

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_CANNON 29-3N HZ PAD

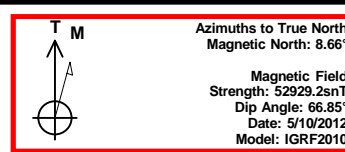
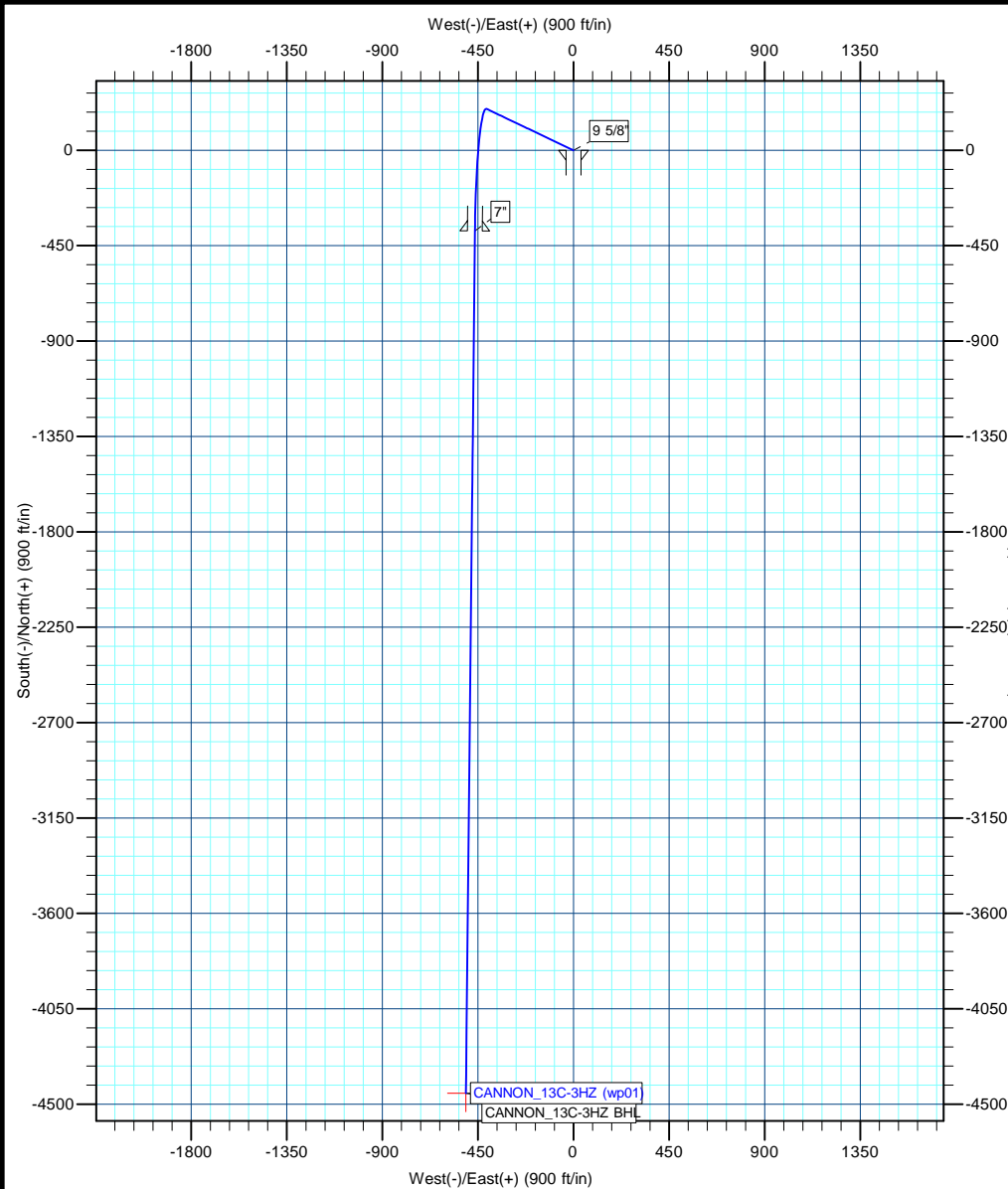
CANNON_13C-3HZ

CANNON_13C-3HZ

Plan: CANNON_13C-3HZ (wp01)

Standard Planning Report

10 May, 2012



Project: COLORADO NORTHERN ZONE - 83
Site: WELD_CANNON 29-3N HZ PAD
Well: CANNON_13C-3HZ
Wellbore: CANNON_13C-3HZ
Section:
SHL:
Design: CANNON_13C-3HZ (wp01)
Latitude: 40.173964
Longitude: -104.655077
GL: 4840.00
KB: GL + RKB @ 4857.00ft

WELL DETAILS: CANNON_13C-3HZ

+N/-S	+E/-W	Northing	Ground Level: Easting	4840.00 Latitude	Longitude	Slot
0.00	0.00	1307342.83	3236100.82	40.173964	-104.655077	

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
1762.13	5.24	295.54	1761.76	5.17	-10.81	2.00	295.54	-3.91
6594.56	5.24	295.54	6573.98	195.55	-409.21	0.00	0.00	-147.97
7520.20	90.35	180.52	7167.00	-380.00	-464.00	10.00	-114.91	430.07
7530.66	90.41	180.60	7166.93	-390.46	-464.10	1.00	55.83	440.48
11588.76	90.41	180.60	7138.00	-4448.24	-506.71	0.00	0.00	4477.01

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

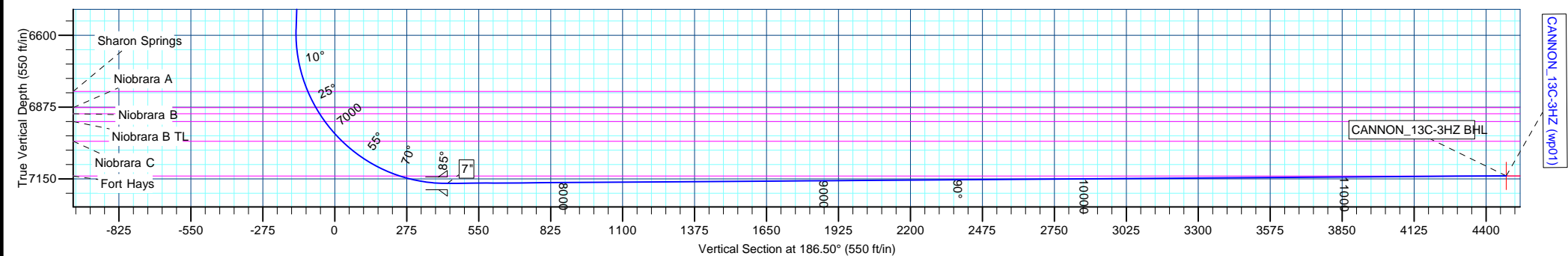
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
CANNON_13C-3HZ BHL	7138.00	-4448.24	-506.71	40.161753	-104.656890	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3956.00	3965.58	Parkman
4524.00	4535.97	Sussex
6815.00	6842.20	Sharon Springs
6877.00	6911.47	Niobrara A
6900.00	6938.34	Niobrara B
6930.00	6974.65	Niobrara B TL
7006.00	7075.59	Niobrara C
7139.00	7336.48	Fort Hays

CASING DETAILS

TVD	MD	Name	Size
775.00	775.00	9 5/8"	9-5/8
7167.00	7520.20	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_13C-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 29-3N HZ PAD	North Reference:	True
Well:	CANNON_13C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_13C-3HZ		
Design:	CANNON_13C-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 29-3N HZ PAD			
Site Position:		Northing:	1,307,342.83 usft	Latitude: 40.173964
From:	Lat/Long	Easting:	3,236,100.82 usft	Longitude: -104.655077
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.55 °

Well	CANNON_13C-3HZ			
Well Position	+N/-S	0.00 ft	Northing:	1,307,342.83 usft
	+E/-W	0.00 ft	Easting:	3,236,100.82 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,840.00 ft

Wellbore	CANNON_13C-3HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/10/2012	8.66	66.85	52,929

Design	CANNON_13C-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	186.50

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	
1,762.13	5.24	295.54	1,761.76	5.17	-10.81	2.00	2.00	0.00	295.54	
6,594.56	5.24	295.54	6,573.98	195.55	-409.21	0.00	0.00	0.00	0.00	
7,520.20	90.35	180.52	7,167.00	-380.00	-464.00	10.00	9.19	-12.43	-114.91	
7,530.66	90.41	180.60	7,166.93	-390.46	-464.10	1.00	0.56	0.83	55.83	
11,588.76	90.41	180.60	7,138.00	-4,448.24	-506.71	0.00	0.00	0.00	0.00	CANNON_13C-3HZ E

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_13C-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 29-3N HZ PAD	North Reference:	True
Well:	CANNON_13C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_13C-3HZ		
Design:	CANNON_13C-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	295.54	1,599.98	0.75	-1.57	-0.57	2.00	2.00	0.00
1,700.00	4.00	295.54	1,699.84	3.01	-6.30	-2.28	2.00	2.00	0.00
1,762.13	5.24	295.54	1,761.76	5.17	-10.81	-3.91	2.00	2.00	0.00
1,800.00	5.24	295.54	1,799.48	6.66	-13.94	-5.04	0.00	0.00	0.00
1,900.00	5.24	295.54	1,899.06	10.60	-22.18	-8.02	0.00	0.00	0.00
2,000.00	5.24	295.54	1,998.64	14.54	-30.42	-11.00	0.00	0.00	0.00
2,100.00	5.24	295.54	2,098.22	18.48	-38.67	-13.98	0.00	0.00	0.00
2,200.00	5.24	295.54	2,197.80	22.42	-46.91	-16.96	0.00	0.00	0.00
2,300.00	5.24	295.54	2,297.38	26.36	-55.16	-19.95	0.00	0.00	0.00
2,400.00	5.24	295.54	2,396.97	30.30	-63.40	-22.93	0.00	0.00	0.00
2,500.00	5.24	295.54	2,496.55	34.24	-71.65	-25.91	0.00	0.00	0.00
2,600.00	5.24	295.54	2,596.13	38.18	-79.89	-28.89	0.00	0.00	0.00
2,700.00	5.24	295.54	2,695.71	42.12	-88.13	-31.87	0.00	0.00	0.00
2,800.00	5.24	295.54	2,795.29	46.06	-96.38	-34.85	0.00	0.00	0.00
2,900.00	5.24	295.54	2,894.87	49.99	-104.62	-37.83	0.00	0.00	0.00
3,000.00	5.24	295.54	2,994.46	53.93	-112.87	-40.81	0.00	0.00	0.00
3,100.00	5.24	295.54	3,094.04	57.87	-121.11	-43.79	0.00	0.00	0.00
3,200.00	5.24	295.54	3,193.62	61.81	-129.36	-46.78	0.00	0.00	0.00
3,300.00	5.24	295.54	3,293.20	65.75	-137.60	-49.76	0.00	0.00	0.00
3,400.00	5.24	295.54	3,392.78	69.69	-145.84	-52.74	0.00	0.00	0.00
3,500.00	5.24	295.54	3,492.36	73.63	-154.09	-55.72	0.00	0.00	0.00
3,600.00	5.24	295.54	3,591.95	77.57	-162.33	-58.70	0.00	0.00	0.00
3,700.00	5.24	295.54	3,691.53	81.51	-170.58	-61.68	0.00	0.00	0.00
3,800.00	5.24	295.54	3,791.11	85.45	-178.82	-64.66	0.00	0.00	0.00
3,900.00	5.24	295.54	3,890.69	89.39	-187.07	-67.64	0.00	0.00	0.00
3,965.58	5.24	295.54	3,956.00	91.97	-192.47	-69.60	0.00	0.00	0.00
Parkman									
4,000.00	5.24	295.54	3,990.27	93.33	-195.31	-70.63	0.00	0.00	0.00
4,100.00	5.24	295.54	4,089.85	97.27	-203.55	-73.61	0.00	0.00	0.00
4,200.00	5.24	295.54	4,189.44	101.21	-211.80	-76.59	0.00	0.00	0.00
4,300.00	5.24	295.54	4,289.02	105.15	-220.04	-79.57	0.00	0.00	0.00
4,400.00	5.24	295.54	4,388.60	109.09	-228.29	-82.55	0.00	0.00	0.00
4,500.00	5.24	295.54	4,488.18	113.03	-236.53	-85.53	0.00	0.00	0.00
4,535.97	5.24	295.54	4,524.00	114.45	-239.50	-86.60	0.00	0.00	0.00
Sussex									

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_13C-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 29-3N HZ PAD	North Reference:	True
Well:	CANNON_13C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_13C-3HZ		
Design:	CANNON_13C-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	5.24	295.54	4,587.76	116.97	-244.78	-88.51	0.00	0.00	0.00
4,700.00	5.24	295.54	4,687.34	120.91	-253.02	-91.49	0.00	0.00	0.00
4,800.00	5.24	295.54	4,786.93	124.85	-261.27	-94.47	0.00	0.00	0.00
4,900.00	5.24	295.54	4,886.51	128.79	-269.51	-97.46	0.00	0.00	0.00
5,000.00	5.24	295.54	4,986.09	132.73	-277.75	-100.44	0.00	0.00	0.00
5,100.00	5.24	295.54	5,085.67	136.67	-286.00	-103.42	0.00	0.00	0.00
5,200.00	5.24	295.54	5,185.25	140.61	-294.24	-106.40	0.00	0.00	0.00
5,300.00	5.24	295.54	5,284.83	144.55	-302.49	-109.38	0.00	0.00	0.00
5,400.00	5.24	295.54	5,384.42	148.49	-310.73	-112.36	0.00	0.00	0.00
5,500.00	5.24	295.54	5,484.00	152.42	-318.98	-115.34	0.00	0.00	0.00
5,600.00	5.24	295.54	5,583.58	156.36	-327.22	-118.32	0.00	0.00	0.00
5,700.00	5.24	295.54	5,683.16	160.30	-335.46	-121.31	0.00	0.00	0.00
5,800.00	5.24	295.54	5,782.74	164.24	-343.71	-124.29	0.00	0.00	0.00
5,900.00	5.24	295.54	5,882.32	168.18	-351.95	-127.27	0.00	0.00	0.00
6,000.00	5.24	295.54	5,981.91	172.12	-360.20	-130.25	0.00	0.00	0.00
6,100.00	5.24	295.54	6,081.49	176.06	-368.44	-133.23	0.00	0.00	0.00
6,200.00	5.24	295.54	6,181.07	180.00	-376.69	-136.21	0.00	0.00	0.00
6,300.00	5.24	295.54	6,280.65	183.94	-384.93	-139.19	0.00	0.00	0.00
6,400.00	5.24	295.54	6,380.23	187.88	-393.17	-142.17	0.00	0.00	0.00
6,500.00	5.24	295.54	6,479.81	191.82	-401.42	-145.16	0.00	0.00	0.00
6,594.56	5.24	295.54	6,573.98	195.55	-409.21	-147.97	0.00	0.00	0.00
6,600.00	5.04	289.91	6,579.40	195.73	-409.66	-148.11	10.00	-3.77	-103.46
6,700.00	9.58	210.05	6,678.76	190.01	-417.98	-141.48	10.00	4.55	-79.86
6,800.00	18.92	194.59	6,775.61	167.06	-426.25	-117.74	10.00	9.33	-15.46
6,842.20	23.02	191.83	6,815.00	152.36	-429.67	-102.75	10.00	9.73	-6.53
Sharon Springs									
6,900.00	28.69	189.28	6,867.00	127.58	-434.23	-77.61	10.00	9.82	-4.41
6,911.47	29.82	188.89	6,877.00	122.04	-435.11	-72.01	10.00	9.86	-3.47
Niobrara A									
6,938.34	32.48	188.05	6,900.00	108.29	-437.16	-58.12	10.00	9.87	-3.10
Niobrara B									
6,974.65	36.07	187.10	6,930.00	88.03	-439.84	-37.68	10.00	9.89	-2.62
Niobrara B TL									
7,000.00	38.58	186.53	6,950.15	72.77	-441.67	-22.31	10.00	9.91	-2.26
7,075.59	46.08	185.14	7,006.00	22.16	-446.79	28.55	10.00	9.92	-1.84
Niobrara C									
7,100.00	48.51	184.76	7,022.55	4.29	-448.34	46.48	10.00	9.94	-1.54
7,200.00	58.45	183.47	7,081.99	-75.77	-454.04	126.67	10.00	9.95	-1.29
7,300.00	68.41	182.43	7,126.66	-164.97	-458.60	215.82	10.00	9.96	-1.04
7,336.48	72.04	182.09	7,139.00	-199.27	-459.95	250.05	10.00	9.96	-0.94
Fort Hays									
7,400.00	78.37	181.52	7,155.21	-260.62	-461.89	311.23	10.00	9.96	-0.89
7,500.00	88.34	180.68	7,166.77	-359.81	-463.79	409.99	10.00	9.97	-0.84
7,520.20	90.35	180.52	7,167.00	-380.00	-464.00	430.08	10.00	9.96	-0.83
7"									
7,530.66	90.41	180.60	7,166.93	-390.46	-464.10	440.48	1.00	0.56	0.83
7,600.00	90.41	180.60	7,166.44	-459.80	-464.83	509.45	0.00	0.00	0.00
7,700.00	90.41	180.60	7,165.72	-559.79	-465.88	608.92	0.00	0.00	0.00
7,800.00	90.41	180.60	7,165.01	-659.78	-466.93	708.39	0.00	0.00	0.00
7,900.00	90.41	180.60	7,164.30	-759.77	-467.98	807.86	0.00	0.00	0.00
8,000.00	90.41	180.60	7,163.58	-859.77	-469.03	907.33	0.00	0.00	0.00
8,100.00	90.41	180.60	7,162.87	-959.76	-470.08	1,006.79	0.00	0.00	0.00
8,200.00	90.41	180.60	7,162.16	-1,059.75	-471.13	1,106.26	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_13C-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 29-3N HZ PAD	North Reference:	True
Well:	CANNON_13C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_13C-3HZ		
Design:	CANNON_13C-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	90.41	180.60	7,161.45	-1,159.74	-472.18	1,205.73	0.00	0.00	0.00
8,400.00	90.41	180.60	7,160.73	-1,259.73	-473.23	1,305.20	0.00	0.00	0.00
8,500.00	90.41	180.60	7,160.02	-1,359.73	-474.28	1,404.67	0.00	0.00	0.00
8,600.00	90.41	180.60	7,159.31	-1,459.72	-475.33	1,504.14	0.00	0.00	0.00
8,700.00	90.41	180.60	7,158.59	-1,559.71	-476.38	1,603.60	0.00	0.00	0.00
8,800.00	90.41	180.60	7,157.88	-1,659.70	-477.43	1,703.07	0.00	0.00	0.00
8,900.00	90.41	180.60	7,157.17	-1,759.69	-478.48	1,802.54	0.00	0.00	0.00
9,000.00	90.41	180.60	7,156.46	-1,859.68	-479.53	1,902.01	0.00	0.00	0.00
9,100.00	90.41	180.60	7,155.74	-1,959.68	-480.58	2,001.48	0.00	0.00	0.00
9,200.00	90.41	180.60	7,155.03	-2,059.67	-481.63	2,100.95	0.00	0.00	0.00
9,300.00	90.41	180.60	7,154.32	-2,159.66	-482.68	2,200.41	0.00	0.00	0.00
9,400.00	90.41	180.60	7,153.60	-2,259.65	-483.73	2,299.88	0.00	0.00	0.00
9,500.00	90.41	180.60	7,152.89	-2,359.64	-484.78	2,399.35	0.00	0.00	0.00
9,600.00	90.41	180.60	7,152.18	-2,459.64	-485.83	2,498.82	0.00	0.00	0.00
9,700.00	90.41	180.60	7,151.47	-2,559.63	-486.88	2,598.29	0.00	0.00	0.00
9,800.00	90.41	180.60	7,150.75	-2,659.62	-487.93	2,697.76	0.00	0.00	0.00
9,900.00	90.41	180.60	7,150.04	-2,759.61	-488.98	2,797.22	0.00	0.00	0.00
10,000.00	90.41	180.60	7,149.33	-2,859.60	-490.03	2,896.69	0.00	0.00	0.00
10,100.00	90.41	180.60	7,148.61	-2,959.60	-491.08	2,996.16	0.00	0.00	0.00
10,200.00	90.41	180.60	7,147.90	-3,059.59	-492.13	3,095.63	0.00	0.00	0.00
10,300.00	90.41	180.60	7,147.19	-3,159.58	-493.18	3,195.10	0.00	0.00	0.00
10,400.00	90.41	180.60	7,146.48	-3,259.57	-494.23	3,294.57	0.00	0.00	0.00
10,500.00	90.41	180.60	7,145.76	-3,359.56	-495.28	3,394.03	0.00	0.00	0.00
10,600.00	90.41	180.60	7,145.05	-3,459.56	-496.33	3,493.50	0.00	0.00	0.00
10,700.00	90.41	180.60	7,144.34	-3,559.55	-497.38	3,592.97	0.00	0.00	0.00
10,800.00	90.41	180.60	7,143.62	-3,659.54	-498.43	3,692.44	0.00	0.00	0.00
10,900.00	90.41	180.60	7,142.91	-3,759.53	-499.48	3,791.91	0.00	0.00	0.00
11,000.00	90.41	180.60	7,142.20	-3,859.52	-500.53	3,891.37	0.00	0.00	0.00
11,100.00	90.41	180.60	7,141.48	-3,959.52	-501.58	3,990.84	0.00	0.00	0.00
11,200.00	90.41	180.60	7,140.77	-4,059.51	-502.63	4,090.31	0.00	0.00	0.00
11,300.00	90.41	180.60	7,140.06	-4,159.50	-503.68	4,189.78	0.00	0.00	0.00
11,400.00	90.41	180.60	7,139.35	-4,259.49	-504.73	4,289.25	0.00	0.00	0.00
11,500.00	90.41	180.60	7,138.63	-4,359.48	-505.78	4,388.72	0.00	0.00	0.00
11,588.76	90.41	180.60	7,138.00	-4,448.24	-506.71	4,477.01	0.00	0.00	0.00
CANNON_13C-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_13C-3HZ BHI	0.00	0.00	7,138.00	-4,448.24	-506.71	1,302,889.97	3,235,636.51	40.161753	-104.656890
- 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
7,520.20	7,167.00	7"		7	8-3/4

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well CANNON_13C-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 29-3N HZ PAD	North Reference:	True
Well:	CANNON_13C-3HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	CANNON_13C-3HZ		
Design:	CANNON_13C-3HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,965.58	3,956.00	Parkman				
4,535.97	4,524.00	Sussex				
6,842.20	6,815.00	Sharon Springs				
6,911.47	6,877.00	Niobrara A				
6,938.34	6,900.00	Niobrara B				
6,974.65	6,930.00	Niobrara B TL				
7,075.59	7,006.00	Niobrara C				
7,336.48	7,139.00	Fort Hays				