973.76	2744.53	2743.00	93.15	1.59	1.39	-0.76										400	
10054.0										10054	10149	ROT		65	10	300	3750	230	400	
10100.0	88.40	0.24	6976.21	2839.47	2837.96	93.68	0.30	-0.26	-0.16										400	
10149.0										10149	10244	ROT		65	10	300	3750	230	400	
10195.0	88.49	0.15	6978.79	2934.41	2932.93	94.00	0.13	0.09	-0.10										400	
10244.0										10244	10339	ROT		65	10	300	3750	230	400	
10290.0	88.61	0.74	6981.20	3029.36	3027.89	94.74	0.64	0.13	0.63										400	
10339.0										10339	10434	ROT		65	12	300	3750	230	400	
10385.0	88.89	0.18	6983.27	3124.32	3122.87	95.50	0.66	0.29	-0.59										400	
10434.0										10434	10529	ROT		65	12	300	3750	230	400	
10480.0	88.98	1.16	6985.03	3219.29	3217.84	96.61	1.03	0.10	1.03										400	
10529.0										10529	10539	20G			18	300	3350	115	400	
10539.0										10539	10624	ROT		65	12	300	3750	230	400	
10575.0	89.94	1.63	6985.93	3314.28	3312.81	98.92	1.12	1.00	0.50										400	
10624.0										10624	10720	ROT		65	12	300	3750	230	400	
10671.0	90.03	1.95	6985.95	3410.28	3408.76	101.92	0.34	0.10	0.33										400	
10720.0										10720	10815	ROT		65	12	300	3750	230	400	
10766.0	90.25	1.84	6985.72	3505.28	3503.71	105.06	0.26	0.23	-0.12										400	
10815.0										10815	10910	ROT		65	12	300	3750	230	400	
10861.0	90.46	1.57	6985.13	3600.28	3598.67	107.89	0.36	0.23	-0.28										400	
10910.0										10910	11005	ROT		65	12	300	3750	230	400	
10956.0	90.31	1.50	6984.50	3695.27	3693.63	110.43	0.18	-0.16	-0.08										400	
11005.0										11005	11100	ROT		65	12	300	3750	230	400	

SURVEY										STEERING				DRILLING PARAMETERS						
Measured Depth (ft)	Incl Angle (deg)	Azi Dir (deg)	Vertical Depth (ft)	Vertical Section (ft)	Coordinates		DLS (°/100')	Build Rate (°/100')	Turn Rate (°/100')	Slide/Rotate		Tool Face (deg)		RPM	WOB (klb)	Flow Rate (gpm)	Stand Pipe (psig)	ROP (fph)	Comment	
					N/S (ft)	E/W (ft)				From (ft)	To (ft)								Run	
11051.0	90.95	1.95	6983.45	3790.27	3788.58	113.29	0.83	0.68	0.48										400	
11100.0										11100	11196	ROT		75	12	300	3750	230	400	
11147.0	91.17	1.05	6981.67	3886.25	3884.53	115.81	0.97	0.23	-0.94										400	
11196.0										11196	11291	ROT		75	12	300	3750	230	400	
11242.0	91.29	1.24	6979.62	3981.22	3979.49	117.71	0.24	0.13	0.20										400	
11291.0										11291	11303	ROT		75	12	300	3750	230	400	
11303.0										11303	11318	-150G			18	300	3350	115	400	
11318.0										11318	11386	ROT		75	12	300	3750	230	400	
11337.0	90.68	1.57	6977.99	4076.21	4074.45	120.04	0.73	-0.65	0.34										400	
11386.0										11386	11481	ROT		75	10	300	3750	230	400	
11432.0	91.51	1.54	6976.17	4171.19	4169.39	122.61	0.88	0.88	-0.02										400	
11481.0										11481	11501	ROT		75	10	300	3750	230	400	
11501.0										11501	11506	-150G			18	300	3350	115	400	
11506.0										11506	11521	-150G			18	300	3350	115	400	
11521.0										11521	11577	ROT		75	10	300	3750	230	400	
11528.0	90.62	2.13	6974.39	4267.17	4265.33	125.69	1.11	-0.93	0.61										400	
11577.0										11577	11672	ROT		75	10	300	3750	230	400	
11623.0	90.28	1.16	6973.65	4362.17	4360.28	128.42	1.08	-0.36	-1.02										400	
11672.0										11672	11767	ROT		75	10	300	3750	230	400	
11718.0	90.03	1.30	6973.39	4457.17	4455.26	130.46	0.29	-0.26	0.14										400	
11767.0										11767	11862	ROT		75	10	300	3750	230	400	
11813.0	89.97	0.86	6973.39	4552.16	4550.24	132.25	0.46	-0.06	-0.46										400	
11862.0										11862	11957	ROT		75	10	300	3750	230	400	
11908.0	89.91	359.97	6973.50	4647.14	4645.24	132.93	0.94	-0.06	-0.94										400	
11957.0										11957	12034	ROT		75	10	300	3750	230	400	
11985.0	90.49	0.17	6973.23	4724.11	4722.24	133.03	0.81	0.76	0.27										400	
12034.0	90.49	0.17	6972.80	4773.09	4771.24	133.18	0.01	-0.01	-0.01										400	

WARRANTY

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Section 4

Contents: Daily Morning Reports

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Country : USA
State / Province : Colorado

CURRENT STATUS Report # 1

Date : 10/11/2012

Total Depth (ft) : 0.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 0.00	Casing Diameter (in) :	Customer Reps : Travis Lourance
Hole Size (in) :	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
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BHA SUMMARY

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lbf2)	Gels	10 sec	10 Min	30 sec	30 min	(lbf2)
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Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH
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TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	04:00	4.00			14	BOP
04:00	12:00	8.00			15	BOP
12:00	00:00	12.00			90	PU pipe

COMMENTS

Daily: \$8,245.50; Total: \$16,491.00

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Country : USA
State / Province : Colorado

CURRENT STATUS Report # 2

Date : 10/12/2012

Total Depth (ft) : 4248.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 3283.00	Casing Diameter (in) :	Customer Reps : Travis Lourance
Hole Size (in) : 8.750	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
4205.00	9.20	176.71	4186.38	273.29	0.00			

BHA SUMMARY

Well: 9680551 Run: 0100 - 2172.20 ft;PDC, 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg, 6 3/4" Flex Collar, 6 3/4" Hang-off Sub, 6 3/4" Pony Collar, 6 3/4" Flex Collar, 6 3/4" X-Over Sub, 21 Jts 4.5" DP, X-Over Sub, 45 Jts 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lhf2)	Gels	10 sec	10 Min	30 sec	30 min	(lhf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	01:45	1.75			90	PU pipe
01:45	04:30	2.75		100	6c	PU tools
04:30	06:03	1.55	965.00	100	6a	Trip in
06:03	06:18	0.25	965.00	100	26	Drill Float
06:18	06:21	0.05	965.00	100	21	Drill Cement
06:21	07:00	0.65	965.00	100	8	Work on pumps
07:00	07:10	0.17	965.00	100	21	Drill Cement
07:10	07:13	0.05	965.00	100	27	Drill shoe
07:13	07:18	0.08	971.00	100	2a	Rotate
07:18	07:25	0.12	971.00	100	90	Connection

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
07:25	07:49	0.40	1064.00	100	2a	Rotate
07:49	07:57	0.13	1064.00	100	5	C/S
07:57	08:08	0.18	1156.00	100	2a	Rotate
08:08	08:17	0.15	1156.00	100	5	C/S
08:17	08:26	0.15	1249.00	100	2a	Rotate
08:26	08:33	0.12	1249.00	100	5	C/S
08:33	08:40	0.12	1341.00	100	2a	Rotate
08:40	08:44	0.07	1341.00	100	90	Connection
08:44	09:26	0.70	1341.00	100	8	Work on pumps
09:26	09:30	0.07	1341.00	100	5	C/S
09:30	09:41	0.18	1433.00	100	2a	Rotate
09:41	09:50	0.15	1433.00	100	5	C/S
09:50	10:00	0.17	1525.00	100	2a	Rotate
10:00	10:09	0.15	1525.00	100	5	C/S
10:09	10:18	0.15	1617.00	100	2a	Rotate
10:18	10:25	0.12	1617.00	100	5	C/S
10:25	10:34	0.15	1710.00	100	2a	Rotate
10:34	10:43	0.15	1710.00	100	5	C/S
10:43	10:53	0.17	1802.00	100	2a	Rotate
10:53	11:02	0.15	1802.00	100	5	C/S
11:02	11:08	0.10	1814.00	100	2b	Slide 12' @ 185M
11:08	11:20	0.20	1895.00	100	2a	Rotate
11:20	11:30	0.17	1895.00	100	5	C/S
11:30	11:37	0.12	1910.00	100	2b	Slide 15' @ 175M
11:37	11:48	0.18	1987.00	100	2a	Rotate
11:48	11:56	0.13	1987.00	100	5	C/S
11:56	12:03	0.12	2002.00	100	2b	Slide 15' @ 170M
12:03	12:14	0.18	2079.00	100	2a	Rotate
12:14	12:21	0.12	2079.00	100	5	C/S
12:21	12:33	0.20	2172.00	100	2a	Rotate
12:33	12:40	0.12	2172.00	100	5	C/S
12:40	12:50	0.17	2188.00	100	2b	Slide 16' @ 170M
12:50	13:00	0.17	2266.00	100	2a	Rotate
13:00	13:20	0.33	2266.00	100	5	C/S
13:20	13:27	0.12	2284.00	100	2b	Slide 16' @ 30L
13:27	13:43	0.27	2361.00	100	2a	Rotate
13:43	13:51	0.13	2361.00	100	5	C/S
13:51	13:59	0.13	2377.00	100	2b	Slide 16' @ 15L
13:59	14:11	0.20	2456.00	100	2a	Rotate
14:11	14:28	0.28	2456.00	100	5	C/S
14:28	14:34	0.10	2472.00	100	2b	Slide 16' @ 20L
14:34	14:45	0.18	2551.00	100	2a	Rotate
14:45	14:52	0.12	2551.00	100	5	C/S

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
14:52	15:07	0.25	2645.00	100	2a	Rotate
15:07	15:14	0.12	2645.00	100	5	C/S
15:14	15:22	0.13	2665.00	100	2b	Slide 20' @ 20L
15:22	15:34	0.20	2740.00	100	2a	Rotate
15:34	15:43	0.15	2740.00	100	5	C/S
15:43	15:56	0.22	2835.00	100	2a	Rotate
15:56	16:07	0.18	2835.00	100	5	C/S
16:07	16:14	0.12	2857.00	100	2b	Slide 22' @ 25L
16:14	16:26	0.20	2929.00	100	2a	Rotate
16:26	16:31	0.08	2929.00	100	5	C/S
16:31	16:48	0.28	3024.00	100	2a	Rotate
16:48	16:56	0.13	3024.00	100	5	C/S
16:56	17:10	0.23	3119.00	100	2a	Rotate
17:10	17:17	0.12	3119.00	100	5	C/S
17:17	17:32	0.25	3213.00	100	2a	Rotate
17:32	17:39	0.12	3213.00	100	5	C/S
17:39	17:52	0.22	3308.00	100	2a	Rotate
17:52	18:00	0.13	3308.00	100	5	C/S
18:00	18:08	0.13	3330.00	100	2b	Slide 22' @ 30R
18:08	18:23	0.25	3403.00	100	2a	Rotate
18:23	18:29	0.10	3403.00	100	5	C/S
18:29	18:38	0.15	3427.00	100	2b	Slide 24' @ HS
18:38	18:49	0.18	3497.00	100	2a	Rotate
18:49	18:57	0.13	3497.00	100	5	C/S
18:57	19:10	0.22	3522.00	100	2b	Slide 25' @ 40R
19:10	19:21	0.18	3592.00	100	2a	Rotate
19:21	19:30	0.15	3592.00	100	5	C/S
19:30	19:44	0.23	3618.00	100	2b	Slide 26' @ 20L
19:44	19:55	0.18	3687.00	100	2a	Rotate
19:55	20:03	0.13	3687.00	100	5	C/S
20:03	20:15	0.20	3715.00	100	2b	Slide 28' @ 20L
20:15	20:26	0.18	3782.00	100	2a	Rotate
20:26	20:33	0.12	3782.00	100	5	C/S
20:33	20:50	0.28	3876.00	100	2a	Rotate
20:50	20:57	0.12	3876.00	100	5	C/S
20:57	21:23	0.43	3906.00	100	2b	Slide 30' @ 45L
21:23	21:33	0.17	3971.00	100	2a	Rotate
21:33	21:41	0.13	3971.00	100	5	C/S
21:41	22:09	0.47	4004.00	100	2b	Slide 33' @ 50L
22:09	22:19	0.17	4065.00	100	2a	Rotate
22:19	22:27	0.13	4065.00	100	5	C/S
22:27	22:59	0.53	4075.00	100	2b	Slide 10' @ 90L
22:59	23:36	0.62	4160.00	100	2a	Rotate

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
23:36	23:45	0.15	4160.00	100	5	C/S
23:45	00:00	0.25	4248.00	100	2a	Rotate

COMMENTS

Daily: \$47,845.25; Total: \$64,336.25

PTB: 50.00'

GTB: 53.43'

RFO: 106.44 deg

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Country : USA
State / Province : Colorado

CURRENT STATUS Report # 3

Date : 10/13/2012

Total Depth (ft) : 6690.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 2442.00	Casing Diameter (in) :	Customer Reps : Travis Lourance
Hole Size (in) : 8.750	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
6672.00	21.19	17.11	6634.60	453.85	0.00			

BHA SUMMARY

Well: 9680551 Run: 0100 - 2172.20 ft;PDC, 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg, 6 3/4" Flex Collar, 6 3/4" Hang-off Sub, 6 3/4" Pony Collar, 6 3/4" Flex Collar, 6 3/4" X-Over Sub, 21 Jts 4.5" DP, X-Over Sub, 45 Jts 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lhf2)	Gels	10 sec	10 Min	30 sec	30 min	(lhf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	00:02	0.03	4255.00	100	2a	Rotate
00:02	00:09	0.12	4255.00	100	5	C/S
00:09	00:24	0.25	4349.00	100	2a	Rotate
00:24	00:31	0.12	4349.00	100	5	C/S
00:31	00:46	0.25	4444.00	100	2a	Rotate
00:46	00:54	0.13	4444.00	100	5	C/S
00:54	01:10	0.27	4539.00	100	2a	Rotate
01:10	01:17	0.12	4539.00	100	5	C/S
01:17	01:31	0.23	4634.00	100	2a	Rotate
01:31	01:40	0.15	4634.00	100	5	C/S

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
01:40	01:58	0.30	4728.00	100	2a	Rotate
01:58	02:05	0.12	4728.00	100	5	C/S
02:05	02:21	0.27	4823.00	100	2a	Rotate
02:21	02:31	0.17	4823.00	100	5	C/S
02:31	02:47	0.27	4918.00	100	2a	Rotate
02:47	02:55	0.13	4918.00	100	5	C/S
02:55	03:15	0.33	4940.00	100	2b	Slide 22' @ 30R
03:15	03:29	0.23	5012.00	100	2a	Rotate
03:29	03:37	0.13	5012.00	100	5	C/S
03:37	03:52	0.25	5107.00	100	2a	Rotate
03:52	04:02	0.17	5107.00	100	5	C/S
04:02	04:26	0.40	5132.00	100	2b	Slide 25' @ 15R
04:26	04:39	0.22	5201.00	100	2a	Rotate
04:39	04:51	0.20	5201.00	100	5	C/S
04:51	05:09	0.30	5296.00	100	2a	Rotate
05:09	05:16	0.12	5296.00	100	5	C/S
05:16	05:35	0.32	5391.00	100	2a	Rotate
05:35	05:43	0.13	5391.00	100	5	C/S
05:43	06:09	0.43	5416.00	100	2b	Slide 25' @ HS
06:09	06:30	0.35	5486.00	100	2a	Rotate
06:30	06:35	0.08	5486.00	100	5	C/S
06:35	06:50	0.25	5486.00	100	8	Work on pumps
06:50	07:22	0.53	5512.00	100	2b	Slide 26' @ HS (10' bad slide)
07:22	07:38	0.27	5581.00	100	2a	Rotate
07:38	07:46	0.13	5581.00	100	5	C/S
07:46	08:00	0.23	5596.00	100	2b	Slide 15' @ 20R
08:00	08:14	0.23	5677.00	100	2a	Rotate
08:14	08:22	0.13	5677.00	100	5	C/S
08:22	08:41	0.32	5771.00	100	2a	Rotate
08:41	08:49	0.13	5771.00	100	5	C/S
08:49	09:02	0.22	5791.00	100	2b	Slide 20' @ 30R
09:02	09:20	0.30	5867.00	100	2a	Rotate
09:20	09:28	0.13	5867.00	100	5	C/S
09:28	09:34	0.10	5882.00	100	2b	Slide 15' @ 20R
09:34	09:54	0.33	5962.00	100	2a	Rotate
09:54	10:07	0.22	5962.00	100	5	C/S
10:07	10:17	0.17	5969.00	100	2b	Slide 7' @ HS (bad slide)
10:17	10:32	0.25	6056.00	100	2a	Rotate
10:32	10:45	0.22	6056.00	100	5	C/S
10:45	11:00	0.25	6151.00	100	2a	Rotate
11:00	11:06	0.10	6151.00	100	5	C/S
11:06	11:21	0.25	6161.00	100	2b	Slide 10' @ 25M
11:21	11:40	0.32	6246.00	100	2a	Rotate

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
11:40	11:50	0.17	6246.00	100	5	C/S
11:50	12:00	0.17	6256.00	100	2b	Slide 10' @ 15M
12:00	12:18	0.30	6341.00	100	2a	Rotate
12:18	12:26	0.13	6341.00	100	5	C/S
12:26	12:33	0.12	6383.00	100	2a	Rotate
12:33	12:45	0.20	6383.00	100	5	Survey
12:45	14:35	1.83	6436.00	100	2b	Slide
14:35	14:45	0.17	6436.00	100	5	C/S
14:45	15:38	0.88	6468.00	100	2b	Slide
15:38	15:45	0.12	6468.00	100	5	Survey
15:45	16:42	0.95	6500.00	100	2b	Slide
16:42	16:50	0.13	6500.00	100	5	C/S
16:50	17:25	0.58	6532.00	100	2b	Slide
17:25	17:35	0.17	6532.00	100	5	C/S
17:35	18:50	1.25	6563.00	100	2b	Slide 31'
18:50	18:55	0.08	6563.00	100	5	Survey
18:55	20:10	1.25	6627.00	100	2b	Slide 64'
20:10	20:22	0.20	6627.00	100	5	C/S
20:22	21:20	0.97	6690.00	100	2b	Slide 63'
21:20	21:37	0.28	6690.00	100	5	Survey
21:37	22:17	0.67	6690.00	100	5	Circulate to trip
22:17	00:00	1.72	6690.00	100	6b	TOOH

COMMENTS

Daily: \$12,658.50; Total: \$76,994.75

PTB: 50.00'

GTB: 53.43'

RFO: 106.44 deg

WELL INFORMATION

Daily Drilling Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Country : USA
State / Province : Colorado

CURRENT STATUS Report # 4 **Date :** 10/14/2012

Total Depth (ft) : 7230.00 Depth Last 24 (ft) : 540.00 Hole Size (in) : 8.750	Casing Depth (ft) : Casing Diameter (in) : Casing ID (in) :	Customer Reps : Stan Walters Customer Reps : Travis Lourance SDS Reps : Jesse Kysar SDS Reps : Jordan Timbs SDS Reps :
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LAST SURVEY
LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
7180.00	81.87	359.88	6941.01	91.74	0.00			

BHA SUMMARY

Well: 9680551 Run: 0100 - 2172.20 ft;PDC, 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg, 6 3/4" Flex Collar, 6 3/4" Hang-off Sub, 6 3/4" Pony Collar, 6 3/4" Flex Collar, 6 3/4" X-Over Sub, 21 Jts 4.5" DP, X-Over Sub, 45 Jts 4" HWDP
 Well: 9680551 Run: 0200 - 2171.92 ft;PDC, 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg, 6 3/4" Flex Collar, 6 3/4" Hang-off Sub, 6 3/4" Pony Collar, 6 3/4" Flex Collar, 6 3/4" X-Over Sub, 21 Jts 4.5" DP, X-Over Sub, 45 Jts 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lhf2)	Gels	10 sec	10 Min	30 sec	30 min	(lhf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	01:25	1.42	6690.00	100	6e	TOOH
01:25	02:00	0.58	6690.00	100	6c	LD tools
02:00	03:15	1.25	6690.00	200	6c	PU tools
03:15	03:30	0.25	6690.00	200	7	Rig service
03:30	04:06	0.60	6690.00	200	6a	Trip in
04:06	04:11	0.08	6690.00	200	5	SPT
04:11	08:15	4.07	6690.00	200	6a	Trip in
08:15	09:00	0.75	6722.00	200	2b	Slide 32'

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
09:00	09:10	0.17	6722.00	200	5	C/S
09:10	09:45	0.58	6754.00	200	2b	Slide 32'
09:45	10:00	0.25	6754.00	200	5	Survey
10:00	11:00	1.00	6817.00	200	2b	Slide 63'
11:00	11:20	0.33	6817.00	200	5	C/S
11:20	12:01	0.68	6848.00	200	2b	Slide 31'
12:01	12:10	0.15	6848.00	200	5	C/S
12:10	12:35	0.42	6880.00	200	2b	Slide 32'
12:35	12:45	0.17	6880.00	200	5	C/S
12:45	13:30	0.75	6912.00	200	2b	Slide 32'
13:30	13:40	0.17	6912.00	200	5	Survey
13:40	14:02	0.37	6944.00	200	2b	Slide 32'
14:02	14:12	0.17	6944.00	200	5	Survey
14:12	14:16	0.07	6947.00	200	2a	Rotate
14:16	14:40	0.40	6975.00	200	2b	Slide 28'
14:40	14:45	0.08	6975.00	200	5	Survey
14:45	15:15	0.50	7004.00	200	2b	Slide 29'
15:15	15:21	0.10	7007.00	200	2a	Rotate
15:21	15:26	0.08	7007.00	200	5	C/S
15:26	15:55	0.48	7036.00	200	2b	Slide 29'
15:55	15:57	0.03	7039.00	200	2a	Rotate
15:57	16:04	0.12	7039.00	200	5	Survey
16:04	16:40	0.60	7068.00	200	2b	Slide 29'
16:40	16:45	0.08	7071.00	200	2a	Rotate
16:45	16:55	0.17	7071.00	200	5	Survey
16:55	17:30	0.58	7103.00	200	2b	Slide 32'
17:30	17:40	0.17	7103.00	200	5	C/S
17:40	18:21	0.68	7131.00	200	2b	Slide 29'
18:21	18:25	0.07	7133.00	200	2a	Rotate
18:25	18:34	0.15	7133.00	200	5	Survey
18:34	18:37	0.05	7136.00	200	2a	Rotate
18:37	19:16	0.65	7163.00	200	2b	Slide 26'
19:16	19:21	0.08	7163.00	200	5	Reshoot Survey
19:21	19:26	0.08	7166.00	200	2a	Rotate
19:26	19:40	0.23	7166.00	200	5	Survey
19:40	20:20	0.67	7193.00	200	2b	Slide 27'
20:20	20:30	0.17	7198.00	200	2a	Rotate
20:30	20:37	0.12	7198.00	200	5	C/S
20:37	21:18	0.68	7222.00	200	2b	Slide 24'
21:18	21:26	0.13	7230.00	200	2a	Rotate
21:26	21:35	0.15	7230.00	200	5	Survey
21:35	22:41	1.10	7230.00	200	5	Circulate to trip
22:41	00:00	1.32	7230.00	200	6b	TOOH

COMMENTS

Daily: \$23,110.25; Total: \$100,105.00

PTB: 50.00'

GTB: 53.15'

RFO: 95.22 deg

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Country : USA
State / Province : Colorado

CURRENT STATUS Report # 5

Date : 10/15/2012

Total Depth (ft) : 7230.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 0.00	Casing Diameter (in) :	Customer Reps : Travis Lourance
Hole Size (in) : 8.750	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
7180.00	81.87	359.88	6941.01	91.74	0.00			

BHA SUMMARY

Well: 9680551 Run: 0200 - 2171.92 ft;PDC, 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg, 6 3/4" Flex Collar, 6 3/4" Hang-off Sub, 6 3/4" Pony Collar, 6 3/4" Flex Collar, 6 3/4" X-Over Sub, 21 Jts 4.5" DP, X-Over Sub, 45 Jts 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lbf2)	Gels	10 sec	10 Min	30 sec	30 min	(lbf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	02:10	2.17	7230.00	200	6e	TOOH
02:10	02:50	0.67	7230.00	200	6c	LD tools
02:50	00:00	21.17	7230.00	200	12	Casing break

COMMENTS

Daily: \$12,658.50; Total: \$112,763.50

PTB: 50.00'
 GTB: 53.15'
 RFO: 95.22 deg

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

CURRENT STATUS Report # 6

Date : 10/16/2012

Total Depth (ft) : 8348.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 1118.00	Casing Diameter (in) :	Customer Reps :
Hole Size (in) : 6.125	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
8299.00	89.78	0.79	6955.19	1039.66	1.60			

BHA SUMMARY

Well: 9680551 Run: 0200 - 2171.92 ft;PDC, 6 3/4" SperryDrill Lobe 6/7 - 5.0 stg, 6 3/4" Flex Collar, 6 3/4" Hang-off Sub, 6 3/4" Pony Collar, 6 3/4" Flex Collar, 6 3/4" X-Over Sub, 21 Jts 4.5" DP, X-Over Sub, 45 Jts 4" HWDP
 Well: 9680551 Run: 0300 - 6927.78 ft;PDC, 5" GeoForce Lobe 4/5 - 5.4 stg, Integral Blade, Pin-Pin XOver, HOC, Integral Blade, NMDC, X-Over Sub, 57 Jts. 4" DP, Agitator, Shock Sub, 114 Jts. 4" DP, 45 Jts. 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lhf2)	Gels	10 sec	10 Min	30 sec	30 min	(lhf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	01:30	1.50	7230.00	200	12	Casing break
01:30	03:10	1.67	7230.00	300	6c	PU tools
03:10	05:06	1.93	7230.00	300	6a	Trip in
05:06	05:16	0.17	7230.00	300	5	SPT
05:16	10:20	5.07	7230.00	300	6a	Trip in
10:20	10:26	0.10	7230.00	300	21	Drill Cement
10:26	10:56	0.50	7230.00	300	26	Drill Float
10:56	11:35	0.65	7230.00	300	27	Drill Shoe

Job No: CA-XX-0009680551 Well Name: Cook 36N-3HZ

Daily Drilling Report

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TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
11:35	12:30	0.92	7306.00	300	2a	Rotate
12:30	12:40	0.17	7306.00	300	5	C/S
12:40	12:54	0.23	7321.00	300	2b	Slide 15' @ 25R
12:54	13:50	0.93	7401.00	300	2a	Rotate
13:50	14:02	0.20	7401.00	300	5	C/S
14:02	14:48	0.77	7496.00	300	2a	Rotate
14:48	14:55	0.12	7496.00	300	5	C/S
14:55	15:57	1.03	7590.00	300	2a	Rotate
15:57	16:06	0.15	7590.00	300	5	C/S
16:06	16:51	0.75	7685.00	300	2a	Rotate
16:51	17:02	0.18	7685.00	300	5	C/S
17:02	17:10	0.13	7708.00	300	2a	Rotate
17:10	17:26	0.27	7723.00	300	2b	Slide 15' @ 150L
17:26	17:51	0.42	7780.00	300	2a	Rotate
17:51	18:08	0.28	7780.00	300	5	C/S
18:08	18:48	0.67	7874.00	300	2a	Rotate
18:48	18:59	0.18	7874.00	300	5	C/S
18:59	19:21	0.37	7892.00	300	2b	Slide 18' @ 140L
19:21	19:54	0.55	7969.00	300	2a	Rotate
19:54	20:02	0.13	7969.00	300	5	C/S
20:02	20:25	0.38	7989.00	300	2b	Slide 20' @ 135L
20:25	21:08	0.72	8064.00	300	2a	Rotate
21:08	21:18	0.17	8064.00	300	5	C/S
21:18	22:05	0.78	8158.00	300	2a	Rotate
22:05	22:12	0.12	8158.00	300	5	C/S
22:12	22:59	0.78	8253.00	300	2a	Rotate
22:59	23:08	0.15	8253.00	300	5	C/S
23:08	00:00	0.87	8348.00	300	2a	Rotate

COMMENTS

Daily: \$35,453.50; Total: \$148,217.00

PTB: 49.00'
 GTB: 52.35'
 RFO: 131.49 deg

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

CURRENT STATUS Report # 7

Date : 10/17/2012

Total Depth (ft) : 9366.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 1018.00	Casing Diameter (in) :	Customer Reps :
Hole Size (in) : 6.125	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
9340.00	91.57	0.52	6962.69	2079.91	1.60			

BHA SUMMARY

Well: 9680551 Run: 0300 - 6927.78 ft;PDC, 5" GeoForce Lobe 4/5 - 5.4 stg, Integral Blade, Pin-Pin XOver, HOC, Integral Blade, NMDC, X-Over Sub, 57 Jts. 4" DP, Agitator, Shock Sub, 114 Jts. 4" DP, 45 Jts. 4" HWDP
 Well: 9680551 Run: 0400 - 6927.63 ft;PDC, 5" GeoForce Lobe 4/5 - 5.4 stg, Integral Blade, Pin-Pin XOver, HOC, Integral Blade, NMDC, X-Over Sub, 57 Jts. 4" DP, Agitator, Shock Sub, 114 Jts. 4" DP, 45 Jts. 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lhf2)	Gels	10 sec	10 Min	30 sec	30 min	(lhf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	00:09	0.15	8348.00	300	5	C/S
00:09	00:56	0.78	8442.00	300	2a	Rotate
00:56	01:04	0.13	8442.00	300	5	C/S
01:04	01:59	0.92	8537.00	300	2a	Rotate
01:59	02:06	0.12	8537.00	300	5	C/S
02:06	03:09	1.05	8632.00	300	2a	Rotate
03:09	03:17	0.13	8632.00	300	5	C/S
03:17	03:42	0.42	8650.00	300	2b	Slide 18' @ 160L

Job No: CA-XX-0009680551 Well Name: Cook 36N-3HZ

Daily Drilling Report

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TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
03:42	04:36	0.90	8726.00	300	2a	Rotate
04:36	04:45	0.15	8726.00	300	5	C/S
04:45	06:24	1.65	8821.00	300	2a	Rotate
06:24	06:37	0.22	8821.00	300	5	C/S
06:37	08:00	1.38	8881.00	300	2a	Rotate
08:00	08:52	0.87	8881.00	300	3a	Circulate hole
08:52	12:50	3.97	8881.00	300	6b	Trip out
12:50	13:00	0.17	8881.00	300	6e	Trip out
13:00	13:40	0.67	8881.00	300	6c	Lay down tools
13:40	14:40	1.00	8881.00	400	6c	Pick up tools
14:40	20:38	5.97	8881.00	400	6a	Trip in
20:38	20:52	0.23	8916.00	400	2a	Rotate
20:52	21:06	0.23	8916.00	400	5	C/S
21:06	21:40	0.57	9010.00	400	2a	Rotate
21:40	21:47	0.12	9010.00	400	5	C/S
21:47	22:17	0.50	9105.00	400	2a	Rotate
22:17	22:24	0.12	9105.00	400	5	C/S
22:24	22:54	0.50	9200.00	400	2a	Rotate
22:54	23:01	0.12	9200.00	400	5	C/S
23:01	23:31	0.50	9294.00	400	2a	Rotate
23:31	23:38	0.12	9294.00	400	5	C/S
23:38	00:00	0.37	9366.00	400	2a	Rotate

COMMENTS

Daily: \$25,753.50; Total: \$173,970.50

PTB: 49.00'

GTB: 52.35'

RFO: 131.49 deg

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

CURRENT STATUS Report # 8

Date : 10/18/2012

Total Depth (ft) : 11595.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 2229.00	Casing Diameter (in) :	Customer Reps :
Hole Size (in) : 6.125	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
11528.00	90.62	2.13	6974.39	4267.18	1.60			

BHA SUMMARY

Well: 9680551 Run: 0400 - 6927.63 ft;PDC, 5" GeoForce Lobe 4/5 - 5.4 stg, Integral Blade, Pin-Pin XOver, HOC, Integral Blade, NMDC, X-Over Sub, 57 Jts. 4" DP, Agitator, Shock Sub, 114 Jts. 4" DP, 45 Jts. 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lbf2)	Gels	10 sec	10 Min	30 sec	30 min	(lbf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	00:08	0.13	9389.00	400	2a	Rotate
00:08	00:16	0.13	9389.00	400	5	C/S
00:16	00:45	0.48	9414.00	400	2b	Slide 25' @ 170R
00:45	01:08	0.38	9484.00	400	2a	Rotate
01:08	01:15	0.12	9484.00	400	5	C/S
01:15	01:47	0.53	9579.00	400	2a	Rotate
01:47	01:52	0.08	9579.00	400	5	C/S
01:52	02:16	0.40	9601.00	400	2b	Slide 22' @ 170L
02:16	02:40	0.40	9674.00	400	2a	Rotate
02:40	02:51	0.18	9674.00	400	5	C/S

Job No: CA-XX-0009680551 Well Name: Cook 36N-3HZ

Daily Drilling Report

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TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
02:51	03:08	0.28	9700.00	400	2b	Slide 26' @ 160L
03:08	03:33	0.42	9769.00	400	2a	Rotate
03:33	03:40	0.12	9769.00	400	5	C/S
03:40	03:55	0.25	9787.00	400	2b	Slide 18' @ 130L
03:55	04:17	0.37	9864.00	400	2a	Rotate
04:17	04:24	0.12	9864.00	400	5	C/S
04:24	04:55	0.52	9959.00	400	2a	Rotate
04:55	05:03	0.13	9959.00	400	5	C/S
05:03	05:27	0.40	9967.00	400	2b	Slide 18' @ 20L
05:27	05:53	0.43	10054.00	400	2a	Rotate
05:53	06:08	0.25	10054.00	400	5	C/S
06:08	06:42	0.57	10149.00	400	2a	Rotate
06:42	06:55	0.22	10149.00	400	5	C/S
06:55	07:28	0.55	10244.00	400	2a	Rotate
07:28	07:49	0.35	10244.00	400	5	C/S
07:49	08:02	0.22	10339.00	400	2a	Rotate
08:02	08:31	0.48	10339.00	400	5	C/S
08:31	09:02	0.52	10434.00	400	2a	Rotate
09:02	09:14	0.20	10434.00	400	5	C/S
09:14	09:43	0.48	10529.00	400	2a	Rotate
09:43	10:00	0.28	10529.00	400	5	C/S
10:00	10:17	0.28	10539.00	400	2b	Slide 10' @ 20R
10:17	10:44	0.45	10624.00	400	2a	Rotate
10:44	10:57	0.22	10624.00	400	5	C/S
10:57	11:28	0.52	10720.00	400	2a	Rotate
11:28	11:40	0.20	10720.00	400	5	C/S
11:40	12:12	0.53	10815.00	400	2a	Rotate
12:12	12:25	0.22	10815.00	400	5	C/S
12:25	13:01	0.60	10910.00	400	2a	Rotate
13:01	13:16	0.25	10910.00	400	5	C/S
13:16	13:47	0.52	11005.00	400	2a	Rotate
13:47	14:00	0.22	11005.00	400	5	C/S
14:00	14:55	0.92	11100.00	400	2a	Rotate
14:55	15:05	0.17	11100.00	400	5	C/S
15:05	15:30	0.42	11196.00	400	2a	Rotate
15:30	15:40	0.17	11196.00	400	5	C/S
15:40	16:10	0.50	11291.00	400	2a	Rotate
16:10	16:30	0.33	11291.00	400	5	C/S
16:30	16:45	0.25	11303.00	400	2a	Rotate
16:45	18:10	1.42	11318.00	400	2b	Sliding
18:10	18:30	0.33	11386.00	400	2a	Rotating
18:30	18:45	0.25	11386.00	400	5	C/S
18:45	19:15	0.50	11481.00	400	2a	Rotating

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
19:15	19:30	0.25	11481.00	400	5	C/S
19:30	19:45	0.25	11501.00	400	2a	Rotating
19:45	20:30	0.75	11506.00	400	2b	Sliding
20:30	22:30	2.00	11506.00	400	6d	Short Trip
22:30	22:45	0.25	11506.00	400	5	Circulate Sweep
22:45	23:05	0.33	11521.00	400	2b	Sliding
23:05	23:30	0.42	11577.00	400	2a	Rotating
23:30	23:40	0.17	11577.00	400	5	C/S
23:40	00:00	0.33	11595.00	400	2a	Rotating

COMMENTS

Daily: \$14,259.00; Total: \$188,229.50

PTB: 49.00'

GTB: 52.35'

RFO: 131.49 deg

WELL INFORMATION

Daily Drilling
Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

CURRENT STATUS Report # 9

Date : 10/19/2012

Total Depth (ft) : 12034.00	Casing Depth (ft) :	Customer Reps : Stan Walters
Depth Last 24 (ft) : 439.00	Casing Diameter (in) :	Customer Reps :
Hole Size (in) : 6.125	Casing ID (in) :	SDS Reps : Jesse Kysar
		SDS Reps : Jordan Timbs
		SDS Reps :

LAST SURVEY

LAST FORMATION TOP

Depth (ft)	Inc (deg)	Azi (deg)	TVD (ft)	Displ (ft)	Direct (deg)	Formation Name	MD Top (ft)	TVD Top (ft)
11985.00	90.49	0.17	6973.23	4724.11	1.60			

BHA SUMMARY

Well: 9680551 Run: 0400 - 6927.63 ft;PDC, 5" GeoForce Lobe 4/5 - 5.4 stg, Integral Blade, Pin-Pin XOver, HOC, Integral Blade, NMDC, X-Over Sub, 57 Jts. 4" DP, Agitator, Shock Sub, 114 Jts. 4" DP, 45 Jts. 4" HWDP

MUD DATA

Type	Weight (ppg)	FV (spqt)	PV (cP)	YP (lbf2)	Gels	10 sec	10 Min	30 sec	30 min	(lbf2)

Flowline	Weight Out (ppg)	FV Out (spqt)	Solids (%)	Sand (%)	Oil (%)	Fluid Loss (mptm)	pH

TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
00:00	00:25	0.42	11672.00	400	2a	Rotate
00:25	00:35	0.17	11672.00	400	5	C/S
00:35	01:00	0.42	11767.00	400	2a	Rotate
01:00	01:10	0.17	11767.00	400	5	C/S
01:10	01:45	0.58	11862.00	400	2a	Rotate
01:45	01:55	0.17	11862.00	400	5	C/S
01:55	02:25	0.50	11957.00	400	2a	Rotate
02:25	02:33	0.13	11957.00	400	5	C/S
02:33	02:58	0.42	12034.00	400	2a	Rotate
02:58	03:03	0.08	12034.00	400	5	TD survey

Job No: CA-XX-0009680551 Well Name: Cook 36N-3HZ

Daily Drilling Report

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TIME BREAKDOWN

From	To	Hours	TMD (ft)	Run	Activity	Activity Description
03:03	04:32	1.48	12034.00	400	5	Circulate to trip
04:32	10:00	5.47	12034.00	400	6e	Trip out
10:00	11:10	1.17	12034.00	400	6c	LD tools
11:10	00:00	12.83	12034.00	400	12	Casing break

COMMENTS

Daily: \$14,259.00; Total: \$202,488.50

PTB: 49.00'

GTB: 52.35'

RFO: 131.49 deg

Section 5

Contents: Graphics

WELL INFORMATION

End of Well Report

Customer : Anadarko Petroleum Corp.
Well Name : Cook 36N-3HZ
Job Number : CA-XX-0009680551
Rig Name : H&P 308
Field Name : Wattenburg
Country : USA

DIRECTIONAL DRILLERS

Driller 1 : Jesse Kysar
Driller 2 : Jordan Timbs
Driller 3 : Herschell Gaddy
Driller 4 :

JOB OBJECTIVES

JOB SUMMARY

BHA SUMMARY

BHA CHART

Run #	Bit #	Motor #	Hole Size (in)	MD In (ft)	MD Out (ft)	TVD In (ft)	TVD Out (ft)	Inc In (deg)	Inc Out (deg)	Azi In (deg)	Azi Out (deg)	Time Drilling (hr)	Time Circ (hr)
0100	2	1		965.00	6690.00	964.99	6651.27	0.26	23.18	76.00	16.48	27.88	10.05
0200	2			6690.00	7230.00	6651.27	6946.57	23.18	85.37	16.48	359.87	10.57	3.94
0300	4	2		7230.00	8881.00	6946.57	6960.14	85.37	88.54	359.87	0.46	17.67	2.92
0400	4			8881.00	12034.00	6960.14	6972.80	88.54	90.49	0.46	0.17	21.66	8.27

MOTOR / ROTARY STEERABLE RUN SUMMARY

MOTOR / ROTARY STEERABLE CHART

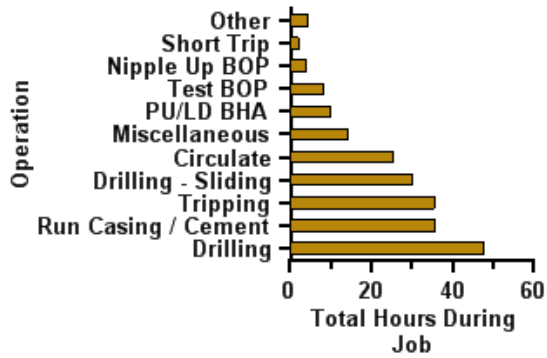
Motor #	Manufacturer	Model	Lobe	OD (in)	Gauge (in)	Bend (deg)	DLS (Ori) (°/100')	DLS (Rot) (°/100')	ROP (Ori) (fph)	ROP (Rot) (fph)
1	Sperry Drilling	SperryDrill	6:7	6.750		1.83	3.22	1.03	63.03	345.55
	Sperry Drilling	SperryDrill	6:7	6.750		2.60	12.29	0.00	50.97	52.91
2	Sperry Drilling	GeoForce	4:5	5.000		1.50	1.78	0.16	66.51	95.56
	Sperry Drilling	GeoForce	4:5	5.000		1.50	1.21	0.43	69.43	154.26

BIT RUN SUMMARY

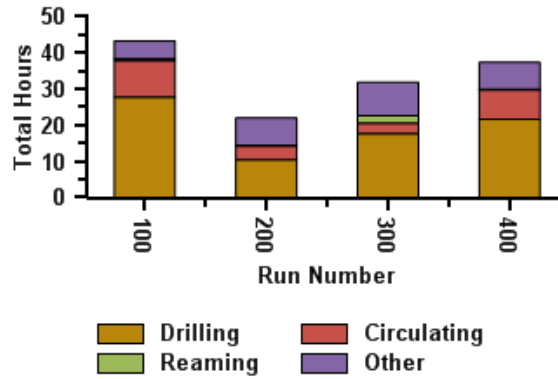
BIT CHART

Bit #	Manufacturer	Style	Gauge (in)	Gauge Length (in)	Nozzles	TFA (in2)	Dull Grades I O D L B G O R	Footage (ft)	Time Drilling (hr)	ROP (fph)
2	Baker / Hughes Christensen	DP505F	8.750	0.200	5x15	0.869	1-1-WT-A-X-X-NO-BHA	5725.00	27.88	205.34
2	Baker / Hughes Christensen	DP505F	8.750	0.200	5x15	0.869	1-1-WT-A-X-X-NO-TD	540.00	10.57	51.09
4	Baker / Hughes Christensen	DP405	6.125	0.270	5x14	0.752	0-0-NO-A-X-I-PN-DTF	1651.00	17.67	93.43
4	HDBS	FXD54	6.125	0.160	5x15	0.863	1-1-WT-A-X-X-X-TD	3153.00	21.66	145.57

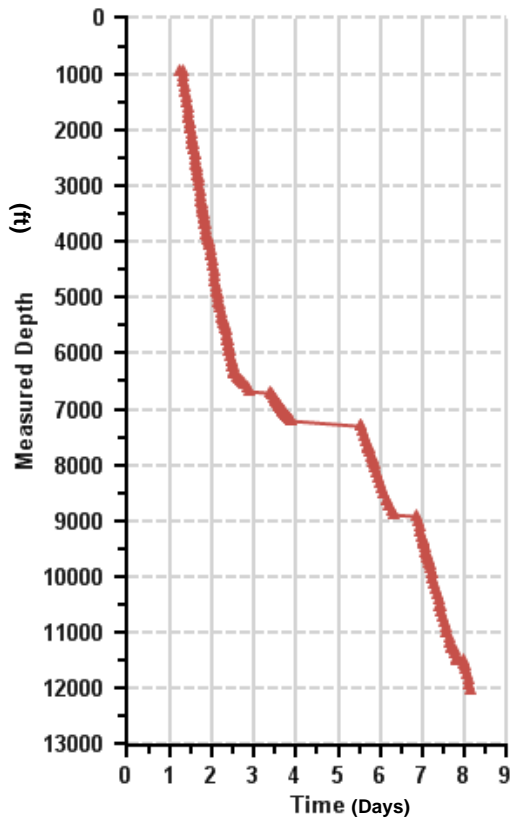
HOURS BY OPERATION



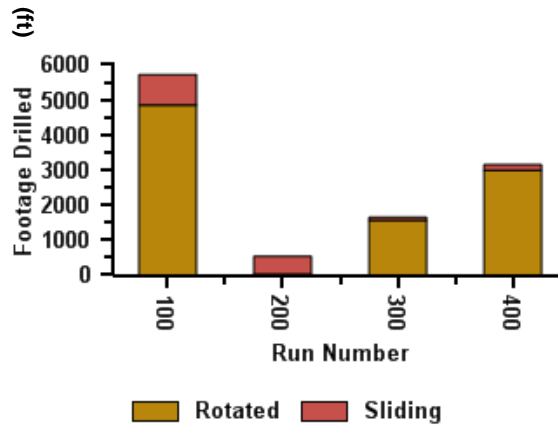
HOURS PER RUN



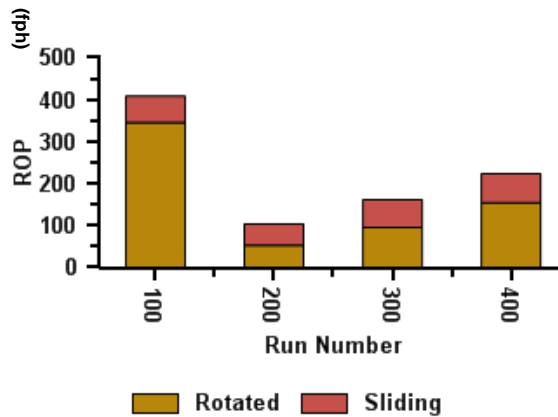
DAY vs DEPTH



FOOTAGE PER RUN



AVERAGE ROP PER RUN



<div><div>HALLIBURTON</div><div>Sperry Drilling</div></div> <div></div>	
SURFACE HOLE SECTION	
INTERMEDIATE HOLE SECTION 1	
INTERMEDIATE HOLE SECTION 2	
PRODUCTION HOLE SECTION	

CA-XX-0009680551

MD (ft)	Formation Name MD/TVD (ft)	Inclination (deg) — DLS ("100') - - -	Bit Data	Drilling Parameters	Motor	BHA Stabilizers	Comments	Run # @ MD (ft)
965.00		0 25 50 75 100						
1465.00			DP505F 5x15 205.34 tph 27.88 hr	WOB 16.46 klb RPM 69 FLO 540.28 gpm SPP 2597.75 psig	6.750" SperryDrill 6/7 1.83 deg		Probe to Bit = 50.00' Bit to Gamma = 53.43' Rev per gal = 0.29 Flow Range = 300-600 gal Bit to Bend = 3.02' Float OD = 3.5" RFO = 106.44 deg Theoretical Build Rates = 23.00	#100 @ 965.0
1965.00								
2465.00			DP505F 5x15 51.09 tph 10.57 hr	WOB 20.00 klb RPM 5 FLO 480.00 gpm SPP 3250.00 psig	6.750" SperryDrill 6/7 2.6 deg		Probe to Bit = 50.00' Bit to Gamma = 53.15' Rev per gal = 0.29 Flow Range = 300-600 gal Bit to Bend = 5.80' Float OD = 3.5" RFO = 95.22 deg	#200 @ 6690.0
2965.00								
3465.00			DP405 5x14 93.43 tph 17.67 hr	WOB 9.83 klb RPM 65 FLO 295.50 gpm SPP 3346.88 psig	5.000" GeoForce 4/5 1.5 deg	5.875 in@ 28.8 ft 5.875 in@ 66.6 ft	Probe to Bit = 49.00' Bit to Gamma = 52.35' Rev per gal = 1.06 Float OD = 3.5" Flow Range = 150-300 gal Bit to Bend = 5.20" RFO = 131.49 deg	#300 @ 7230.0
3965.00								
4465.00			FXD54 5x15 145.57 tph 21.66 hr	WOB 12.31 klb RPM 69 FLO 299.98 gpm SPP 3653.89 psig	5.000" GeoForce 4/5 1.5 deg	5.875 in@ 28.6 ft 5.875 in@ 66.4 ft	Probe to Bit = 49.00' Bit to Gamma = 52.2' Rev per gal = 1.06 Float OD = 3.5" Flow Range = 150-300 gal Bit to Bend = 5.14" RFO = 316.0 deg	#400 @ 8881.0
4965.00								
5465.00								
5965.00								
6465.00								
6965.00								
7465.00								
7965.00								
8465.00								
8965.00								
9465.00								
9965.00								
10465.00								
10965.00								
11465.00								
11965.00								
12465.00		0 3.8 7.5 11.3 15 DLS						