

US ROCKIES REGION PLANNING

COLORADO CENTRAL ZONE - 83

ARAPAHOE_HOULIHAN PAD

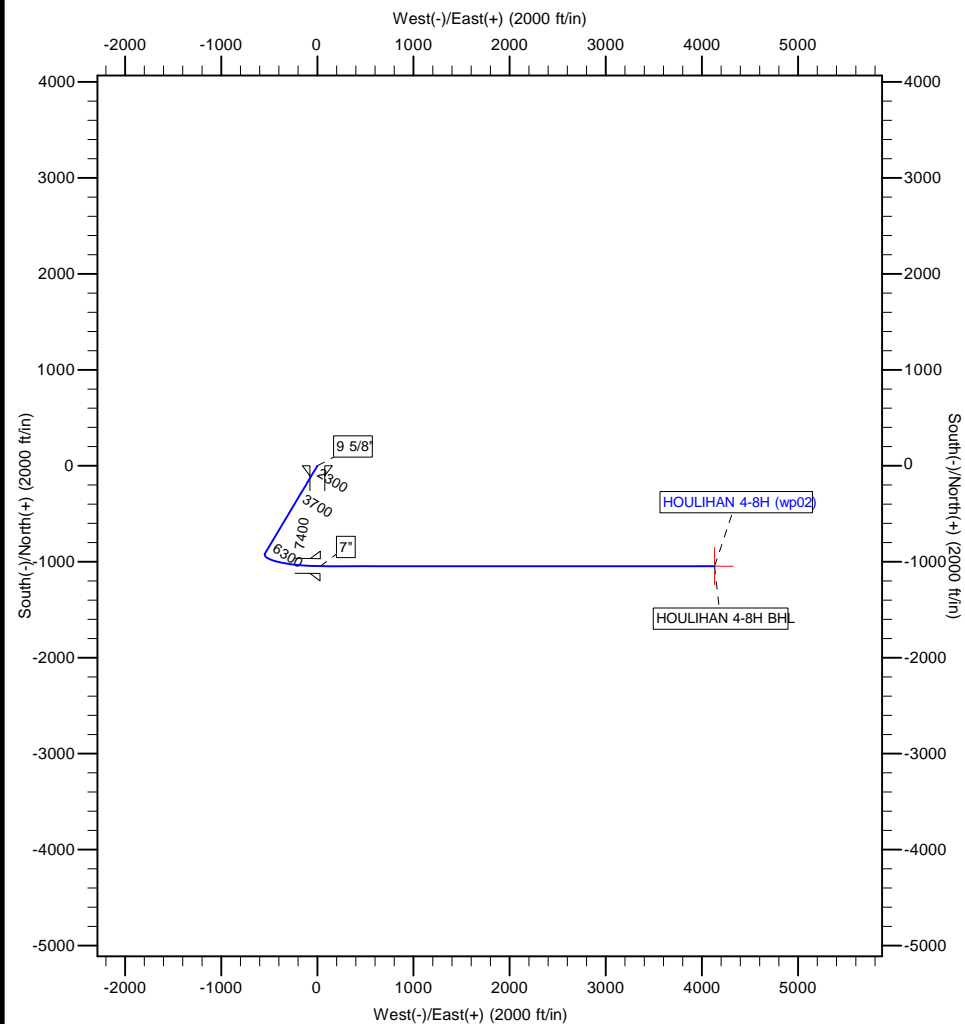
HOULIHAN 4-8H

HOULIHAN 4-8H

Plan: HOULIHAN 4-8H (wp02)

Standard Planning Report

14 February, 2012



Project: COLORADO CENTRAL ZONE - 83
 Site: ARAPAHOE HOULIHAN PAD
 Well: HOULIHAN 4-8H
 Wellbore: HOULIHAN 4-8H
 Section:
 SHL:
 Design: HOULIHAN 4-8H (wp02)
 Latitude: 39.708210
 Longitude: -104.543868
 GL: 5633.00
 KB: 25' RKB + 5633' GL @ 5658.00ft

WELL DETAILS: HOULIHAN 4-8H

+N/-S	+E/-W	Northing	Ground Level: Easting	5633.00 Latitude	39.708210 Longitude	Slot
0.00	0.00	1684260.31	3269002.40	39.708210	-104.543868	

SECTION DETAILS

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1970.00	0.00	0.00	1970.00	0.00	0.00	0.00	0.00	0.00
2623.34	13.07	210.80	2617.69	-63.71	-37.98	2.00	210.80	-21.20
6992.41	13.07	210.80	6873.64	-912.17	-543.80	0.00	0.00	-303.49
7963.63	90.60	90.60	7499.00	-1045.00	30.00	10.00	-119.43	285.35
8023.47	90.63	90.00	7498.36	-1045.31	89.83	1.00	-87.59	343.44
2066.80	90.63	90.00	7454.00	-1045.46	4132.92	0.00	0.00	4263.10

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

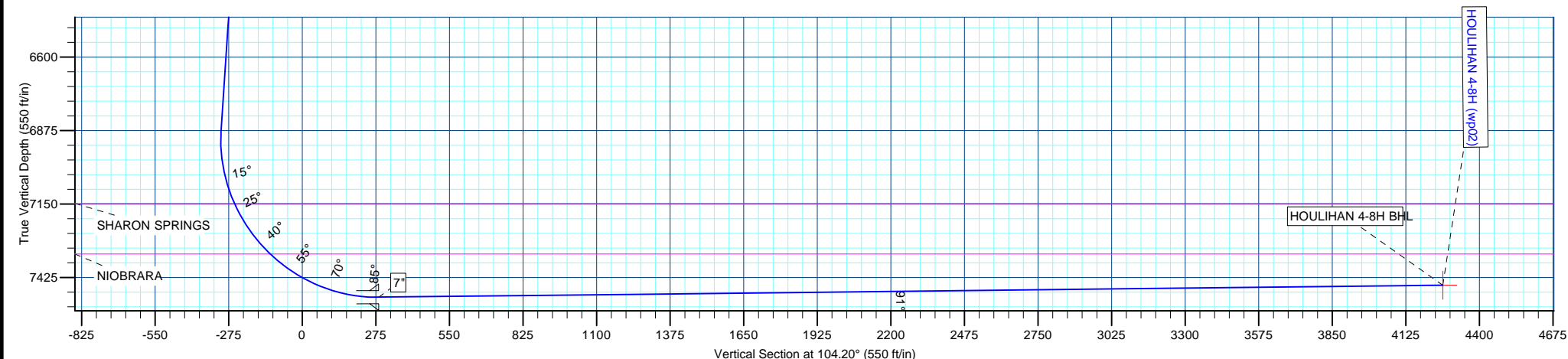
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
HOULIHAN 4-8H BHL	7454.00	-1045.46	4132.92	39.705339	-104.529179	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1668.00	1668.00	FOX HILLS
2743.00	2751.98	PARKMAN
5023.00	5092.58	SUSSEX
5456.00	5537.09	SHANNON
7148.00	7277.78	SHARON SPRINGS
7337.00	7511.09	NIOBRARA

CASING DETAILS

TVD	MD	Name	Size
1820.00	1820.00	9 5/8"	9-5/8
7499.00	7963.63	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOULIHAN 4-8H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	25' RKB + 5633' GL @ 5658.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	25' RKB + 5633' GL @ 5658.00ft
Site:	ARAPAHOE_HOULIHAN PAD	North Reference:	True
Well:	HOULIHAN 4-8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HOULIHAN 4-8H		
Design:	HOULIHAN 4-8H (wp02)		

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

Site		ARAPAHOE_HOULIHAN PAD			
Site Position:		Northing:	1,684,290.19 usft	Latitude:	39.708292
From:	Lat/Long	Easting:	3,269,002.37 usft	Longitude:	-104.543867
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.60 °

Well	HOULIHAN 4-8H					
Well Position	+N/-S	-29.88 ft	Northing:	1,684,260.31 usft	Latitude:	39.708210
	+E/-W	-0.28 ft	Easting:	3,269,002.40 usft	Longitude:	-104.543868
Position Uncertainty		0.00 ft	Wellhead Elevation:		Ground Level:	5,633.00 ft

Wellbore	HOULIHAN 4-8H				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/7/2011	8.64	66.51	52,750

Design	HOULIHAN 4-8H (wp02)			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	104.20

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,970.00	0.00	0.00	1,970.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,623.34	13.07	210.80	2,617.69	-63.71	-37.98	2.00	2.00	0.00	210.80	
6,992.41	13.07	210.80	6,873.64	-912.17	-543.80	0.00	0.00	0.00	0.00	
7,963.63	90.60	90.60	7,499.00	-1,045.00	30.00	10.00	7.98	-12.38	-119.43	
8,023.47	90.63	90.00	7,498.36	-1,045.31	89.83	1.00	0.04	-1.00	-87.59	
12,066.80	90.63	90.00	7,454.00	-1,045.46	4,132.92	0.00	0.00	0.00	0.00	HOULIHAN 4-8H BHL

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOULIHAN 4-8H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	25' RKB + 5633' GL @ 5658.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	25' RKB + 5633' GL @ 5658.00ft
Site:	ARAPAHOE_HOULIHAN PAD	North Reference:	True
Well:	HOULIHAN 4-8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HOULIHAN 4-8H		
Design:	HOULIHAN 4-8H (wp02)		

Planned 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	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00
1,668.00	0.00	0.00	1,668.00	0.00	0.00	0.00	0.00	0.00	0.00
FOX HILLS									
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00
1,820.00	0.00	0.00	1,820.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,970.00	0.00	0.00	1,970.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
2,000.00	0.60	210.80	2,000.00	-0.13	-0.08	-0.04	2.00	2.00	0.00
2,100.00	2.60	210.80	2,099.96	-2.53	-1.51	-0.84	2.00	2.00	0.00
2,200.00	4.60	210.80	2,199.75	-7.93	-4.73	-2.64	2.00	2.00	0.00
2,300.00	6.60	210.80	2,299.27	-16.31	-9.72	-5.43	2.00	2.00	0.00
2,400.00	8.60	210.80	2,398.39	-27.67	-16.49	-9.21	2.00	2.00	0.00
2,500.00	10.60	210.80	2,496.98	-41.99	-25.03	-13.97	2.00	2.00	0.00
2,600.00	12.60	210.80	2,594.93	-59.26	-35.33	-19.72	2.00	2.00	0.00
2,623.34	13.07	210.80	2,617.69	-63.71	-37.98	-21.20	2.00	2.00	0.00
Start 4369.07 hold at 2623.34 MD									
2,700.00	13.07	210.80	2,692.37	-78.60	-46.86	-26.15	0.00	0.00	0.00
2,751.98	13.07	210.80	2,743.00	-88.70	-52.88	-29.51	0.00	0.00	0.00
PARKMAN									
2,800.00	13.07	210.80	2,789.78	-98.02	-58.44	-32.61	0.00	0.00	0.00
2,900.00	13.07	210.80	2,887.19	-117.44	-70.01	-39.07	0.00	0.00	0.00
3,000.00	13.07	210.80	2,984.60	-136.86	-81.59	-45.54	0.00	0.00	0.00
3,100.00	13.07	210.80	3,082.01	-156.28	-93.17	-52.00	0.00	0.00	0.00
3,200.00	13.07	210.80	3,179.42	-175.70	-104.74	-58.46	0.00	0.00	0.00
3,300.00	13.07	210.80	3,276.83	-195.12	-116.32	-64.92	0.00	0.00	0.00
3,400.00	13.07	210.80	3,374.24	-214.54	-127.90	-71.38	0.00	0.00	0.00
3,500.00	13.07	210.80	3,471.65	-233.96	-139.48	-77.84	0.00	0.00	0.00
3,600.00	13.07	210.80	3,569.06	-253.38	-151.05	-84.30	0.00	0.00	0.00
3,700.00	13.07	210.80	3,666.47	-272.80	-162.63	-90.76	0.00	0.00	0.00
3,800.00	13.07	210.80	3,763.88	-292.22	-174.21	-97.23	0.00	0.00	0.00
3,900.00	13.07	210.80	3,861.30	-311.64	-185.78	-103.69	0.00	0.00	0.00
4,000.00	13.07	210.80	3,958.71	-331.06	-197.36	-110.15	0.00	0.00	0.00
4,100.00	13.07	210.80	4,056.12	-350.48	-208.94	-116.61	0.00	0.00	0.00
4,200.00	13.07	210.80	4,153.53	-369.90	-220.52	-123.07	0.00	0.00	0.00
4,300.00	13.07	210.80	4,250.94	-389.31	-232.09	-129.53	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOULIHAN 4-8H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	25' RKB + 5633' GL @ 5658.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	25' RKB + 5633' GL @ 5658.00ft
Site:	ARAPAHOE_HOULIHAN PAD	North Reference:	True
Well:	HOULIHAN 4-8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HOULIHAN 4-8H		
Design:	HOULIHAN 4-8H (wp02)		

Planned 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)
4,400.00	13.07	210.80	4,348.35	-408.73	-243.67	-135.99	0.00	0.00	0.00
4,500.00	13.07	210.80	4,445.76	-428.15	-255.25	-142.45	0.00	0.00	0.00
4,600.00	13.07	210.80	4,543.17	-447.57	-266.82	-148.92	0.00	0.00	0.00
4,700.00	13.07	210.80	4,640.58	-466.99	-278.40	-155.38	0.00	0.00	0.00
4,800.00	13.07	210.80	4,737.99	-486.41	-289.98	-161.84	0.00	0.00	0.00
4,900.00	13.07	210.80	4,835.40	-505.83	-301.56	-168.30	0.00	0.00	0.00
5,000.00	13.07	210.80	4,932.81	-525.25	-313.13	-174.76	0.00	0.00	0.00
5,092.58	13.07	210.80	5,023.00	-543.23	-323.85	-180.74	0.00	0.00	0.00
SUSSEX									
5,100.00	13.07	210.80	5,030.22	-544.67	-324.71	-181.22	0.00	0.00	0.00
5,200.00	13.07	210.80	5,127.63	-564.09	-336.29	-187.68	0.00	0.00	0.00
5,300.00	13.07	210.80	5,225.05	-583.51	-347.86	-194.14	0.00	0.00	0.00
5,400.00	13.07	210.80	5,322.46	-602.93	-359.44	-200.61	0.00	0.00	0.00
5,500.00	13.07	210.80	5,419.87	-622.35	-371.02	-207.07	0.00	0.00	0.00
5,537.09	13.07	210.80	5,456.00	-629.55	-375.31	-209.46	0.00	0.00	0.00
SHANNON									
5,600.00	13.07	210.80	5,517.28	-641.77	-382.60	-213.53	0.00	0.00	0.00
5,700.00	13.07	210.80	5,614.69	-661.19	-394.17	-219.99	0.00	0.00	0.00
5,800.00	13.07	210.80	5,712.10	-680.61	-405.75	-226.45	0.00	0.00	0.00
5,900.00	13.07	210.80	5,809.51	-700.03	-417.33	-232.91	0.00	0.00	0.00
6,000.00	13.07	210.80	5,906.92	-719.45	-428.90	-239.37	0.00	0.00	0.00
6,100.00	13.07	210.80	6,004.33	-738.87	-440.48	-245.83	0.00	0.00	0.00
6,200.00	13.07	210.80	6,101.74	-758.29	-452.06	-252.30	0.00	0.00	0.00
6,300.00	13.07	210.80	6,199.15	-777.71	-463.64	-258.76	0.00	0.00	0.00
6,400.00	13.07	210.80	6,296.56	-797.13	-475.21	-265.22	0.00	0.00	0.00
6,500.00	13.07	210.80	6,393.97	-816.55	-486.79	-271.68	0.00	0.00	0.00
6,600.00	13.07	210.80	6,491.38	-835.97	-498.37	-278.14	0.00	0.00	0.00
6,700.00	13.07	210.80	6,588.80	-855.39	-509.94	-284.60	0.00	0.00	0.00
6,800.00	13.07	210.80	6,686.21	-874.80	-521.52	-291.06	0.00	0.00	0.00
6,900.00	13.07	210.80	6,783.62	-894.22	-533.10	-297.52	0.00	0.00	0.00
6,992.41	13.07	210.80	6,873.64	-912.17	-543.80	-303.49	0.00	0.00	0.00
Start DLS 10.00 TFO -119.43									
7,000.00	12.71	207.80	6,881.03	-913.65	-544.63	-303.94	10.00	-4.69	-39.60
7,100.00	12.12	160.03	6,978.94	-933.29	-546.18	-300.62	10.00	-0.59	-47.76
7,200.00	18.15	128.50	7,075.59	-952.90	-530.36	-280.48	10.00	6.03	-31.53
7,277.78	24.65	116.67	7,148.00	-967.75	-506.35	-253.56	10.00	8.36	-15.21
SHARON SPRINGS									
7,300.00	26.63	114.33	7,168.03	-971.88	-497.67	-244.13	10.00	8.90	-10.53
7,400.00	35.87	106.85	7,253.46	-989.65	-449.09	-192.68	10.00	9.23	-7.48
7,500.00	45.39	102.15	7,329.28	-1,005.67	-386.09	-127.67	10.00	9.53	-4.70
7,511.09	46.46	101.72	7,337.00	-1,007.32	-378.29	-119.71	10.00	9.62	-3.82
NIOBRARA									
7,600.00	55.06	98.79	7,393.20	-1,019.46	-310.59	-51.10	10.00	9.67	-3.30
7,700.00	64.79	96.15	7,443.26	-1,030.60	-224.89	34.71	10.00	9.74	-2.64
7,800.00	74.57	93.90	7,477.95	-1,038.74	-131.59	127.16	10.00	9.78	-2.25
7,900.00	84.36	91.86	7,496.21	-1,043.64	-33.53	223.44	10.00	9.80	-2.04
7,963.63	90.60	90.60	7,499.00	-1,045.00	30.00	285.35	10.00	9.80	-1.97
Start DLS 1.00 TFO -87.59 - 7"									
8,000.00	90.62	90.24	7,498.61	-1,045.27	66.36	320.67	1.00	0.04	-1.00
8,023.47	90.63	90.00	7,498.36	-1,045.31	89.83	343.44	1.00	0.04	-1.00
Start 4043.33 hold at 8023.47 MD									
8,100.00	90.63	90.00	7,497.52	-1,045.32	166.36	417.63	0.00	0.00	0.00
8,200.00	90.63	90.00	7,496.42	-1,045.32	266.35	514.57	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOULIHAN 4-8H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	25' RKB + 5633' GL @ 5658.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	25' RKB + 5633' GL @ 5658.00ft
Site:	ARAPAHOE_HOULIHAN PAD	North Reference:	True
Well:	HOULIHAN 4-8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HOULIHAN 4-8H		
Design:	HOULIHAN 4-8H (wp02)		

Planned 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)	
8,300.00	90.63	90.00	7,495.32	-1,045.32	366.34	611.51	0.00	0.00	0.00	
8,400.00	90.63	90.00	7,494.23	-1,045.33	466.34	708.45	0.00	0.00	0.00	
8,500.00	90.63	90.00	7,493.13	-1,045.33	566.33	805.39	0.00	0.00	0.00	
8,600.00	90.63	90.00	7,492.03	-1,045.34	666.33	902.33	0.00	0.00	0.00	
8,700.00	90.63	90.00	7,490.94	-1,045.34	766.32	999.27	0.00	0.00	0.00	
8,800.00	90.63	90.00	7,489.84	-1,045.34	866.31	1,096.22	0.00	0.00	0.00	
8,900.00	90.63	90.00	7,488.74	-1,045.35	966.31	1,193.16	0.00	0.00	0.00	
9,000.00	90.63	90.00	7,487.64	-1,045.35	1,066.30	1,290.10	0.00	0.00	0.00	
9,100.00	90.63	90.00	7,486.55	-1,045.35	1,166.30	1,387.04	0.00	0.00	0.00	
9,200.00	90.63	90.00	7,485.45	-1,045.36	1,266.29	1,483.98	0.00	0.00	0.00	
9,300.00	90.63	90.00	7,484.35	-1,045.36	1,366.28	1,580.92	0.00	0.00	0.00	
9,400.00	90.63	90.00	7,483.26	-1,045.37	1,466.28	1,677.86	0.00	0.00	0.00	
9,500.00	90.63	90.00	7,482.16	-1,045.37	1,566.27	1,774.81	0.00	0.00	0.00	
9,600.00	90.63	90.00	7,481.06	-1,045.37	1,666.27	1,871.75	0.00	0.00	0.00	
9,700.00	90.63	90.00	7,479.96	-1,045.38	1,766.26	1,968.69	0.00	0.00	0.00	
9,800.00	90.63	90.00	7,478.87	-1,045.38	1,866.25	2,065.63	0.00	0.00	0.00	
9,900.00	90.63	90.00	7,477.77	-1,045.38	1,966.25	2,162.57	0.00	0.00	0.00	
10,000.00	90.63	90.00	7,476.67	-1,045.39	2,066.24	2,259.51	0.00	0.00	0.00	
10,100.00	90.63	90.00	7,475.58	-1,045.39	2,166.24	2,356.45	0.00	0.00	0.00	
10,200.00	90.63	90.00	7,474.48	-1,045.39	2,266.23	2,453.40	0.00	0.00	0.00	
10,300.00	90.63	90.00	7,473.38	-1,045.40	2,366.22	2,550.34	0.00	0.00	0.00	
10,400.00	90.63	90.00	7,472.29	-1,045.40	2,466.22	2,647.28	0.00	0.00	0.00	
10,500.00	90.63	90.00	7,471.19	-1,045.41	2,566.21	2,744.22	0.00	0.00	0.00	
10,600.00	90.63	90.00	7,470.09	-1,045.41	2,666.21	2,841.16	0.00	0.00	0.00	
10,700.00	90.63	90.00	7,468.99	-1,045.41	2,766.20	2,938.10	0.00	0.00	0.00	
10,800.00	90.63	90.00	7,467.90	-1,045.42	2,866.19	3,035.04	0.00	0.00	0.00	
10,900.00	90.63	90.00	7,466.80	-1,045.42	2,966.19	3,131.99	0.00	0.00	0.00	
11,000.00	90.63	90.00	7,465.70	-1,045.42	3,066.18	3,228.93	0.00	0.00	0.00	
11,100.00	90.63	90.00	7,464.61	-1,045.43	3,166.18	3,325.87	0.00	0.00	0.00	
11,200.00	90.63	90.00	7,463.51	-1,045.43	3,266.17	3,422.81	0.00	0.00	0.00	
11,300.00	90.63	90.00	7,462.41	-1,045.43	3,366.16	3,519.75	0.00	0.00	0.00	
11,400.00	90.63	90.00	7,461.32	-1,045.44	3,466.16	3,616.69	0.00	0.00	0.00	
11,500.00	90.63	90.00	7,460.22	-1,045.44	3,566.15	3,713.63	0.00	0.00	0.00	
11,600.00	90.63	90.00	7,459.12	-1,045.45	3,666.15	3,810.58	0.00	0.00	0.00	
11,700.00	90.63	90.00	7,458.02	-1,045.45	3,766.14	3,907.52	0.00	0.00	0.00	
11,800.00	90.63	90.00	7,456.93	-1,045.45	3,866.13	4,004.46	0.00	0.00	0.00	
11,900.00	90.63	90.00	7,455.83	-1,045.46	3,966.13	4,101.40	0.00	0.00	0.00	
12,000.00	90.63	90.00	7,454.73	-1,045.46	4,066.12	4,198.34	0.00	0.00	0.00	
12,066.80	90.63	90.00	7,454.00	-1,045.46	4,132.92	4,263.10	0.00	0.00	0.00	
TD at 12066.80 - HOULIHAN 4-8H BHL										

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
HOULIHAN 4-8H BHL	0.00	0.00	7,454.00	-1,045.46	4,132.92	1,683,258.40	3,273,146.09	39.705339	-104.529179
- plan hits target center									
- Point									

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOULIHAN 4-8H
Company:	US ROCKIES REGION PLANNING	TVD Reference:	25' RKB + 5633' GL @ 5658.00ft
Project:	COLORADO CENTRAL ZONE - 83	MD Reference:	25' RKB + 5633' GL @ 5658.00ft
Site:	ARAPAHOE_HOULIHAN PAD	North Reference:	True
Well:	HOULIHAN 4-8H	Survey Calculation Method:	Minimum Curvature
Wellbore:	HOULIHAN 4-8H		
Design:	HOULIHAN 4-8H (wp02)		

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
1,820.00	1,820.00	9 5/8"	9-5/8	12-1/4	
7,963.63	7,499.00	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,668.00	1,668.00	FOX HILLS		0.00	
2,751.98	2,743.00	PARKMAN		0.00	
5,092.58	5,023.00	SUSSEX		0.00	
5,537.09	5,456.00	SHANNON		0.00	
7,277.78	7,148.00	SHARON SPRINGS		0.00	
7,511.09	7,337.00	NIOBRARA		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,970.00	1,970.00	0.00	0.00	Start Build 2.00	
2,623.34	2,617.69	-63.71	-37.98	Start 4369.07 hold at 2623.34 MD	
6,992.41	6,873.64	-912.17	-543.80	Start DLS 10.00 TFO -119.43	
7,963.63	7,499.00	-1,045.00	30.00	Start DLS 1.00 TFO -87.59	
8,023.47	7,498.36	-1,045.31	89.83	Start 4043.33 hold at 8023.47 MD	
12,066.80	7,454.00	-1,045.46	4,132.92	TD at 12066.80	