



Weatherford®

Weatherford International Ltd.

2000 Oil Drive

Casper, WY 82604

Survey Certification

Operating Company:	Anadarko Petroleum Corp.
Well Name:	CANNON 37N-E3HZ
State:	Colorado
County:	Weld
API Number:	512335792
Datum:	NAD 83
Survey Calculation Method:	Minimum Curvature
North Reference:	True North

I, John R. Morgan, hereby certify the attached directional survey run from the measure depth of 918.00 feet to the measured depth of 11,394.00 feet as accurate and true to the best of my knowledge.

Signature

27-Aug-12

Date

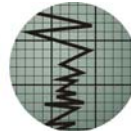
John Morgan

Directional Planning

Weatherford International - Rockies District



Weatherford®



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DAILY ACTIVITY.....	SEC.2
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FINAL SURVEYS

FORMATION TOP DETAILS

Formation
Parkman
Sussex
Sharon Springs
Niobrara A
Niobrara B
Niobrara C

CASING DETAILS

TVD	MD	Name	Size
7017.19	7393.89	7"	7



Azimuths to True North
Magnetic North: 8.63°

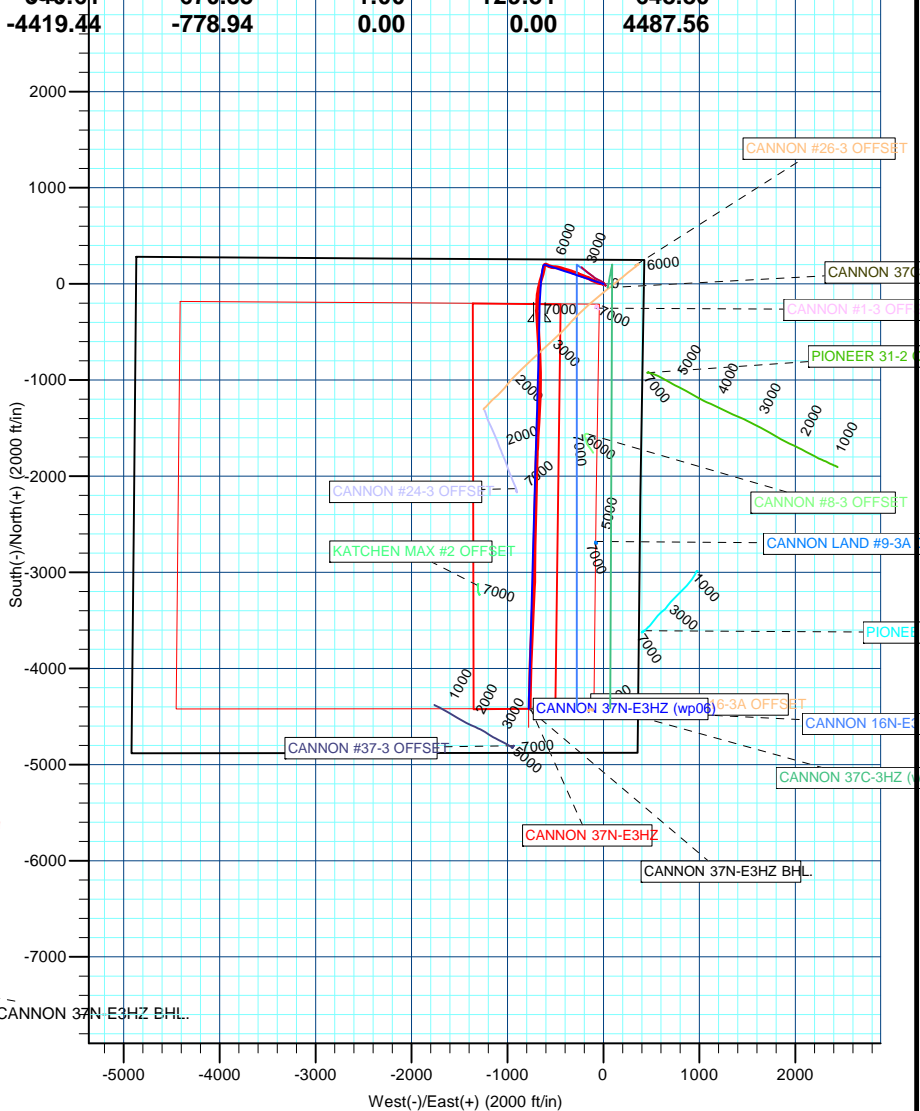
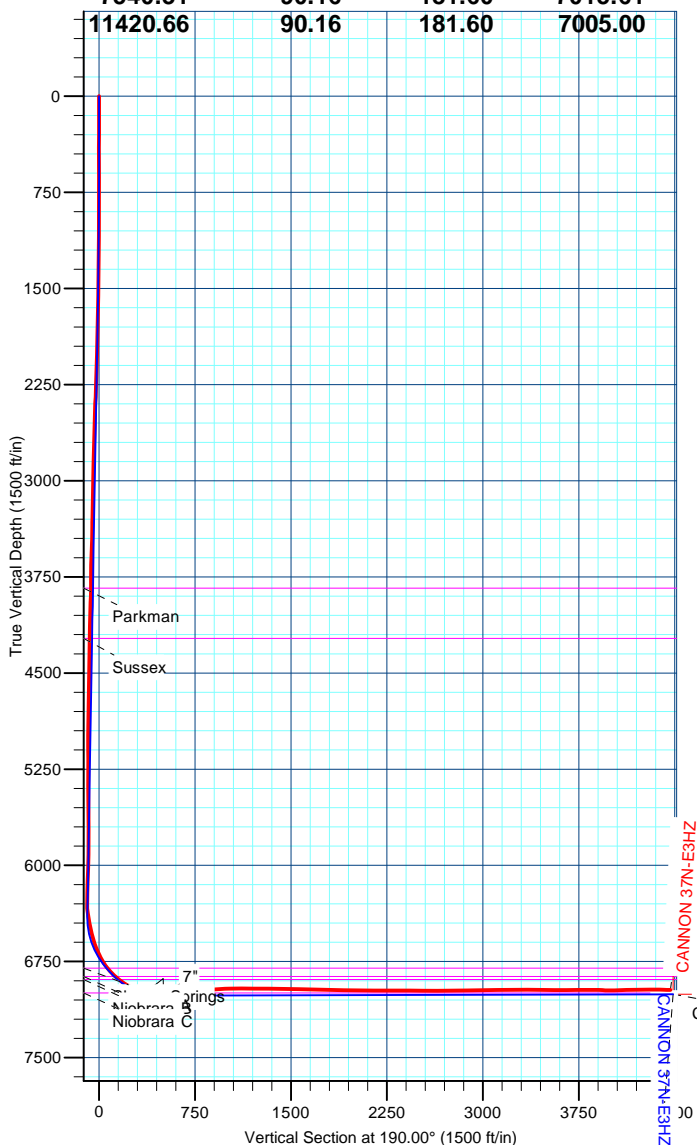
Magnetic Field
Strength: 52913.1nT
Dip Angle: 66.85°
Date: 7/9/2012
Model: IGRF2010

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
CANNON 37N-E3HZ BHL.	7005.00	-4419.44	-778.94	1302924.93	3239096.41	40.161758	-104.644510	Point

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSector
740.00	0.43	206.43	739.99	0.37	-1.62	0.00	0.00	-0.08
901.00	0.00	0.00	900.99	-0.17	-1.89	0.27	180.00	0.50
1232.50	6.88	288.20	1231.69	6.04	-20.78	2.08	288.20	-2.34
6437.64	6.81	288.24	6399.74	200.00	-610.00	0.00	176.05	-91.08
6846.42	38.87	185.05	6778.00	74.45	-645.83	10.00	-111.00	38.78
6931.36	43.12	185.05	6842.10	18.96	-650.73	5.00	0.00	94.28
7393.89	91.02	180.55	7017.19	-394.23	-667.90	10.39	-6.04	504.17
7404.66	91.02	180.55	7017.00	-405.00	-668.00	0.00	0.00	514.80
7540.31	90.16	181.60	7015.61	-540.61	-670.55	1.00	129.51	648.80
1420.66	90.16	181.60	7005.00	-4419.44	-778.94	0.00	0.00	4487.56



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_CANNON 26-3HZ PAD

CANNON 37N-E3HZ

CANNON 37N-E3HZ

Design: CANNON 37N-E3HZ

Standard Survey Report

27 August, 2012

Andarko Petroleum Corporation

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		WELD_CANNON 26-3HZ PAD						
Site Position:		Northing:	1,307,351.72	usft	Latitude:	40.173890		
From:	Lat/Long	Easting:	3,239,832.54	usft	Longitude:	-104.641723		
Position Uncertainty:	0.00	ft	Slot Radius:	13-3/16	"	Grid Convergence:	0.55	°

Well	CANNON 37N-E3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,307,351.69 usft	Latitude:	40.173890
	+E/-W	0.00 ft	Easting:	3,239,832.54 usft	Longitude:	-104.641723
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,842.00 ft

Wellbore	CANNON 37N-E3HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/9/2012	8.64	66.85	52,913

Design	CANNON 37N-E3HZ				
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	189.89	

Survey Program	Date	8/23/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
100.00	740.00	Survey #1 (CANNON 37N-E3HZ)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
918.00	11,394.00	Survey #2 (CANNON 37N-E3HZ)	MWD	MWD - STANDARD	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.16	221.28	100.00	-0.10	-0.09	0.12	0.16	0.16	0.00	
200.00	0.11	25.22	200.00	-0.12	-0.14	0.15	0.27	-0.05	163.94	
300.00	0.39	355.39	300.00	0.30	-0.13	-0.28	0.30	0.28	-29.83	
400.00	0.30	317.44	400.00	0.84	-0.33	-0.77	0.24	-0.09	-37.95	
500.00	0.45	292.78	499.99	1.18	-0.87	-1.01	0.22	0.15	-24.66	
600.00	0.21	193.51	599.99	1.15	-1.28	-0.92	0.53	-0.24	-99.27	
700.00	0.43	206.43	699.99	0.64	-1.49	-0.37	0.23	0.22	12.92	
740.00	0.43	206.43	739.99	0.37	-1.62	-0.09	0.00	0.00	0.00	
TIE ON										

Andarko Petroleum Corporation

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
918.00	0.16	185.07	917.99	-0.47	-1.94	0.80	0.16	-0.15	-12.00
FIRST MWD SURVEY									
1,009.00	2.81	297.26	1,008.95	0.42	-3.94	0.26	3.16	2.91	123.29
1,099.00	4.14	295.74	1,098.79	2.84	-8.82	-1.28	1.48	1.48	-1.69
1,190.00	6.05	292.60	1,189.42	6.11	-16.21	-3.24	2.12	2.10	-3.45
1,283.00	7.10	272.85	1,281.82	8.28	-26.48	-3.61	2.66	1.13	-21.24
1,405.00	6.86	282.53	1,402.92	10.24	-41.12	-3.02	0.98	-0.20	7.93
1,500.00	6.94	282.43	1,497.23	12.70	-52.26	-3.54	0.09	0.08	-0.11
1,596.00	6.81	296.17	1,592.55	16.46	-63.04	-5.39	1.71	-0.14	14.31
1,691.00	6.30	293.55	1,686.93	21.03	-72.87	-8.20	0.62	-0.54	-2.76
1,787.00	5.99	287.92	1,782.38	24.67	-82.46	-10.14	0.71	-0.32	-5.86
1,881.00	7.44	299.32	1,875.73	29.16	-92.44	-12.85	2.09	1.54	12.13
1,976.00	6.97	293.84	1,969.98	34.51	-103.07	-16.29	0.88	-0.49	-5.77
2,071.00	6.63	291.98	2,064.32	38.89	-113.43	-18.83	0.43	-0.36	-1.96
2,166.00	5.82	289.37	2,158.76	42.54	-123.06	-20.77	0.90	-0.85	-2.75
2,261.00	7.10	300.91	2,253.15	47.15	-132.64	-23.67	1.91	1.35	12.15
2,356.00	6.15	299.70	2,347.52	52.69	-142.10	-27.50	1.01	-1.00	-1.27
2,450.00	8.14	301.05	2,440.78	58.62	-152.18	-31.61	2.12	2.12	1.44
2,545.00	8.12	291.10	2,534.83	64.50	-164.20	-35.34	1.48	-0.02	-10.47
2,641.00	8.11	287.16	2,629.87	68.94	-176.99	-37.51	0.58	-0.01	-4.10
2,735.00	7.53	285.56	2,723.00	72.55	-189.26	-38.96	0.66	-0.62	-1.70
2,830.00	7.62	293.03	2,817.17	76.68	-201.06	-41.01	1.04	0.09	7.86
2,925.00	7.15	295.12	2,911.38	81.66	-212.21	-43.99	0.57	-0.49	2.20
3,020.00	7.57	290.60	3,005.60	86.37	-223.42	-46.71	0.75	0.44	-4.76
3,115.00	6.64	287.25	3,099.87	90.20	-234.52	-48.58	1.07	-0.98	-3.53
3,209.00	5.45	286.33	3,193.35	93.07	-243.99	-49.77	1.27	-1.27	-0.98
3,305.00	6.14	294.07	3,288.86	96.44	-253.06	-51.54	1.08	0.72	8.06
3,399.00	3.88	288.64	3,382.49	99.51	-260.66	-53.26	2.45	-2.40	-5.78
3,494.00	6.30	301.66	3,477.11	103.27	-268.15	-55.68	2.81	2.55	13.71
3,589.00	7.11	293.48	3,571.47	108.35	-277.98	-58.99	1.32	0.85	-8.61
3,684.00	5.33	299.54	3,665.90	112.87	-287.21	-61.86	1.99	-1.87	6.38
3,778.00	7.21	275.57	3,759.35	115.60	-296.88	-62.88	3.39	2.00	-25.50
3,873.00	7.96	292.50	3,853.53	118.69	-308.89	-63.87	2.47	0.79	17.82
3,968.00	9.45	291.05	3,947.44	124.01	-322.25	-66.82	1.59	1.57	-1.53
4,063.00	9.11	288.58	4,041.19	129.21	-336.65	-69.46	0.55	-0.36	-2.60
4,158.00	7.89	287.51	4,135.15	133.57	-350.00	-71.46	1.29	-1.28	-1.13
4,253.00	8.67	286.40	4,229.16	137.55	-363.09	-73.14	0.84	0.82	-1.17
4,348.00	8.15	284.87	4,323.14	141.30	-376.47	-74.54	0.60	-0.55	-1.61
4,443.00	7.35	283.07	4,417.27	144.40	-388.90	-75.46	0.88	-0.84	-1.89
4,539.00	7.10	294.24	4,512.51	148.23	-400.29	-77.27	1.48	-0.26	11.64
4,634.00	6.87	293.04	4,606.80	152.86	-410.87	-80.02	0.29	-0.24	-1.26
4,729.00	6.06	288.33	4,701.20	156.66	-420.86	-82.04	1.02	-0.85	-4.96
4,823.00	6.53	287.60	4,794.63	159.84	-430.66	-83.49	0.51	0.50	-0.78

Andarko Petroleum Corporation

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,919.00	6.08	285.44	4,890.05	162.84	-440.77	-84.71	0.53	-0.47	-2.25
5,013.00	5.83	283.93	4,983.55	165.32	-450.20	-85.53	0.31	-0.27	-1.61
5,108.00	5.97	274.38	5,078.04	166.86	-459.81	-85.40	1.04	0.15	-10.05
5,203.00	5.11	276.53	5,172.60	167.71	-468.94	-84.67	0.93	-0.91	2.26
5,298.00	6.40	282.96	5,267.12	169.38	-478.30	-84.71	1.52	1.36	6.77
5,393.00	7.86	281.91	5,361.38	171.91	-489.82	-85.22	1.54	1.54	-1.11
5,488.00	6.53	279.01	5,455.63	174.10	-501.51	-85.37	1.45	-1.40	-3.05
5,583.00	6.46	266.53	5,550.03	174.62	-512.18	-84.05	1.48	-0.07	-13.14
5,677.00	8.21	275.47	5,643.26	174.94	-524.14	-82.31	2.22	1.86	9.51
5,773.00	6.49	274.29	5,738.47	176.00	-536.37	-81.25	1.80	-1.79	-1.23
5,867.00	6.91	284.02	5,831.83	177.77	-547.16	-81.14	1.29	0.45	10.35
5,962.00	7.35	295.71	5,926.10	181.79	-558.18	-83.21	1.59	0.46	12.31
6,057.00	6.70	288.86	6,020.38	186.22	-568.90	-85.73	1.12	-0.68	-7.21
6,153.00	7.17	300.65	6,115.69	191.08	-579.35	-88.73	1.56	0.49	12.28
6,248.00	6.94	296.02	6,209.97	196.62	-589.61	-92.42	0.65	-0.24	-4.87
6,343.00	6.42	282.61	6,304.33	200.30	-599.95	-94.27	1.73	-0.55	-14.12
6,375.00	7.81	252.65	6,336.09	200.04	-603.78	-93.36	12.21	4.34	-93.63
6,407.00	11.30	234.18	6,367.65	197.56	-608.40	-90.12	14.39	10.91	-57.72
6,438.00	12.13	224.03	6,398.01	193.44	-613.12	-85.25	7.16	2.68	-32.74
6,470.00	11.91	216.13	6,429.31	188.35	-617.41	-79.50	5.18	-0.69	-24.69
6,501.00	12.82	195.77	6,459.60	182.46	-620.23	-73.21	14.29	2.94	-65.68
6,533.00	12.68	187.81	6,490.82	175.56	-621.67	-66.17	5.50	-0.44	-24.88
6,564.00	11.57	181.69	6,521.13	169.08	-622.22	-59.69	5.47	-3.58	-19.74
6,596.00	13.33	182.76	6,552.37	162.19	-622.50	-52.85	5.55	5.50	3.34
6,628.00	16.36	186.65	6,583.30	154.02	-623.20	-44.69	9.96	9.47	12.16
6,659.00	19.72	189.57	6,612.77	144.53	-624.57	-35.10	11.22	10.84	9.42
6,691.00	22.47	191.09	6,642.63	133.20	-626.65	-23.58	8.76	8.59	4.75
6,722.00	23.64	193.02	6,671.15	121.33	-629.19	-11.45	4.49	3.77	6.23
6,754.00	25.85	194.62	6,700.21	108.33	-632.39	1.91	7.22	6.91	5.00
6,786.00	28.83	195.53	6,728.63	94.14	-636.22	16.54	9.40	9.31	2.84
6,817.00	32.05	196.10	6,755.36	79.03	-640.50	32.16	10.43	10.39	1.84
6,849.00	35.96	195.83	6,781.88	61.83	-645.42	49.95	12.23	12.22	-0.84
6,881.00	39.48	196.94	6,807.19	43.05	-650.95	69.40	11.20	11.00	3.47
6,913.00	43.33	195.95	6,831.19	22.76	-656.94	90.42	12.20	12.03	-3.09
6,945.00	46.47	194.74	6,853.85	0.98	-662.91	112.90	10.17	9.81	-3.78
6,977.00	49.12	193.16	6,875.35	-22.03	-668.61	136.55	9.05	8.28	-4.94
7,008.00	52.45	190.86	6,894.94	-45.52	-673.60	160.54	12.18	10.74	-7.42
7,040.00	55.80	190.23	6,913.69	-71.00	-678.34	186.46	10.59	10.47	-1.97
7,071.00	59.05	187.86	6,930.38	-96.80	-682.44	212.58	12.30	10.48	-7.65
7,103.00	61.48	184.72	6,946.26	-124.41	-685.47	240.30	11.41	7.59	-9.81
7,135.00	64.47	183.10	6,960.80	-152.85	-687.41	268.65	10.37	9.34	-5.06
7,167.00	68.74	182.88	6,973.50	-182.17	-688.94	297.80	13.36	13.34	-0.69
7,199.00	73.05	182.64	6,983.97	-212.36	-690.39	327.79	13.49	13.47	-0.75
7,231.00	77.67	182.52	6,992.06	-243.29	-691.79	358.50	14.44	14.44	-0.38

Andarko Petroleum Corporation

Survey Report

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Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,264.00	81.23	181.35	6,998.10	-275.70	-692.88	390.62	11.34	10.79	-3.55
7,296.00	82.99	177.59	7,002.49	-307.39	-692.58	421.79	12.87	5.50	-11.75
7,328.00	86.01	175.26	7,005.56	-339.18	-690.60	452.76	11.90	9.44	-7.28
7,382.00	93.43	175.96	7,005.82	-392.98	-686.47	505.05	13.80	13.74	1.30
7,532.00	95.56	176.85	6,994.07	-542.21	-677.09	650.46	1.54	1.42	0.59
7,627.00	95.99	177.03	6,984.51	-636.60	-672.04	742.57	0.49	0.45	0.19
7,722.00	95.86	177.35	6,974.70	-730.98	-667.41	834.75	0.36	-0.14	0.34
7,817.00	94.41	177.92	6,966.20	-825.51	-663.51	927.21	1.64	-1.53	0.60
7,911.00	91.79	179.49	6,961.12	-919.34	-661.39	1,019.28	3.25	-2.79	1.67
8,006.00	89.74	180.38	6,959.85	-1,014.32	-661.28	1,112.83	2.35	-2.16	0.94
8,101.00	89.14	180.55	6,960.78	-1,109.32	-662.05	1,206.55	0.66	-0.63	0.18
8,196.00	89.20	182.30	6,962.15	-1,204.27	-664.41	1,300.50	1.84	0.06	1.84
8,291.00	89.26	183.17	6,963.43	-1,299.16	-668.95	1,394.75	0.92	0.06	0.92
8,386.00	89.69	183.39	6,964.30	-1,394.00	-674.38	1,489.11	0.51	0.45	0.23
8,481.00	89.20	183.43	6,965.22	-1,488.82	-680.03	1,583.50	0.52	-0.52	0.04
8,576.00	88.52	183.03	6,967.11	-1,583.65	-685.38	1,677.84	0.83	-0.72	-0.42
8,672.00	87.97	183.40	6,970.05	-1,679.46	-690.76	1,773.14	0.69	-0.57	0.39
8,767.00	88.77	181.50	6,972.75	-1,774.32	-694.82	1,867.30	2.17	0.84	-2.00
8,861.00	89.45	181.83	6,974.21	-1,868.27	-697.55	1,960.32	0.80	0.72	0.35
8,957.00	89.32	181.19	6,975.24	-1,964.23	-700.08	2,055.29	0.68	-0.14	-0.67
9,051.00	89.82	181.49	6,975.95	-2,058.20	-702.28	2,148.24	0.62	0.53	0.32
9,146.00	90.06	181.44	6,976.05	-2,153.17	-704.71	2,242.22	0.26	0.25	-0.05
9,240.00	90.25	180.94	6,975.79	-2,247.15	-706.66	2,335.14	0.57	0.20	-0.53
9,335.00	89.45	181.27	6,976.04	-2,342.13	-708.50	2,429.02	0.91	-0.84	0.35
9,431.00	89.51	181.60	6,976.91	-2,438.10	-710.90	2,523.97	0.35	0.06	0.34
9,526.00	89.38	182.67	6,977.83	-2,533.03	-714.44	2,618.10	1.13	-0.14	1.13
9,620.00	90.92	179.39	6,977.59	-2,627.00	-716.13	2,710.96	3.85	1.64	-3.49
9,715.00	90.93	181.32	6,976.05	-2,721.98	-716.72	2,804.63	2.03	0.01	2.03
9,809.00	90.49	181.15	6,974.89	-2,815.95	-718.74	2,897.55	0.50	-0.47	-0.18
9,905.00	90.86	180.61	6,973.76	-2,911.93	-720.22	2,992.36	0.68	0.39	-0.56
10,000.00	91.67	180.52	6,971.66	-3,006.90	-721.15	3,086.08	0.86	0.85	-0.09
10,096.00	90.31	181.11	6,970.00	-3,102.87	-722.52	3,180.86	1.54	-1.42	0.61
10,191.00	89.69	182.92	6,970.00	-3,197.81	-725.86	3,274.96	2.01	-0.65	1.91
10,287.00	89.57	182.77	6,970.62	-3,293.69	-730.62	3,370.24	0.20	-0.13	-0.16
10,382.00	88.95	182.49	6,971.85	-3,388.58	-734.98	3,464.47	0.72	-0.65	-0.29
10,477.00	89.88	182.39	6,972.82	-3,483.49	-739.03	3,558.66	0.98	0.98	-0.11
10,572.00	90.56	182.54	6,972.45	-3,578.40	-743.11	3,652.86	0.73	0.72	0.16
10,667.00	90.62	183.04	6,971.48	-3,673.28	-747.74	3,747.13	0.53	0.06	0.53
10,761.00	89.94	182.65	6,971.02	-3,767.17	-752.40	3,840.41	0.83	-0.72	-0.41
10,856.00	87.78	181.24	6,972.91	-3,862.08	-755.63	3,934.48	2.72	-2.27	-1.48
10,951.00	91.11	182.24	6,973.83	-3,957.02	-758.51	4,028.50	3.66	3.51	1.05
11,047.00	91.41	181.62	6,971.72	-4,052.94	-761.74	4,123.55	0.72	0.31	-0.65
11,142.00	90.99	181.03	6,969.73	-4,147.90	-763.94	4,217.47	0.76	-0.44	-0.62

Andarko Petroleum Corporation

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,237.00	90.35	181.44	6,968.62	-4,242.87	-765.99	4,311.38	0.80	-0.67	0.43
11,340.00	88.27	180.10	6,969.86	-4,345.84	-767.37	4,413.06	2.40	-2.02	-1.30
LAST MWD SURVEY									
11,394.00	87.18	179.40	6,972.00	-4,399.80	-767.13	4,466.18	2.40	-2.02	-1.30
PROJECTION TO TD									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
740.00	739.99	0.37	-1.62	TIE ON
918.00	917.99	-0.47	-1.94	FIRST MWD SURVEY
11,340.00	6,969.86	-4,345.84	-767.37	LAST MWD SURVEY
11,394.00	6,972.00	-4,399.80	-767.13	PROJECTION TO TD

Checked By: _____ Approved By: _____ Date: _____

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_CANNON 26-3HZ PAD

CANNON 37N-E3HZ

CANNON 37N-E3HZ

Design: CANNON 37N-E3HZ

Survey Report - Geographic

27 August, 2012

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Project	COLORADO NORTHERN ZONE - 83		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	WELD_CANNON 26-3HZ PAD			
Site Position:		Northing:	1,307,351.72 usft	Latitude: 40.173890
From:	Lat/Long	Easting:	3,239,832.54 usft	Longitude: -104.641723
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.55 °

Well	CANNON 37N-E3HZ			
Well Position	+N/-S	0.00 ft	Northing:	1,307,351.69 usft
	+E/-W	0.00 ft	Easting:	3,239,832.54 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft	Ground Level: 4,842.00 ft

Wellbore	CANNON 37N-E3HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/9/2012	8.64	66.85	52,913

Design	CANNON 37N-E3HZ			
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	189.89

Survey Program	Date	8/23/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
100.00	740.00	Survey #1 (CANNON 37N-E3HZ)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S
918.00	11,394.00	Survey #2 (CANNON 37N-E3HZ)	MWD	MWD - STANDARD

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	1,307,351.69	3,239,832.54	40.173890	-104.641723
100.00	0.16	221.28	100.00	-0.10	-0.09	1,307,351.59	3,239,832.45	40.173890	-104.641724
200.00	0.11	25.22	200.00	-0.12	-0.14	1,307,351.57	3,239,832.40	40.173890	-104.641724
300.00	0.39	355.39	300.00	0.30	-0.13	1,307,352.00	3,239,832.41	40.173891	-104.641724
400.00	0.30	317.44	400.00	0.84	-0.33	1,307,352.53	3,239,832.20	40.173892	-104.641724
500.00	0.45	292.78	499.99	1.18	-0.87	1,307,352.87	3,239,831.65	40.173893	-104.641726
600.00	0.21	193.51	599.99	1.15	-1.28	1,307,352.84	3,239,831.25	40.173893	-104.641728
700.00	0.43	206.43	699.99	0.64	-1.49	1,307,352.32	3,239,831.04	40.173892	-104.641729
740.00	0.43	206.43	739.99	0.37	-1.62	1,307,352.05	3,239,830.91	40.173891	-104.641729
TIE ON									

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
918.00	0.16	185.07	917.99	-0.47	-1.94	1,307,351.20	3,239,830.60	40.173889	-104.641730
FIRST MWD SURVEY									
1,009.00	2.81	297.26	1,008.95	0.42	-3.94	1,307,352.08	3,239,828.60	40.173891	-104.641737
1,099.00	4.14	295.74	1,098.79	2.84	-8.82	1,307,354.45	3,239,823.69	40.173898	-104.641755
1,190.00	6.05	292.60	1,189.42	6.11	-16.21	1,307,357.65	3,239,816.27	40.173907	-104.641781
1,283.00	7.10	272.85	1,281.82	8.28	-26.48	1,307,359.72	3,239,805.98	40.173913	-104.641818
1,405.00	6.86	282.53	1,402.92	10.24	-41.12	1,307,361.53	3,239,791.32	40.173918	-104.641870
1,500.00	6.94	282.43	1,497.23	12.70	-52.26	1,307,363.89	3,239,780.15	40.173925	-104.641910
1,596.00	6.81	296.17	1,592.55	16.46	-63.04	1,307,367.55	3,239,769.35	40.173935	-104.641949
1,691.00	6.30	293.55	1,686.93	21.03	-72.87	1,307,372.02	3,239,759.47	40.173948	-104.641984
1,787.00	5.99	287.92	1,782.38	24.67	-82.46	1,307,375.57	3,239,749.84	40.173958	-104.642018
1,881.00	7.44	299.32	1,875.73	29.16	-92.44	1,307,379.96	3,239,739.82	40.173970	-104.642054
1,976.00	6.97	293.84	1,969.98	34.51	-103.07	1,307,385.20	3,239,729.14	40.173985	-104.642092
2,071.00	6.63	291.98	2,064.32	38.89	-113.43	1,307,389.48	3,239,718.74	40.173997	-104.642129
2,166.00	5.82	289.37	2,158.76	42.54	-123.06	1,307,393.04	3,239,709.07	40.174007	-104.642164
2,261.00	7.10	300.91	2,253.15	47.15	-132.64	1,307,397.56	3,239,699.44	40.174019	-104.642198
2,356.00	6.15	299.70	2,347.52	52.69	-142.10	1,307,403.01	3,239,689.93	40.174035	-104.642232
2,450.00	8.14	301.05	2,440.78	58.62	-152.18	1,307,408.84	3,239,679.80	40.174051	-104.642268
2,545.00	8.12	291.10	2,534.83	64.50	-164.20	1,307,414.60	3,239,667.72	40.174067	-104.642311
2,641.00	8.11	287.16	2,629.87	68.94	-176.99	1,307,418.92	3,239,654.88	40.174079	-104.642357
2,735.00	7.53	285.56	2,723.00	72.55	-189.26	1,307,422.41	3,239,642.58	40.174089	-104.642401
2,830.00	7.62	293.03	2,817.17	76.68	-201.06	1,307,426.43	3,239,630.75	40.174101	-104.642443
2,925.00	7.15	295.12	2,911.38	81.66	-212.21	1,307,431.29	3,239,619.55	40.174114	-104.642483
3,020.00	7.57	290.60	3,005.60	86.37	-223.42	1,307,435.90	3,239,608.30	40.174127	-104.642523
3,115.00	6.64	287.25	3,099.87	90.20	-234.52	1,307,439.62	3,239,597.16	40.174138	-104.642563
3,209.00	5.45	286.33	3,193.35	93.07	-243.99	1,307,442.39	3,239,587.65	40.174146	-104.642596
3,305.00	6.14	294.07	3,288.86	96.44	-253.06	1,307,445.68	3,239,578.56	40.174155	-104.642629
3,399.00	3.88	288.64	3,382.49	99.51	-260.66	1,307,448.68	3,239,570.93	40.174163	-104.642656
3,494.00	6.30	301.66	3,477.11	103.27	-268.15	1,307,452.37	3,239,563.41	40.174174	-104.642683
3,589.00	7.11	293.48	3,571.47	108.35	-277.98	1,307,457.35	3,239,553.53	40.174187	-104.642718
3,684.00	5.33	299.54	3,665.90	112.87	-287.21	1,307,461.78	3,239,544.25	40.174200	-104.642751
3,778.00	7.21	275.57	3,759.35	115.60	-296.88	1,307,464.41	3,239,534.55	40.174207	-104.642786
3,873.00	7.96	292.50	3,853.53	118.69	-308.89	1,307,467.39	3,239,522.51	40.174216	-104.642829
3,968.00	9.45	291.05	3,947.44	124.01	-322.25	1,307,472.58	3,239,509.11	40.174230	-104.642876
4,063.00	9.11	288.58	4,041.19	129.21	-336.65	1,307,477.64	3,239,494.65	40.174245	-104.642928
4,158.00	7.89	287.51	4,135.15	133.57	-350.00	1,307,481.87	3,239,481.26	40.174257	-104.642976
4,253.00	8.67	286.40	4,229.16	137.55	-363.09	1,307,485.72	3,239,468.13	40.174268	-104.643023
4,348.00	8.15	284.87	4,323.14	141.30	-376.47	1,307,489.34	3,239,454.72	40.174278	-104.643070
4,443.00	7.35	283.07	4,417.27	144.40	-388.90	1,307,492.33	3,239,442.26	40.174286	-104.643115
4,539.00	7.10	294.24	4,512.51	148.23	-400.29	1,307,496.04	3,239,430.84	40.174297	-104.643156
4,634.00	6.87	293.04	4,606.80	152.86	-410.87	1,307,500.57	3,239,420.21	40.174310	-104.643194
4,729.00	6.06	288.33	4,701.20	156.66	-420.86	1,307,504.28	3,239,410.18	40.174320	-104.643229
4,823.00	6.53	287.60	4,794.63	159.84	-430.66	1,307,507.36	3,239,400.35	40.174329	-104.643264
4,919.00	6.08	285.44	4,890.05	162.84	-440.77	1,307,510.26	3,239,390.22	40.174337	-104.643301
5,013.00	5.83	283.93	4,983.55	165.32	-450.20	1,307,512.65	3,239,380.76	40.174344	-104.643334
5,108.00	5.97	274.38	5,078.04	166.86	-459.81	1,307,514.09	3,239,371.14	40.174348	-104.643369
5,203.00	5.11	276.53	5,172.60	167.71	-468.94	1,307,514.86	3,239,362.00	40.174350	-104.643401
5,298.00	6.40	282.96	5,267.12	169.38	-478.30	1,307,516.44	3,239,352.62	40.174355	-104.643435
5,393.00	7.86	281.91	5,361.38	171.91	-489.82	1,307,518.86	3,239,341.08	40.174362	-104.643476
5,488.00	6.53	279.01	5,455.63	174.10	-501.51	1,307,520.93	3,239,329.37	40.174368	-104.643518
5,583.00	6.46	266.53	5,550.03	174.62	-512.18	1,307,521.35	3,239,318.69	40.174369	-104.643556
5,677.00	8.21	275.47	5,643.26	174.94	-524.14	1,307,521.55	3,239,306.73	40.174370	-104.643599
5,773.00	6.49	274.29	5,738.47	176.00	-536.37	1,307,522.49	3,239,294.49	40.174373	-104.643643
5,867.00	6.91	284.02	5,831.83	177.77	-547.16	1,307,524.16	3,239,283.69	40.174378	-104.643681
5,962.00	7.35	295.71	5,926.10	181.79	-558.18	1,307,528.07	3,239,272.63	40.174389	-104.643721

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,057.00	6.70	288.86	6,020.38	186.22	-568.90	1,307,532.39	3,239,261.86	40.174401	-104.643759
6,153.00	7.17	300.65	6,115.69	191.08	-579.35	1,307,537.16	3,239,251.36	40.174415	-104.643797
6,248.00	6.94	296.02	6,209.97	196.62	-589.61	1,307,542.60	3,239,241.05	40.174430	-104.643833
6,343.00	6.42	282.61	6,304.33	200.30	-599.95	1,307,546.18	3,239,230.68	40.174440	-104.643870
6,375.00	7.81	252.65	6,336.09	200.04	-603.78	1,307,545.88	3,239,226.86	40.174439	-104.643884
6,407.00	11.30	234.18	6,367.65	197.56	-608.40	1,307,543.35	3,239,222.26	40.174432	-104.643900
6,438.00	12.13	224.03	6,398.01	193.44	-613.12	1,307,539.19	3,239,217.57	40.174421	-104.643917
6,470.00	11.91	216.13	6,429.31	188.35	-617.41	1,307,534.06	3,239,213.34	40.174407	-104.643933
6,501.00	12.82	195.77	6,459.60	182.46	-620.23	1,307,528.14	3,239,210.57	40.174391	-104.643943
6,533.00	12.68	187.81	6,490.82	175.56	-621.67	1,307,521.23	3,239,209.20	40.174372	-104.643948
6,564.00	11.57	181.69	6,521.13	169.08	-622.22	1,307,514.74	3,239,208.71	40.174354	-104.643950
6,596.00	13.33	182.76	6,552.37	162.19	-622.50	1,307,507.85	3,239,208.50	40.174335	-104.643951
6,628.00	16.36	186.65	6,583.30	154.02	-623.20	1,307,499.68	3,239,207.88	40.174313	-104.643953
6,659.00	19.72	189.57	6,612.77	144.53	-624.57	1,307,490.17	3,239,206.60	40.174287	-104.643958
6,691.00	22.47	191.09	6,642.63	133.20	-626.65	1,307,478.82	3,239,204.63	40.174256	-104.643966
6,722.00	23.64	193.02	6,671.15	121.33	-629.19	1,307,466.93	3,239,202.21	40.174223	-104.643975
6,754.00	25.85	194.62	6,700.21	108.33	-632.39	1,307,453.90	3,239,199.13	40.174187	-104.643986
6,786.00	28.83	195.53	6,728.63	94.14	-636.22	1,307,439.67	3,239,195.44	40.174148	-104.644000
6,817.00	32.05	196.10	6,755.36	79.03	-640.50	1,307,424.52	3,239,191.30	40.174107	-104.644015
6,849.00	35.96	195.83	6,781.88	61.83	-645.42	1,307,407.27	3,239,186.55	40.174060	-104.644033
6,881.00	39.48	196.94	6,807.19	43.05	-650.95	1,307,388.44	3,239,181.20	40.174008	-104.644053
6,913.00	43.33	195.95	6,831.19	22.76	-656.94	1,307,368.09	3,239,175.41	40.173952	-104.644074
6,945.00	46.47	194.74	6,853.85	0.98	-662.91	1,307,346.25	3,239,169.66	40.173893	-104.644096
6,977.00	49.12	193.16	6,875.35	-22.03	-668.61	1,307,323.20	3,239,164.17	40.173830	-104.644116
7,008.00	52.45	190.86	6,894.94	-45.52	-673.60	1,307,299.66	3,239,159.41	40.173765	-104.644134
7,040.00	55.80	190.23	6,913.69	-71.00	-678.34	1,307,274.13	3,239,154.92	40.173695	-104.644151
7,071.00	59.05	187.86	6,930.38	-96.80	-682.44	1,307,248.30	3,239,151.07	40.173624	-104.644165
7,103.00	61.48	184.72	6,946.26	-124.41	-685.47	1,307,220.65	3,239,148.31	40.173548	-104.644176
7,135.00	64.47	183.10	6,960.80	-152.85	-687.41	1,307,192.20	3,239,146.64	40.173470	-104.644183
7,167.00	68.74	182.88	6,973.50	-182.17	-688.94	1,307,162.87	3,239,145.40	40.173390	-104.644189
7,199.00	73.05	182.64	6,983.97	-212.36	-690.39	1,307,132.66	3,239,144.23	40.173307	-104.644194
7,231.00	77.67	182.52	6,992.06	-243.29	-691.79	1,307,101.72	3,239,143.14	40.173222	-104.644199
7,264.00	81.23	181.35	6,998.10	-275.70	-692.88	1,307,069.30	3,239,142.36	40.173133	-104.644203
7,296.00	82.99	177.59	7,002.49	-307.39	-692.58	1,307,037.61	3,239,142.96	40.173046	-104.644202
7,328.00	86.01	175.26	7,005.56	-339.18	-690.60	1,307,005.85	3,239,145.26	40.172959	-104.644195
7,382.00	93.43	175.96	7,005.82	-392.98	-686.47	1,306,952.09	3,239,149.91	40.172811	-104.644180
7,532.00	95.56	176.85	6,994.07	-542.21	-677.09	1,306,802.95	3,239,160.73	40.172402	-104.644146
7,627.00	95.99	177.03	6,984.51	-636.60	-672.04	1,306,708.62	3,239,166.69	40.172142	-104.644128
7,722.00	95.86	177.35	6,974.70	-730.98	-667.41	1,306,614.29	3,239,172.23	40.171883	-104.644112
7,817.00	94.41	177.92	6,966.20	-825.51	-663.51	1,306,519.80	3,239,177.05	40.171624	-104.644098
7,911.00	91.79	179.49	6,961.12	-919.34	-661.39	1,306,426.00	3,239,180.08	40.171366	-104.644090
8,006.00	89.74	180.38	6,959.85	-1,014.32	-661.28	1,306,331.02	3,239,181.11	40.171106	-104.644090
8,101.00	89.14	180.55	6,960.78	-1,109.32	-662.05	1,306,236.03	3,239,181.26	40.170845	-104.644092
8,196.00	89.20	182.30	6,962.15	-1,204.27	-664.41	1,306,141.05	3,239,179.81	40.170584	-104.644101
8,291.00	89.26	183.17	6,963.43	-1,299.16	-668.95	1,306,046.13	3,239,176.20	40.170324	-104.644117
8,386.00	89.69	183.39	6,964.30	-1,394.00	-674.38	1,305,951.24	3,239,171.68	40.170063	-104.644136
8,481.00	89.20	183.43	6,965.22	-1,488.82	-680.03	1,305,856.36	3,239,166.95	40.169803	-104.644157
8,576.00	88.52	183.03	6,967.11	-1,583.65	-685.38	1,305,761.49	3,239,162.52	40.169543	-104.644176
8,672.00	87.97	183.40	6,970.05	-1,679.46	-690.76	1,305,665.64	3,239,158.06	40.169280	-104.644195
8,767.00	88.77	181.50	6,972.75	-1,774.32	-694.82	1,305,570.73	3,239,154.92	40.169019	-104.644210
8,861.00	89.45	181.83	6,974.21	-1,868.27	-697.55	1,305,476.76	3,239,153.10	40.168761	-104.644219
8,957.00	89.32	181.19	6,975.24	-1,964.23	-700.08	1,305,380.78	3,239,151.50	40.168498	-104.644228
9,051.00	89.82	181.49	6,975.95	-2,058.20	-702.28	1,305,286.79	3,239,150.21	40.168240	-104.644236
9,146.00	90.06	181.44	6,976.05	-2,153.17	-704.71	1,305,191.81	3,239,148.70	40.167979	-104.644245
9,240.00	90.25	180.94	6,975.79	-2,247.15	-706.66	1,305,097.81	3,239,147.66	40.167721	-104.644252

Andarko Petroleum Corporation

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well CANNON 37N-E3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	4842' GL + 25' RKB @ 4867.00ft
Site:	WELD_CANNON 26-3HZ PAD	MD Reference:	4842' GL + 25' RKB @ 4867.00ft
Well:	CANNON 37N-E3HZ	North Reference:	True
Wellbore:	CANNON 37N-E3HZ	Survey Calculation Method:	Minimum Curvature
Design:	CANNON 37N-E3HZ	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,335.00	89.45	181.27	6,976.04	-2,342.13	-708.50	1,305,002.82	3,239,146.75	40.167461	-104.644258
9,431.00	89.51	181.60	6,976.91	-2,438.10	-710.90	1,304,906.83	3,239,145.27	40.167197	-104.644267
9,526.00	89.38	182.67	6,977.83	-2,533.03	-714.44	1,304,811.88	3,239,142.65	40.166937	-104.644280
9,620.00	90.92	179.39	6,977.59	-2,627.00	-716.13	1,304,717.89	3,239,141.87	40.166679	-104.644286
9,715.00	90.93	181.32	6,976.05	-2,721.98	-716.72	1,304,622.91	3,239,142.20	40.166418	-104.644288
9,809.00	90.49	181.15	6,974.89	-2,815.95	-718.74	1,304,528.93	3,239,141.09	40.166160	-104.644295
9,905.00	90.86	180.61	6,973.76	-2,911.93	-720.22	1,304,432.94	3,239,140.54	40.165896	-104.644300
10,000.00	91.67	180.52	6,971.66	-3,006.90	-721.15	1,304,337.96	3,239,140.52	40.165636	-104.644304
10,096.00	90.31	181.11	6,970.00	-3,102.87	-722.52	1,304,241.98	3,239,140.09	40.165372	-104.644309
10,191.00	89.69	182.92	6,970.00	-3,197.81	-725.86	1,304,147.01	3,239,137.67	40.165112	-104.644320
10,287.00	89.57	182.77	6,970.62	-3,293.69	-730.62	1,304,051.09	3,239,133.83	40.164848	-104.644338
10,382.00	88.95	182.49	6,971.85	-3,388.58	-734.98	1,303,956.16	3,239,130.39	40.164588	-104.644353
10,477.00	89.88	182.39	6,972.82	-3,483.49	-739.03	1,303,861.22	3,239,127.26	40.164327	-104.644368
10,572.00	90.56	182.54	6,972.45	-3,578.40	-743.11	1,303,766.28	3,239,124.10	40.164067	-104.644382
10,667.00	90.62	183.04	6,971.48	-3,673.28	-747.74	1,303,671.35	3,239,120.39	40.163806	-104.644399
10,761.00	89.94	182.65	6,971.02	-3,767.17	-752.40	1,303,577.43	3,239,116.63	40.163549	-104.644415
10,856.00	87.78	181.24	6,972.91	-3,862.08	-755.63	1,303,482.49	3,239,114.33	40.163288	-104.644427
10,951.00	91.11	182.24	6,973.83	-3,957.02	-758.51	1,303,387.52	3,239,112.36	40.163027	-104.644437
11,047.00	91.41	181.62	6,971.72	-4,052.94	-761.74	1,303,291.58	3,239,110.06	40.162764	-104.644449
11,142.00	90.99	181.03	6,969.73	-4,147.90	-763.94	1,303,196.61	3,239,108.78	40.162504	-104.644457
11,237.00	90.35	181.44	6,968.62	-4,242.87	-765.99	1,303,101.62	3,239,107.66	40.162243	-104.644464
11,340.00	88.27	180.10	6,969.86	-4,345.84	-767.37	1,302,998.64	3,239,107.27	40.161960	-104.644469
LAST MWD SURVEY									
11,394.00	87.18	179.40	6,972.00	-4,399.80	-767.13	1,302,944.69	3,239,108.03	40.161812	-104.644468
PROJECTION TO TD									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
740.00	739.99	0.37	-1.62	TIE ON	
918.00	917.99	-0.47	-1.94	FIRST MWD SURVEY	
11,340.00	6,969.86	-4,345.84	-767.37	LAST MWD SURVEY	
11,394.00	6,972.00	-4,399.80	-767.13	PROJECTION TO TD	

Checked By: _____	Approved By: _____	Date: _____
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DAILY ACTIVITY

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 1 - 2012/08/11

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

DIR Trainee: Jacob Hofer

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 0.0 ft

PROGRESS: 0.0 ft

DAILY COST: USD\$7582.50

KB ELEV: 4867 ft

END DEPTH: 0.0 ft

AVG. ROP.: 0.0 ft/hr

PREVIOUS COST: USD\$0.00

WORK STATUS: Standby

(All units are imperial.)

TOTAL COST: USD\$7582.50

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-24:00	Wait On Orders - Standby, Rig Up	24.00	0	n/a			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 0.00	ORIENTING HRS: 0.00	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 0.00	MOTOR HRS: 0.00
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 0.00	ROTARY DRILL: 0.00	OTHER: 24.00
MOTOR HRS: 0.00	DRILL HRS: 0.00	TOTAL HRS: 24.00

DRILLING PARAMETERS:

ROTARY TORQUE:	STRING WEIGHT: 0 lbs
WOB SLIDING (HI): 0 lbf	WOB ROTATE (HI): 0 lbf
WOB SLIDING (LO): 0 lbf	WOB ROTATE (LO): 0 lbf
RPM (ROTARY):	DRAG UP: 0 lbf
RPM (MOTOR):	DRAG DN: 0 lbf

BHA / MOTOR / BIT INFORMATION:

BHA:	HOLE SIZE:	SECTION TYPE:	SURVEY TYPE:
MANFCT.:	STABILIZER:	SERIAL#:	MODEL:
SETTING:	KICKPAD:	SIZE:	MTR HRS THIS DAY:
MANFCT:	BIT TYPE:	TYPE:	NOZZLES:
IADC BIT GRADE:			LOBE CFG.:
			MTR HRS TO DATE:

PUMP PARAMETERS

PRESSURE ON BTM: 0	PRESSURE OFF BTM: 0	TOTAL FLOW RATE: 569.66 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0% SPM: 78.00	LINER: 6.00 in STROKE VOL.: 3.8438 gal/stk
PUMP 2: TYPE: PZ-11	EFF.: 95.0% SPM: 78.00	LINER: 6.00 in STROKE VOL.: 3.8438 gal/stk
PUMP 3: TYPE:	EFF.: 100.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water	VISC: 0 sec/qt	WTR LOSS: 0 cc/30min	PV: 0 cP	YP: 0 lb/100 ft²	pH: 0
DENSITY: 0 lb/gal	GEL 0/10: 0.00 lb/100 ft²	SAND: 0	SOLIDS: 0	OIL: 0	TEMP: 0 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

Wait on Orders.

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 2 - 2012/08/12

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307 SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 0.0 ft

PROGRESS: 2601.0 ft

DAILY COST: USD\$20527.50

KB ELEV: 4867 ft

END DEPTH: 2601.0 ft

AVG. ROP.: 315.3 ft/hr

PREVIOUS COST: USD\$7582.50

TOTAL COST: USD\$28110.00

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-02:30	PU Directional Tools	2.50	0	1	16:35-16:55	Rotating With Motor	0.33	1556	1
02:30-06:00	Pick Up HW Drill Pipe	3.50	0	1	16:55-17:00	Circ & Accumulate Surveys - Connection	0.08	1556	1
06:00-06:55	Rig Service	0.92	0	1	17:00-18:05	Work On MWD - MWD Computers	1.08	1556	1
06:55-08:00	RIH - tag cement @ 726	1.08	0	1	18:05-18:20	Orienting With Motor	0.25	1562	1
08:00-09:30	Drill Out Flt, Shoe & Cmmt	1.50	884	1	18:20-18:40	Rotating With Motor	0.33	1652	1
09:30-09:35	Circ & Accumulate Surveys - check shot	0.08	884	1	18:40-18:45	Circ & Accumulate Surveys	0.08	1652	1
09:35-10:10	Rotating With Motor	0.58	974	1	18:45-18:55	Rotating With Motor	0.17	1747	1
10:10-10:15	Circ & Accumulate Surveys - connection	0.08	974	1	18:55-19:00	Circ & Accumulate Surveys	0.08	1747	1
10:15-10:35	Orienting With Motor	0.33	991	1	19:00-19:30	Rotating With Motor	0.50	1843	1
10:35-10:50	Rotating With Motor	0.25	1065	1	19:30-19:35	Circ & Accumulate Surveys	0.08	1843	1
10:50-11:10	Work On MWD - work on stuck screen	0.33	1065	1	19:35-19:45	Orienting With Motor	0.17	1853	1
11:10-11:15	Circ & Accumulate Surveys - connection	0.08	1065	1	19:45-20:10	Rotating With Motor	0.42	1937	1
11:15-11:35	Orienting With Motor	0.33	1075	1	20:10-20:15	Circ & Accumulate Surveys	0.08	1937	1
11:35-11:50	Rotating With Motor	0.25	1155	1	20:15-20:30	Rotating With Motor	0.25	2032	1
11:50-11:55	Circ & Accumulate Surveys	0.08	1155	1	20:30-20:35	Circ & Accumulate Surveys	0.08	2032	1
11:55-12:10	Orienting With Motor	0.25	1167	1	20:35-20:50	Rotating With Motor	0.25	2127	1
12:10-12:25	Rotating With Motor	0.25	1246	1	20:50-20:55	Circ & Accumulate Surveys	0.08	2127	1
12:25-12:30	Circ & Accumulate Surveys - Connection	0.08	1246	1	20:55-21:15	Rotating With Motor	0.33	2222	1
12:30-12:40	Orienting With Motor	0.17	1260	1	21:15-21:20	Circ & Accumulate Surveys	0.08	2222	1
12:40-12:50	Rotating With Motor	0.17	1339	1	21:20-21:30	Orienting With Motor	0.17	2234	1
12:50-14:00	Other - See Comments - change saver sub.	1.17	1339	1	21:30-21:55	Rotating With Motor	0.42	2317	1
14:00-14:10	Rotating With Motor	0.17	1350	1	21:55-22:00	Circ & Accumulate Surveys	0.08	2317	1
14:10-14:30	Other - See Comments - Instal rotating head	0.33	1350	1	22:00-22:25	Rotating With Motor	0.42	2412	1
14:30-14:45	Circ & Accumulate Surveys	0.25	1350	1	22:25-22:30	Circ & Accumulate Surveys	0.08	2412	1
14:45-15:45	Work On MWD	1.00	1350	1	22:30-22:40	Orienting With Motor	0.17	2427	1
15:45-15:55	Orienting With Motor	0.17	1358	1	22:40-23:05	Rotating With Motor	0.42	2506	1
15:55-16:10	Rotating With Motor	0.25	1431	1	23:05-23:10	Circ & Accumulate Surveys	0.08	2506	1
16:10-16:15	Other - See Comments - Connection	0.08	1431	1	23:10-23:15	Orienting With Motor	0.08	2512	1
16:15-16:25	Rotating With Motor	0.17	1461	1	23:15-23:30	Rotating With Motor	0.25	2601	1
16:25-16:35	Circ & Accumulate Surveys	0.17	1461	1	23:30-24:00	Rig Service	0.50	2601	1

TIME SUMMARY (hrs):

MOTOR DRILL:	8.25	ORIENTING HRS:	2.08	ROTARY DRILL:	0.00
TIME DRILL:	0.00	ROTATING HRS:	6.17	MOTOR HRS:	11.50
MOTOR REAM:	0.00			TRIP:	1.08
CIRC:	3.25	ROTARY DRILL:	0.00	OTHER:	11.42
MOTOR HRS:	11.50	DRILL HRS:	8.25	TOTAL HRS:	24.00

DRILLING PARAMETERS:

ROTARY TORQUE:	4900 ft-lb	STRING WEIGHT	96000 lbs
WOB SLIDING (HI):	10000 lbf	WOB ROTATE (HI):	50000 lbf
WOB SLIDING (LO):	3000 lbf	WOB ROTATE (LO):	15000 lbf
RPM (ROTARY):	40 rpm	DRAG UP:	100000 lbf
RPM (MOTOR):	168 rpm	DRAG DN:	93000 lbf

— BHA / MOTOR / BIT INFORMATION: —

**Weatherford**

Daily Activity Report

Drilling Services
v4.2.2674**Day 2 - 2012/08/12**

BHA: 1 **HOLE SIZE:** 8.75 in **SECTION TYPE:** Build & Hold **SURVEY TYPE:** Positive Pulse MWD
MANFCT.: Weatherford 1.8 **STABILIZER:** No **SERIAL#:** 675-43586 **MODEL:** QLE7850 **LOBE CFG.:** 7/8
SETTING: 1.88 ° **KICKPAD:** No **SIZE:** 6 3/4" (171mm) **MTR HRS THIS DAY:** 11.5 **MTR HRS TO DATE:** 11.5
MANFCT: Security **BIT TYPE:** Security PDC BIT **TYPE:** FXD55 **NOZZLES:** 0.648 in² TFA
IADC BIT GRADE: 1 / 2 / BT / G / X / I / BT / DMF

PUMP PARAMETERS

PRESSURE ON BTM: 3200		PRESSURE OFF BTM: 2200		TOTAL FLOW RATE: 569.66 gal/min	
PUMP 1:	TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00	LINER: 6.00 in	STROKE VOL.: 3.8438 gal/stk
PUMP 2:	TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00	LINER: 6.00 in	STROKE VOL.: 3.8438 gal/stk
PUMP 3:	TYPE:	EFF.: 100.0%	SPM: 0.00	LINER: 0.00 in	STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water	VISC: 28 sec/qt	WTR LOSS: 0 cc/30min	PV: 0 cP	YP: 3 lb/100 ft ²	pH: 12
DENSITY: 8.4 lb/gal	GEL 0/10: 0.00 lb/100 ft ²	SAND: 0	SOLIDS: 0	OIL: 0	TEMP: 75 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

PU BHA and Mud Pulse MWD, RIH, Tag cement @ 726 Drill out cement to shoe to 809.
Drill F/ 809 T/ 2601'

Anadarko Requested to put 50k wt. on bit to try to hold a diff of 1200 psi.

CUSTOMER SIGNATURE:



Weatherford®

Daily Activity Report

Drilling Services
v4.2.2674

Day 3 - 2012/08/13

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 2601.0 ft

PROGRESS: 1959.0 ft

DAILY COST: USD\$18807.50

KB ELEV: 4867 ft

END DEPTH: 4560.0 ft

AVG. ROP.: 157.7 ft/hr

PREVIOUS COST: USD\$28110.00

TOTAL COST: USD\$46917.50

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-00:05	Circ & Accumulate Surveys	0.08	2601	1	09:30-09:45	Rotating With Motor	0.25	3740	1
00:05-00:10	Orienting With Motor	0.08	2606	1	09:45-09:50	Circ & Accumulate Surveys	0.08	3740	1
00:10-00:50	Rotating With Motor	0.67	2697	1	09:50-10:20	Rotating With Motor	0.50	3803	1
00:50-00:55	Circ & Accumulate Surveys	0.08	2697	1	10:20-10:25	Circ & Accumulate Surveys - check shot.	0.08	3803	1
00:55-01:25	Rotating With Motor	0.50	2791	1	10:25-10:50	Rotating With Motor	0.42	3834	1
01:25-01:30	Circ & Accumulate Surveys	0.08	2791	1	10:50-11:20	Circ & Accumulate Surveys - work on mwd	0.50	3834	1
01:30-01:40	Orienting With Motor	0.17	2799	1	11:20-11:30	Orienting With Motor	0.17	3850	1
01:40-02:00	Rotating With Motor	0.33	2886	1	11:30-11:50	Rotating With Motor	0.33	3891	1
02:00-02:05	Circ & Accumulate Surveys	0.08	2886	1	11:50-12:40	Circ & Condition Hole	0.83	3891	1
02:05-02:30	Rotating With Motor	0.42	2981	1	12:40-13:10	Other - See Comments - CHECK FOR FLOW	0.50	3891	1
02:30-02:35	Circ & Accumulate Surveys	0.08	2981	1	13:10-15:40	POOH - See Comments	2.50	3891	1
02:35-02:40	Orienting With Motor	0.08	2987	1	15:40-15:55	Other - See Comments - SAFETY MEETING	0.25	3891	1
02:40-03:00	Rotating With Motor	0.33	3076	1	15:55-17:15	Change Bit And Motor	1.33	3891	2
03:00-03:05	Circ & Accumulate Surveys	0.08	3076	1	17:15-19:40	RIH With New BHA	2.42	3891	2
03:05-03:30	Rotating With Motor	0.42	3171	1	19:40-19:55	Wash To Bottom	0.25	3891	2
03:30-03:35	Circ & Accumulate Surveys	0.08	3171	1	19:55-20:10	Rotating With Motor	0.25	3929	2
03:35-04:05	Rotating With Motor	0.50	3265	1	20:10-20:15	Circ & Accumulate Surveys	0.08	3929	2
04:05-04:10	Circ & Accumulate Surveys	0.08	3265	1	20:15-20:20	Orienting With Motor	0.08	3935	2
04:10-04:25	Orienting With Motor	0.25	3277	1	20:20-20:40	Rotating With Motor	0.33	4024	2
04:25-04:55	Rotating With Motor	0.50	3361	1	20:40-20:45	Circ & Accumulate Surveys	0.08	4024	2
04:55-05:00	Circ & Accumulate Surveys	0.08	3361	1	20:45-21:10	Rotating With Motor	0.42	4119	2
05:00-05:35	Rotating With Motor	0.58	3455	1	21:10-21:15	Circ & Accumulate Surveys	0.08	4119	2
05:35-05:55	Circ & Accumulate Surveys	0.33	3455	1	21:15-21:45	Rotating With Motor	0.50	4214	2
05:55-06:30	Orienting With Motor	0.58	3473	1	21:45-21:50	Circ & Accumulate Surveys	0.08	4214	2
06:30-06:45	Rotating With Motor	0.25	3500	1	21:50-22:00	Orienting With Motor	0.17	4224	2
06:45-07:00	Orienting With Motor	0.25	3512	1	22:00-22:20	Rotating With Motor	0.33	4309	2
07:00-07:15	Rotating With Motor	0.25	3550	1	22:20-22:25	Circ & Accumulate Surveys	0.08	4309	2
07:15-07:20	Circ & Accumulate Surveys	0.08	3550	1	22:25-22:50	Rotating With Motor	0.42	4404	2
07:20-07:35	Orienting With Motor	0.25	3560	1	22:50-22:55	Circ & Accumulate Surveys	0.08	4404	2
07:35-08:00	Rotating With Motor	0.42	3645	1	22:55-23:10	Rotating With Motor	0.25	4499	2
08:00-08:25	Work on Pumps	0.42	3645	1	23:10-23:40	Rig Service	0.50	4499	2
08:25-08:30	Circ & Accumulate Surveys	0.08	3645	1	23:40-23:45	Circ & Accumulate Surveys	0.08	4499	2
08:30-09:00	Rotating With Motor	0.50	3708	1	23:45-23:50	Orienting With Motor	0.08	4505	2
09:00-09:05	Circ & Accumulate Surveys - check shot	0.08	3708	1	23:50-24:00	Rotating With Motor	0.17	4560	2
09:05-09:30	Orienting With Motor	0.42	3720	1			0.00		

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 3 - 2012/08/13

TIME SUMMARY (hrs):				DRILLING PARAMETERS:					
MOTOR DRILL:	12.42	ORIENTING HRS:	2.25	ROTARY DRILL:	0.00	ROTARY TORQUE:	9000 ft-lb	STRING WEIGHT	110000 lbs
TIME DRILL:	0.00	ROTATING HRS:	7.17	MOTOR HRS:	16.08	WOB SLIDING (HI):	24000 lbf	WOB ROTATE (HI):	50000 lbf
MOTOR REAM:	0.00			TRIP:	4.92	WOB SLIDING (LO):	12000 lbf	WOB ROTATE (LO):	10000 lbf
CIRC:	3.67	ROTARY DRILL:	0.00	OTHER:	3.00	RPM (ROTARY):	55 rpm	DRAG UP:	121000 lbf
MOTOR HRS:	16.08	DRILL HRS:	12.42	TOTAL HRS:	24.00	RPM (MOTOR):	168 rpm	DRAG DN:	100000 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 1	HOLE SIZE: 8.75 in	SECTION TYPE: Build & Hold	SURVEY TYPE: Positive Pulse MWD
MANFCT.: Weatherford 1.8	STABILIZER: No	SERIAL#: 675-43586	MODEL: QLE7850
SETTING: 1.88 °	KICKPAD: No	SIZE: 6 3/4" (171mm)	LOBE CFG.: 7/8
MANFCT: Security	BIT TYPE: Security PDC BIT	TYPE: FXD55	MTR HRS THIS DAY: 12.25
IADC BIT GRADE: 1 / 2 / BT / G / X / I / BT / DMF			MTR HRS TO DATE: 23.75
			NOZZLES: 0.648 in ² TFA

BHA: 2	HOLE SIZE: 8.75 in	SECTION TYPE: Build & Hold	SURVEY TYPE: Positive Pulse MWD
MANFCT.: Weatherford 1.8	STABILIZER: No	SERIAL#: 675-43613	MODEL: QLE7850
SETTING: 1.88 °	KICKPAD: No	SIZE: 6 3/4" (171mm)	LOBE CFG.: 7/8
MANFCT: Security	BIT TYPE: Security PDC Bit	TYPE: FXD55	MTR HRS THIS DAY: 3.8333333333333333
IADC BIT GRADE: ? / ? / ? / ? / ? / ? / ? / ?			MTR HRS TO DATE: 3.8333333333333333
			NOZZLES: 0.648 in ² TFA

PUMP PARAMETERS

PRESSURE ON BTM: 3600	PRESSURE OFF BTM: 2400	TOTAL FLOW RATE: 569.66 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0% SPM: 78.00	LINER: 6.00 in STROKE VOL.: 3.8438 gal/stk
PUMP 2: TYPE: PZ-11	EFF.: 95.0% SPM: 78.00	LINER: 6.00 in STROKE VOL.: 3.8438 gal/stk
PUMP 3: TYPE:	EFF.: 100.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water	VISC: 28 sec/qt	WTR LOSS: 0 cc/30min	PV: 0 cP	YP: 3 lb/100 ft ²	pH: 8.6
DENSITY: 8.6 lb/gal	GEL 0/10: 0.00 lb/100 ft ²	SAND: 0.1	SOLIDS: 0	OIL: 0	TEMP: 143 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

Drill F/ 2601' T/ 3891 POOH for motor. Change out motor and bit. RIH. Drill F/ 3891' T/ 4560'

over the last 24 hrs @ company man request we ran 45 to 50 wt on bit with torque up as high as 11300 and diff as high 1200 and stalling at 1440. well bore is wanting to walk in rotation 6 to 8 deg. with these parameters.

@ 0600 this morning we were starting to see motor issues with the pressure spiking and diff spiking following with the motor starting to stall. @ 3700 i asked if we could drop that weight back down to at least to 35k wt. on bit to help with deviation, they did as i asked but then even with less weight as much as 20k wt. on bit the motor was still pressure spiking from 3700 psi to 5000 psi putting our diff as high as 2000 psi and stalling motor. Then Anadarko decided that the motor had failed. I believe this is do to the weight on bit that the Anadarko requested.

CUSTOMER SIGNATURE:



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Daily Activity Report

Drilling Services
v4.2.2674

Day 4 - 2012/08/14

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca, Brian Trani

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 4560.0 ft

PROGRESS: 1271.0 ft

DAILY COST: USD\$16927.50

KB ELEV: 4867 ft

END DEPTH: 5831.0 ft

AVG. ROP.: 103.8 ft/hr

PREVIOUS COST: USD\$46917.50

TOTAL COST: USD\$63845.00

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-00:10	Rotating With Motor	0.17	4595	2	07:05-07:10	Rotating With Motor	0.08	5269	2
00:10-00:15	Circ & Accumulate Surveys	0.08	4595	2	07:10-07:30	Orienting With Motor	0.33	5291	2
00:15-00:45	Rotating With Motor	0.50	4690	2	07:30-07:55	Rotating With Motor	0.42	5354	2
00:45-00:50	Circ & Accumulate Surveys	0.08	4690	2	07:55-08:00	Circ & Accumulate Surveys	0.08	5354	2
00:50-01:15	Rotating With Motor	0.42	4785	2	08:00-08:05	Rotating With Motor	0.08	5364	2
01:15-01:20	Circ & Accumulate Surveys	0.08	4785	2	08:05-08:25	Orienting With Motor	0.33	5382	2
01:20-01:25	Orienting With Motor	0.08	4791	2	08:25-08:50	Rotating With Motor	0.42	5449	2
01:25-02:00	Rotating With Motor	0.58	4879	2	08:50-08:55	Circ & Accumulate Surveys	0.08	5449	2
02:00-02:05	Circ & Accumulate Surveys	0.08	4879	2	08:55-09:30	Rotating With Motor	0.58	5544	2
02:05-02:55	Orienting With Motor - hanging up	0.83	4885	2	09:30-09:40	Circ & Accumulate Surveys - Connection	0.17	5544	2
02:55-03:25	Rotating With Motor	0.50	4975	2	09:40-09:45	Rotating With Motor	0.08	5554	2
03:25-03:30	Circ & Accumulate Surveys	0.08	4975	2	09:45-10:55	Orienting With Motor	1.17	5576	2
03:30-03:50	Rotating With Motor	0.33	5026	2	10:55-11:20	Rotating With Motor	0.42	5639	2
03:50-04:00	Circ & Accumulate Surveys - Checkshot	0.17	5026	2	11:20-11:25	Circ & Accumulate Surveys - Connection	0.08	5639	2
04:00-04:25	Orienting With Motor	0.42	5038	2	11:25-11:50	Orienting With Motor	0.42	5664	2
04:25-04:50	Rotating With Motor	0.42	5069	2	11:50-12:40	Rotating With Motor	0.83	5733	2
04:50-04:55	Circ & Accumulate Surveys	0.08	5069	2	12:40-12:45	Circ & Accumulate Surveys	0.08	5733	2
04:55-05:25	Rotating With Motor	0.50	5164	2	12:45-13:30	Circ & Condition Hole	0.75	5733	2
05:25-05:30	Circ & Accumulate Surveys	0.08	5164	2	13:30-14:00	Flow Test	0.50	5733	2
05:30-06:15	Orienting With Motor	0.75	5174	2	14:00-17:45	POOH For Motor	3.75	5733	2
06:15-06:30	Rotating With Motor	0.25	5196	2	17:45-19:15	Change Bit And Motor	1.50	5733	2
06:30-06:35	Circ & Accumulate Surveys - check shot.	0.08	5196	2	19:15-23:00	RIH	3.75	5733	3
06:35-06:55	Rotating With Motor	0.33	5196	2	23:00-23:30	Orienting With Motor	0.50	5741	3
06:55-07:05	Circ & Accumulate Surveys - Connection	0.17	5259	2	23:30-24:00	Rotating With Motor	0.50	5831	3

TIME SUMMARY (hrs):

MOTOR DRILL:	12.25	ORIENTING HRS:	4.33	ROTARY DRILL:	0.00
TIME DRILL:	0.00	ROTATING HRS:	6.92	MOTOR HRS:	14.50
MOTOR REAM:	0.00	TRIP:	7.50	OTHER:	2.00
CIRC:	2.25	ROTARY DRILL:	0.00		
MOTOR HRS:	14.50	DRILL HRS:	12.25	TOTAL HRS:	24.00

DRILLING PARAMETERS:

ROTARY TORQUE:	10500 ft-lb	STRING WEIGHT	110000 lbs
WOB SLIDING (HI):	20000 lbf	WOB ROTATE (HI):	27000 lbf
WOB SLIDING (LO):	10000 lbf	WOB ROTATE (LO):	20000 lbf
RPM (ROTARY):	55 rpm	DRAG UP:	130000 lbf
RPM (MOTOR):	168 rpm	DRAG DN:	95000 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 2	HOLE SIZE: 8.75 in	SECTION TYPE: Build & Hold	SURVEY TYPE: Positive Pulse MWD
MANFCT.: Weatherford 1.8	STABILIZER: No	SERIAL#: 675-43613	MODEL: QLE7850
SETTING: 1.88 °	KICKPAD: No	SIZE: 6 3/4" (171mm)	LOBE CFG: 7/8
MANFCT: Security	BIT TYPE: Security PDC Bit	TYPE: FXD55	MTR HRS THIS DAY: 13.5
IADC BIT GRADE: ? / ? / ? / ? / ? / ? / ? / ?			MTR HRS TO DATE: 17.33333333333333
			NOZZLES: 0.648 in² TFA

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674**Day 4 - 2012/08/14**

BHA: 3 **HOLE SIZE:** 8.75 in **SECTION TYPE:** Curve **SURVEY TYPE:** Positive Pulse MWD
MANFCT.: Weatherford 2.2 **STABILIZER:** No **SERIAL#:** 675-3590 **MODEL:** QLE7850 **LOBE CFG.:** 7/8
SETTING: 2.25 ° **KICKPAD:** No **SIZE:** 6 3/4" (171mm) **MTR HRS THIS DAY:** 1 **MTR HRS TO DATE:** 1
MANFCT: Security **BIT TYPE:** Security PDC Bit **TYPE:** FXD55 **NOZZLES:** 0.648 in² TFA
IADC BIT GRADE: 1 / 1 / WT / A / X / I / NO / TD

PUMP PARAMETERS

PRESSURE ON BTM: 3400		PRESSURE OFF BTM: 2600		TOTAL FLOW RATE: 584.65 gal/min	
PUMP 1:	TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00	LINER: 6.00 in	STROKE VOL.: 4.0461 gal/stk
PUMP 2:	TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00	LINER: 6.00 in	STROKE VOL.: 3.8438 gal/stk
PUMP 3:	TYPE:	EFF.: 100.0%	SPM: 0.00	LINER: 0.00 in	STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water	VISC: 28 sec/qt	WTR LOSS: 0 cc/30min	PV: 2 cP	YP: 3 lb/100 ft²	pH: 8.4
DENSITY: 8.4 lb/gal	GEL 0/10: 0.00 lb/100 ft²	SAND: 0.01	SOLIDS: 0.4	OIL: 0	TEMP: 155 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

Drill F/ 4560 to

@ 5670 we were running 25 wt. on bit with a diff of 580 and rpm of 40, the pressure spiked from 3144 psi to 4123 and the diff went from 500 to 1200, Driller picked up of btm dropped his stks from 78 & 78 to 30 & 30 and SPP was still holding at 4000 psi.

Prior to this the motor had been throwing us little spikes anywhere from 500 diff to 800 diff using same parameters in rotation.

The last two slides put in the motor spiked using parameters of 10k wt on bit, w/ 150 diff with 100 rop motor would drill along just fine and then towards the end of the slide the motor diff would spike f/ 150 to 800 to 1100 psi.

Rubber found in bit on surface. Changed bit and motor.

CUSTOMER SIGNATURE:

**Weatherford®**

Daily Activity Report

Day 5 - 2012/08/15**Drilling Services**
v4.2.2674**FILE #:** 4027067**WELL NAME:** CANNON 37N-E3HZ**SERVICE CO.:** Precision Energy Services**JOB TYPE:** Horizontal**COMPANY:** Anadarko Petroleum Corporation**SURVEY TYPE:** HEL LWD**RIG & NO:** Helmerich & Payne 307**SURFACE LOCATION:****FIELD / LOCATION:** Wattenburg / CO / USA**DIR Supervisor:** Josh Monroe, Charles Apodaca, Brian Trani**DIR Trainee:** Jacob Hofer**Other:** Cory Langford**MWD Supervisor:** Rusty Komrs**MWD Trainee:** James Asher**GROUND ELEV:** 4842 ft**START DEPTH:** 5831.0 ft**PROGRESS:** 1140.0 ft**DAILY COST:** USD\$17227.50**KB ELEV:** 4867 ft**END DEPTH:** 6971.0 ft**AVG. ROP.:** 66.4 ft/hr**PREVIOUS COST:** USD\$63845.00**TOTAL COST:** USD\$81072.50**WORK STATUS:** Operating*(All units are imperial.)*

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-00:10	Circ & Accumulate Surveys	0.17	5831	3	13:50-14:00	Circ & Accumulate Surveys	0.17	6591	3
00:10-00:45	Orienting With Motor	0.58	5843	3	14:00-14:40	Orienting With Motor	0.67	6622	3
00:45-01:15	Rotating With Motor	0.50	5925	3	14:40-14:50	Circ & Accumulate Surveys	0.17	6622	3
01:15-01:35	Work on Top Drive - Inspect top drive	0.33	5925	3	14:50-15:15	Orienting With Motor	0.42	6654	3
01:35-01:40	Circ & Accumulate Surveys	0.08	5925	3	15:15-15:25	Circ & Accumulate Surveys	0.17	6654	3
01:40-01:55	Orienting With Motor	0.25	5933	3	15:25-15:40	Orienting With Motor	0.25	6686	3
01:55-02:35	Rotating With Motor	0.67	6020	3	15:40-15:50	Circ & Accumulate Surveys	0.17	6686	3
02:35-02:40	Circ & Accumulate Surveys	0.08	6020	3	15:50-16:15	Orienting With Motor	0.42	6717	3
02:40-03:10	Rotating With Motor	0.50	6115	3	16:15-16:25	Circ & Accumulate Surveys	0.17	6717	3
03:10-03:15	Circ & Accumulate Surveys	0.08	6115	3	16:25-16:30	Rotating With Motor	0.08	6723	3
03:15-03:40	Orienting With Motor	0.42	6127	3	16:30-16:55	Orienting With Motor	0.42	6749	3
03:40-04:15	Rotating With Motor	0.58	6211	3	16:55-17:05	Circ & Accumulate Surveys	0.17	6749	3
04:15-04:20	Circ & Accumulate Surveys	0.08	6211	3	17:05-17:50	Orienting With Motor	0.75	6780	3
04:20-04:35	Orienting With Motor	0.25	6219	3	17:50-18:00	Circ & Accumulate Surveys	0.17	6780	3
04:35-05:20	Rotating With Motor	0.75	6306	3	18:00-18:10	Orienting With Motor	0.17	6795	3
05:20-05:25	Circ & Accumulate Surveys	0.08	6306	3	18:10-18:30	Other - See Comments - STAND BACK	0.33	6795	3
05:25-05:40	Rotating With Motor	0.25	6350	3	18:30-18:50	Orienting With Motor	0.33	6812	3
05:40-06:40	Orienting With Motor	1.00	6401	3	18:50-18:55	Circ & Accumulate Surveys	0.08	6812	3
06:40-07:35	Work On MWD - Troubleshoot	0.92	6401	3	18:55-19:50	Other - See Comments - WORK ON MUD LINE	0.92	6812	3
07:35-07:40	Circ & Accumulate Surveys	0.08	6401	3	19:50-20:15	Orienting With Motor	0.42	6827	3
07:40-08:45	Orienting With Motor	1.08	6433	3	20:15-20:20	Other - See Comments - TAKE PMP OFF LINE	0.08	6827	3
08:45-08:50	Circ & Accumulate Surveys	0.08	6433	3	20:20-20:50	Orienting With Motor	0.50	6844	3
08:50-09:00	Rotating With Motor	0.17	6465	3	20:50-20:55	Circ & Accumulate Surveys	0.08	6844	3
09:00-09:10	Circ & Accumulate Surveys	0.17	6465	3	20:55-21:20	Orienting With Motor	0.42	6856	3
09:10-09:50	Orienting With Motor	0.67	6496	3	21:20-21:25	Other - See Comments - TAKE PMP OF LINE	0.08	6856	3
09:50-10:00	Circ & Accumulate Surveys	0.17	6496	3	21:25-22:20	Orienting With Motor	0.92	6875	3
10:00-10:35	Orienting With Motor	0.58	6528	3	22:20-22:25	Circ & Accumulate Surveys - CONNECTION	0.08	6875	3
10:35-10:45	Circ & Accumulate Surveys	0.17	6528	3	22:25-22:55	Orienting With Motor	0.50	6907	3
10:45-11:00	Rotating With Motor	0.25	6559	3	22:55-23:00	Circ & Accumulate Surveys	0.08	6907	3
11:00-11:10	Circ & Accumulate Surveys	0.17	6559	3	23:00-23:20	Orienting With Motor	0.33	6939	3
11:10-11:40	Gamma Rerun	0.50	6559	3	23:20-23:25	Circ & Accumulate Surveys	0.08	6939	3
11:40-12:20	Other - See Comments - Orient toolface	0.67	6559	3	23:25-24:00	Orienting With Motor	0.58	6971	3
12:20-13:50	Orienting With Motor	1.50	6591	3			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 17.17	ORIENTING HRS: 13.42	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 3.75	MOTOR HRS: 20.17
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 3.00	ROTARY DRILL: 0.00	OTHER: 3.83
MOTOR HRS: 20.17	DRILL HRS: 17.17	TOTAL HRS: 24.00

DRILLING PARAMETERS:

ROTARY TORQUE: 10000 ft-lb	STRING WEIGHT 120000 lbs
WOB SLIDING (HI): 30000 lbf	WOB ROTATE (HI): 35000 lbf
WOB SLIDING (LO): 10000 lbf	WOB ROTATE (LO): 12000 lbf
RPM (ROTARY): 30 rpm	DRAG UP: 135000 lbf
RPM (MOTOR): 168 rpm	DRAG DN: 90000 lbf

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 5 - 2012/08/15

BHA / MOTOR / BIT INFORMATION:

BHA: 3	HOLE SIZE: 8.75 in	SECTION TYPE: Curve	SURVEY TYPE: Positive Pulse MWD
MANFCT.: Weatherford 2.2	STABILIZER: No	SERIAL#: 675-3590	MODEL: QLE7850
SETTING: 2.25 °	KICKPAD: No	SIZE: 6 3/4" (171mm)	LOBE CFG.: 7/8
MANFCT: Security	BIT TYPE: Security PDC Bit	TYPE: FXD55	MTR HRS THIS DAY: 20.166666666666666
IADC BIT GRADE: 1 / 1 / WT / A / X / I / NO / TD			NOZZLES: 0.648 in² TFA

PUMP PARAMETERS

PRESSURE ON BTM: 3150	PRESSURE OFF BTM: 2300	TOTAL FLOW RATE: 598.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00
PUMP 2: TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00
PUMP 3: TYPE:	EFF.: 100.0%	SPM: 0.00

MUD RECORD

MUD TYPE: Water	VISC: 38 sec/qt	WTR LOSS: 8.4 cc/30min	PV: 10 cP	YP: 10 lb/100 ft²	pH: 8.6
DENSITY: 8.8 lb/gal	GEL 0/10: 3.00 lb/100 ft²	SAND: 0.2	SOLIDS: 1.9	OIL: 0	TEMP: 128 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

Drill F/ 5739 to 6971

CUSTOMER SIGNATURE:

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 6 - 2012/08/16

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca, Brian Trani

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 6971.0 ft

PROGRESS: 469.0 ft

DAILY COST: USD\$17227.50

KB ELEV: 4867 ft

END DEPTH: 7440.0 ft

AVG. ROP.: 30.3 ft/hr

PREVIOUS COST: USD\$81072.50

TOTAL COST: USD\$98300.00

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-00:10	Circ & Accumulate Surveys - Connection	0.17	6971	3	09:25-10:15	Orienting With Motor	0.83	7257	3
00:10-01:15	Orienting With Motor	1.08	7003	3	10:15-10:25	Circ & Accumulate Surveys	0.17	7257	3
01:15-01:20	Circ & Accumulate Surveys	0.08	7003	3	10:25-11:20	Rotating With Motor	0.92	7271	3
01:20-02:35	Orienting With Motor	1.25	7035	3	11:20-11:50	Work Tight Hole	0.50	7271	3
02:35-02:40	Circ & Accumulate Surveys	0.08	7035	3	11:50-12:40	Orienting With Motor	0.83	7289	3
02:40-03:30	Orienting With Motor	0.83	7066	3	12:40-12:50	Circ & Accumulate Surveys	0.17	7289	3
03:30-03:35	Circ & Accumulate Surveys - Connection	0.08	7066	3	12:50-13:50	Orienting With Motor	1.00	7322	3
03:35-04:40	Orienting With Motor	1.08	7098	3	13:50-14:05	Circ & Accumulate Surveys	0.25	7322	3
04:40-04:45	Circ & Accumulate Surveys	0.08	7098	3	14:05-15:30	Orienting With Motor	1.42	7354	3
04:45-05:25	Orienting With Motor	0.67	7129	3	15:30-15:45	Circ & Accumulate Surveys	0.25	7354	3
05:25-05:30	Circ & Accumulate Surveys	0.08	7129	3	15:45-17:00	Orienting With Motor	1.25	7386	3
05:30-06:50	Orienting With Motor	1.33	7161	3	17:00-17:05	Circ & Accumulate Surveys	0.08	7386	3
06:50-07:00	Circ & Accumulate Surveys	0.17	7161	3	17:05-18:00	Rotating With Motor	0.92	7440	3
07:00-08:00	Rotating With Motor	1.00	7193	3	18:00-18:10	Circ & Accumulate Surveys	0.17	7440	3
08:00-08:10	Circ & Accumulate Surveys	0.17	7193	3	18:10-20:00	Circ & Condition Hole	1.83	7440	3
08:10-09:15	Orienting With Motor	1.08	7225	3	20:00-24:00	POOH To Run Casing	4.00	7440	3
09:15-09:25	Circ & Accumulate Surveys	0.17	7225	3			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 15.50	ORIENTING HRS: 12.67	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 2.83	MOTOR HRS: 19.50
MOTOR REAM: 0.00		TRIP: 4.00
CIRC: 4.00	ROTARY DRILL: 0.00	OTHER: 0.50
MOTOR HRS: 19.50	DRILL HRS: 15.50	TOTAL HRS: 24.00

DRILLING PARAMETERS:

ROTARY TORQUE: 10000 ft-lb	STRING WEIGHT: 140000 lbs
WOB SLIDING (HI): 20000 lbf	WOB ROTATE (HI): 25000 lbf
WOB SLIDING (LO): 5000 lbf	WOB ROTATE (LO): 15000 lbf
RPM (ROTARY): 25 rpm	DRAG UP: 186000 lbf
RPM (MOTOR): 167 rpm	DRAG DN: 131000 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 3	HOLE SIZE: 8.75 in	SECTION TYPE: Curve	SURVEY TYPE: Positive Pulse MWD
MANFCT.: Weatherford 2.2	STABILIZER: No	SERIAL#: 675-3590	MODEL: QLE7850
SETTING: 2.25 °	KICKPAD: No	SIZE: 6 3/4" (171mm)	LOBE CFG.: 7/8
MANFCT: Security	BIT TYPE: Security PDC Bit	TYPE: FXD55	MTR HRS THIS DAY: 19.5
IADC BIT GRADE: 1 / 1 / WT / A / X / I / NO / TD			MTR HRS TO DATE: 40.66666666666666
			NOZZLES: 0.648 in² TFA

PUMP PARAMETERS

PRESSURE ON BTM: 3500	PRESSURE OFF BTM: 3000	TOTAL FLOW RATE: 598.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00
PUMP 2: TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00
PUMP 3: TYPE:	EFF.: 100.0%	SPM: 0.00
	LINER: 6.00 in	STROKE VOL.: 3.8438 gal/stk
	LINER: 6.00 in	STROKE VOL.: 3.8438 gal/stk
	LINER: 0.00 in	STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water	VISC: 40 sec/qt	WTR LOSS: 8.4 cc/30min	PV: 12 cP	YP: 10 lb/100 ft²	pH: 8.6
DENSITY: 9.8 lb/gal	GEL 0/10: 10.00 lb/100 ft²	SAND: 0.2	SOLIDS: 1.9	OIL: 0	TEMP: 174 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min



Daily Activity Report

Drilling Services
v4.2.2674

Day 6 - 2012/08/16

COMMENTS:

DRILL F/ 6971 TO 7440'

@ 0240 A.M. 6907 M.D. we were 7.25' above And 21' Right azm 193.00 and needing it to be 185 azm. walking away from the line 14 ft. per 100. we have been fighting inc to at this time needing build up rates of 10 and only getting 9. prior to this i was getting 12 and was putting in slides HS at what ever distance it called for and then the rest turn. Talking to company man he was confident that we could slide for more turn and slow Gpm down and mash on weight to help gain on our angle and turn not allowing us to fall below our build rate needed.

As per Anadarko we are allowed to land 10' high, Anadarko prefers this.

Curve landed @ 7386' MD. Drill to 7440' per co. mans request for casing.

CUSTOMER SIGNATURE:



Weatherford®

Daily Activity Report

Drilling Services
v4.2.2674

Day 7 - 2012/08/17

FILE #: 4027067 WELL NAME: CANNON 37N-E3HZ SERVICE CO.: Precision Energy Services
JOB TYPE: Horizontal COMPANY: Anadarko Petroleum Corporation SURVEY TYPE: HEL LWD
RIG & NO: Helmerich & Payne 307 SURFACE LOCATION: FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca
DIR Trainee: Jacob Hofer
MWD Supervisor: Rusty Komrs
Other: Cory Langford

GROUND ELEV: 4842 ft START DEPTH: 7440.0 ft PROGRESS: 0.0 ft DAILY COST: USD\$17227.50
KB ELEV: 4867 ft END DEPTH: 7440.0 ft AVG. ROP.: 0.0 ft/hr PREVIOUS COST: USD\$98300.00
WORK STATUS: Operating (All units are imperial.) TOTAL COST: USD\$115527.50

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-01:30	POOH To Run Casing	1.50	7440	3	03:00-24:00	Wait On Orders	21.00	7440	n/a
01:30-03:00	Lay Down Directional Tools - See comments	1.50	7440	n/a			0.00		

TIME SUMMARY (hrs):				DRILLING PARAMETERS:			
MOTOR DRILL:	0.00	ORIENTING HRS:	0.00	ROTARY DRILL:	0.00	ROTARY TORQUE:	10000 ft-lb
TIME DRILL:	0.00	ROTATING HRS:	0.00	MOTOR HRS:	0.00	WOB SLIDING (HI):	25000 lbf
MOTOR REAM:	0.00			TRIP:	1.50	WOB SLIDING (LO):	5000 lbf
CIRC:	0.00	ROTARY DRILL:	0.00	OTHER:	22.50	RPM (ROTARY):	25 rpm
MOTOR HRS:	0.00	DRILL HRS:	0.00	TOTAL HRS:	24.00	RPM (MOTOR):	167 rpm
						STRING WEIGHT	140000 lbs
						WOB ROTATE (HI):	25000 lbf
						WOB ROTATE (LO):	12000 lbf
						DRAG UP:	186000 lbf
						DRAG DN:	131000 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 3 HOLE SIZE: 8.75 in SECTION TYPE: Curve SURVEY TYPE: Positive Pulse MWD
MANFCT.: Weatherford 2.2 STABILIZER: No SERIAL#: 675-3590 MODEL: QLE7850 LOBE CFG.: 7/8
SETTING: 2.25 ° KICKPAD: No SIZE: 6 3/4" (171mm) MTR HRS THIS DAY: 0 MTR HRS TO DATE: 40.66666666666666
MANFCT: Security BIT TYPE: Security PDC Bit TYPE: FXD55 NOZZLES: 0.648 in² TFA
IADC BIT GRADE: 1 / 1 / WT / A / X / I / NO / TD

PUMP PARAMETERS

PRESSURE ON BTM: 3500 PRESSURE OFF BTM: 3000 TOTAL FLOW RATE: 569.66 gal/min
PUMP 1: TYPE: PZ-11 EFF.: 95.0% SPM: 78.00 LINER: 6.00 in STROKE VOL.: 3.8438 gal/stk
PUMP 2: TYPE: PZ-11 EFF.: 95.0% SPM: 78.00 LINER: 6.00 in STROKE VOL.: 3.8438 gal/stk
PUMP 3: TYPE: EFF.: 100.0% SPM: 0.00 LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Gelchem VISC: 40 sec/qt WTR LOSS: 8.4 cc/30min PV: 12 cP YP: 10 lb/100 ft² pH: 8.6
DENSITY: 9.8 lb/gal GEL 0/10: 10.00 lb/100 ft² SAND: 0.2 SOLIDS: 1.9 OIL: 0 TEMP: 174 °F
LIQUID BASE: Water LIQUID RATE: 0 gal/min GAS TYPE: GAS RATE: 0 cu ft/min

COMMENTS:

POOH to run casing. Lay down tools. Run 7" Casing.

Could not get MWD tool pulled out. Some centralizer rubber was missing on first centralizer. We think that's what jammed tool into UBHO. Left UBHO and monel screwed together and laid down with MWD tool still inside. 4 1/4 IF TOOLS are Torqed 30,000

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 8 - 2012/08/18

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

DIR Trainee: Jacob Hofer

MWD Supervisor: Rusty Komrs

Other: Cory Langford

GROUND ELEV: 4842 ft

START DEPTH: 7440.0 ft

PROGRESS: 0.0 ft

DAILY COST: USD\$38110.00

KB ELEV: 4867 ft

END DEPTH: 7440.0 ft

AVG. ROP.: 0.0 ft/hr

PREVIOUS COST: USD\$115527.50

WORK STATUS: Operating

(All units are imperial.)

TOTAL COST: USD\$153637.50

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-11:15	Wait On Orders	11.25	7440	n/a	15:30-16:00	Shallow Test Tools	0.50	7440	4
11:15-13:15	PU Directional Tools	2.00	7440	4	16:00-23:50	RIH	7.83	7440	4
13:15-15:30	Other - See Comments - Program LWD tools	2.25	7440	4	23:50-24:00	Other - See Comments - JSA	0.17	7440	4

TIME SUMMARY (hrs):

MOTOR DRILL: 0.00	ORIENTING HRS: 0.00	ROTARY DRILL: 0.00	ROTARY TORQUE:	STRING WEIGHT	140000 lbs
TIME DRILL: 0.00	ROTATING HRS: 0.00	MOTOR HRS: 0.00	WOB SLIDING (HI): 18000 lbf	WOB ROTATE (HI): 25000 lbf	
MOTOR REAM: 0.00		TRIP: 7.83	WOB SLIDING (LO): 5000 lbf	WOB ROTATE (LO): 6000 lbf	
CIRC: 0.00	ROTARY DRILL: 0.00	OTHER: 16.17	RPM (ROTARY): 70 rpm	DRAG UP: 181000 lbf	
MOTOR HRS: 0.00	DRILL HRS: 0.00	TOTAL HRS: 24.00	RPM (MOTOR): 251 rpm	DRAG DN: 131000 lbf	

DRILLING PARAMETERS:**BHA / MOTOR / BIT INFORMATION:**

BHA: 4	HOLE SIZE: 6.125 in	SECTION TYPE: Lateral 1	SURVEY TYPE: HEL LWD
MANFCT.: Weatherford 1.1	STABILIZER: 5 7/8" (149mm)	SERIAL#: 475-1583	MODEL: LE6750
SETTING: 1.15 °	KICKPAD: No	SIZE: 5" (127mm)	LOBE CFG.: 6/7
MANFCT: Varel	BIT TYPE: Varel PDC Bit	TYPE: VM513H	MTR HRS THIS DAY: 0
IADC BIT GRADE: 8 / 1 / JD / N / X / I / BT / PR			MTR HRS TO DATE: 0
			NOZZLES: 0.648 in² TFA

PUMP PARAMETERS

PRESSURE ON BTM: 3700	PRESSURE OFF BTM: 3100	TOTAL FLOW RATE: 307.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0%	SPM: 80.00
PUMP 2: TYPE: PZ-11	EFF.: 95.0%	SPM: 0.00
PUMP 3: TYPE:	EFF.: 100.0%	SPM: 0.00
	LINER: 6.00 in	STROKE VOL.: 3.8438 gal/stk
	LINER: 0.00 in	STROKE VOL.: 0.0000 gal/stk
	LINER: 0.00 in	STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Gelchem	VISC: 39 sec/qt	WTR LOSS: 6.8 cc/30min	PV: 12 cP	YP: 11 lb/100 ft²	pH: 8.6
DENSITY: 9.9 lb/gal	GEL 0/10: 3.00 lb/100 ft²	SAND: 0.5	SOLIDS: 6.7	OIL: 0	TEMP: 174 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

Wait on orders.

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 9 - 2012/08/19

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

GROUND ELEV: 4842 ft

START DEPTH: 7440.0 ft

PROGRESS: 905.0 ft

DAILY COST: USD\$20550.00

KB ELEV: 4867 ft

END DEPTH: 8345.0 ft

AVG. ROP.: 50.8 ft/hr

PREVIOUS COST: USD\$153637.50

TOTAL COST: USD\$174187.50

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-00:20	Other - See Comments - PSI Test Casing	0.33	7440	4	11:55-12:45	Orienting With Motor	0.83	7911	4
00:20-01:00	Wash To Bottom - Wash down to cement	0.67	7440	4	12:45-13:00	Rotating With Motor	0.25	7934	4
01:00-02:40	Drill Out Flt, Shoe & Cmmt	1.67	7440	4	13:00-13:10	Circ & Accumulate Surveys - Check Shot	0.17	7934	4
02:40-03:20	Rotating With Motor	0.67	7492	4	13:10-13:30	Orienting With Motor	0.33	7949	4
03:20-03:35	Rig Service	0.25	7492	4	13:30-14:00	Rotating With Motor	0.50	7965	4
03:35-03:40	Circ & Accumulate Surveys - no good	0.08	7492	4	14:00-14:10	Circ & Accumulate Surveys	0.17	7965	4
03:40-04:50	Rotating With Motor	1.17	7586	4	14:10-15:15	Orienting With Motor	1.08	7995	4
04:50-04:55	Circ & Accumulate Surveys	0.08	7586	4	15:15-16:15	Rotating With Motor	1.00	8060	4
04:55-06:10	Orienting With Motor	1.25	7606	4	16:15-16:35	Circ & Accumulate Surveys	0.33	8060	4
06:10-07:00	Rotating With Motor	0.83	7681	4	16:35-17:15	Orienting With Motor	0.67	8085	4
07:00-07:15	Circ & Accumulate Surveys	0.25	7681	4	17:15-17:25	Orienting With Motor	0.17	8085	4
07:15-08:15	Orienting With Motor	1.00	7710	4	17:25-18:30	Rotating With Motor	1.08	8155	4
08:15-08:45	Rotating With Motor	0.50	7776	4	18:30-18:35	Circ & Accumulate Surveys	0.08	8155	4
08:45-09:30	Gamma Rerun	0.75	7776	4	18:35-20:20	Orienting With Motor	1.75	8186	4
09:30-09:45	Circ & Accumulate Surveys	0.25	7776	4	20:20-21:15	Rotating With Motor	0.92	8250	4
09:45-10:30	Orienting With Motor	0.75	7816	4	21:15-21:20	Circ & Accumulate Surveys	0.08	8250	4
10:30-10:50	Rotating With Motor	0.33	7839	4	21:20-21:55	Orienting With Motor	0.58	8263	4
10:50-11:00	Circ & Accumulate Surveys - Checkshot	0.17	7839	4	21:55-23:20	Rotating With Motor	1.42	8345	4
11:00-11:25	Orienting With Motor	0.42	7854	4	23:20-23:25	Circ & Accumulate Surveys	0.08	8345	4
11:25-11:45	Rotating With Motor	0.33	7871	4	23:25-24:00	Rig Service	0.58	8345	4
11:45-11:55	Circ & Accumulate Surveys	0.17	7871	4			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 17.83	ORIENTING HRS: 8.83	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 9.00	MOTOR HRS: 22.08
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 4.25	ROTARY DRILL: 0.00	OTHER: 1.92
MOTOR HRS: 22.08	DRILL HRS: 17.83	TOTAL HRS: 24.00

DRILLING PARAMETERS:

ROTARY TORQUE: 7500 ft-lb	STRING WEIGHT: 128000 lbs
WOB SLIDING (HI): 15000 lbf	WOB ROTATE (HI): 25000 lbf
WOB SLIDING (LO): 5000 lbf	WOB ROTATE (LO): 10000 lbf
RPM (ROTARY): 55 rpm	DRAG UP: 164000 lbf
RPM (MOTOR): 252 rpm	DRAG DN: 98000 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 4	HOLE SIZE: 6.125 in	SECTION TYPE: Lateral 1	SURVEY TYPE: HEL LWD
MANFCT.: Weatherford 1.1	STABILIZER: 5 7/8" (149mm)	SERIAL#: 475-1583	MODEL: LE6750
SETTING: 1.15 °	KICKPAD: No	SIZE: 5" (127mm)	LOBE CFG.: 6/7
MANFCT: Varel	BIT TYPE: Varel PDC Bit	TYPE: VM513H	MTR HRS THIS DAY: 22.08333333
IADC BIT GRADE: 8 / 1 / JD / N / X / I / BT / PR			MTR HRS TO DATE: 22.083333333333
			NOZZLES: 0.648 in ² TFA



Weatherford

Daily Activity Report

Drilling Services

v4.2.2674

Day 9 - 2012/08/19

PUMP PARAMETERS

PRESSURE ON BTM: 2800

PRESSURE OFF BTM: 2300

TOTAL FLOW RATE: 307.00 gal/min

PUMP 1: TYPE: PZ-11

EFF.: 95.0%

SPM: 80.00

LINER: 6.00 in

STROKE VOL.: 3.8438 gal/stk

PUMP 2: TYPE: PZ-11

EFF.: 95.0%

SPM: 0.00

LINER: 0.00 in

STROKE VOL.: 0.0000 gal/stk

PUMP 3: TYPE:

EFF.: 100.0%

SPM: 0.00

LINER: 0.00 in

STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water

VISC: 39 sec/qt

WTR LOSS: 6 cc/30min

PV: 12 cP

YP: 11 lb/100 ft² pH: 8.6

DENSITY: 9.8 lb/gal

GEL 0/10: 3.00 lb/100 ft²

SAND: 0.5

SOLIDS: 0

OIL: 0

TEMP: 175 °F

LIQUID BASE: Water

LIQUID RATE: 0 gal/min

GAS TYPE:

GAS RATE: 0 cu ft/min

COMMENTS:

Drill f/ 7440 to 8345'

The well built to 96 degrees out of the shoe and we experienced difficulties dropping the angle back down. This 1.15 stabilized motor is only giving us 3-5 degree drop rates per 100'. It is taking 40' - 55' of slide LS to get results of 1.5 - 2.5 dogleg. Anadarko was fine with a 4 degree dogleg. Continue sliding LS until we get below 90 degrees to gain on a TVD of 7005' @ 0' VS 90 degrees. Typically in on previous wells in this area we would only have to slide 8' - 10' with a 1.5 slick motor to see results of a 1-2 degree drop.

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 10 - 2012/08/20

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 8345.0 ft

PROGRESS: 1329.0 ft

DAILY COST: USD\$20550.00

KB ELEV: 4867 ft

END DEPTH: 9674.0 ft

AVG. ROP.: 59.7 ft/hr

PREVIOUS COST: USD\$174187.50

TOTAL COST: USD\$194737.50

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-01:00	Rotating With Motor	1.00	8440	4	11:45-12:20	Rotating With Motor	0.58	9105	4
01:00-01:05	Circ & Accumulate Surveys	0.08	8440	4	12:20-12:25	Circ & Accumulate Surveys	0.08	9105	4
01:05-02:40	Rotating With Motor	1.58	8535	4	12:25-13:40	Rotating With Motor	1.25	9200	4
02:40-02:45	Circ & Accumulate Surveys	0.08	8535	4	13:40-13:45	Circ & Accumulate Surveys	0.08	9200	4
02:45-04:05	Rotating With Motor	1.33	8630	4	13:45-15:10	Rotating With Motor	1.42	9294	4
04:05-04:10	Circ & Accumulate Surveys	0.08	8630	4	15:10-15:15	Circ & Accumulate Surveys	0.08	9294	4
04:10-05:15	Rotating With Motor	1.08	8726	4	15:15-16:25	Orienting With Motor	1.17	9322	4
05:15-05:20	Circ & Accumulate Surveys	0.08	8726	4	16:25-17:30	Rotating With Motor	1.08	9389	4
05:20-07:10	Orienting With Motor	1.83	8757	4	17:30-17:35	Circ & Accumulate Surveys	0.08	9389	4
07:10-08:00	Rotating With Motor	0.83	8821	4	17:35-19:00	Orienting With Motor	1.42	9421	4
08:00-08:10	Circ & Accumulate Surveys	0.17	8821	4	19:00-20:20	Rotating With Motor	1.33	9485	4
08:10-08:25	Work on Pumps	0.25	8821	4	20:20-20:25	Circ & Accumulate Surveys	0.08	9485	4
08:25-09:30	Orienting With Motor	1.08	8841	4	20:25-21:35	Orienting With Motor	1.17	9496	4
09:30-10:20	Rotating With Motor	0.83	8915	4	21:35-22:40	Rotating With Motor	1.08	9580	4
10:20-10:25	Circ & Accumulate Surveys	0.08	8915	4	22:40-22:45	Circ & Accumulate Surveys	0.08	9580	4
10:25-11:10	Rotating With Motor	0.75	9010	4	22:45-23:40	Rotating With Motor	0.92	9674	4
11:10-11:15	Circ & Accumulate Surveys	0.08	9010	4	23:40-24:00	Rig Service	0.33	9674	4
11:15-11:45	Rotating With Motor	0.50	9030	4			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 22.25	ORIENTING HRS: 6.67	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 15.58	MOTOR HRS: 23.42
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 1.17	ROTARY DRILL: 0.00	OTHER: 0.58
MOTOR HRS: 23.42	DRILL HRS: 22.25	TOTAL HRS: 24.00

DRILLING PARAMETERS:

ROTARY TORQUE: 9000 ft-lb	STRING WEIGHT: 128000 lbs
WOB SLIDING (HI): 20000 lbf	WOB ROTATE (HI): 30000 lbf
WOB SLIDING (LO): 10000 lbf	WOB ROTATE (LO): 15000 lbf
RPM (ROTARY): 70 rpm	DRAG UP: 164000 lbf
RPM (MOTOR): 252 rpm	DRAG DN: 98000 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 4	HOLE SIZE: 6.125 in	SECTION TYPE: Lateral 1	SURVEY TYPE: HEL LWD
MANFCT.: Weatherford 1.1	STABILIZER: 5 7/8" (149mm)	SERIAL#: 475-1583	MODEL: LE6750
SETTING: 1.15 °	KICKPAD: No	SIZE: 5" (127mm)	LOBE CFG.: 6/7
MANFCT: Varel	BIT TYPE: Varel PDC Bit	TYPE: VM513H	MTR HRS THIS DAY: 23.41666667
IADC BIT GRADE: 8 / 1 / JD / N / X / I / BT / PR			NOZZLES: 0.648 in² TFA
			NOZZLE HRS TO DATE: 45.5



Weatherford®

Daily Activity Report

Drilling Services
v4.2.2674

Day 10 - 2012/08/20

PUMP PARAMETERS

PRESSURE ON BTM: 2800

PRESSURE OFF BTM: 2100

TOTAL FLOW RATE: 307.00 gal/min

PUMP 1: TYPE: PZ-11

EFF.: 95.0%

SPM: 80.00

LINER: 6.00 in

STROKE VOL.: 3.8438 gal/stk

PUMP 2: TYPE: PZ-11

EFF.: 95.0%

SPM: 0.00

LINER: 0.00 in

STROKE VOL.: 0.0000 gal/stk

PUMP 3: TYPE:

EFF.: 100.0%

SPM: 0.00

LINER: 0.00 in

STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water

VISC: 39 sec/qt

WTR LOSS: 9.2 cc/30min

PV: 9 cP

YP: 9 lb/100 ft²

pH: 12.6

DENSITY: 9.9 lb/gal

GEL 0/10: 2.00 lb/100 ft²

SAND: 0.5

SOLIDS: 6.7

OIL: 0

TEMP: 204 °F

LIQUID BASE: Water

LIQUID RATE: 0 gal/min

GAS TYPE:

GAS RATE: 0 cu ft/min

COMMENTS:

Drill Ahead in Lateral F/ 8345' - 9674

While trying to slid @ 9485 we were 89.51 inc. and 181.60 azm. 2.89' below the line and 12' left we had 10' of slid in taking a full hr, at company mans request we were to rotate ahead putting 30k wt. on bit trying to get it to build in rotation.

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 11 - 2012/08/21

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 9674.0 ft

PROGRESS: 444.0 ft

DAILY COST: USD\$26930.00

KB ELEV: 4867 ft

END DEPTH: 10118.0 ft

AVG. ROP.: 43.3 ft/hr

PREVIOUS COST: USD\$194737.50

TOTAL COST: USD\$221667.50

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-00:15	Rig Service	0.25	9674	4	07:00-08:15	Rotating With Motor	1.25	10054	4
00:15-00:25	Circ & Accumulate Surveys	0.17	9674	4	08:15-08:25	Circ & Accumulate Surveys	0.17	10054	4
00:25-01:35	Orienting With Motor	1.17	9698	4	08:25-10:45	Orienting With Motor	2.33	10094	4
01:35-01:55	Rotating With Motor	0.33	9736	4	10:45-11:20	Rotating With Motor	0.58	10118	4
01:55-02:10	Other - See Comments - LWD	0.25	9736	4	11:20-13:00	Circ & Condition Hole	1.67	10118	4
02:10-02:35	Rotating With Motor	0.42	9769	4	13:00-13:05	Circ & Accumulate Surveys	0.08	10118	4
02:35-02:40	Circ & Accumulate Surveys	0.08	9769	4	13:05-13:40	Flow Test	0.58	10118	4
02:40-04:10	Rotating With Motor	1.50	9863	4	13:40-18:40	POOH To Change BHA	5.00	10118	4
04:10-04:15	Circ & Accumulate Surveys	0.08	9863	4	18:40-18:50	Other - See Comments - JSA	0.17	10118	4
04:15-05:20	Rotating With Motor	1.08	9959	4	18:50-21:20	Handle Directional Tools - CHANGE BIT & M.M.	2.50	10118	4
05:20-05:25	Circ & Accumulate Surveys	0.08	9959	4	21:20-23:30	Work On MWD - DOWNLOAD & PROGRAM	2.17	10118	5
05:25-07:00	Orienting With Motor	1.58	9991	4	23:30-24:00	RIH	0.50	10118	5

TIME SUMMARY (hrs):

MOTOR DRILL: 10.25	ORIENTING HRS: 5.08	ROTARY DRILL: 0.00	ROTARY TORQUE: 9800 ft-lb	STRING WEIGHT: 128000 lbs
TIME DRILL: 0.00	ROTATING HRS: 5.17	MOTOR HRS: 12.58	WOB SLIDING (HI): 30000 lbf	WOB ROTATE (HI): 30000 lbf
MOTOR REAM: 0.00		TRIP: 5.50	WOB SLIDING (LO): 10000 lbf	WOB ROTATE (LO): 20000 lbf
CIRC: 2.33	ROTARY DRILL: 0.00	OTHER: 5.92	RPM (ROTARY): 70 rpm	DRAG UP: 170000 lbf
MOTOR HRS: 12.58	DRILL HRS: 10.25	TOTAL HRS: 24.00	RPM (MOTOR): 251 rpm	DRAG DN: 96000 lbf

DRILLING PARAMETERS:

BHA / MOTOR / BIT INFORMATION:

BHA: 4	HOLE SIZE: 6.125 in	SECTION TYPE: Lateral 1	SURVEY TYPE: HEL LWD
MANFCT.: Weatherford 1.1	STABILIZER: 5 7/8" (149mm)	SERIAL#: 475-1583	MODEL: LE6750
SETTING: 1.15 °	KICKPAD: No	SIZE: 5" (127mm)	LOBE CFG.: 6/7
MANFCT: Varel	BIT TYPE: Varel PDC Bit	TYPE: VM513H	MTR HRS THIS DAY: 12.58333333
IADC BIT GRADE: 8 / 1 / JD / N / X / I / BT / PR			MTR HRS TO DATE: 58.083333333333
			NOZZLES: 0.648 in² TFA

BHA: 5	HOLE SIZE: 6.125 in	SECTION TYPE: Lateral 1	SURVEY TYPE: HEL LWD
MANFCT.: Weatherford	STABILIZER: No	SERIAL#: 475-41096	MODEL: ME6770
SETTING: 1.5 °	KICKPAD: No	SIZE: 5" (127mm)	LOBE CFG.: 6/7
MANFCT: Security	BIT TYPE: security	TYPE: FXD54	MTR HRS THIS DAY: 0
IADC BIT GRADE: 1 / 1 / FC / G / ? / I / FC / TD			MTR HRS TO DATE: 0
			NOZZLES: 0.648 in² TFA

PUMP PARAMETERS

PRESSURE ON BTM: 2800	PRESSURE OFF BTM: 2100	TOTAL FLOW RATE: 299.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0%	SPM: 78.00
PUMP 2: TYPE: PZ-11	EFF.: 95.0%	SPM: 0.00
PUMP 3: TYPE:	EFF.: 100.0%	SPM: 0.00
	LINER: 6.00 in	STROKE VOL.: 3.8438 gal/stk
	LINER: 0.00 in	STROKE VOL.: 0.0000 gal/stk
	LINER: 0.00 in	STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water	VISC: 39 sec/qt	WTR LOSS: 8.2 cc/30min	PV: 12 cP	YP: 12 lb/100 ft²	pH: 8.6
DENSITY: 10 lb/gal	GEL 0/10: 2.00 lb/100 ft²	SAND: 0.5	SOLIDS: 6	OIL: 0	TEMP: 200 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min



Daily Activity Report

Drilling Services
v4.2.2674

Day 11 - 2012/08/21

COMMENTS:

Drill f/ 9674 to 10118'

@ 6947 M.D. we were 90.92 inc and 179.39 AZM wanting to slide 31' at 90R do to being 15' left of the line and walking away from it. the company man requested that I only put in the amount of slide that the hole would only allow while the lube was going by the slide was going good but as soon as the lube was gone the slide went from 30' to 40' rop to 0' ROP and at this point instead of keeping the lube going and getting the slide I needed the company man Requested that we rotate forward

POOH due to slow ROP. We will P/U a 1.5 slick motor for next run.

Once on surface it was loss of ROP was obvious due to the Matrix on the bit being gone. This bit was very close to being cored out.

CUSTOMER SIGNATURE:



Weatherford®

Daily Activity Report

Drilling Services
v4.2.2674

Day 12 - 2012/08/22

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 10118.0 ft

PROGRESS: 1276.0 ft

DAILY COST: USD\$20050.00

KB ELEV: 4867 ft

END DEPTH: 11394.0 ft

AVG. ROP.: 134.3 ft/hr

PREVIOUS COST: USD\$221667.50

TOTAL COST: USD\$241717.50

WORK STATUS: Operating

(All units are imperial.)

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-00:10	RIH	0.17	10118	5	10:45-10:50	Circ & Accumulate Surveys	0.08	10815	5
00:10-00:20	Shallow Test Tools	0.17	10118	5	10:50-11:30	Rotating With Motor	0.67	10910	5
00:20-04:40	RIH	4.33	10118	5	11:30-11:35	Circ & Accumulate Surveys	0.08	10910	5
04:40-04:50	Circ & Accumulate Surveys - CHECK SHOT	0.17	10118	5	11:35-11:45	Rotating With Motor	0.17	10915	5
04:50-06:05	Orienting With Motor	1.25	10132	5	11:45-12:05	Orienting With Motor	0.33	10935	5
06:05-06:30	Rotating With Motor	0.42	10150	5	12:05-12:35	Rotating With Motor	0.50	11005	5
06:30-06:35	Circ & Accumulate Surveys	0.08	10150	5	12:35-12:40	Circ & Accumulate Surveys	0.08	11005	5
06:35-07:05	Rotating With Motor	0.50	10245	5	12:40-13:15	Rotating With Motor	0.58	11101	5
07:05-07:10	Circ & Accumulate Surveys	0.08	10245	5	13:15-13:20	Circ & Accumulate Surveys	0.08	11101	5
07:10-07:40	Rotating With Motor	0.50	10341	5	13:20-13:55	Rotating With Motor	0.58	11196	5
07:40-07:45	Circ & Accumulate Surveys	0.08	10341	5	13:55-14:00	Circ & Accumulate Surveys	0.08	11196	5
07:45-08:15	Rotating With Motor	0.50	10436	5	14:00-14:40	Rotating With Motor	0.67	11291	5
08:15-08:20	Circ & Accumulate Surveys	0.08	10436	5	14:40-14:45	Circ & Accumulate Surveys	0.08	11291	5
08:20-08:55	Rotating With Motor	0.58	10531	5	14:45-15:20	Rotating With Motor	0.58	11387	5
08:55-09:00	Circ & Accumulate Surveys	0.08	10531	5	15:20-15:25	Circ & Accumulate Surveys	0.08	11387	5
09:00-09:30	Rotating With Motor	0.50	10626	5	15:25-15:30	Rotating With Motor	0.08	11394	5
09:30-09:35	Circ & Accumulate Surveys	0.08	10626	5	15:30-15:35	Circ & Accumulate Surveys	0.08	11394	5
09:35-10:05	Rotating With Motor	0.50	10721	5	15:35-18:30	Circ & Condition Hole	2.92	11394	5
10:05-10:10	Circ & Accumulate Surveys	0.08	10721	5	18:30-24:00	POOH To Run Casing	5.50	11394	5
10:10-10:45	Rotating With Motor	0.58	10815	5			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL:	9.50	ORIENTING HRS:	1.58	ROTARY DRILL:	0.00
TIME DRILL:	0.00	ROTATING HRS:	7.92	MOTOR HRS:	13.83
MOTOR REAM:	0.00			TRIP:	10.00
CIRC:	4.33	ROTARY DRILL:	0.00	OTHER:	0.17
MOTOR HRS:	13.83	DRILL HRS:	9.50	TOTAL HRS:	24.00

DRILLING PARAMETERS:

ROTARY TORQUE:	9800 ft-lb	STRING WEIGHT	128000 lbs
WOB SLIDING (HI):	20000 lbf	WOB ROTATE (HI):	25000 lbf
WOB SLIDING (LO):	10000 lbf	WOB ROTATE (LO):	15000 lbf
RPM (ROTARY):	70 rpm	DRAG UP:	226000 lbf
RPM (MOTOR):	251 rpm	DRAG DN:	98000 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 5	HOLE SIZE: 6.125 in	SECTION TYPE: Lateral 1	SURVEY TYPE: HEL LWD
MANFCT.: Weatherford	STABILIZER: No	SERIAL#: 475-41096	MODEL: ME6770
SETTING: 1.5 °	KICKPAD: No	SIZE: 5" (127mm)	LOBE CFG: 6/7
MANFCT: Security	BIT TYPE: security	TYPE: FXD54	MTR HRS THIS DAY: 13.83333333
IADC BIT GRADE: 1 / 1 / FC / G / ? / 1 / FC / TD			MTR HRS TO DATE: 13.833333333333
			NOZZLES: 0.648 in ² TFA



Weatherford®

Daily Activity Report

Drilling Services
v4.2.2674

Day 12 - 2012/08/22

PUMP PARAMETERS

PRESSURE ON BTM: 3800

PRESSURE OFF BTM: 3000

TOTAL FLOW RATE: 299.00 gal/min

PUMP 1: TYPE: PZ-11

EFF.: 95.0%

SPM: 78.00

LINER: 6.00 in

STROKE VOL.: 3.8438 gal/stk

PUMP 2: TYPE: PZ-11

EFF.: 95.0%

SPM: 0.00

LINER: 0.00 in

STROKE VOL.: 0.0000 gal/stk

PUMP 3: TYPE:

EFF.: 100.0%

SPM: 0.00

LINER: 0.00 in

STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Water

VISC: 43 sec/qt

WTR LOSS: 6.8 cc/30min

PV: 21 cP

YP: 17 lb/100 ft² pH: 8.2

DENSITY: 10.5 lb/gal

GEL 0/10: 5.00 lb/100 ft²

SAND: 0.7

SOLIDS: 10.2

OIL: 0

TEMP: 204 °F

LIQUID BASE: Water

LIQUID RATE: 0 gal/min

GAS TYPE:

GAS RATE: 0 cu ft/min

COMMENTS:

Drill F/ 10118' to 11394'

TD Well @ 11394'

Circulate & POOH

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 13 - 2012/08/23

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 11394.0 ft

PROGRESS: 0.0 ft

DAILY COST: USD\$23850.00

KB ELEV: 4867 ft

END DEPTH: 11394.0 ft

AVG. ROP.: 0.0 ft/hr

PREVIOUS COST: USD\$241717.50

WORK STATUS: Operating

(All units are imperial.)

TOTAL COST: USD\$265567.50

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
00:00-02:30	Wiper Trip	2.50	11394	5	12:30-13:45	Lay Down Directional Tools	1.25	11394	5
02:30-06:00	Circ & Condition Hole	3.50	11394	5	13:45-24:00	Wait On Orders - Standby for next wel	10.25	11394	5
06:00-12:30	POOH To Run Casing	6.50	11394	5			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 0.00	ORIENTING HRS: 0.00	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 0.00	MOTOR HRS: 3.50
MOTOR REAM: 0.00		TRIP: 9.00
CIRC: 3.50	ROTARY DRILL: 0.00	OTHER: 11.50
MOTOR HRS: 3.50	DRILL HRS: 0.00	TOTAL HRS: 24.00

DRILLING PARAMETERS:

ROTARY TORQUE:	STRING WEIGHT 0 lbs
WOB SLIDING (HI): 0 lbf	WOB ROTATE (HI): 0 lbf
WOB SLIDING (LO): 0 lbf	WOB ROTATE (LO): 0 lbf
RPM (ROTARY):	DRAG UP: 0 lbf
RPM (MOTOR):	DRAG DN: 0 lbf

BHA / MOTOR / BIT INFORMATION:

BHA: 5	HOLE SIZE: 6.125 in	SECTION TYPE: Lateral 1	SURVEY TYPE: HEL LWD
MANFCT.: Weatherford	STABILIZER: No	SERIAL#: 475-41096	MODEL: ME6770
SETTING: 1.5 °	KICKPAD: No	SIZE: 5" (127mm)	LOBE CFG.: 6/7
MANFCT: Security	BIT TYPE: security	TYPE: FXD54	MTR HRS THIS DAY: 3.5
IADC BIT GRADE: 1 / 1 / FC / G / ? / 1 / FC / TD			MTR HRS TO DATE: 17.333333333333
			NOZZLES: 0.648 in ² TFA

PUMP PARAMETERS

PRESSURE ON BTM: 0	PRESSURE OFF BTM: 0	TOTAL FLOW RATE: 0.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in
PUMP 2: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	STROKE VOL.: 0.0000 gal/stk
PUMP 3: TYPE:	EFF.: 100.0% SPM: 0.00	LINER: 0.00 in
		STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE: Gelchem	VISC: 42 sec/qt	WTR LOSS: 6.8 cc/30min	PV: 21 cP	YP: 17 lb/100 ft ²	pH: 8.2
DENSITY: 10.3 lb/gal	GEL 0/10: 5.00 lb/100 ft ²	SAND: 0.7	SOLIDS: 10.2	OIL: 0	TEMP: 231 °F
LIQUID BASE: Water		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

POOH to run casing/ wait on orders.

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 14 - 2012/08/24

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

DIR Trainee: Jacob Hofer

Other: Cory Langford

MWD Supervisor: Rusty Komrs

MWD Trainee: James Asher

GROUND ELEV: 4842 ft

START DEPTH: 11394.0 ft

PROGRESS: 0.0 ft

DAILY COST: USD\$7832.50

KB ELEV: 4867 ft

END DEPTH: 11394.0 ft

AVG. ROP.: 0.0 ft/hr

PREVIOUS COST: USD\$265567.50

WORK STATUS: Standby

(All units are imperial.)

TOTAL COST: USD\$273400.00

TIME	DAILY ACTIVITY	HRS	DPH	BHA	TIME	DAILY ACTIVITY	HRS	DPH	BHA
00:00-24:00	Wait On Orders	24.00	11394	n/a			0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 0.00	ORIENTING HRS: 0.00	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 0.00	MOTOR HRS: 0.00
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 0.00	ROTARY DRILL: 0.00	OTHER: 24.00
MOTOR HRS: 0.00	DRILL HRS: 0.00	TOTAL HRS: 24.00

DRILLING PARAMETERS:

ROTARY TORQUE:	STRING WEIGHT: 0 lbs
WOB SLIDING (HI): 0 lbf	WOB ROTATE (HI): 0 lbf
WOB SLIDING (LO): 0 lbf	WOB ROTATE (LO): 0 lbf
RPM (ROTARY):	DRAG UP: 0 lbf
RPM (MOTOR):	DRAG DN: 0 lbf

BHA / MOTOR / BIT INFORMATION:

BHA:	HOLE SIZE:	SECTION TYPE:	SURVEY TYPE:
MANFCT.:	STABILIZER:	SERIAL#:	MODEL:
SETTING:	KICKPAD:	SIZE:	MTR HRS THIS DAY:
MANFCT:	BIT TYPE:	TYPE:	NOZZLES:
IADC BIT GRADE:			LOBE CFG.: MTR HRS TO DATE:

PUMP PARAMETERS

PRESSURE ON BTM: 0	PRESSURE OFF BTM: 0	TOTAL FLOW RATE: 0.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 2: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 3: TYPE:	EFF.: 100.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE:	VISC: 0 sec/qt	WTR LOSS: 0 cc/30min	PV: 0 cP	YP: 0 lb/100 ft²	pH: 0
DENSITY: 0 lb/gal	GEL 0/10: 0.00 lb/100 ft²	SAND: 0	SOLIDS: 0	OIL: 0	TEMP: 0 °F
LIQUID BASE:		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

Wait on orders MWD Standby.

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services

v4.2.2674

Day 15 - 2012/08/25**FILE #:** 4027067**WELL NAME:** CANNON 37N-E3HZ**SERVICE CO.:** Precision Energy Services**JOB TYPE:** Horizontal**COMPANY:** Anadarko Petroleum Corporation**SURVEY TYPE:** HEL LWD**RIG & NO:** Helmerich & Payne 307**SURFACE LOCATION:****FIELD / LOCATION:** Wattenburg / CO / USA**2012/08/25**

No personnel have been recorded for this date.

GROUND ELEV: 4842 ft**START DEPTH:** 11394.0 ft**PROGRESS:** 0.0 ft**DAILY COST:** USD\$0.00**KB ELEV:** 4867 ft**END DEPTH:** 11394.0 ft**AVG. ROP.:** 0.0 ft/hr**PREVIOUS COST:** USD\$273400.00**WORK STATUS:**

(All units are imperial.)

TOTAL COST: USD\$273400.00

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
		0.00					0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 0.00	ORIENTING HRS: 0.00	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 0.00	MOTOR HRS: 0.00
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 0.00	ROTARY DRILL: 0.00	OTHER: 0.00
MOTOR HRS: 0.00	DRILL HRS: 0.00	TOTAL HRS: 0.00

DRILLING PARAMETERS:

ROTARY TORQUE:	STRING WEIGHT 0 lbs
WOB SLIDING (HI): 0 lbf	WOB ROTATE (HI): 0 lbf
WOB SLIDING (LO): 0 lbf	WOB ROTATE (LO): 0 lbf
RPM (ROTARY):	DRAG UP: 0 lbf
RPM (MOTOR):	DRAG DN: 0 lbf

BHA / MOTOR / BIT INFORMATION:

BHA:	HOLE SIZE:	SECTION TYPE:	SURVEY TYPE:
MANFCT.:	STABILIZER:	SERIAL#:	MODEL:
SETTING:	KICKPAD:	SIZE:	MTR HRS THIS DAY:
MANFCT:	BIT TYPE:	TYPE:	NOZZLES:
IADC BIT GRADE:			LOBE CFG.:
			MTR HRS TO DATE:

PUMP PARAMETERS

PRESSURE ON BTM: 0	PRESSURE OFF BTM: 0	TOTAL FLOW RATE: 0.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 2: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 3: TYPE:	EFF.: 100.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE:	VISC: 0 sec/qt	WTR LOSS: 0 cc/30min	PV: 0 cP	YP: 0 lb/100 ft²	pH: 0
DENSITY: 0 lb/gal	GEL 0/10: 0.00 lb/100 ft²	SAND: 0	SOLIDS: 0	OIL: 0	TEMP: 0 °F
LIQUID BASE:		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:**CUSTOMER SIGNATURE:**

**Weatherford®**

Daily Activity Report

Drilling Services
v4.2.2674

Day 16 - 2012/08/26

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

2012/08/26

No personnel have been recorded for this date.

GROUND ELEV: 4842 ft

START DEPTH: 11394.0 ft

PROGRESS: 0.0 ft

DAILY COST: USD\$0.00

KB ELEV: 4867 ft

END DEPTH: 11394.0 ft

AVG. ROP.: 0.0 ft/hr

PREVIOUS COST: USD\$273400.00

WORK STATUS:

(All units are imperial.)

TOTAL COST: USD\$273400.00

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
		0.00					0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 0.00	ORIENTING HRS: 0.00	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 0.00	MOTOR HRS: 0.00
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 0.00	ROTARY DRILL: 0.00	OTHER: 0.00
MOTOR HRS: 0.00	DRILL HRS: 0.00	TOTAL HRS: 0.00

DRILLING PARAMETERS:

ROTARY TORQUE:	STRING WEIGHT: 0 lbs
WOB SLIDING (HI): 0 lbf	WOB ROTATE (HI): 0 lbf
WOB SLIDING (LO): 0 lbf	WOB ROTATE (LO): 0 lbf
RPM (ROTARY):	DRAG UP: 0 lbf
RPM (MOTOR):	DRAG DN: 0 lbf

BHA / MOTOR / BIT INFORMATION:

BHA:	HOLE SIZE:	SECTION TYPE:	SURVEY TYPE:
MANFCT.:	STABILIZER:	SERIAL#:	MODEL:
SETTING:	KICKPAD:	SIZE:	MTR HRS THIS DAY:
MANFCT:	BIT TYPE:	TYPE:	NOZZLES:
IADC BIT GRADE:			LOBE CFG.:
			MTR HRS TO DATE:

PUMP PARAMETERS

PRESSURE ON BTM: 0	PRESSURE OFF BTM: 0	TOTAL FLOW RATE: 0.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 2: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 3: TYPE:	EFF.: 100.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE:	VISC: 0 sec/qt	WTR LOSS: 0 cc/30min	PV: 0 cP	YP: 0 lb/100 ft²	pH: 0
DENSITY: 0 lb/gal	GEL 0/10: 0.00 lb/100 ft²	SAND: 0	SOLIDS: 0	OIL: 0	TEMP: 0 °F
LIQUID BASE:		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

CUSTOMER SIGNATURE: _____

**Weatherford®**

Daily Activity Report

Drilling Services

v4.2.2674

Day 17 - 2012/08/27

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

2012/08/27

No personnel have been recorded for this date.

GROUND ELEV: 4842 ft

START DEPTH: 11394.0 ft

PROGRESS: 0.0 ft

DAILY COST: USD\$0.00

KB ELEV: 4867 ft

END DEPTH: 11394.0 ft

AVG. ROP.: 0.0 ft/hr

PREVIOUS COST: USD\$273400.00

WORK STATUS:

(All units are imperial.)

TOTAL COST: USD\$273400.00

TIME	DAILY ACTIVITY	HRS	DPTH	BHA	TIME	DAILY ACTIVITY	HRS	DPTH	BHA
		0.00					0.00		

TIME SUMMARY (hrs):

MOTOR DRILL: 0.00	ORIENTING HRS: 0.00	ROTARY DRILL: 0.00
TIME DRILL: 0.00	ROTATING HRS: 0.00	MOTOR HRS: 0.00
MOTOR REAM: 0.00		TRIP: 0.00
CIRC: 0.00	ROTARY DRILL: 0.00	OTHER: 0.00
MOTOR HRS: 0.00	DRILL HRS: 0.00	TOTAL HRS: 0.00

DRILLING PARAMETERS:

ROTARY TORQUE:	STRING WEIGHT: 0 lbs
WOB SLIDING (HI): 0 lbf	WOB ROTATE (HI): 0 lbf
WOB SLIDING (LO): 0 lbf	WOB ROTATE (LO): 0 lbf
RPM (ROTARY):	DRAG UP: 0 lbf
RPM (MOTOR):	DRAG DN: 0 lbf

BHA / MOTOR / BIT INFORMATION:

BHA:	HOLE SIZE:	SECTION TYPE:	SURVEY TYPE:
MANFCT.:	STABILIZER:	SERIAL#:	MODEL:
SETTING:	KICKPAD:	SIZE:	MTR HRS THIS DAY:
MANFCT:	BIT TYPE:	TYPE:	NOZZLES:
IADC BIT GRADE:			LOBE CFG.:
			MTR HRS TO DATE:

PUMP PARAMETERS

PRESSURE ON BTM: 0	PRESSURE OFF BTM: 0	TOTAL FLOW RATE: 0.00 gal/min
PUMP 1: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 2: TYPE: PZ-11	EFF.: 95.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk
PUMP 3: TYPE:	EFF.: 100.0% SPM: 0.00	LINER: 0.00 in STROKE VOL.: 0.0000 gal/stk

MUD RECORD

MUD TYPE:	VISC: 0 sec/qt	WTR LOSS: 0 cc/30min	PV: 0 cP	YP: 0 lb/100 ft²	pH: 0
DENSITY: 0 lb/gal	GEL 0/10: 0.00 lb/100 ft²	SAND: 0	SOLIDS: 0	OIL: 0	TEMP: 0 °F
LIQUID BASE:		LIQUID RATE: 0 gal/min	GAS TYPE:		GAS RATE: 0 cu ft/min

COMMENTS:

CUSTOMER SIGNATURE:



BHA REPORTS

**Weatherford®**

BHA Report

Drilling Services
v4.2.2674

BHA 1 - Build & Hold Section

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Security PDC BIT	Security	12034931	FXD55	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Weatherford Motor	Weatherford 1.8	675-43586	QLE7850	7.77	0	0	4 1/2" REG Box	4 1/2" IF Box	25.52 ft	26.52 ft
1	Muleshoe	Weatherford	675-17969	NM UBHO	6.75	2.75	0	4 1/2" IF Pin	4 1/2" IF Box	3.12 ft	29.64 ft
1	NMDC	Weatherford	675-21855		6.81	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	29.68 ft	59.32 ft
1	Flex NMDC	Weatherford	650-21601	Flex	6.54	3.125	6.47	4 1/2" IF Pin	4 1/2" IF Box	30.40 ft	89.72 ft
1	X/O Sub	Weatherford	47524	NMXO	6.82	3.25	0	4 1/2" IF Pin	4 1/2" XH Box	4.01 ft	93.73 ft
41	4 1/2" HWDP	Rig	Rig	41 Jts.	4.5	2.75	0	4 1/2" XH Pin	4 1/2" XH Box	1243.53	1337.26 ft
1	X/O Sub	Rig	Rig	X/O Sub	5.125	2.78	0	4 1/2" XH Pin	XT-39 Box	2.29 ft	1339.55 ft
4	4" HWDP	Rig	Rig	15 STDS	4	2.75	0	XT-39 Pin	XT-39 Box	122.33 ft	1461.88 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2012/08/12 TO 2012/08/13
DEPTH IN: 0.00 ft **ANGLE IN:** 0.16 °
DEPTH OUT: 3891.00 ft **ANGLE OUT:** 7.21 °
DRILL HRS: 17.67 **BUILD:** 7.05 °
ORIENTING HRS: 4.33 **HOLE MADE:** 3891.00 ft
ROTATING HRS: 13.33 **AVG R.O.P.:** 220.20 ft/hr

MOTOR INFORMATION

MANFCT. Weatherford 1.8 **SETTING:** 1.88 °
SERIAL #: 675-43586 **KICK PAD:** No
MODEL: QLE7850 **STABILIZER:** No
LOBE CFG: 7/8 **MOTOR HRS:** 23.75
BIT TO BEND: 3.87

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	78	78	0
STROKE VOLUME:	3.8438 gal/stk	3.8438 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	569.65637 gal/min		
PUMP PRESSURE:	OFF BTM: 2400 psi	ON BTM: 3600 psi	

MUD INFORMATION

MUD TYPE: Water **LIQUID BASE:** Water
DENSITY: 8.6 lb/gal **TEMP:** 143 °F
VISCOSITY: 28 sec/qt **pH:** 8.6
WTR LOSS: 0 cc/30min **SAND:** 0.1 **LIQUID RATE:** 0 gal/min
PLAST VISC: 0 cP **SOLIDS:** 0 **GAS TYPE:**
YIELD PT: 3 lb/100 ft² **OIL:** 0 **GAS RATE:** 0 cu ft/min

BIT INFORMATION

MANFCT: Security **TYPE:** FXD55 **IADC BIT GRADE:** 1 / 2 / BT / G / X / I / BT / DMF
NOZZLES: 0.648 in² TFA

REASON FOR BHA CHANGE

Motor stator rubber.

FORMATION CHARACTERISTICS

Formation seemed really soft not allowing motor to get as much diff as expected. Due to this at company man's request we started running 50k on bit to achieve diff. Azimuth drifted right and left 6 to 10 with these parameters.

MWD COMMENTS

Pumps were not maintaining constant pressure making it difficult to survey.



Weatherford®

BHA Report

Drilling Services
v4.2.2674

BHA 1 - Build & Hold Section

SIDETRACKING PROCEDURE COMMENTS

N/A

RUN SUMMARY

Average buildup rates experienced were 13 deg per. 100'. Condition of BHA when pulled was good other than the motor, motor did not have any squat to it or play in the bit housing, but there was 2 jets plugged off and a big chunk of rubber inside the bit.

**Weatherford®**

BHA Report

Drilling Services
v4.2.2674

BHA 2 - Build & Hold Section

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Security PDC Bit	Security	12031713	FXD55	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Weatherford Motor	Weatherford 1.8	675-43613	QLE7850	7.8	0	0	4 1/2" REG Box	4 1/2" IF Box	25.92 ft	26.92 ft
1	Muleshoe	Weatherford	675-17969	NM UBHO	6.75	2.75	0	4 1/2" IF Pin	4 1/2" IF Box	3.12 ft	30.04 ft
1	NMDC	Weatherford	675-21855		6.81	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	29.68 ft	59.72 ft
1	Flex NMDC	Weatherford	650-21601	Flex	6.54	3.125	6.47	4 1/2" IF Pin	4 1/2" IF Box	30.40 ft	90.12 ft
1	X/O Sub	Weatherford	47524	NMXO	6.82	3.25	0	4 1/2" IF Pin	4 1/2" XH Box	4.01 ft	94.13 ft
41	4 1/2" HWDP	Rig	Rig	41 Jts.	4.5	2.75	0	4 1/2" XH Pin	4 1/2" XH Box	1243.53	1337.66 ft
1	X/O Sub	Rig	Rig	X/O Sub	5.125	2.78	0	4 1/2" XH Pin	XT-39 Box	2.29 ft	1339.95 ft
4	4" HWDP	Rig	Rig	15 STDS	4	2.75	0	XT-39 Pin	XT-39 Box	122.33 ft	1462.28 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2012/08/13 TO 2012/08/14
DEPTH IN: 3891.00 ft **ANGLE IN:** 0.00 °
DEPTH OUT: 5733.00 ft **ANGLE OUT:** 6.46 °
DRILL HRS: 14.25 **BUILD:** 6.46 °
ORIENTING HRS: 4.67 **HOLE MADE:** 1842.00 ft
ROTATING HRS: 9.58 **AVG R.O.P.:** 129.26 ft/hr

MOTOR INFORMATION

MANFCT. Weatherford 1.8 **SETTING:** 1.88 °
SERIAL #: 675-43613 **KICK PAD:** No
MODEL: QLE7850 **STABILIZER:** No
LOBE CFG: 7/8 **MOTOR HRS:** 17.33
BIT TO BEND: 3.87

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	78	78	0
STROKE VOLUME:	4.0461 gal/stk	3.8438 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	584.64733 gal/min		
PUMP PRESSURE:	OFF BTM: 2600 psi	ON BTM: 3400 psi	

MUD INFORMATION

MUD TYPE: Water **LIQUID BASE:** Water
DENSITY: 8.4 lb/gal **TEMP:** 155 °F
VISCOSITY: 28 sec/qt **pH:** 8.4
WTR LOSS: 0 cc/30min **SAND:** 0.01 **LIQUID RATE:** 0 gal/min
PLAST VISC: 2 cP **SOLIDS:** 0.4 **GAS TYPE:**
YIELD PT: 3 lb/100 ft² **OIL:** 0 **GAS RATE:** 0 cu ft/min

BIT INFORMATION

MANFCT: Security **TYPE:** FXD55 **IADC BIT GRADE:** ?/?/?/?/?/?/?/?/?
NOZZLES: 0.648 in² TFA

REASON FOR BHA CHANGE

Motor stator rubber.

FORMATION CHARACTERISTICS

Formation drilled as expected. As usual the formation dropped and turned 6-10 degrees in rotation. Maintain sliding to hold inclination and azimuth.

MWD COMMENTS

MWD tool performed as expected. We used a 60 degree orifice with a 6 3/4" pulser. Down hole temp at the end of the run was 156 degrees and battery consumption was 34% consumed.



BHA 2 - Build & Hold Section

SIDETRACKING PROCEDURE COMMENTS

NA

RUN SUMMARY

Average build rates experienced were 13 degrees / 100'. Condition of BHA looked good when pulled no problems encountered.

**Weatherford®**

BHA Report

BHA 3 - Curve Section

Drilling Services
v4.2.2674**FILE #:** 4027067**JOB TYPE:** Horizontal**RIG & NO:** Helmerich & Payne 307**WELL NAME:** CANNON 37N-E3HZ**COMPANY:** Anadarko Petroleum Corporation**SURFACE LOCATION:****SERVICE CO.:** Precision Energy Services**SURVEY TYPE:** HEL LWD**FIELD / LOCATION:** Wattenburg / CO / USA**DIR Supervisor:** Josh Monroe, Charles Apodaca, Brian Trani**MWD Supervisor:** Rusty Komrs**BHA SURVEY TYPE:** Positive Pulse MWD**HOLE SIZE:** 8.75 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Security PDC Bit	Security	12066930	FXD55	8.75	0	0		4 1/2" REG Pin	1.00 ft	1.00 ft
1	Weatherford Motor	Weatherford 2.2	675-3590	QLE7850	8.1	0	0	4 1/2" REG Box	4 1/2" IF Box	27.90 ft	28.90 ft
1	Muleshoe	Weatherford	675-17969	NM UBHO	6.75	2.75	0	4 1/2" IF Pin	4 1/2" IF Box	3.12 ft	32.02 ft
1	NMDC	Weatherford	675-21855		6.81	3.25	0	4 1/2" IF Pin	4 1/2" IF Box	29.68 ft	61.70 ft
1	Flex NMDC	Weatherford	650-21601	Flex	6.54	3.125	6.47	4 1/2" IF Pin	4 1/2" IF Box	30.40 ft	92.10 ft
1	X/O Sub	Weatherford	47524	NMXO	6.82	3.25	0	4 1/2" IF Pin	4 1/2" XH Box	4.01 ft	96.11 ft
41	4 1/2" HWDP	Rig	Rig	41 Jts.	4.5	2.75	0	4 1/2" XH Pin	4 1/2" XH Box	1243.53	1339.64 ft
1	X/O Sub	Rig	Rig	X/O Sub	5.125	2.78	0	4 1/2" XH Pin	XT-39 Box	2.29 ft	1341.93 ft
4	4" HWDP	Rig	Rig	15 STDS	4	2.75	0	XT-39 Pin	XT-39 Box	122.33 ft	1464.26 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2012/08/14 TO 2012/08/17
DEPTH IN: 5733.00 ft **ANGLE IN:** 8.21 °
DEPTH OUT: 7440.00 ft **ANGLE OUT:** 93.43 °
DRILL HRS: 33.67 **BUILD:** 85.22 °
ORIENTING HRS: 26.58 **HOLE MADE:** 1707.00 ft
ROTATING HRS: 7.08 **AVG R.O.P.:** 50.70 ft/hr

MOTOR INFORMATION

MANFCT. Weatherford 2.2 **SETTING:** 2.25 °
SERIAL #: 675-3590 **KICK PAD:** No
MODEL: QLE7850 **STABILIZER:** No
LOBE CFG: 7/8 **MOTOR HRS:** 40.67
BIT TO BEND: 6.22

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	78	78	0
STROKE VOLUME:	3.8438 gal/stk	3.8438 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	569.65637 gal/min		
PUMP PRESSURE:	OFF BTM: 3000 psi	ON BTM: 3500 psi	

MUD INFORMATION

MUD TYPE: Gelchem **LIQUID BASE:** Water
DENSITY: 9.8 lb/gal **TEMP:** 174 °F
VISCOSITY: 40 sec/qt **pH:** 8.6
WTR LOSS: 8.4 cc/30min **SAND:** 0.2 **LIQUID RATE:** 0 gal/min
PLAST VISC: 12 cP **SOLIDS:** 1.9 **GAS TYPE:**
YIELD PT: 10 lb/100 ft² **OIL:** 0 **GAS RATE:** 0 cu ft/min

BIT INFORMATION

MANFCT: Security **TYPE:** FXD55 **IADC BIT GRADE:** 1 / 1 / WT / A / X / I / NO / TD
NOZZLES: 0.648 in² TFA

REASON FOR BHA CHANGE

TD Curve

FORMATION CHARACTERISTICS

Formations drilled as expected. We had a hard time getting build rates at the beginning of the curve but they started coming on. As usual we were getting hung up from the kick pad on the motor, causing us to get stuck a couple times. We also experienced some very slow ROP in the curve. We slid most of this curve 100%.

MWD COMMENTS

MWD tool performed as expected. a 65 degree orifice was used with a 6 3/4" pulser Downhole temp @ TD was 174 degrees and the battery consumption was 36% consumed.



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BHA Report

Drilling Services
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BHA 3 - Curve Section

SIDETRACKING PROCEDURE COMMENTS

NA

RUN SUMMARY

Average build rates experienced were 13 degrees /100' Condition of BHA looked good when pulled. Objective of BHA was to build the curve. Objective accomplished. Could not get MWD tool pulled out. Some centralizer rubber was missing on first centralizer. We think that's what jammed tool into UBHO. Left UBHO and monel screwed together and laid down with MWD tool still inside.

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BHA Report

Drilling Services
v4.2.2674

BHA 4 - Lateral 1 Section

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: HEL LWD

HOLE SIZE: 6.125 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	Varel PDC Bit	Varel	4004451	VM513H	6.125	0	0		3 1/2" REG Pin	1.00 ft	1.00 ft
1	Weatherford Motor	Weatherford	1.1 475-1583	LE6750	5.85	0	0.58	3 1/2" REG Box	3 1/2" IF Box	28.23 ft	29.23 ft
1	Duradrill Slide Stab Rig		DDSR58-004NM	Dynomax	4.82	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	4.91 ft	34.14 ft
1	SAGR	Weatherford	NW21692	LWD/Azi. GR	4.75	2.5	6.74	3 1/2" IF Pin	3 1/2" IF Box	14.21 ft	48.35 ft
1	Split IDS	WEATHERFORD	NW21691	LWD / Svy Snsr	4.75	2.5	3.36	3 1/2" IF Pin	3 1/2" IF Box	12.19 ft	60.54 ft
1	MFR	Weatherford	NW21690	LWD/Resistivity	4.75	2.5	7.33	3 1/2" IF Pin	3 1/2" IF Box	29.27 ft	89.81 ft
1	HEL LWD	Weatherford	NW21491	LWD/ Pulser	4.75	2.5	10.43	3 1/2" IF Pin	3 1/2" IF Box	14.60 ft	104.41 ft
1	Stabilizer	Stabil Drill	SD 20091	Stabilizer	4.88	3.5	3.2	3 1/2" REG Pin	3 1/2" REG Box	5.11 ft	109.52 ft
1	NMDC	Weatherford	43546	Slick NMDC	4.84	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	30.99 ft	140.51 ft
1	X/O Sub	Weatherford	44887	X/O Sub	5.04	2.625	0	3 1/2" IF Pin	XT-39 Box	2.68 ft	143.19 ft
129	4" Drill Pipe	Rig	Rig	43 STDS	4	3.5	0	XT-39 Pin	XT-39 Box	4075.86	4219.05 ft
45	4" HWDP	Rig	Rig	15 STDS	4	2.75	0	XT-39 Pin	XT-39 Box	1373.84	5592.89 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2012/08/18 TO 2012/08/21
 DEPTH IN: 7440.00 ft ANGLE IN: 95.56 °
 DEPTH OUT: 10118.00 ft ANGLE OUT: 91.67 °
 DRILL HRS: 50.33 BUILD: -3.89 °
 ORIENTING HRS: 20.58 HOLE MADE: 2678.00 ft
 ROTATING HRS: 29.75 AVG R.O.P.: 53.21 ft/hr

MOTOR INFORMATION

MANFCT. Weatherford 1.1 SETTING: 1.15 °
 SERIAL #: 475-1583 KICK PAD: No
 MODEL: LE6750 STABILIZER: 5 7/8" (149mm)
 LOBE CFG: 6/7 MOTOR HRS: 58.08
 BIT TO BEND: 6.14

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	78	0	0
STROKE VOLUME:	3.8438 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	299 gal/min		
PUMP PRESSURE:	OFF BTM: 2100 psi	ON BTM: 2800 psi	

MUD INFORMATION

MUD TYPE: Water LIQUID BASE: Water
 DENSITY: 10 lb/gal TEMP: 200 °F
 VISCOSITY: 39 sec/qt pH: 8.6
 WTR LOSS: 8.2 cc/30min SAND: 0.5 LIQUID RATE: 0 gal/min
 PLAST VISC: 12 cP SOLIDS: 6 GAS TYPE:
 YIELD PT: 12 lb/100 ft² OIL: 0 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Varel TYPE: VM513H IADC BIT GRADE: 8 / 1 / JD / N / X / I / BT / PR
 NOZZLES: 0.648 in² TFA

REASON FOR BHA CHANGE

ROP

FORMATION CHARACTERISTICS

Niobrarra Formation drilled extremely slow compared to previous wells. We had a difficult time getting desired build rates with the 1.15 stabilized motor. Predicted build rates as shown in the motor book are 10 degrees per 100' and we were getting 3-6 degree build rates per 100'. The formation had a slight build tendency and wanted to turn towards the east. Its hard to tell if the slow ROP was the cause of the stabilized motor because we ran a new bit as well. In my opinion proper lube percentage was not high enough as well.



—MWD COMMENTS

LWD performed as expected. We used a 60 degree orifice with a 4 3/4" pulser. The battery consumption was unknown due to the fact of not being able to download tools at the end of the run. This is the most accurate way to get a consumption per LWD. Downhole temp. was 208 degrees at the end of the run. At the beginning of the lateral we had some ratty formation causing poor detection but it eventually cleared up. It was also noticed that mud pump # 1 had worse detection than mud pump # 2.

—SIDETRACKING PROCEDURE COMMENTS

NA

—RUN SUMMARY

Average build rates experienced were 3-6 degrees per 100'. We had to slide a lot more due to the motor not giving desired build rates. Condition of BHA looked good when pulled Other than the bit. Problems encountered were very slow ROP during the entire lateral, excessive drag and torque and difficulties sliding at a reasonable ROP. Toolfaces while sliding were good, we were just not getting the results desired. This assembly seemed to track well with a slight build tendency as well as the formation pulling us towards the east. Once on surface the loss of ROP was obvious the matrix on the bit was gone and it was close to coring out.

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BHA Report

Drilling Services
v4.2.2674

BHA 5 - Lateral 1 Section

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: HEL LWD

HOLE SIZE: 6.125 in

QTY	COMPONENT	MANFCT.	SERIAL #	MODEL	O.D.	I.D.	F.N.	BOT. CONN.	TOP CONN.	LEN.	C.LEN.
1	security	Security	11699788	FXD54	6.125	0	0		3 1/2" REG Pin	1.00 ft	1.00 ft
1	Weatherford Motor	Weatherford	475-41096	ME6770	5.5	0	0.51	3 1/2" REG Box	3 1/2" IF Box	28.27 ft	29.27 ft
1	Duradrill Slide Stab Rig		DDSR58-004NM	Dynomax	4.82	2.25	0	3 1/2" IF Pin	3 1/2" IF Box	4.91 ft	34.18 ft
1	SAGR	Weatherford	NW21692	LWD/Azi. GR	4.75	2.5	6.74	3 1/2" IF Pin	3 1/2" IF Box	14.21 ft	48.39 ft
1	Split IDS	WEATHERFORD	NW21691	LWD / Svy Snsr	4.75	2.5	3.36	3 1/2" IF Pin	3 1/2" IF Box	12.19 ft	60.58 ft
1	MFR	Weatherford	NW21690	LWD/Resistivity	4.75	2.5	7.33	3 1/2" IF Pin	3 1/2" IF Box	29.27 ft	89.85 ft
1	HEL LWD	Weatherford	NW21491	LWD/ Pulser	4.75	2.5	10.43	3 1/2" IF Pin	3 1/2" IF Box	14.60 ft	104.45 ft
1	NMDC	Weatherford	43546	Slick NMDC	4.84	2.75	0	3 1/2" IF Pin	3 1/2" IF Box	30.99 ft	135.44 ft
1	X/O Sub	Weatherford	44887	X/O Sub	5.04	2.625	0	3 1/2" IF Pin	XT-39 Box	2.68 ft	138.12 ft
1	Gost Reamer	Rig	SD80246		5.01	2.5	0	XT39 Pin	XT39 Box	6.39 ft	144.51 ft
129	4" Drill Pipe	Rig	Rig	43 STDS	4	3.5	0	XT-39 Pin	XT-39 Box	4075.86	4220.37 ft
45	4" HWDP	Rig	Rig	15 STDS	4	2.75	0	XT-39 Pin	XT-39 Box	1373.84	5594.21 ft

(O.D. units are in; I.D. units are in; FNeck units are ft)

GENERAL INFORMATION

DATES RUN: 2012/08/21 TO 2012/08/23
 DEPTH IN: 10118.00 ft ANGLE IN: 91.48 °
 DEPTH OUT: 11394.00 ft ANGLE OUT: 87.78 °
 DRILL HRS: 9.50 BUILD: -3.70 °
 ORIENTING HRS: 1.58 HOLE MADE: 1276.00 ft
 ROTATING HRS: 7.92 AVG R.O.P.: 134.32 ft/hr

MOTOR INFORMATION

MANFCT. Weatherford
 SERIAL #: 475-41096
 MODEL: ME6770
 LOBE CFG: 6/7
 BIT TO BEND: 6.14
 SETTING: 1.50 °
 KICK PAD: No
 STABILIZER: No
 MOTOR HRS: 17.33

PUMP INFORMATION

PUMPS	PUMP 1	PUMP 2	PUMP 3
EFFICIENCY:	95.0%	95.0%	100.0%
S.P.M.:	0	0	0
STROKE VOLUME:	0.0 gal/stk	0.0 gal/stk	0.0 gal/stk
TOTAL FLOW RATE:	0 gal/min		
PUMP PRESSURE:	OFF BTM: 0 psi	ON BTM: 0 psi	

MUD INFORMATION

MUD TYPE: Gelchem
 LIQUID BASE: Water
 DENSITY: 10.3 lb/gal
 TEMP: 231 °F
 VISCOSITY: 42 sec/qt
 pH: 8.2
 WTR LOSS: 6.8 cc/30min
 SAND: 0.7
 LIQUID RATE: 0 gal/min
 PLAST VISC: 21 cP
 SOLIDS: 10.2
 GAS TYPE:
 YIELD PT: 17 lb/100 ft²
 OIL: 0
 GAS RATE: 0 cu ft/min

BIT INFORMATION

MANFCT: Security TYPE: FXD54 IADC BIT GRADE: 1 / 1 / FC / G / ? / 1 / FC / TD
 NOZZLES: 0.648 in² TFA

REASON FOR BHA CHANGE

TD Well.

FORMATION CHARACTERISTICS

Niobrarra formation drilled as expected. We were able to control angle with WOB & RPM. the formation had a tendency to drift towards the west.



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BHA Report

BHA 5 - Lateral 1 Section

Drilling Services
v4.2.2674

MWD COMMENTS

LWD tool performed as expected. a 60 degree orifice was used with a 4 3/4" pulser. Battery consumption at the end of the run was 30% consumed and downhole temp. at TD was 231 degrees. No formation problems experienced.

SIDETRACKING PROCEDURE COMMENTS

NA

RUN SUMMARY

Average build rates experienced we 15 degrees per 100'. BHA objective was to drill lateral and was successful. Condition of BHA looked good when pulled. No problems encountered.



SLIDE REPORT



Slide Sheet Report

Drilling Services

v4.2.2674

BHA 1 - 2012/08/12 TO 2012/08/13

FILE #: 4027067

JOB TYPE: Horizontal

RIG & NO: Helmerich & Payne 307

WELL NAME: CANNON 37N-E3HZ

COMPANY: Anadarko Petroleum Corporation

SURFACE LOCATION:

SERVICE CO.: Precision Energy Services

SURVEY TYPE: HEL LWD

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

MWD Supervisor: Rusty Komrs

BHA NO: 1	DATES RUN: 2012/08/12 TO 2012/08/13	SECTION: Build & Ho	TOOLFACE OFFSET: 182.4 °	SURVEY OFFSET: 56 ft
MOTOR SETTING: 1.88 °	KICKPAD: No	STABILIZER: No	MODEL: QLE7850	SERIAL NO: 675-43586
			BHA SURVEY TYPE: Positive Pulse MWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY DEPTH	INC	AZM	TF	----- ORIENTING -----			----- ROTATING -----			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS
					FROM	TO	FEET	FROM	TO	FEET				
974.00	91.00	918.00	0.16	185.07	288 M	974.00	991.00	17.00	991.00	1065.00	74.00	0.00	0.00	0.00
1065.00	90.00	1009.00	2.81	297.26	280 M	1065.00	1075.00	10.00	1075.00	1155.00	80.00	17.00	0.16	2.91
1155.00	91.00	1099.00	4.14	295.74	270 M	1155.00	1167.00	12.00	1167.00	1246.00	79.00	10.00	0.13	1.48
1246.00	93.00	1190.00	6.05	292.60	80 L	1246.00	1260.00	14.00	1260.00	1339.00	79.00	12.00	0.16	2.10
1339.00	217.00	1283.00	7.10	272.85	90 R	1339.00	1347.00	8.00	1347.00	1556.00	209.00	14.00	0.07	1.13
1556.00	287.00	1500.00	6.94	282.43	90R	1556.00	1562.00	6.00	1562.00	1843.00	281.00	8.00	-0.02	-0.07
1843.00	379.00	1787.00	5.99	287.92	30R	1843.00	1853.00	10.00	1853.00	2222.00	369.00	6.00	-0.16	-0.33
2222.00	190.00	2166.00	5.82	289.37	30R	2222.00	2234.00	12.00	2234.00	2412.00	178.00	10.00	-0.02	-0.04
2412.00	94.00	2356.00	6.15	299.70	HS	2412.00	2427.00	15.00	2427.00	2506.00	79.00	12.00	0.03	0.17
2506.00	95.00	2450.00	8.14	301.05	50L	2506.00	2512.00	6.00	2512.00	2601.00	89.00	15.00	0.13	2.12
2601.00	190.00	2545.00	8.12	291.10	HS	2601.00	2606.00	5.00	2606.00	2791.00	185.00	6.00	0.00	-0.02
2791.00	474.00	2735.00	7.53	285.56	60R	2791.00	2799.00	8.00	2799.00	3265.00	466.00	5.00	-0.12	-0.31
3265.00	190.00	3209.00	5.45	286.33	20R	3265.00	3277.00	12.00	3277.00	3455.00	178.00	8.00	-0.26	-0.44
3455.00	95.00	3399.00	3.88	288.64	295 M	3455.00	3485.00	30.00	3485.00	3550.00	65.00	12.00	-0.13	-0.83
3550.00	95.00	3494.00	6.30	301.66	90 L	3550.00	3560.00	10.00	3560.00	3645.00	85.00	30.00	0.08	2.55
3645.00	189.00	3589.00	7.11	293.48	50 L	3645.00	3665.00	20.00	3665.00	3834.00	169.00	10.00	0.08	0.85
3834.00	57.00	3778.00	7.21	275.57	60 R	3834.00	3850.00	16.00	3850.00	3891.00	41.00	20.00	0.00	0.05

Totals:	211.00 ft	2706.00 ft
Percentages:	7.2%	92.8%
Time:	4.33 hrs	13.33 hrs
Percentages:	24.5%	75.5%



Slide Sheet Report

Drilling Services

v4.2.2674

BHA 2 - 2012/08/13 TO 2012/08/14

FILE #: 4027067

JOB TYPE: Horizontal

RIG & NO: Helmerich & Payne 307

WELL NAME: CANNON 37N-E3HZ

COMPANY: Anadarko Petroleum Corporation

SURFACE LOCATION:

SERVICE CO.: Precision Energy Services

SURVEY TYPE: HEL LWD

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

MWD Supervisor: Rusty Komrs

BHA NO: 2	DATES RUN: 2012/08/13 TO 2012/08/14	SECTION: Build & Ho	TOOLFACE OFFSET: 156.9 °	SURVEY OFFSET: 56 ft
MOTOR SETTING: 1.88 °	KICKPAD: No	STABILIZER: No	MODEL: QLE7850	SERIAL NO: 675-43613
			BHA SURVEY TYPE: Positive Pulse MWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY				----- ORIENTING -----			----- ROTATING -----			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS
	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO	FEET				
3891.00	38.00	3835.00	0.00	0.00	ROT	3891.00	3891.00	0.00	3891.00	3929.00	38.00	0.00	0.00	
3929.00	285.00	3873.00	7.96	292.50	30L	3929.00	3935.00	6.00	3935.00	4214.00	279.00	0.00	0.00	20.95
4214.00	285.00	4158.00	7.89	287.51	HS	4214.00	4224.00	10.00	4224.00	4499.00	275.00	6.00	-0.01	-0.02
4499.00	286.00	4443.00	7.35	283.07	50R	4499.00	4505.00	6.00	4505.00	4785.00	280.00	10.00	-0.05	-0.19
4785.00	94.00	4729.00	6.06	288.33	20L	4785.00	4791.00	6.00	4791.00	4879.00	88.00	6.00	-0.21	-0.45
4879.00	147.00	4823.00	6.53	287.60	60L	4879.00	4887.00	8.00	4887.00	5026.00	139.00	6.00	0.08	0.50
5026.00	138.00	4970.00	5.95	288.75	70L	5026.00	5038.00	12.00	5038.00	5164.00	126.00	8.00	-0.07	-0.39
5164.00	95.00	5108.00	5.97	274.38	50R	5164.00	5174.00	10.00	5174.00	5259.00	85.00	12.00	0.00	0.01
5259.00	95.00	5203.00	5.11	276.53	45 R	5259.00	5281.00	22.00	5281.00	5354.00	73.00	10.00	-0.09	-0.91
5354.00	190.00	5298.00	6.40	282.96	25 R	5354.00	5372.00	18.00	5372.00	5544.00	172.00	22.00	0.06	1.36
5544.00	95.00	5488.00	6.53	279.01	30 R	5544.00	5566.00	22.00	5566.00	5639.00	73.00	18.00	0.01	0.07
5639.00	94.00	5583.00	6.46	266.53	50 R	5639.00	5664.00	25.00	5664.00	5733.00	69.00	22.00	0.00	-0.07

Totals:	145.00 ft	1697.00 ft
Percentages:	7.9%	92.1%
Time:	4.67 hrs	9.58 hrs
Percentages:	32.7%	67.3%



Slide Sheet Report

Drilling Services

v4.2.2674

BHA 3 - 2012/08/14 TO 2012/08/17

FILE #: 4027067

JOB TYPE: Horizontal

RIG & NO: Helmerich & Payne 307

WELL NAME: CANNON 37N-E3HZ

COMPANY: Anadarko Petroleum Corporation

SURFACE LOCATION:

SERVICE CO.: Precision Energy Services

SURVEY TYPE: HEL LWD

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca, Brian Trani

MWD Supervisor: Rusty Komrs

BHA NO: 3	DATES RUN: 2012/08/14 TO 2012/08/17	SECTION: Curve	TOOLFACE OFFSET: 358.9 °	SURVEY OFFSET: 58 ft
MOTOR SETTING: 2.25 °	KICKPAD: No	STABILIZER: No	MODEL: QLE7850	SERIAL NO: 675-3590
			BHA SURVEY TYPE: Positive Pulse MWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY					----- ORIENTING -----			----- ROTATING -----			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS
	DEPTH	INC	AZM	TF		FROM	TO	FEET	FROM	TO	FEET				
5733.00	98.00	5675.00	8.21	275.47	90R	5733.00	5741.00	8.00	5741.00	5831.00	90.00	0.00	0.00	0.00	
5831.00	94.00	5773.00	6.49	274.29	60R	5831.00	5843.00	12.00	5843.00	5925.00	82.00	8.00	-0.22	-1.76	
5925.00	190.00	5867.00	6.91	284.02	60R	5925.00	5933.00	8.00	5933.00	6115.00	182.00	12.00	0.03	0.45	
6115.00	96.00	6057.00	6.70	288.86	30R	6115.00	6127.00	12.00	6127.00	6211.00	84.00	8.00	-0.03	-0.11	
6211.00	139.00	6153.00	7.17	300.65	HS	6211.00	6219.00	8.00	6219.00	6350.00	131.00	12.00	0.04	0.49	
6350.00	51.00	6292.00	6.94	296.02	90 L	6350.00	6401.00	51.00	6401.00	6401.00	0.00	8.00	-0.03	-0.17	
6401.00	64.00	6343.00	6.42	282.61	90 L	6401.00	6433.00	32.00	6433.00	6465.00	32.00	0.00	0.00	-1.02	
6465.00	31.00	6407.00	11.30	234.18	90 L	6465.00	6496.00	31.00	6496.00	6496.00	0.00	57.00	0.09	7.63	
6496.00	63.00	6438.00	12.13	224.03	90 L	6496.00	6528.00	32.00	6528.00	6559.00	31.00	26.00	0.03	2.68	
6559.00	32.00	6501.00	12.82	195.77	HSR	6559.00	6591.00	32.00	6591.00	6591.00	0.00	36.00	0.02	1.10	
6591.00	31.00	6533.00	12.88	187.81	HS	6591.00	6622.00	31.00	6622.00	6622.00	0.00	27.00	0.00	0.19	
6622.00	32.00	6564.00	11.57	181.69	30 R	6622.00	6654.00	32.00	6654.00	6654.00	0.00	5.00	-0.26	-4.23	
6654.00	32.00	6596.00	13.33	182.76	HS	6654.00	6686.00	32.00	6686.00	6686.00	0.00	32.00	0.05	5.50	
6686.00	31.00	6628.00	16.36	186.65	HS	6686.00	6717.00	31.00	6717.00	6717.00	0.00	32.00	0.09	9.47	
6717.00	32.00	6659.00	19.72	189.57	HS	6717.00	6743.00	26.00	6743.00	6749.00	6.00	31.00	0.11	10.84	
6749.00	31.00	6691.00	22.47	191.13	HS	6749.00	6780.00	31.00	6780.00	6780.00	0.00	32.00	0.09	8.59	
6780.00	32.00	6722.00	23.64	193.06	10 L	6780.00	6812.00	32.00	6812.00	6812.00	0.00	31.00	0.04	3.77	
6812.00	32.00	6754.00	25.85	194.66	HS	6812.00	6844.00	32.00	6844.00	6844.00	0.00	26.00	0.09	6.91	
6844.00	31.00	6786.00	28.83	195.53	HS	6844.00	6875.00	31.00	6875.00	6875.00	0.00	32.00	0.09	9.31	
6875.00	32.00	6817.00	32.05	196.10	HS	6875.00	6907.00	32.00	6907.00	6907.00	0.00	31.00	0.10	10.39	
6907.00	32.00	6849.00	35.96	195.83	HS	6907.00	6939.00	32.00	6939.00	6939.00	0.00	32.00	0.12	12.22	
6939.00	32.00	6881.00	39.48	196.94	20L	6939.00	6971.00	32.00	6971.00	6971.00	0.00	32.00	0.11	11.00	
6971.00	32.00	6913.00	43.33	195.95	20 L	6971.00	7003.00	32.00	7003.00	7003.00	0.00	32.00	0.12	12.03	
7003.00	32.00	6945.00	46.47	194.74	20 L	7003.00	7035.00	32.00	7035.00	7035.00	0.00	32.00	0.10	9.81	
7035.00	31.00	6977.00	49.12	193.16	15 L	7035.00	7066.00	31.00	7066.00	7066.00	0.00	32.00	0.08	8.28	

Slide Sheet Report

BHA 3 - 2012/08/14 TO 2012/08/17

BIT		SURVEY				----- ORIENTING -----			----- ROTATING -----			SLIDE	BUR	BUR	COMMENTS
DEPTH	DRILLED	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO	FEET	SEEN	/ft	/100ft	
7066.00	32.00	7008.00	52.45	190.86	50 L	7066.00	7098.00	32.00	7098.00	7098.00	0.00	31.00	0.11	10.74	
7098.00	31.00	7040.00	55.80	190.23	45 L	7098.00	7129.00	31.00	7129.00	7129.00	0.00	32.00	0.10	10.47	
7129.00	32.00	7071.00	59.05	187.86	30 R	7129.00	7161.00	32.00	7161.00	7161.00	0.00	31.00	0.10	10.48	
7161.00	32.00	7103.00	61.48	184.72	HS	7161.00	7193.00	32.00	7193.00	7193.00	0.00	32.00	0.08	7.59	
7193.00	32.00	7135.00	64.47	183.10	HS	7193.00	7225.00	32.00	7225.00	7225.00	0.00	32.00	0.09	9.34	
7225.00	32.00	7167.00	68.74	182.88	30 L	7225.00	7257.00	32.00	7257.00	7257.00	0.00	32.00	0.13	13.34	
7257.00	32.00	7199.00	73.05	182.64	40 L	7257.00	7289.00	32.00	7289.00	7289.00	0.00	32.00	0.13	13.47	
7289.00	33.00	7231.00	77.67	182.52	40 L	7289.00	7322.00	33.00	7322.00	7322.00	0.00	32.00	0.14	14.44	
7322.00	32.00	7264.00	81.23	181.35	HS	7322.00	7354.00	32.00	7354.00	7354.00	0.00	33.00	0.11	10.79	
7354.00	86.00	7296.00	82.99	177.59	HS	7354.00	7386.00	32.00	7386.00	7440.00	54.00	32.00	0.05	5.50	
7440.00	0.00	7382.00	93.43	175.96		7440.00	7440.00	0.00	7440.00	7440.00	0.00	86.00	0.12	12.14	TD curve

Totals:	1015.00 ft	692.00 ft
Percentages:	59.5%	40.5%
Time:	26.58 hrs	7.08 hrs
Percentages:	79.0%	21.0%



Slide Sheet Report

Drilling Services

v4.2.2674

BHA 4 - 2012/08/18 TO 2012/08/21

FILE #: 4027067

JOB TYPE: Horizontal

RIG & NO: Helmerich & Payne 307

WELL NAME: CANNON 37N-E3HZ

COMPANY: Anadarko Petroleum Corporation

SURFACE LOCATION:

SERVICE CO.: Precision Energy Services

SURVEY TYPE: HEL LWD

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

MWD Supervisor: Rusty Komrs

BHA NO: 4	DATES RUN: 2012/08/18 TO 2012/08/21	SECTION: Lateral 1	TOOLFACE OFFSET: 56.00 °	SURVEY OFFSET: 54 ft
MOTOR SETTING: 1.15 °	KICKPAD: No	STABILIZER: 5 7/8" (149mm)	MODEL: LE6750	SERIAL NO: 475-1583
			BHA SURVEY TYPE: HEL LWD	

(Distances are shown in feet.)

BIT DEPTH DRILLED	SURVEY DEPTH	INC	AZM	TF	----- ORIENTING -----			----- ROTATING -----			SLIDE SEEN	BUR /ft	BUR /100ft	COMMENTS
					FROM	TO	FEET	FROM	TO	FEET				
7586.00	95.00	7532.00	95.56	176.85	145 R	7586.00	7607.00	21.00	7607.00	7681.00	74.00	0.00	0.00	
7681.00	95.00	7627.00	95.99	177.03	160R	7681.00	7711.00	30.00	7711.00	7776.00	65.00	21.00	0.02	0.45
7776.00	63.00	7722.00	95.86	177.35	LS	7776.00	7816.00	40.00	7816.00	7839.00	23.00	30.00	0.00	-0.14
7839.00	32.00	7785.00	95.47	177.92	LS	7839.00	7854.00	15.00	7854.00	7871.00	17.00	9.00	-0.04	-0.62
7871.00	63.00	7817.00	94.41	177.92	160R	7871.00	7911.00	40.00	7911.00	7934.00	23.00	31.00	-0.03	-3.31
7934.00	31.00	7880.00	93.03	178.95	LS	7934.00	7949.00	15.00	7949.00	7965.00	16.00	24.00	-0.06	-2.19
7965.00	95.00	7911.00	91.79	179.49	145 R	7965.00	7995.00	30.00	7995.00	8060.00	65.00	31.00	-0.04	-4.00
8060.00	95.00	8006.00	89.74	180.38	120 R	8060.00	8085.00	25.00	8085.00	8155.00	70.00	45.00	-0.05	-2.16
8155.00	95.00	8101.00	89.14	180.55	90 R	8155.00	8186.00	31.00	8186.00	8250.00	64.00	25.00	-0.02	-0.63
8250.00	476.00	8196.00	89.20	182.30	90 R	8250.00	8263.00	13.00	8263.00	8726.00	463.00	31.00	0.00	0.06
8726.00	95.00	8672.00	87.97	183.40	30L	8726.00	8757.00	31.00	8757.00	8821.00	64.00	13.00	-0.09	-0.26
8821.00	189.00	8767.00	88.77	181.50	HS	8821.00	8841.00	20.00	8841.00	9010.00	169.00	31.00	0.03	0.84
9010.00	284.00	8956.00	89.32	181.19	45 R	9010.00	9030.00	20.00	9030.00	9294.00	264.00	20.00	0.03	0.29
9294.00	95.00	9240.00	90.25	180.94	100 R	9294.00	9322.00	28.00	9322.00	9389.00	67.00	20.00	0.05	0.33
9389.00	96.00	9335.00	89.45	181.27	80 R	9389.00	9421.00	32.00	9421.00	9485.00	64.00	28.00	-0.03	-0.84
9485.00	189.00	9431.00	89.51	181.60	85 R	9485.00	9496.00	11.00	9496.00	9674.00	178.00	32.00	0.00	0.06
9674.00	285.00	9620.00	90.92	179.39	95 R	9674.00	9698.00	24.00	9698.00	9959.00	261.00	11.00	0.13	0.75
9959.00	95.00	9905.00	90.86	180.61	110 R	9959.00	9991.00	32.00	9991.00	10054.00	63.00	24.00	0.00	-0.02
10054.00	64.00	10000.00	91.67	180.52	160 R	10054.00	10094.00	40.00	10094.00	10118.00	24.00	32.00	0.03	0.85

Totals:	498.00 ft	2034.00 ft
Percentages:	19.7%	80.3%
Time:	20.58 hrs	29.75 hrs
Percentages:	40.9%	59.1%



Slide Sheet Report

Drilling Services

v4.2.2674

BHA 5 - 2012/08/21 TO 2012/08/23

FILE #: 4027067

JOB TYPE: Horizontal

RIG & NO: Helmerich & Payne 307

WELL NAME: CANNON 37N-E3HZ

COMPANY: Anadarko Petroleum Corporation

SURFACE LOCATION:

SERVICE CO.: Precision Energy Services

SURVEY TYPE: HEL LWD

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

MWD Supervisor: Rusty Komrs

BHA NO: 5	DATES RUN: 2012/08/21 TO 2012/08/23	SECTION: Lateral 1	TOOLFACE OFFSET: 258.4 °	SURVEY OFFSET: 54 ft
MOTOR SETTING: 1.50 °	KICKPAD: No	STABILIZER: No	MODEL: ME6770	SERIAL NO: 475-41096
			BHA SURVEY TYPE: HEL LWD	

(Distances are shown in feet.)

BIT		SURVEY				----- ORIENTING -----			----- ROTATING -----			SLIDE	BUR	BUR	COMMENTS
DEPTH	DRILLED	DEPTH	INC	AZM	TF	FROM	TO	FEET	FROM	TO	FEET	SEEN	/ft	/100ft	
10118.00	797.00	10064.00	91.48	181.08	135 R	10118.00	10132.00	14.00	10132.00	10915.00	783.00	0.00	0.00	0.00	
10915.00	479.00	10861.00	87.78	181.24	20 R	10915.00	10935.00	20.00	10935.00	11394.00	459.00	14.00	-0.26	-0.46	

Totals:	34.00 ft	1242.00 ft
Percentages:	2.7%	97.3%
Time:	1.58 hrs	7.92 hrs
Percentages:	16.7%	83.3%



MOTOR REPORTS

**Weatherford®**

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 1 - Build & Hold Section, Motor #675-43586

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307 SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 8.75 in

GENERAL INFORMATION:

BHA #: 1
DATE IN: 2012/08/12
DATE OUT: 2012/08/13
ANGLE IN: 0.16 °
ANGLE OUT: 7.21 °
ORIENTING HRS: 4.33
START DEPTH: 0.00 ft
END DEPTH: 3891.00 ft
HOLE MADE: 3891.00 ft
AVG ROP: 220.20 ft/hr
ROTATING HRS: 13.33

MOTOR INFORMATION:

MANFCT: Weatherford 1.8
SERIAL #: 675-43586
MODEL: QLE7850
LOBE: 7/8
SETTING: 1.88 °
BIT TO BEND: 3.87 ft
KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: FXD55
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi
IADC BIT GRADE: 1 / 2 / BT / G / X / I / BT / DMF
TOTAL FLOW RATE: 569.66 gal/min
NOZZLES: 0.648 in² TFA
PUMP PRESS: (OFF) 2400.00 psi
(ON) 3600.00 psi

MUD INFORMATION:

MUD TYPE: Water
DENSITY: 9 lb/gal
SAND: 0.100
SOLIDS: 0.000
OIL: 0.000
TEMP: 143 °F
LIQUID BASE: Water
VISCOSITY: 28 sec/qt
WATER LOSS: 0.00 cc/30min
PLASTIC VISC: 0.0 cP
YIELD POINT: 3.0 lb/100 ft²
pH: 8.6
LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min
 (All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 6.08
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 17.67
MOTOR HOURS THIS RUN: 23.75
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 23.75
TOTAL BRT HOURS: 23.75

MOTOR EVALUATION COMMENTS:

This motor has 23 hrs total on it, it was ran to the max weight on motor of 35k and then some as high as 50k while in a vertical section so the motor did see the full amount of weight while rotating we had less than a 10,000 pounds of drag in the hole at this point.

REASON FOR BHA CHANGE:

Motor stator rubber.

COMMENTS FROM LAST DAY RAN:

Drill F/ 2601' T/ 3891 POOH for motor. Change out motor and bit. RIH. Drill F/ 3891' T/ 4560'

over the last 24 hrs @ company man request we ran 45 to 50 wt on bit with torque up as high as 11300 and diff as high 1200 and stalling at 1440. well bore is wanting to walk in rotation 6 to 8 deg. with these parameters.



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Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 1 - Build & Hold Section, Motor #675-43586

@ 0600 this morning we were starting to see motor issues with the pressure spiking and diff spiking following with the motor starting to stall. @ 3700 i asked if we could drop that weight back down to at least to 35k wt. on bit to help with deviation, they did as i asked but then even with less weight as much as 20k wt. on bit the motor was still pressure spiking from 3700 psi to 5000 psi putting our diff as high as 2000 psi and stalling motor. Then Anadarko decided that the motor had failed. I believe this is do to the weight on bit that the Anadarko requested.

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Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 2 - Build & Hold Section, Motor #675-43613

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307 SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Charles Apodaca, Brian Trani

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 8.75 in

GENERAL INFORMATION:

BHA #: 2
DATE IN: 2012/08/13
DATE OUT: 2012/08/14
ANGLE IN: 0.00 °
ANGLE OUT: 6.46 °
ORIENTING HRS: 4.67
START DEPTH: 3891.00 ft
END DEPTH: 5733.00 ft
HOLE MADE: 1842.00 ft
AVG ROP: 129.26 ft/hr
ROTATING HRS: 9.58

MOTOR INFORMATION:

MANFCT: Weatherford 1.8
SERIAL #: 675-43613
MODEL: QLE7850
LOBE: 7/8
SETTING: 1.88 °
BIT TO BEND: 3.87 ft
KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: FXD55
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi
IADC BIT GRADE: ?/?/?/?/?/?/?/?/?
TOTAL FLOW RATE: 584.65 gal/min
NOZZLES: 0.648 in² TFA
PUMP PRESS: (OFF) 2600.00 psi
(ON) 3400.00 psi

MUD INFORMATION:

MUD TYPE: Water
DENSITY: 8 lb/gal
SAND: 0.010
SOLIDS: 0.400
OIL: 0.000
TEMP: 155 °F
LIQUID BASE: Water
VISCOSITY: 28 sec/qt
WATER LOSS: 0.00 cc/30min
PLASTIC VISC: 2.0 cP
YIELD POINT: 3.0 lb/100 ft²
pH: 8.4
LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min
 (All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 3.08
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 14.25
MOTOR HOURS THIS RUN: 17.33
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 17.33
TOTAL BRT HOURS: 17.83

MOTOR EVALUATION COMMENTS:

Weatherford motor SN (675-43613) failed in less than 2000'. This motor had a total of 17.33 hours on it. The stator chucked plugging the jets in the bit. We also got a lot of rubber over the shakers.

REASON FOR BHA CHANGE:

Motor stator rubber.

COMMENTS FROM LAST DAY RAN:

Drill F/ 4560 to

@ 5670 we were running 25 wt. on bit with a diff of 580 and rpm of 40, the pressure spiked from 3144 psi to 4123 and the diff went from 500 to 1200, Driller picked up of bttm dropped his stks from 78 & 78 to 30 & 30 and SPP was still holding at 4000 psi.



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Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 2 - Build & Hold Section, Motor #675-43613

Prior to this the motor had been throwing us little spikes anywhere from 500 diff to 800 diff using same parameters in rotation.

The last two slides put in the motor spiked using parameters of 10k wt on bit, w/ 150 diff with 100 rop motor would drill along just fine and then towards the end of the slide the motor diff would spike f/ 150 to 800 to 1100 psi.

Rubber found in bit on surface. Changed bit and motor.

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Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 3 - Curve Section, Motor #675-3590

FILE #: 4027067 WELL NAME: CANNON 37N-E3HZ SERVICE CO.: Precision Energy Services
 JOB TYPE: Horizontal COMPANY: Anadarko Petroleum Corporation SURVEY TYPE: HEL LWD
 RIG & NO: Helmerich & Payne 307 SURFACE LOCATION: FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca, Brian Trani
 MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: Positive Pulse MWD

HOLE SIZE: 8.75 in

GENERAL INFORMATION:

BHA #: 3 START DEPTH: 5733.00 ft
 DATE IN: 2012/08/14 END DEPTH: 7440.00 ft
 DATE OUT: 2012/08/17 HOLE MADE: 1707.00 ft
 ANGLE IN: 8.21 ° AVG ROP: 50.70 ft/hr
 ANGLE OUT: 93.43 °
 ORIENTING HRS: 26.58 ROTATING HRS: 7.08

MOTOR INFORMATION:

MANFCT: Weatherford 2.2
 SERIAL #: 675-3590
 MODEL: QLE7850
 LOBE: 7/8 BIT TO BEND: 6.22 ft
 SETTING: 2.25 ° KICKPAD: No
 STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: FXD55 IADC BIT GRADE: 1 / 1 / WT / A / X / I / NO / TD
 BIT PRESS DROP: 0.00 psi TOTAL FLOW RATE: 569.66 gal/min PUMP PRESS: (OFF) 3000.00 psi
 MTR PRESS DROP: 0.00 psi NOZZLES: 0.648 in² TFA (ON) 3500.00 psi

MUD INFORMATION:

MUD TYPE: Gelchem LIQUID BASE: Water (All units are imperial.)
 DENSITY: 10 lb/gal VISCOSITY: 40 sec/qt
 SAND: 0.200 WATER LOSS: 8.40 cc/30min LIQUID RATE: 0.00 gal/min
 SOLIDS: 1.900 PLASTIC VISC: 12.0 cP GAS TYPE:
 OIL: 0.000 YIELD POINT: 10.0 lb/100 ft² GAS RATE: 0.00 cu ft/min
 TEMP: 174 °F pH: 8.6

TIME INFORMATION:

CIRCULATING HOURS: 7.00
 REAMING HOURS: 0.00
 TIME DRILL HOURS: 0.00
 MOTOR DRILL HOURS: 33.67
 MOTOR HOURS THIS RUN: 40.67
 PREVIOUS HOURS: 0.00
 TOTAL MOTOR HOURS: 40.67
 TOTAL BRT HOURS: 40.67

MOTOR EVALUATION COMMENTS:

WFT Motor SN (675-3590) 7/8 5.0 performed as expected. Motor had a total of 40.67 hours on it. It had no squat and looked good.

REASON FOR BHA CHANGE:

TD Curve

COMMENTS FROM LAST DAY RAN:

POOH to run casing. Lay down tools. Run 7" Casing.

Could not get MWD tool pulled out. Some centralizer rubber was missing on first centralizer. We think that's what jammed tool into UBHO. Left UBHO and monel screwed together and laid down with MWD tool still inside. 4 1/4 IF TOOLS are Torqed 30,000

**Weatherford**

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 4 - Lateral 1 Section, Motor #475-1583

FILE #: 4027067

WELL NAME: CANNON 37N-E3HZ

SERVICE CO.: Precision Energy Services

JOB TYPE: Horizontal

COMPANY: Anadarko Petroleum Corporation

SURVEY TYPE: HEL LWD

RIG & NO: Helmerich & Payne 307

SURFACE LOCATION:

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: HEL LWD

HOLE SIZE: 6.125 in

GENERAL INFORMATION:

BHA #: 4
DATE IN: 2012/08/18
DATE OUT: 2012/08/21
ANGLE IN: 95.56 °
ANGLE OUT: 91.67 °
ORIENTING HRS: 20.58
START DEPTH: 7440.00 ft
END DEPTH: 10118.00 ft
HOLE MADE: 2678.00 ft
AVG ROP: 53.21 ft/hr
ROTATING HRS: 29.75

MOTOR INFORMATION:

MANFCT: Weatherford 1.1
SERIAL #: 475-1583
MODEL: LE6750
LOBE: 6/7
SETTING: 1.15 °
BIT TO BEND: 6.14 ft
KICKPAD: No
STABILIZER: 5 7/8" (149mm)

DRILLING INFORMATION:

BIT TYPE: VM513H
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi
IADC BIT GRADE: 8 / 1 / JD / N / X / I / BT / PR
TOTAL FLOW RATE: 299.00 gal/min
NOZZLES: 0.648 in² TFA
PUMP PRESS: (OFF) 2100.00 psi
(ON) 2800.00 psi

MUD INFORMATION:

MUD TYPE: Water
DENSITY: 10 lb/gal
SAND: 0.500
SOLIDS: 6.000
OIL: 0.000
TEMP: 200 °F
LIQUID BASE: Water
VISCOSITY: 39 sec/qt
WATER LOSS: 8.20 cc/30min
PLASTIC VISC: 12.0 cP
YIELD POINT: 12.0 lb/100 ft²
pH: 8.6
LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min
 (All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 7.75
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 50.33
MOTOR HOURS THIS RUN: 58.08
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 58.08
TOTAL BRT HOURS: 58.67

MOTOR EVALUATION COMMENTS:

Weatherford Motor SN (475-1583) 6/7 lobe 7.0 stage performed as expected although we did not get build rates expected. This motor had a total of 58.25 hours on it. This motor was configured as 1.15 stabilized & ROP was extremely low throughout the entire lateral. The motor had about 1/8" of squat in it when squat tested and looked good when laid down.

REASON FOR BHA CHANGE:

ROP

COMMENTS FROM LAST DAY RAN:

Drill f/ 9674 to 10118'

@ 6947 M.D. we were 90.92 inc and 179.39 AZM wanting to slide 31' at 90R do to being 15' left of the line and walking away from it.

**BHA 4 - Lateral 1 Section, Motor #475-1583**

the company man requested that I only put in the amount of slide that the hole would only allow while the lube was going by the slide was going good but as soon as the lube was gone the slide went from 30' to 40' rop to 0' ROP and at this point instead of keeping the lube going and getting the slide I needed the company man Requested that we rotate forward

POOH due to slow ROP. We will P/U a 1.5 slick motor for next run.

Once on surface it was loss of ROP was obvious due to the Matrix on the bit being gone. This bit was very close to being cored out.

**Weatherford®**

Motor / RSS Evaluation Report

Drilling Services
v4.2.2674

BHA 5 - Lateral 1 Section, Motor #475-41096

FILE #: 4027067

JOB TYPE: Horizontal

RIG & NO: Helmerich & Payne 307

WELL NAME: CANNON 37N-E3HZ

COMPANY: Anadarko Petroleum Corporation

SURFACE LOCATION:

SERVICE CO.: Precision Energy Services

SURVEY TYPE: HEL LWD

FIELD / LOCATION: Wattenburg / CO / USA

DIR Supervisor: Josh Monroe, Charles Apodaca

MWD Supervisor: Rusty Komrs

BHA SURVEY TYPE: HEL LWD

HOLE SIZE: 6.125 in

GENERAL INFORMATION:

BHA #: 5
DATE IN: 2012/08/21
DATE OUT: 2012/08/23
ANGLE IN: 91.48 °
ANGLE OUT: 87.78 °
ORIENTING HRS: 1.58

START DEPTH: 10118.00 ft
END DEPTH: 11394.00 ft
HOLE MADE: 1276.00 ft
AVG ROP: 134.32 ft/hr
ROTATING HRS: 7.92

MOTOR INFORMATION:

MANFCT: Weatherford
SERIAL #: 475-41096
MODEL: ME6770
LOBE: 6/7
SETTING: 1.50 °

BIT TO BEND: 6.14 ft
KICKPAD: No
STABILIZER: No

DRILLING INFORMATION:

BIT TYPE: FXD54
BIT PRESS DROP: 0.00 psi
MTR PRESS DROP: 0.00 psi

IADC BIT GRADE: 1 / 1 / FC / G / ? / I / FC / TD
TOTAL FLOW RATE: 0.00 gal/min
NOZZLES: 0.648 in² TFA

PUMP PRESS: (OFF) 0.00 psi
(ON) 0.00 psi

MUD INFORMATION:

MUD TYPE: Gelchem
DENSITY: 10 lb/gal
SAND: 0.700
SOLIDS: 10.200
OIL: 0.000
TEMP: 231 °F

LIQUID BASE: Water
VISCOSITY: 42 sec/qt
WATER LOSS: 6.80 cc/30min
PLASTIC VISC: 21.0 cP
YIELD POINT: 17.0 lb/100 ft²
pH: 8.2

LIQUID RATE: 0.00 gal/min
GAS TYPE:
GAS RATE: 0.00 cu ft/min

(All units are imperial.)

TIME INFORMATION:

CIRCULATING HOURS: 7.83
REAMING HOURS: 0.00
TIME DRILL HOURS: 0.00
MOTOR DRILL HOURS: 9.50
MOTOR HOURS THIS RUN: 17.33
PREVIOUS HOURS: 0.00
TOTAL MOTOR HOURS: 17.33
TOTAL BRT HOURS: 17.33

MOTOR EVALUATION COMMENTS:

Weatherford Motor SN (475-41096) 6/7 lobe 7.0 stage. Performed as expected. This Motor had a total of 12.83 hours on it. Motor looked good when laid down and had no squat in it when squat tested.

REASON FOR BHA CHANGE:

TD Well.

COMMENTS FROM LAST DAY RAN:

POOH to run casing/ wait on orders.