

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_PALYO 4-11HZ Pad

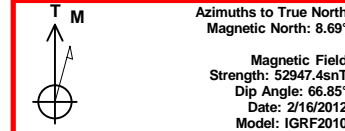
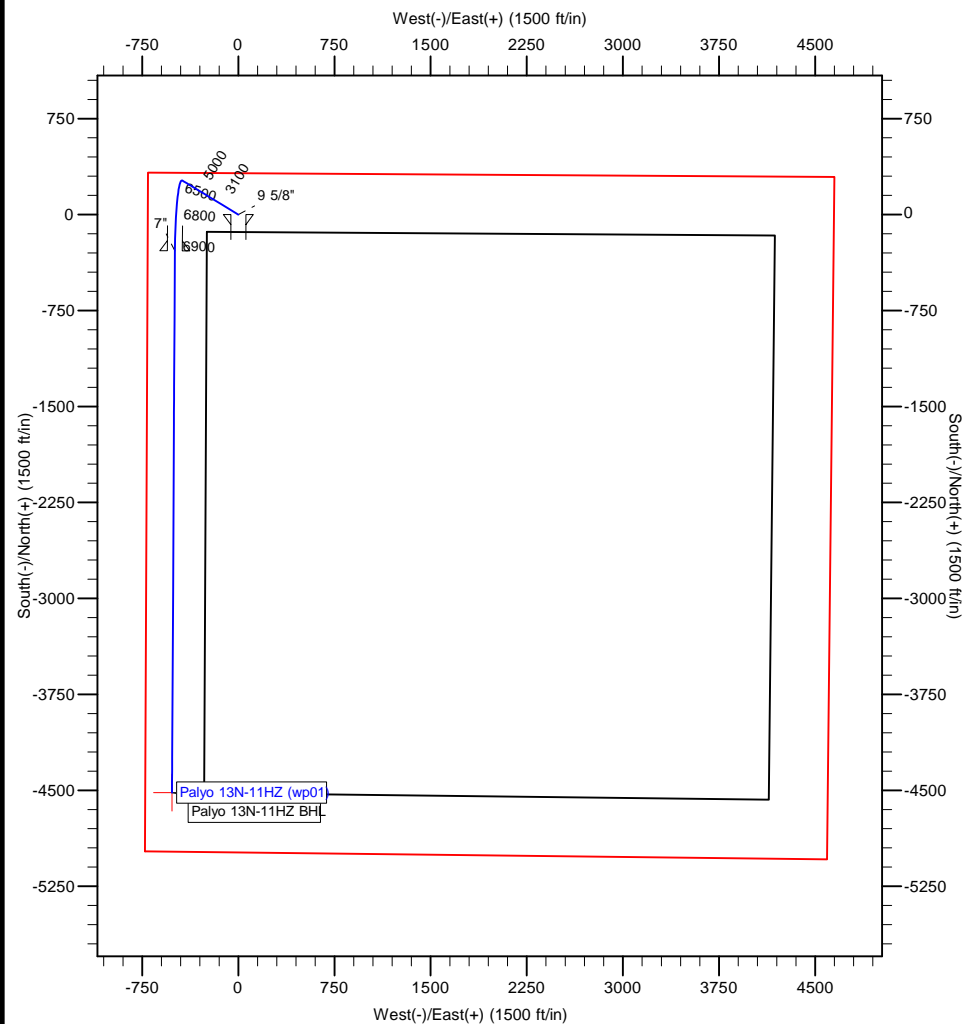
Palyo 13N-11HZ

Palyo 13N-11HZ

Plan: Palyo 13N-11HZ (wp01)

Standard Planning Report

21 February, 2012



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD_PALYO 4-11HZ Pad
 Well: Palyo 13N-11HZ
 Wellbore: Palyo 13N-11HZ
 Section:
 SHL:
 Design: Palyo 13N-11HZ (wp01)
 Latitude: 40.159596
 Longitude: -104.637926
 GL: 4855.00
 KB: gl + rkb @ 4872.00ft

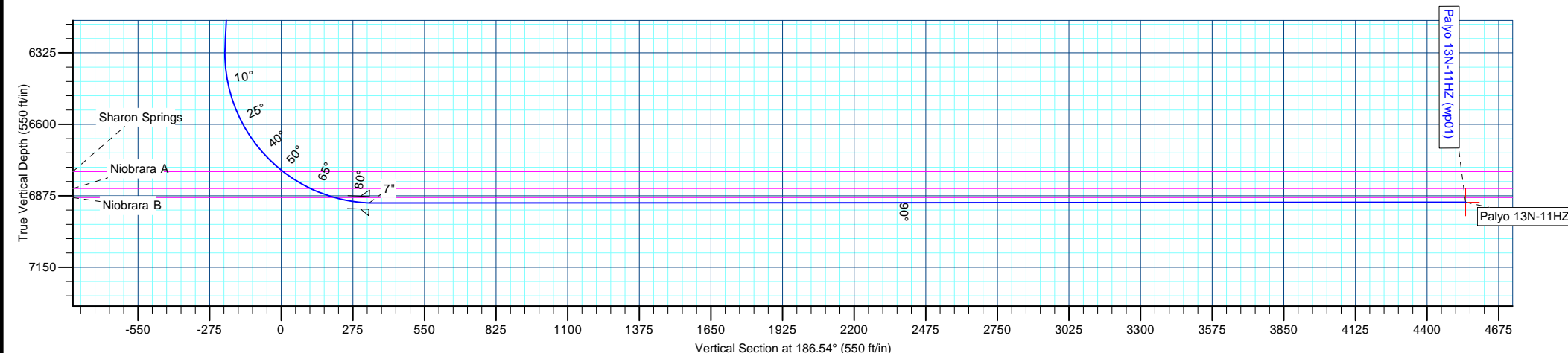
WELL DETAILS: Palyo 13N-11HZ						
+N/-S	+E/-W	Northing	Ground Level: Easting	4855.00 Latitude	Longitude	Slot
0.00	0.00	1302155.20	3240944.14	40.159596	-104.637926	

SECTION DETAILS								
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00
1708.23	6.16	301.41	1707.63	8.63	-14.14	2.00	301.41	-6.97
6328.11	6.16	301.41	6300.80	267.18	-437.54	0.00	0.00	-215.63
7260.32	90.04	180.28	6903.00	-305.00	-496.00	10.00	-120.98	359.48
7262.33	90.04	180.30	6903.00	-307.01	-496.01	1.00	82.14	361.49
1473.53	90.04	180.30	6900.00	-4518.16	-517.73	0.00	0.00	4547.72

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Palyo 13N-11HZ BHL	6900.00	-4518.16	-517.73	40.147193	-104.639778	Point

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3955.00	3968.66	Parkman
4438.00	4454.47	Sussex
6782.00	6879.85	Sharon Springs
6847.00	7003.95	Niobrara A
6882.00	7104.00	Niobrara B

CASING DETAILS			
TVD	MD	Name	Size
850.00	850.00	9 5/8"	9-5/8
6902.60	7238.41	7"	7



Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Palyo 13N-11HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4872.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4872.00ft
Site:	WELD_PALYO 4-11HZ Pad	North Reference:	True
Well:	Palyo 13N-11HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Palyo 13N-11HZ		
Design:	Palyo 13N-11HZ (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_PALYO 4-11HZ Pad			
Site Position:		Northing:	1,302,155.51 usft	Latitude: 40.159596
From:	Lat/Long	Easting:	3,240,974.04 usft	Longitude: -104.637819
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence: 0.56 °

Well	Palyo 13N-11HZ			
Well Position	+N/-S	-0.02 ft	Northing:	1,302,155.20 usft
	+E/-W	-29.91 ft	Easting:	3,240,944.14 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 4,855.00 ft

Wellbore	Palyo 13N-11HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/16/2012	8.68	66.85	52,947

Design	Palyo 13N-11HZ (wp01)			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.00	0.00	0.00	186.54

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	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,708.23	6.16	301.41	1,707.63	8.63	-14.14	2.00	2.00	0.00	301.41	
6,328.11	6.16	301.41	6,300.80	267.18	-437.54	0.00	0.00	0.00	0.00	
7,260.32	90.04	180.28	6,903.00	-305.00	-496.00	10.00	9.00	-12.99	-120.98	
7,262.33	90.04	180.30	6,903.00	-307.01	-496.01	1.00	0.14	0.99	82.14	
11,473.53	90.04	180.30	6,900.00	-4,518.16	-517.73	0.00	0.00	0.00	0.00	Palyo 13N-11HZ BHL

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Palyo 13N-11HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4872.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4872.00ft
Site:	WELD_PALYO 4-11HZ Pad	North Reference:	True
Well:	Palyo 13N-11HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Palyo 13N-11HZ		
Design:	Palyo 13N-11HZ (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
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
850.00	0.00	0.00	850.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
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	2.00	301.41	1,499.98	0.91	-1.49	-0.73	2.00	2.00	0.00
1,600.00	4.00	301.41	1,599.84	3.64	-5.96	-2.94	2.00	2.00	0.00
1,700.00	6.00	301.41	1,699.45	8.18	-13.39	-6.60	2.00	2.00	0.00
1,708.23	6.16	301.41	1,707.63	8.63	-14.14	-6.97	2.00	2.00	0.00
1,800.00	6.16	301.41	1,798.88	13.77	-22.55	-11.11	0.00	0.00	0.00
1,900.00	6.16	301.41	1,898.30	19.37	-31.71	-15.63	0.00	0.00	0.00
2,000.00	6.16	301.41	1,997.72	24.96	-40.88	-20.15	0.00	0.00	0.00
2,100.00	6.16	301.41	2,097.14	30.56	-50.04	-24.66	0.00	0.00	0.00
2,200.00	6.16	301.41	2,196.56	36.15	-59.21	-29.18	0.00	0.00	0.00
2,300.00	6.16	301.41	2,295.98	41.75	-68.37	-33.70	0.00	0.00	0.00
2,400.00	6.16	301.41	2,395.41	47.35	-77.54	-38.21	0.00	0.00	0.00
2,500.00	6.16	301.41	2,494.83	52.94	-86.70	-42.73	0.00	0.00	0.00
2,600.00	6.16	301.41	2,594.25	58.54	-95.87	-47.25	0.00	0.00	0.00
2,700.00	6.16	301.41	2,693.67	64.14	-105.03	-51.76	0.00	0.00	0.00
2,800.00	6.16	301.41	2,793.09	69.73	-114.20	-56.28	0.00	0.00	0.00
2,900.00	6.16	301.41	2,892.51	75.33	-123.36	-60.80	0.00	0.00	0.00
3,000.00	6.16	301.41	2,991.94	80.93	-132.53	-65.31	0.00	0.00	0.00
3,100.00	6.16	301.41	3,091.36	86.52	-141.69	-69.83	0.00	0.00	0.00
3,200.00	6.16	301.41	3,190.78	92.12	-150.85	-74.35	0.00	0.00	0.00
3,300.00	6.16	301.41	3,290.20	97.71	-160.02	-78.86	0.00	0.00	0.00
3,400.00	6.16	301.41	3,389.62	103.31	-169.18	-83.38	0.00	0.00	0.00
3,500.00	6.16	301.41	3,489.05	108.91	-178.35	-87.90	0.00	0.00	0.00
3,600.00	6.16	301.41	3,588.47	114.50	-187.51	-92.41	0.00	0.00	0.00
3,700.00	6.16	301.41	3,687.89	120.10	-196.68	-96.93	0.00	0.00	0.00
3,800.00	6.16	301.41	3,787.31	125.70	-205.84	-101.45	0.00	0.00	0.00
3,900.00	6.16	301.41	3,886.73	131.29	-215.01	-105.96	0.00	0.00	0.00
3,968.66	6.16	301.41	3,955.00	135.14	-221.30	-109.06	0.00	0.00	0.00
Parkman									
4,000.00	6.16	301.41	3,986.15	136.89	-224.17	-110.48	0.00	0.00	0.00
4,100.00	6.16	301.41	4,085.58	142.49	-233.34	-115.00	0.00	0.00	0.00
4,200.00	6.16	301.41	4,185.00	148.08	-242.50	-119.51	0.00	0.00	0.00
4,300.00	6.16	301.41	4,284.42	153.68	-251.67	-124.03	0.00	0.00	0.00
4,400.00	6.16	301.41	4,383.84	159.28	-260.83	-128.55	0.00	0.00	0.00
4,454.47	6.16	301.41	4,438.00	162.32	-265.82	-131.01	0.00	0.00	0.00
Sussex									
4,500.00	6.16	301.41	4,483.26	164.87	-270.00	-133.06	0.00	0.00	0.00

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Palyo 13N-11HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4872.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4872.00ft
Site:	WELD_PALYO 4-11HZ Pad	North Reference:	True
Well:	Palyo 13N-11HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Palyo 13N-11HZ		
Design:	Palyo 13N-11HZ (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	6.16	301.41	4,582.68	170.47	-279.16	-137.58	0.00	0.00	0.00
4,700.00	6.16	301.41	4,682.11	176.06	-288.33	-142.10	0.00	0.00	0.00
4,800.00	6.16	301.41	4,781.53	181.66	-297.49	-146.61	0.00	0.00	0.00
4,900.00	6.16	301.41	4,880.95	187.26	-306.66	-151.13	0.00	0.00	0.00
5,000.00	6.16	301.41	4,980.37	192.85	-315.82	-155.65	0.00	0.00	0.00
5,100.00	6.16	301.41	5,079.79	198.45	-324.98	-160.16	0.00	0.00	0.00
5,200.00	6.16	301.41	5,179.22	204.05	-334.15	-164.68	0.00	0.00	0.00
5,300.00	6.16	301.41	5,278.64	209.64	-343.31	-169.20	0.00	0.00	0.00
5,400.00	6.16	301.41	5,378.06	215.24	-352.48	-173.71	0.00	0.00	0.00
5,500.00	6.16	301.41	5,477.48	220.84	-361.64	-178.23	0.00	0.00	0.00
5,600.00	6.16	301.41	5,576.90	226.43	-370.81	-182.75	0.00	0.00	0.00
5,700.00	6.16	301.41	5,676.32	232.03	-379.97	-187.26	0.00	0.00	0.00
5,800.00	6.16	301.41	5,775.75	237.62	-389.14	-191.78	0.00	0.00	0.00
5,900.00	6.16	301.41	5,875.17	243.22	-398.30	-196.30	0.00	0.00	0.00
6,000.00	6.16	301.41	5,974.59	248.82	-407.47	-200.81	0.00	0.00	0.00
6,100.00	6.16	301.41	6,074.01	254.41	-416.63	-205.33	0.00	0.00	0.00
6,200.00	6.16	301.41	6,173.43	260.01	-425.80	-209.85	0.00	0.00	0.00
6,300.00	6.16	301.41	6,272.85	265.61	-434.96	-214.36	0.00	0.00	0.00
6,328.11	6.16	301.41	6,300.80	267.18	-437.54	-215.63	0.00	0.00	0.00
6,400.00	6.63	233.01	6,372.34	266.69	-444.15	-214.40	10.00	0.64	-95.14
6,500.00	14.95	200.54	6,470.56	251.10	-453.31	-197.87	10.00	8.32	-32.48
6,600.00	24.55	191.96	6,564.59	218.62	-462.16	-164.59	10.00	9.60	-8.58
6,700.00	34.37	188.05	6,651.56	170.23	-470.44	-115.57	10.00	9.82	-3.91
6,800.00	44.26	185.72	6,728.84	107.41	-477.89	-52.30	10.00	9.89	-2.33
6,879.85	52.18	184.39	6,782.00	48.14	-483.09	7.17	10.00	9.92	-1.66
Sharon Springs									
6,900.00	54.18	184.10	6,794.08	32.05	-484.29	23.29	10.00	9.93	-1.44
7,000.00	64.13	182.85	6,845.29	-53.54	-489.44	108.91	10.00	9.94	-1.26
7,003.95	64.52	182.80	6,847.00	-57.09	-489.62	112.46	10.00	9.95	-1.13
Niobrara A									
7,100.00	74.08	181.79	6,880.92	-146.76	-493.19	201.95	10.00	9.95	-1.06
7,104.00	74.47	181.75	6,882.00	-150.61	-493.31	205.79	10.00	9.95	-0.99
Niobrara B									
7,200.00	84.03	180.83	6,899.88	-244.79	-495.42	299.60	10.00	9.96	-0.96
7,238.41	87.86	180.48	6,902.60	-283.10	-495.86	337.71	10.00	9.96	-0.93
7"									
7,260.32	90.04	180.28	6,903.00	-305.00	-496.00	359.48	10.00	9.96	-0.92
7,262.33	90.04	180.30	6,903.00	-307.01	-496.01	361.49	1.00	0.14	0.99
7,300.00	90.04	180.30	6,902.97	-344.68	-496.20	398.93	0.00	0.00	0.00
7,400.00	90.04	180.30	6,902.90	-444.68	-496.72	498.34	0.00	0.00	0.00
7,500.00	90.04	180.30	6,902.83	-544.68	-497.24	597.74	0.00	0.00	0.00
7,600.00	90.04	180.30	6,902.76	-644.68	-497.75	697.15	0.00	0.00	0.00
7,700.00	90.04	180.30	6,902.69	-744.68	-498.27	796.56	0.00	0.00	0.00
7,800.00	90.04	180.30	6,902.62	-844.68	-498.78	895.97	0.00	0.00	0.00
7,900.00	90.04	180.30	6,902.54	-944.67	-499.30	995.37	0.00	0.00	0.00
8,000.00	90.04	180.30	6,902.47	-1,044.67	-499.81	1,094.78	0.00	0.00	0.00
8,100.00	90.04	180.30	6,902.40	-1,144.67	-500.33	1,194.19	0.00	0.00	0.00
8,200.00	90.04	180.30	6,902.33	-1,244.67	-500.85	1,293.60	0.00	0.00	0.00
8,300.00	90.04	180.30	6,902.26	-1,344.67	-501.36	1,393.00	0.00	0.00	0.00
8,400.00	90.04	180.30	6,902.19	-1,444.67	-501.88	1,492.41	0.00	0.00	0.00
8,500.00	90.04	180.30	6,902.12	-1,544.67	-502.39	1,591.82	0.00	0.00	0.00
8,600.00	90.04	180.30	6,902.05	-1,644.66	-502.91	1,691.22	0.00	0.00	0.00
8,700.00	90.04	180.30	6,901.98	-1,744.66	-503.42	1,790.63	0.00	0.00	0.00
8,800.00	90.04	180.30	6,901.90	-1,844.66	-503.94	1,890.04	0.00	0.00	0.00

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Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Palyo 13N-11HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4872.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4872.00ft
Site:	WELD_PALYO 4-11HZ Pad	North Reference:	True
Well:	Palyo 13N-11HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Palyo 13N-11HZ		
Design:	Palyo 13N-11HZ (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)
8,900.00	90.04	180.30	6,901.83	-1,944.66	-504.45	1,989.45	0.00	0.00	0.00
9,000.00	90.04	180.30	6,901.76	-2,044.66	-504.97	2,088.85	0.00	0.00	0.00
9,100.00	90.04	180.30	6,901.69	-2,144.66	-505.49	2,188.26	0.00	0.00	0.00
9,200.00	90.04	180.30	6,901.62	-2,244.66	-506.00	2,287.67	0.00	0.00	0.00
9,300.00	90.04	180.30	6,901.55	-2,344.65	-506.52	2,387.08	0.00	0.00	0.00
9,400.00	90.04	180.30	6,901.48	-2,444.65	-507.03	2,486.48	0.00	0.00	0.00
9,500.00	90.04	180.30	6,901.41	-2,544.65	-507.55	2,585.89	0.00	0.00	0.00
9,600.00	90.04	180.30	6,901.33	-2,644.65	-508.06	2,685.30	0.00	0.00	0.00
9,700.00	90.04	180.30	6,901.26	-2,744.65	-508.58	2,784.70	0.00	0.00	0.00
9,800.00	90.04	180.30	6,901.19	-2,844.65	-509.10	2,884.11	0.00	0.00	0.00
9,900.00	90.04	180.30	6,901.12	-2,944.65	-509.61	2,983.52	0.00	0.00	0.00
10,000.00	90.04	180.30	6,901.05	-3,044.65	-510.13	3,082.93	0.00	0.00	0.00
10,100.00	90.04	180.30	6,900.98	-3,144.64	-510.64	3,182.33	0.00	0.00	0.00
10,200.00	90.04	180.30	6,900.91	-3,244.64	-511.16	3,281.74	0.00	0.00	0.00
10,300.00	90.04	180.30	6,900.84	-3,344.64	-511.67	3,381.15	0.00	0.00	0.00
10,400.00	90.04	180.30	6,900.76	-3,444.64	-512.19	3,480.55	0.00	0.00	0.00
10,500.00	90.04	180.30	6,900.69	-3,544.64	-512.71	3,579.96	0.00	0.00	0.00
10,600.00	90.04	180.30	6,900.62	-3,644.64	-513.22	3,679.37	0.00	0.00	0.00
10,700.00	90.04	180.30	6,900.55	-3,744.64	-513.74	3,778.78	0.00	0.00	0.00
10,800.00	90.04	180.30	6,900.48	-3,844.63	-514.25	3,878.18	0.00	0.00	0.00
10,900.00	90.04	180.30	6,900.41	-3,944.63	-514.77	3,977.59	0.00	0.00	0.00
11,000.00	90.04	180.30	6,900.34	-4,044.63	-515.28	4,077.00	0.00	0.00	0.00
11,100.00	90.04	180.30	6,900.27	-4,144.63	-515.80	4,176.41	0.00	0.00	0.00
11,200.00	90.04	180.30	6,900.19	-4,244.63	-516.32	4,275.81	0.00	0.00	0.00
11,300.00	90.04	180.30	6,900.12	-4,344.63	-516.83	4,375.22	0.00	0.00	0.00
11,400.00	90.04	180.30	6,900.05	-4,444.63	-517.35	4,474.63	0.00	0.00	0.00
11,473.53	90.04	180.30	6,900.00	-4,518.16	-517.73	4,547.72	0.00	0.00	0.00
Palyo 13N-11HZ 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									
Palyo 13N-11HZ BHL	0.00	0.00	6,900.00	-4,518.16	-517.73	1,297,632.23	3,240,470.36	40.147193	-104.639778
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
850.00	850.00	9 5/8"	9-5/8	12-1/4	
7,238.41	6,902.60	7"	7	8-3/4	

Anadarko Petroleum Corp

Planning Report

Database:	edmp	Local Co-ordinate Reference:	Well Palyo 13N-11HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	gl + rkb @ 4872.00ft
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	gl + rkb @ 4872.00ft
Site:	WELD_PALYO 4-11HZ Pad	North Reference:	True
Well:	Palyo 13N-11HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	Palyo 13N-11HZ		
Design:	Palyo 13N-11HZ (wp01)		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,968.66	3,955.00	Parkman				
4,454.47	4,438.00	Sussex				
6,879.85	6,782.00	Sharon Springs				
7,003.95	6,847.00	Niobrara A				
7,104.00	6,882.00	Niobrara B				