

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_HOWARD 4 PAD

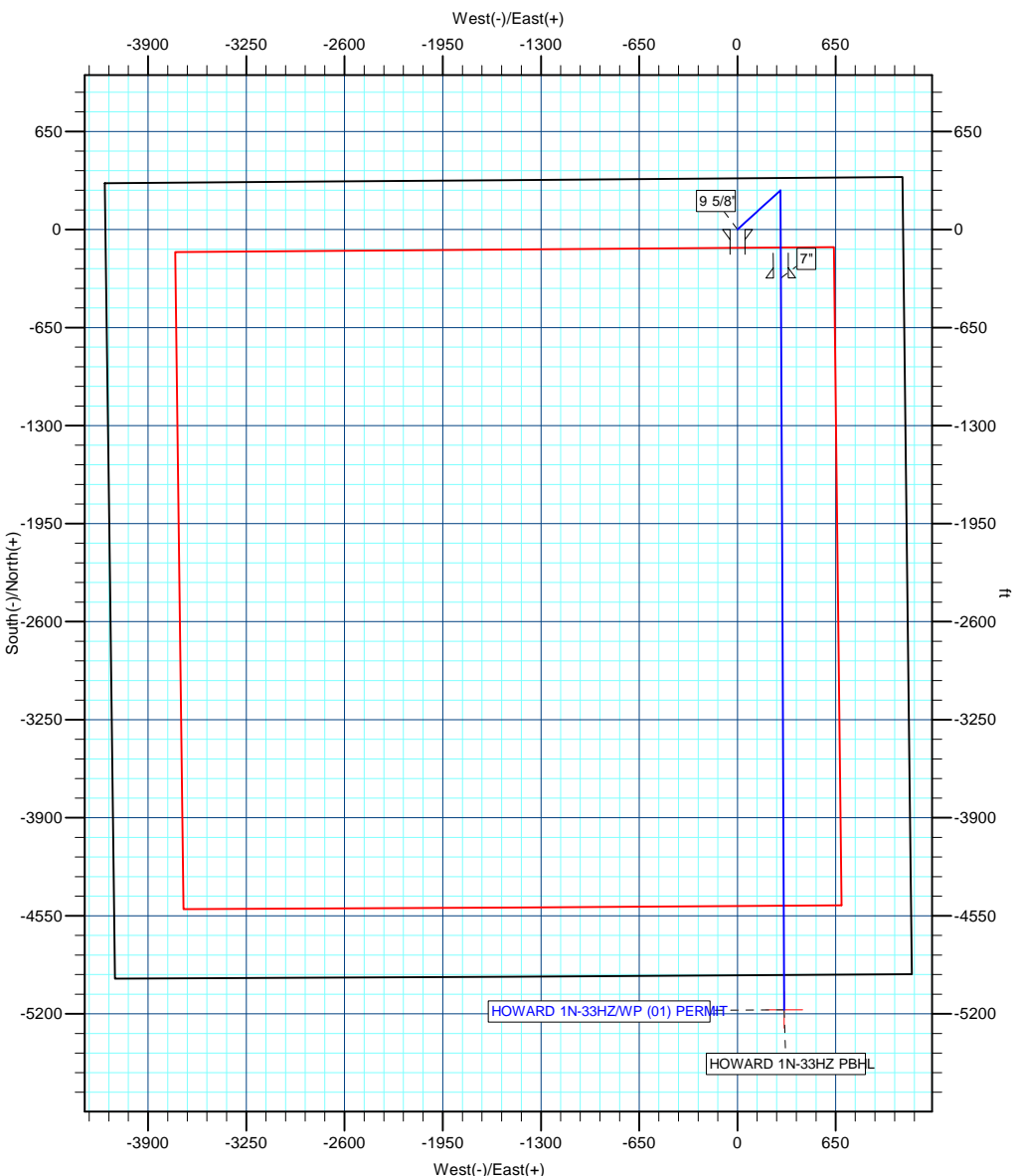
HOWARD 1N-33HZ

Wellbore #1

Plan: WP (01) PERMIT

Standard Planning Report

10 December, 2012



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Azimuths to M

Magnetic North: 8.70°

Magnetic Field

Strength: 52765.1nT

Dip Angle: 66.68°

Date: 12/7/2012

Model: IGRF2010

Anadarko

Petroleum Corporation

Project: COLORADO NORTHERN ZONE - 83
Site: WELD HOWARD 4 PAD
Well: HOWARD 1N-33HZ
Wellbore: Wellbore #1
Design: WP (01) PERMIT
Latitude: 40.028474
Longitude: -104.890030
GL: 4983.00
KB: 17°RKB+4983'GL @ 5000.00ft

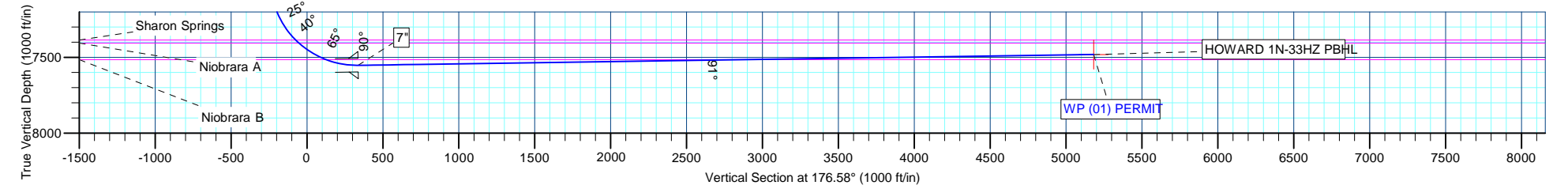
WELL DETAILS: HOWARD 1N-33HZ							
+N/-S	+E/-W	Northing	Ground Level: Easting	4983.00 Latitude	Longitude	Slot	
0.00	0.00	1253806.66	3170812.59	40.028474	-104.890030		

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
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00
1294.07	3.88	47.63	1293.92	4.43	4.85	2.00	47.63	-4.13
6798.95	3.88	47.63	6786.18	255.57	280.15	0.00	0.00	-238.38
6993.02	0.00	0.00	6980.10	260.00	285.00	2.00	180.00	-242.51
7901.41	90.84	179.74	7553.00	-321.34	287.62	10.00	179.74	337.94
2753.70	90.84	179.74	7482.00	-5173.06	309.51	0.00	0.00	5182.31

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)							
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape	
HOWARD 1N-33HZ PBHL	7482.00	-5173.06	309.51	40.014273	-104.888925	Point	

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	
4780.00	4788.16	Sussex	
7386.00	7444.10	Sharon Springs	
7406.00	7473.19	Niobrara A	
7515.00	7683.02	Niobrara B	

CASING DETAILS			
TVD	MD	Name	Size
900.00	900.00	9 5/8"	9-5/8
7553.00	7901.41	7"	7



Andarko Petroleum Corporation

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOWARD 1N-33HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17'RKB+4983'GL @ 5000.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17'RKB+4983'GL @ 5000.00ft
Site:	WELD_HOWARD 4 PAD	North Reference:	True
Well:	HOWARD 1N-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	WP (01) PERMIT		

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_HOWARD 4 PAD			
Site Position:		Northing:	1,253,776.80 usft	Latitude: 40.028392
From:	Lat/Long	Easting:	3,170,813.08 usft	Longitude: -104.890029
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.39 °

Well	HOWARD 1N-33HZ			
Well Position	+N/-S	29.86 ft	Northing:	1,253,806.65 usft
	+E/-W	-0.28 ft	Easting:	3,170,812.59 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,983.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	12/7/2012	8.70	66.68	52,765

Design	WP (01) PERMIT			
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	176.58

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	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,294.07	3.88	47.63	1,293.92	4.43	4.85	2.00	2.00	0.00	47.63	
6,798.95	3.88	47.63	6,786.18	255.57	280.15	0.00	0.00	0.00	0.00	
6,993.02	0.00	0.00	6,980.10	260.00	285.00	2.00	-2.00	0.00	180.00	
7,901.41	90.84	179.74	7,553.00	-321.34	287.62	10.00	10.00	0.00	179.74	
12,753.70	90.84	179.74	7,482.00	-5,173.06	309.51	0.00	0.00	0.00	0.00	HOWARD 1N-33HZ F

Andarko Petroleum Corporation

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOWARD 1N-33HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17'RKB+4983'GL @ 5000.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17'RKB+4983'GL @ 5000.00ft
Site:	WELD_HOWARD 4 PAD	North Reference:	True
Well:	HOWARD 1N-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	WP (01) PERMIT		

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
9 5/8"									
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
Start Build 2.00									
1,200.00	2.00	47.63	1,199.98	1.18	1.29	-1.10	2.00	2.00	0.00
1,294.07	3.88	47.63	1,293.92	4.43	4.85	-4.13	2.00	2.00	0.00
Start 5504.88 hold at 1294.07 MD									
1,300.00	3.88	47.63	1,299.84	4.70	5.15	-4.38	0.00	0.00	0.00
1,400.00	3.88	47.63	1,399.61	9.26	10.15	-8.64	0.00	0.00	0.00
1,500.00	3.88	47.63	1,499.38	13.82	15.15	-12.89	0.00	0.00	0.00
1,600.00	3.88	47.63	1,599.15	18.39	20.15	-17.15	0.00	0.00	0.00
1,700.00	3.88	47.63	1,698.92	22.95	25.15	-21.40	0.00	0.00	0.00
1,800.00	3.88	47.63	1,798.69	27.51	30.16	-25.66	0.00	0.00	0.00
1,900.00	3.88	47.63	1,898.46	32.07	35.16	-29.92	0.00	0.00	0.00
2,000.00	3.88	47.63	1,998.23	36.63	40.16	-34.17	0.00	0.00	0.00
2,100.00	3.88	47.63	2,098.00	41.20	45.16	-38.43	0.00	0.00	0.00
2,200.00	3.88	47.63	2,197.77	45.76	50.16	-42.68	0.00	0.00	0.00
2,300.00	3.88	47.63	2,297.54	50.32	55.16	-46.94	0.00	0.00	0.00
2,400.00	3.88	47.63	2,397.31	54.88	60.16	-51.19	0.00	0.00	0.00
2,500.00	3.88	47.63	2,497.09	59.45	65.16	-55.45	0.00	0.00	0.00
2,600.00	3.88	47.63	2,596.86	64.01	70.16	-59.70	0.00	0.00	0.00
2,700.00	3.88	47.63	2,696.63	68.57	75.16	-63.96	0.00	0.00	0.00
2,800.00	3.88	47.63	2,796.40	73.13	80.16	-68.21	0.00	0.00	0.00
2,900.00	3.88	47.63	2,896.17	77.69	85.16	-72.47	0.00	0.00	0.00
3,000.00	3.88	47.63	2,995.94	82.26	90.17	-76.72	0.00	0.00	0.00
3,100.00	3.88	47.63	3,095.71	86.82	95.17	-80.98	0.00	0.00	0.00
3,200.00	3.88	47.63	3,195.48	91.38	100.17	-85.24	0.00	0.00	0.00
3,300.00	3.88	47.63	3,295.25	95.94	105.17	-89.49	0.00	0.00	0.00
3,400.00	3.88	47.63	3,395.02	100.50	110.17	-93.75	0.00	0.00	0.00
3,500.00	3.88	47.63	3,494.79	105.07	115.17	-98.00	0.00	0.00	0.00
3,600.00	3.88	47.63	3,594.56	109.63	120.17	-102.26	0.00	0.00	0.00
3,700.00	3.88	47.63	3,694.33	114.19	125.17	-106.51	0.00	0.00	0.00
3,800.00	3.88	47.63	3,794.10	118.75	130.17	-110.77	0.00	0.00	0.00
3,900.00	3.88	47.63	3,893.87	123.32	135.17	-115.02	0.00	0.00	0.00
4,000.00	3.88	47.63	3,993.65	127.88	140.17	-119.28	0.00	0.00	0.00
4,100.00	3.88	47.63	4,093.42	132.44	145.17	-123.53	0.00	0.00	0.00
4,200.00	3.88	47.63	4,193.19	137.00	150.18	-127.79	0.00	0.00	0.00
4,300.00	3.88	47.63	4,292.96	141.56	155.18	-132.04	0.00	0.00	0.00
4,400.00	3.88	47.63	4,392.73	146.13	160.18	-136.30	0.00	0.00	0.00
4,500.00	3.88	47.63	4,492.50	150.69	165.18	-140.55	0.00	0.00	0.00
4,600.00	3.88	47.63	4,592.27	155.25	170.18	-144.81	0.00	0.00	0.00
4,700.00	3.88	47.63	4,692.04	159.81	175.18	-149.07	0.00	0.00	0.00
4,788.16	3.88	47.63	4,780.00	163.84	179.59	-152.82	0.00	0.00	0.00
Sussex									

Andarko Petroleum Corporation

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOWARD 1N-33HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17'RKB+4983'GL @ 5000.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17'RKB+4983'GL @ 5000.00ft
Site:	WELD_HOWARD 4 PAD	North Reference:	True
Well:	HOWARD 1N-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	WP (01) PERMIT		

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)
4,800.00	3.88	47.63	4,791.81	164.38	180.18	-153.32	0.00	0.00	0.00
4,900.00	3.88	47.63	4,891.58	168.94	185.18	-157.58	0.00	0.00	0.00
5,000.00	3.88	47.63	4,991.35	173.50	190.18	-161.83	0.00	0.00	0.00
5,100.00	3.88	47.63	5,091.12	178.06	195.18	-166.09	0.00	0.00	0.00
5,200.00	3.88	47.63	5,190.89	182.62	200.18	-170.34	0.00	0.00	0.00
5,300.00	3.88	47.63	5,290.66	187.19	205.19	-174.60	0.00	0.00	0.00
5,400.00	3.88	47.63	5,390.43	191.75	210.19	-178.85	0.00	0.00	0.00
5,500.00	3.88	47.63	5,490.20	196.31	215.19	-183.11	0.00	0.00	0.00
5,600.00	3.88	47.63	5,589.98	200.87	220.19	-187.36	0.00	0.00	0.00
5,700.00	3.88	47.63	5,689.75	205.44	225.19	-191.62	0.00	0.00	0.00
5,800.00	3.88	47.63	5,789.52	210.00	230.19	-195.87	0.00	0.00	0.00
5,900.00	3.88	47.63	5,889.29	214.56	235.19	-200.13	0.00	0.00	0.00
6,000.00	3.88	47.63	5,989.06	219.12	240.19	-204.39	0.00	0.00	0.00
6,100.00	3.88	47.63	6,088.83	223.68	245.19	-208.64	0.00	0.00	0.00
6,200.00	3.88	47.63	6,188.60	228.25	250.19	-212.90	0.00	0.00	0.00
6,300.00	3.88	47.63	6,288.37	232.81	255.19	-217.15	0.00	0.00	0.00
6,400.00	3.88	47.63	6,388.14	237.37	260.19	-221.41	0.00	0.00	0.00
6,500.00	3.88	47.63	6,487.91	241.93	265.20	-225.66	0.00	0.00	0.00
6,600.00	3.88	47.63	6,587.68	246.49	270.20	-229.92	0.00	0.00	0.00
6,700.00	3.88	47.63	6,687.45	251.06	275.20	-234.17	0.00	0.00	0.00
6,798.95	3.88	47.63	6,786.18	255.57	280.15	-238.38	0.00	0.00	0.00
Start Drop -2.00									
6,800.00	3.86	47.63	6,787.22	255.62	280.20	-238.43	2.00	-2.00	0.00
6,900.00	1.86	47.63	6,887.09	258.98	283.88	-241.57	2.00	-2.00	0.00
6,993.02	0.00	0.00	6,980.10	260.00	285.00	-242.51	2.00	-2.00	0.00
Start Build 10.00									
7,000.00	0.70	179.74	6,987.08	259.96	285.00	-242.47	10.00	10.00	0.00
7,050.00	5.70	179.74	7,036.98	257.17	285.01	-239.69	10.00	10.00	0.00
7,100.00	10.70	179.74	7,086.46	250.04	285.04	-232.57	10.00	10.00	0.00
7,150.00	15.70	179.74	7,135.12	238.63	285.10	-221.18	10.00	10.00	0.00
7,200.00	20.70	179.74	7,182.60	223.02	285.17	-205.59	10.00	10.00	0.00
7,250.00	25.70	179.74	7,228.55	203.33	285.26	-185.93	10.00	10.00	0.00
7,300.00	30.70	179.74	7,272.60	179.71	285.36	-162.35	10.00	10.00	0.00
7,350.00	35.70	179.74	7,314.43	152.35	285.49	-135.02	10.00	10.00	0.00
7,400.00	40.70	179.74	7,353.71	121.44	285.62	-104.16	10.00	10.00	0.00
7,444.10	45.11	179.74	7,386.00	91.43	285.76	-74.20	10.00	10.00	0.00
Sharon Springs									
7,450.00	45.70	179.74	7,390.15	87.22	285.78	-70.00	10.00	10.00	0.00
7,473.19	48.02	179.74	7,406.00	70.31	285.86	-53.11	10.00	10.00	0.00
Niobrara A									
7,500.00	50.70	179.74	7,423.46	49.96	285.95	-32.80	10.00	10.00	0.00
7,550.00	55.70	179.74	7,453.41	9.94	286.13	7.17	10.00	10.00	0.00
7,600.00	60.70	179.74	7,479.75	-32.54	286.32	49.58	10.00	10.00	0.00
7,650.00	65.70	179.74	7,502.29	-77.15	286.52	94.13	10.00	10.00	0.00
7,683.02	69.00	179.74	7,515.00	-107.62	286.66	124.54	10.00	10.00	0.00
Niobrara B									
7,700.00	70.70	179.74	7,520.85	-123.56	286.73	140.46	10.00	10.00	0.00
7,750.00	75.70	179.74	7,535.30	-171.41	286.95	188.24	10.00	10.00	0.00
7,800.00	80.70	179.74	7,545.52	-220.34	287.17	237.09	10.00	10.00	0.00
7,850.00	85.70	179.74	7,551.44	-269.97	287.39	286.65	10.00	10.00	0.00
7,901.41	90.84	179.74	7,553.00	-321.34	287.62	337.94	10.00	10.00	0.00
Start 4852.29 hold at 7901.41 MD - 7"									
8,000.00	90.84	179.74	7,551.56	-419.92	288.07	436.37	0.00	0.00	0.00

Andarko Petroleum Corporation

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOWARD 1N-33HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17'RKB+4983'GL @ 5000.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17'RKB+4983'GL @ 5000.00ft
Site:	WELD_HOWARD 4 PAD	North Reference:	True
Well:	HOWARD 1N-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	WP (01) PERMIT		

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)
8,100.00	90.84	179.74	7,550.09	-519.90	288.52	536.21	0.00	0.00	0.00
8,200.00	90.84	179.74	7,548.63	-619.89	288.97	636.04	0.00	0.00	0.00
8,300.00	90.84	179.74	7,547.17	-719.88	289.42	735.88	0.00	0.00	0.00
8,400.00	90.84	179.74	7,545.70	-819.87	289.87	835.72	0.00	0.00	0.00
8,500.00	90.84	179.74	7,544.24	-919.86	290.32	935.55	0.00	0.00	0.00
8,600.00	90.84	179.74	7,542.78	-1,019.85	290.77	1,035.39	0.00	0.00	0.00
8,700.00	90.84	179.74	7,541.31	-1,119.83	291.22	1,135.23	0.00	0.00	0.00
8,800.00	90.84	179.74	7,539.85	-1,219.82	291.67	1,235.06	0.00	0.00	0.00
8,900.00	90.84	179.74	7,538.39	-1,319.81	292.13	1,334.90	0.00	0.00	0.00
9,000.00	90.84	179.74	7,536.92	-1,419.80	292.58	1,434.74	0.00	0.00	0.00
9,100.00	90.84	179.74	7,535.46	-1,519.79	293.03	1,534.57	0.00	0.00	0.00
9,200.00	90.84	179.74	7,534.00	-1,619.78	293.48	1,634.41	0.00	0.00	0.00
9,300.00	90.84	179.74	7,532.53	-1,719.76	293.93	1,734.25	0.00	0.00	0.00
9,400.00	90.84	179.74	7,531.07	-1,819.75	294.38	1,834.08	0.00	0.00	0.00
9,500.00	90.84	179.74	7,529.61	-1,919.74	294.83	1,933.92	0.00	0.00	0.00
9,600.00	90.84	179.74	7,528.14	-2,019.73	295.28	2,033.76	0.00	0.00	0.00
9,700.00	90.84	179.74	7,526.68	-2,119.72	295.73	2,133.60	0.00	0.00	0.00
9,800.00	90.84	179.74	7,525.22	-2,219.70	296.18	2,233.43	0.00	0.00	0.00
9,900.00	90.84	179.74	7,523.75	-2,319.69	296.64	2,333.27	0.00	0.00	0.00
10,000.00	90.84	179.74	7,522.29	-2,419.68	297.09	2,433.11	0.00	0.00	0.00
10,100.00	90.84	179.74	7,520.83	-2,519.67	297.54	2,532.94	0.00	0.00	0.00
10,200.00	90.84	179.74	7,519.37	-2,619.66	297.99	2,632.78	0.00	0.00	0.00
10,300.00	90.84	179.74	7,517.90	-2,719.65	298.44	2,732.62	0.00	0.00	0.00
10,400.00	90.84	179.74	7,516.44	-2,819.63	298.89	2,832.45	0.00	0.00	0.00
10,500.00	90.84	179.74	7,514.98	-2,919.62	299.34	2,932.29	0.00	0.00	0.00
10,600.00	90.84	179.74	7,513.51	-3,019.61	299.79	3,032.13	0.00	0.00	0.00
10,700.00	90.84	179.74	7,512.05	-3,119.60	300.24	3,131.96	0.00	0.00	0.00
10,800.00	90.84	179.74	7,510.59	-3,219.59	300.69	3,231.80	0.00	0.00	0.00
10,900.00	90.84	179.74	7,509.12	-3,319.58	301.15	3,331.64	0.00	0.00	0.00
11,000.00	90.84	179.74	7,507.66	-3,419.56	301.60	3,431.47	0.00	0.00	0.00
11,100.00	90.84	179.74	7,506.20	-3,519.55	302.05	3,531.31	0.00	0.00	0.00
11,200.00	90.84	179.74	7,504.73	-3,619.54	302.50	3,631.15	0.00	0.00	0.00
11,300.00	90.84	179.74	7,503.27	-3,719.53	302.95	3,730.98	0.00	0.00	0.00
11,400.00	90.84	179.74	7,501.81	-3,819.52	303.40	3,830.82	0.00	0.00	0.00
11,500.00	90.84	179.74	7,500.34	-3,919.51	303.85	3,930.66	0.00	0.00	0.00
11,600.00	90.84	179.74	7,498.88	-4,019.49	304.30	4,030.49	0.00	0.00	0.00
11,700.00	90.84	179.74	7,497.42	-4,119.48	304.75	4,130.33	0.00	0.00	0.00
11,800.00	90.84	179.74	7,495.95	-4,219.47	305.20	4,230.17	0.00	0.00	0.00
11,900.00	90.84	179.74	7,494.49	-4,319.46	305.66	4,330.00	0.00	0.00	0.00
12,000.00	90.84	179.74	7,493.03	-4,419.45	306.11	4,429.84	0.00	0.00	0.00
12,100.00	90.84	179.74	7,491.56	-4,519.44	306.56	4,529.68	0.00	0.00	0.00
12,200.00	90.84	179.74	7,490.10	-4,619.42	307.01	4,629.51	0.00	0.00	0.00
12,300.00	90.84	179.74	7,488.64	-4,719.41	307.46	4,729.35	0.00	0.00	0.00
12,400.00	90.84	179.74	7,487.18	-4,819.40	307.91	4,829.19	0.00	0.00	0.00
12,500.00	90.84	179.74	7,485.71	-4,919.39	308.36	4,929.02	0.00	0.00	0.00
12,600.00	90.84	179.74	7,484.25	-5,019.38	308.81	5,028.86	0.00	0.00	0.00
12,700.00	90.84	179.74	7,482.79	-5,119.36	309.26	5,128.70	0.00	0.00	0.00
12,753.70	90.84	179.74	7,482.00	-5,173.06	309.51	5,182.31	0.00	0.00	0.00
TD at 12753.70 - HOWARD 1N-33HZ PBHL									

Andarko Petroleum Corporation

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well HOWARD 1N-33HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	17'RKB+4983'GL @ 5000.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	17'RKB+4983'GL @ 5000.00ft
Site:	WELD_HOWARD 4 PAD	North Reference:	True
Well:	HOWARD 1N-33HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	WP (01) PERMIT		

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									
HOWARD 1N-33HZ PBH	0.00	0.00	7,482.00	-5,173.06	309.51	1,248,635.86	3,171,157.67	40.014273	-104.888925
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
900.00	900.00	9 5/8"	9-5/8	12-1/4	
7,901.41	7,553.00	7"	7	7-1/2	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,788.16	4,780.00	Sussex		0.00	
7,444.10	7,386.00	Sharon Springs		0.00	
7,473.19	7,406.00	Niobrara A		0.00	
7,683.02	7,515.00	Niobrara B		0.00	

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
1,100.00	1,100.00	0.00	0.00	Start Build 2.00	
1,294.07	1,293.92	4.43	4.85	Start 5504.88 hold at 1294.07 MD	
6,798.95	6,786.18	255.57	280.15	Start Drop -2.00	
6,993.02	6,980.10	260.00	285.00	Start Build 10.00	
7,901.41	7,553.00	-321.34	287.62	Start 4852.29 hold at 7901.41 MD	
12,753.70	7,482.00	-5,173.06	309.51	TD at 12753.70	