

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_CANNON 26-3HZ PAD

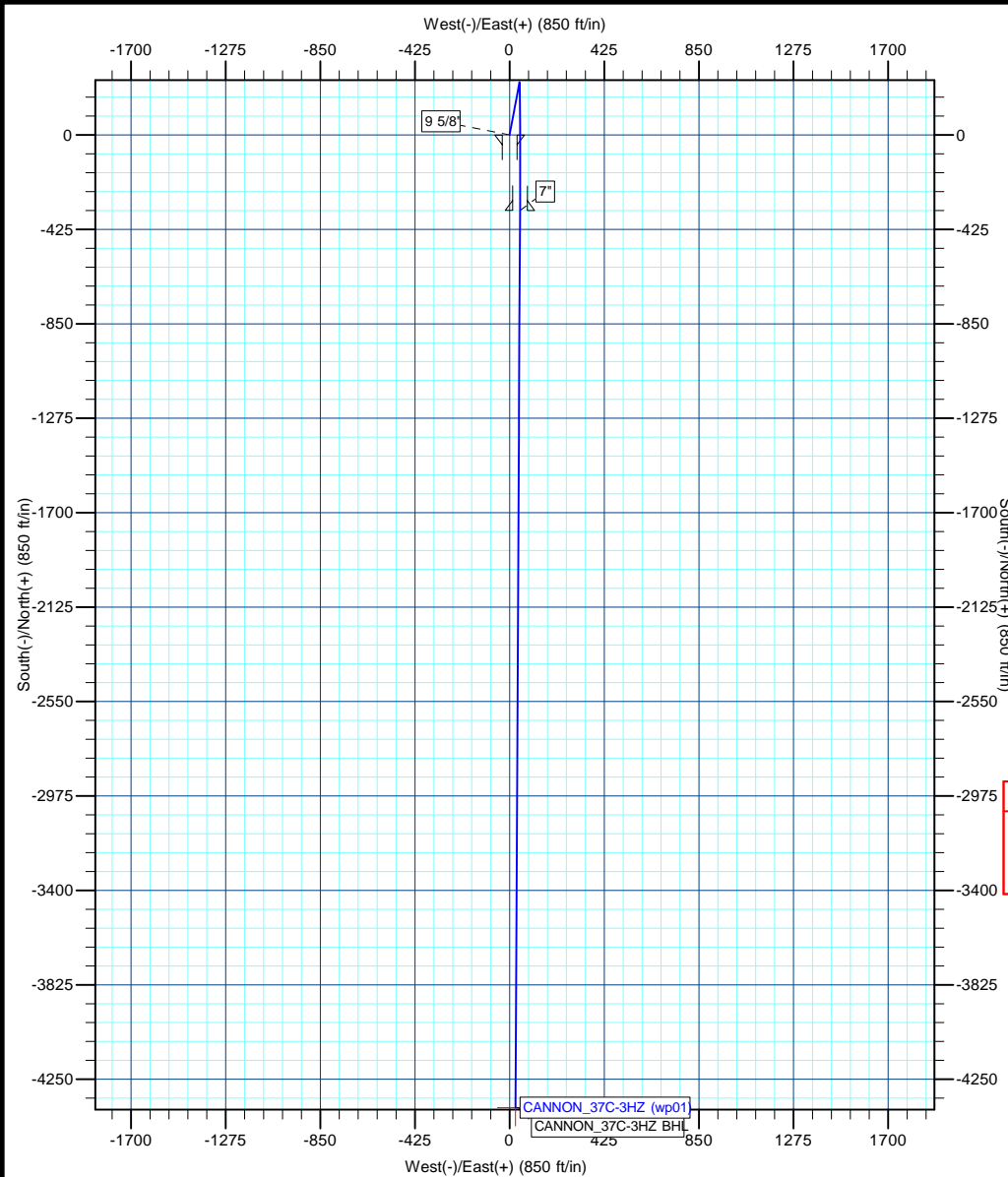
CANNON_37C-3HZ

CANNON_37C-3HZ

Plan: CANNON_37C-3HZ (wp01)

Standard Planning Report

10 May, 2012



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Azimuths to True North

Magnetic North: 8.66°

Magnetic Field

Strength: 52930.4snT

Dip Angle: 66.86°

Date: 5/10/2012

Model: IGRF2010



Project: COLORADO NORTHERN ZONE - 83

Site: WELD_CANNON 26-3HZ PAD

Well: CANNON_37C-3HZ

Wellbore: CANNON_37C-3HZ

Section:

SHL:

Design: CANNON_37C-3HZ (wp01)

Latitude: 40.173779

Longitude: -104.641565

GL: 4840.00

KB: gl + rkb @ 4857.00ft

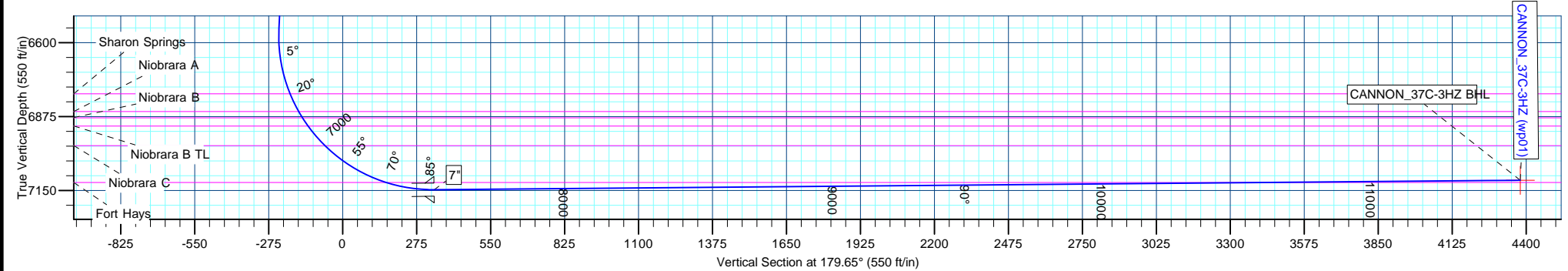
WELL DETAILS: CANNON_37C-3HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4840.00 Latitude	40.173779 Longitude	Slot
0.00	0.00	1307311.70	3239877.08			

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
1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00
1638.81	2.78	10.63	1638.76	3.30	0.62	2.00	10.63	-3.30
6552.61	2.78	10.63	6546.78	237.23	44.52	0.00	0.00	-236.95
7484.82	90.49	180.28	7147.00	-340.00	47.00	10.00	169.63	340.28
7485.87	90.50	180.29	7146.99	-341.06	46.99	1.00	51.51	341.34
11523.32	90.50	180.29	7112.00	-4378.29	26.83	0.00	0.00	4378.38

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
CANNON_37C-3HZ BHL	7112.00	-4378.29	26.83	40.161760	-104.641469	Point

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3824.00	3826.62	Parkman
4219.00	4222.09	Sussex
6790.00	6801.31	Sharon Springs
6856.00	6874.67	Niobrara A
6879.00	6901.46	Niobrara B
6910.00	6938.87	Niobrara B TL
6983.00	7035.30	Niobrara C
7120.00	7303.25	Fort Hays

CASING DETAILS			
TVD	MD	Name	Size
775.00	775.00	9 5/8"	9-5/8
7147.00	7484.82	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_37C-3HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4857.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4857.00ft
Site:	WELD_CANNON 26-3HZ PAD	North Reference:	True
Well:	CANNON_37C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_37C-3HZ		
Design:	CANNON_37C-3HZ (wp01)		

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:	1,307,332.63 usft	Latitude: 40.173837
From:	Lat/Long	Easting:	3,239,855.64 usft	Longitude: -104.641641
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.55 °

Well	CANNON_37C-3HZ			
Well Position	+N/-S	-21.14 ft	Northing:	1,307,311.70 usft
	+E/-W	21.24 ft	Easting:	3,239,877.08 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Latitude: 40.173779
				Longitude: -104.641565
				Ground Level: 4,840.00 ft

Wellbore	CANNON_37C-3HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/10/2012	8.66	66.86	52,930

Design	CANNON_37C-3HZ (wp01)			
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	179.65

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	
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,638.81	2.78	10.63	1,638.76	3.30	0.62	2.00	2.00	0.00	10.63	
6,552.61	2.78	10.63	6,546.79	237.23	44.52	0.00	0.00	0.00	0.00	
7,484.82	90.49	180.28	7,147.00	-340.00	47.00	10.00	9.41	18.20	169.63	
7,485.87	90.50	180.29	7,146.99	-341.06	46.99	1.00	0.62	0.78	51.51	
11,523.32	90.50	180.29	7,112.00	-4,378.29	26.83	0.00	0.00	0.00	0.00	CANNON_37C-3HZ E

Anadarko Petroleum Corp

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4857.00ft
Site:	WELD_CANNON 26-3HZ PAD	North Reference:	True
Well:	CANNON_37C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_37C-3HZ		
Design:	CANNON_37C-3HZ (wp01)		

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
775.00	0.00	0.00	775.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
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	2.00	10.63	1,599.98	1.72	0.32	-1.71	2.00	2.00	0.00
1,638.81	2.78	10.63	1,638.76	3.30	0.62	-3.30	2.00	2.00	0.00
1,700.00	2.78	10.63	1,699.87	6.22	1.17	-6.21	0.00	0.00	0.00
1,800.00	2.78	10.63	1,799.76	10.98	2.06	-10.97	0.00	0.00	0.00
1,900.00	2.78	10.63	1,899.64	15.74	2.95	-15.72	0.00	0.00	0.00
2,000.00	2.78	10.63	1,999.52	20.50	3.85	-20.48	0.00	0.00	0.00
2,100.00	2.78	10.63	2,099.40	25.26	4.74	-25.23	0.00	0.00	0.00
2,200.00	2.78	10.63	2,199.29	30.02	5.63	-29.99	0.00	0.00	0.00
2,300.00	2.78	10.63	2,299.17	34.78	6.53	-34.74	0.00	0.00	0.00
2,400.00	2.78	10.63	2,399.05	39.54	7.42	-39.49	0.00	0.00	0.00
2,500.00	2.78	10.63	2,498.93	44.30	8.31	-44.25	0.00	0.00	0.00
2,600.00	2.78	10.63	2,598.82	49.06	9.21	-49.00	0.00	0.00	0.00
2,700.00	2.78	10.63	2,698.70	53.82	10.10	-53.76	0.00	0.00	0.00
2,800.00	2.78	10.63	2,798.58	58.58	11.00	-58.51	0.00	0.00	0.00
2,900.00	2.78	10.63	2,898.47	63.34	11.89	-63.27	0.00	0.00	0.00
3,000.00	2.78	10.63	2,998.35	68.10	12.78	-68.02	0.00	0.00	0.00
3,100.00	2.78	10.63	3,098.23	72.86	13.68	-72.78	0.00	0.00	0.00
3,200.00	2.78	10.63	3,198.11	77.63	14.57	-77.53	0.00	0.00	0.00
3,300.00	2.78	10.63	3,298.00	82.39	15.46	-82.29	0.00	0.00	0.00
3,400.00	2.78	10.63	3,397.88	87.15	16.36	-87.04	0.00	0.00	0.00
3,500.00	2.78	10.63	3,497.76	91.91	17.25	-91.80	0.00	0.00	0.00
3,600.00	2.78	10.63	3,597.64	96.67	18.14	-96.55	0.00	0.00	0.00
3,700.00	2.78	10.63	3,697.53	101.43	19.04	-101.31	0.00	0.00	0.00
3,800.00	2.78	10.63	3,797.41	106.19	19.93	-106.06	0.00	0.00	0.00
3,826.62	2.78	10.63	3,824.00	107.46	20.17	-107.33	0.00	0.00	0.00
Parkman									
3,900.00	2.78	10.63	3,897.29	110.95	20.82	-110.82	0.00	0.00	0.00
4,000.00	2.78	10.63	3,997.17	115.71	21.72	-115.57	0.00	0.00	0.00
4,100.00	2.78	10.63	4,097.06	120.47	22.61	-120.33	0.00	0.00	0.00
4,200.00	2.78	10.63	4,196.94	125.23	23.50	-125.08	0.00	0.00	0.00
4,222.09	2.78	10.63	4,219.00	126.28	23.70	-126.13	0.00	0.00	0.00
Sussex									
4,300.00	2.78	10.63	4,296.82	129.99	24.40	-129.84	0.00	0.00	0.00
4,400.00	2.78	10.63	4,396.70	134.75	25.29	-134.59	0.00	0.00	0.00
4,500.00	2.78	10.63	4,496.59	139.51	26.18	-139.35	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_37C-3HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4857.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4857.00ft
Site:	WELD_CANNON 26-3HZ PAD	North Reference:	True
Well:	CANNON_37C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_37C-3HZ		
Design:	CANNON_37C-3HZ (wp01)		

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)
4,600.00	2.78	10.63	4,596.47	144.27	27.08	-144.10	0.00	0.00	0.00
4,700.00	2.78	10.63	4,696.35	149.03	27.97	-148.86	0.00	0.00	0.00
4,800.00	2.78	10.63	4,796.24	153.79	28.86	-153.61	0.00	0.00	0.00
4,900.00	2.78	10.63	4,896.12	158.55	29.76	-158.37	0.00	0.00	0.00
5,000.00	2.78	10.63	4,996.00	163.31	30.65	-163.12	0.00	0.00	0.00
5,100.00	2.78	10.63	5,095.88	168.08	31.55	-167.88	0.00	0.00	0.00
5,200.00	2.78	10.63	5,195.77	172.84	32.44	-172.63	0.00	0.00	0.00
5,300.00	2.78	10.63	5,295.65	177.60	33.33	-177.39	0.00	0.00	0.00
5,400.00	2.78	10.63	5,395.53	182.36	34.23	-182.14	0.00	0.00	0.00
5,500.00	2.78	10.63	5,495.41	187.12	35.12	-186.90	0.00	0.00	0.00
5,600.00	2.78	10.63	5,595.30	191.88	36.01	-191.65	0.00	0.00	0.00
5,700.00	2.78	10.63	5,695.18	196.64	36.91	-196.41	0.00	0.00	0.00
5,800.00	2.78	10.63	5,795.06	201.40	37.80	-201.16	0.00	0.00	0.00
5,900.00	2.78	10.63	5,894.94	206.16	38.69	-205.92	0.00	0.00	0.00
6,000.00	2.78	10.63	5,994.83	210.92	39.59	-210.67	0.00	0.00	0.00
6,100.00	2.78	10.63	6,094.71	215.68	40.48	-215.43	0.00	0.00	0.00
6,200.00	2.78	10.63	6,194.59	220.44	41.37	-220.18	0.00	0.00	0.00
6,300.00	2.78	10.63	6,294.47	225.20	42.27	-224.94	0.00	0.00	0.00
6,400.00	2.78	10.63	6,394.36	229.96	43.16	-229.69	0.00	0.00	0.00
6,500.00	2.78	10.63	6,494.24	234.72	44.05	-234.45	0.00	0.00	0.00
6,552.61	2.78	10.63	6,546.79	237.23	44.52	-236.95	0.00	0.00	0.00
6,600.00	2.07	166.31	6,594.16	237.52	44.94	-237.24	10.00	-1.49	328.49
6,700.00	12.02	177.93	6,693.29	225.33	45.74	-225.05	10.00	9.95	11.61
6,800.00	22.01	179.04	6,788.79	196.12	46.44	-195.83	10.00	10.00	1.11
6,801.31	22.14	179.05	6,790.00	195.62	46.45	-195.34	10.00	10.00	0.62
Sharon Springs									
6,874.67	29.48	179.39	6,856.00	163.70	46.87	-163.41	10.00	10.00	0.47
Niobrara A									
6,900.00	32.01	179.47	6,877.76	150.76	47.00	-150.47	10.00	10.00	0.33
6,901.46	32.16	179.48	6,879.00	149.98	47.00	-149.69	10.00	10.00	0.31
Niobrara B									
6,938.87	35.90	179.58	6,910.00	129.05	47.17	-128.76	10.00	10.00	0.28
Niobrara B TL									
7,000.00	42.01	179.72	6,957.51	90.64	47.40	-90.35	10.00	10.00	0.22
7,035.30	45.54	179.78	6,983.00	66.22	47.51	-65.93	10.00	10.00	0.18
Niobrara C									
7,100.00	52.01	179.88	7,025.62	17.59	47.65	-17.29	10.00	10.00	0.15
7,200.00	62.01	180.01	7,080.00	-66.18	47.72	66.48	10.00	10.00	0.12
7,300.00	72.01	180.11	7,119.00	-158.12	47.62	158.41	10.00	10.00	0.10
7,303.25	72.33	180.11	7,120.00	-161.22	47.62	161.51	10.00	10.00	0.10
Fort Hays									
7,400.00	82.01	180.20	7,141.46	-255.44	47.36	255.73	10.00	10.00	0.09
7,484.82	90.49	180.28	7,147.00	-340.00	47.00	340.28	10.00	10.00	0.09
7"									
7,485.87	90.50	180.29	7,146.99	-341.06	46.99	341.34	1.00	0.62	0.78
7,500.00	90.50	180.29	7,146.87	-355.18	46.92	355.46	0.00	0.00	0.00
7,600.00	90.50	180.29	7,146.00	-455.18	46.42	455.45	0.00	0.00	0.00
7,700.00	90.50	180.29	7,145.14	-555.17	45.93	555.44	0.00	0.00	0.00
7,800.00	90.50	180.29	7,144.27	-655.17	45.43	655.43	0.00	0.00	0.00
7,900.00	90.50	180.29	7,143.40	-755.16	44.93	755.42	0.00	0.00	0.00
8,000.00	90.50	180.29	7,142.54	-855.16	44.43	855.41	0.00	0.00	0.00
8,100.00	90.50	180.29	7,141.67	-955.15	43.93	955.40	0.00	0.00	0.00
8,200.00	90.50	180.29	7,140.80	-1,055.15	43.43	1,055.39	0.00	0.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4857.00ft
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Well:	CANNON_37C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_37C-3HZ		
Design:	CANNON_37C-3HZ (wp01)		

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	90.50	180.29	7,139.94	-1,155.14	42.93	1,155.38	0.00	0.00	0.00	
8,400.00	90.50	180.29	7,139.07	-1,255.14	42.43	1,255.37	0.00	0.00	0.00	
8,500.00	90.50	180.29	7,138.20	-1,355.13	41.93	1,355.36	0.00	0.00	0.00	
8,600.00	90.50	180.29	7,137.34	-1,455.13	41.43	1,455.35	0.00	0.00	0.00	
8,700.00	90.50	180.29	7,136.47	-1,555.12	40.93	1,555.34	0.00	0.00	0.00	
8,800.00	90.50	180.29	7,135.60	-1,655.12	40.43	1,655.33	0.00	0.00	0.00	
8,900.00	90.50	180.29	7,134.74	-1,755.11	39.93	1,755.32	0.00	0.00	0.00	
9,000.00	90.50	180.29	7,133.87	-1,855.11	39.43	1,855.31	0.00	0.00	0.00	
9,100.00	90.50	180.29	7,133.00	-1,955.10	38.93	1,955.30	0.00	0.00	0.00	
9,200.00	90.50	180.29	7,132.14	-2,055.10	38.43	2,055.29	0.00	0.00	0.00	
9,300.00	90.50	180.29	7,131.27	-2,155.09	37.93	2,155.28	0.00	0.00	0.00	
9,400.00	90.50	180.29	7,130.40	-2,255.09	37.44	2,255.27	0.00	0.00	0.00	
9,500.00	90.50	180.29	7,129.54	-2,355.08	36.94	2,355.26	0.00	0.00	0.00	
9,600.00	90.50	180.29	7,128.67	-2,455.08	36.44	2,455.25	0.00	0.00	0.00	
9,700.00	90.50	180.29	7,127.80	-2,555.07	35.94	2,555.24	0.00	0.00	0.00	
9,800.00	90.50	180.29	7,126.94	-2,655.07	35.44	2,655.23	0.00	0.00	0.00	
9,900.00	90.50	180.29	7,126.07	-2,755.06	34.94	2,755.22	0.00	0.00	0.00	
10,000.00	90.50	180.29	7,125.20	-2,855.06	34.44	2,855.21	0.00	0.00	0.00	
10,100.00	90.50	180.29	7,124.34	-2,955.05	33.94	2,955.20	0.00	0.00	0.00	
10,200.00	90.50	180.29	7,123.47	-3,055.05	33.44	3,055.19	0.00	0.00	0.00	
10,300.00	90.50	180.29	7,122.60	-3,155.04	32.94	3,155.18	0.00	0.00	0.00	
10,400.00	90.50	180.29	7,121.74	-3,255.04	32.44	3,255.17	0.00	0.00	0.00	
10,500.00	90.50	180.29	7,120.87	-3,355.03	31.94	3,355.16	0.00	0.00	0.00	
10,600.00	90.50	180.29	7,120.00	-3,455.03	31.44	3,455.15	0.00	0.00	0.00	
10,700.00	90.50	180.29	7,119.14	-3,555.02	30.94	3,555.14	0.00	0.00	0.00	
10,800.00	90.50	180.29	7,118.27	-3,655.02	30.44	3,655.13	0.00	0.00	0.00	
10,900.00	90.50	180.29	7,117.40	-3,755.01	29.94	3,755.12	0.00	0.00	0.00	
11,000.00	90.50	180.29	7,116.54	-3,855.01	29.44	3,855.11	0.00	0.00	0.00	
11,100.00	90.50	180.29	7,115.67	-3,955.00	28.95	3,955.10	0.00	0.00	0.00	
11,200.00	90.50	180.29	7,114.80	-4,055.00	28.45	4,055.09	0.00	0.00	0.00	
11,300.00	90.50	180.29	7,113.94	-4,154.99	27.95	4,155.08	0.00	0.00	0.00	
11,400.00	90.50	180.29	7,113.07	-4,254.99	27.45	4,255.07	0.00	0.00	0.00	
11,500.00	90.50	180.29	7,112.20	-4,354.98	26.95	4,355.06	0.00	0.00	0.00	
11,523.32	90.50	180.29	7,112.00	-4,378.29	26.83	4,378.38	0.00	0.00	0.00	
CANNON_37C-3HZ 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									
CANNON_37C-3HZ BHI	0.00	0.00	7,112.00	-4,378.29	26.83	1,302,933.88	3,239,946.29	40.161760	-104.641469
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
775.00	775.00	9 5/8"	9-5/8	12-1/4	
7,484.82	7,147.00	7"	7	8-3/4	

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_37C-3HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4857.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4857.00ft
Site:	WELD_CANNON 26-3HZ PAD	North Reference:	True
Well:	CANNON_37C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_37C-3HZ		
Design:	CANNON_37C-3HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,826.62	3,824.00	Parkman				
4,222.09	4,219.00	Sussex				
6,801.31	6,790.00	Sharon Springs				
6,874.67	6,856.00	Niobrara A				
6,901.46	6,879.00	Niobrara B				
6,938.87	6,910.00	Niobrara B TL				
7,035.30	6,983.00	Niobrara C				
7,303.25	7,120.00	Fort Hays				