

Azimuths to True North
 Magnetic North: 8.57°
 Magnetic Field
 Strength: 52828.2snT
 Dip Angle: 66.78°
 Date: 12/13/2012
 Model: IGRF2010



Project: COLORADO NORTHERN ZONE - 83
 Site: WELD SPARBOE 4 PAD
 Well: SPARBOE 24N-3HZ
 Wellbore: Wellbore #1
 Design: ACTUAL
 Latitude: 40.101500
 Longitude: -104.645813
 GL: 4977.00
 KB: 16'RKB+4977'GL @ 4993.00ft (XTREME 23)

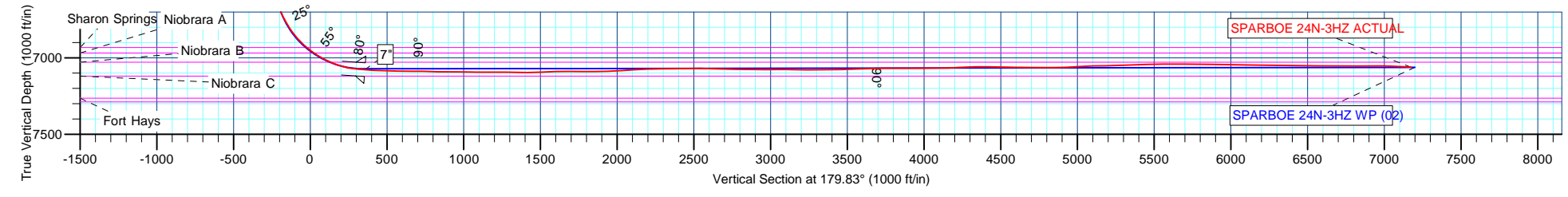
WELL DETAILS: SPARBOE 24N-3HZ						
+N-S	+E-W	Northing	Ground Level: Easting	4977.00	Latitude	Slot
0.00	0.00	1280971.65	3238943.70	40.101500	-104.645813	

ANNOTATIONS										
TVD	MD	Inc	Azi	+N-S	+E-W	VSect	Departure	Annotation		
1790.99	1791.00	0.13	348.27	0.94	-0.47	-0.94	6.95	TIE ON		
1887.99	1888.00	0.28	224.52	0.88	-0.65	-0.88	7.29	FIRST WFT SURVEY		
7077.17	7404.00	85.44	179.72	-339.56	174.83	340.08	878.45	7 IN. CASING		
7058.45	14185.00	86.98	178.49	-7117.24	202.47	7117.81	7657.39	LAST WFT SURVEY		
7061.45	14242.00	86.98	178.49	-7174.14	203.97	7174.71	7714.31	PROJECTION TO TD		

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)						
Name	TVD	+N-S	+E-W	Latitude	Longitude	Shape
SPARBOE 24N-3HZ PBHL	7043.00	-7199.56	191.12	40.081736	-104.645130	Point
SPARBOE 24N-3HZ PBHL Rev. 1	7063.00	-7199.56	191.12	40.081736	-104.645130	Point

FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
746.00	746.00	Fox Hills
4992.00	4999.84	Sussex
6933.00	7005.62	Sharon Springs
6969.00	7065.33	Niobrara A
7029.00	7190.63	Niobrara B

CASING DETAILS			
TVD	MD	Name	Size
7077.17	7404.00	7"	7"



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_SPARBOE 4 PAD

SPARBOE 24N-3HZ

Wellbore #1

Design: ACTUAL

Standard Survey Report

13 March, 2013

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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_SPARBOE 4 PAD				
Site Position:		Northing:	1,280,971.47 usft	Latitude:	40.101501
From:	Lat/Long	Easting:	3,238,883.56 usft	Longitude:	-104.646028
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.55 °

Well	SPARBOE 24N-3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,280,971.65 usft	Latitude:	40.101500
	+E/-W	0.00 ft	Easting:	3,238,943.70 usft	Longitude:	-104.645813
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,977.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	12/13/2012	(°)	(°)	(nT)
			8.57	66.78	52,828

Design	ACTUAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	16.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	16.00	0.00	0.00	179.83	

Survey Program	Date	3/13/2013			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
116.00	1,791.00	Survey #1 (Wellbore #1)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
1,888.00	14,242.00	Survey #2 (Wellbore #1)	MWD+IFR	MWD + IFR CORRECTION	

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(ft)	(ft)	Section	Rate	Rate	Rate	
(ft)			(ft)			(ft)	(°/100usft)	(°/100usft)	(°/100usft)	
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	
116.00	0.22	128.34	116.00	-0.12	0.15	0.12	0.22	0.22	0.00	
216.00	0.21	147.68	216.00	-0.39	0.40	0.39	0.07	-0.01	19.34	
316.00	0.24	122.41	316.00	-0.66	0.67	0.66	0.10	0.03	-25.27	
416.00	0.16	123.10	416.00	-0.85	0.97	0.85	0.08	-0.08	0.69	
516.00	0.27	0.77	516.00	-0.69	1.09	0.69	0.38	0.11	-122.33	
616.00	0.32	56.23	616.00	-0.30	1.32	0.30	0.28	0.05	55.46	
716.00	0.03	136.48	716.00	-0.16	1.57	0.17	0.32	-0.29	80.25	
816.00	0.22	259.07	816.00	-0.22	1.40	0.22	0.24	0.19	122.59	
916.00	0.18	197.62	915.99	-0.40	1.17	0.41	0.21	-0.04	-61.45	

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)	
1,016.00	0.18	191.17	1,015.99	-0.71	1.09	0.71	0.02	0.00	-6.45	
1,116.00	0.12	120.03	1,115.99	-0.91	1.15	0.92	0.18	-0.06	-71.14	
1,216.00	0.34	289.61	1,215.99	-0.87	0.96	0.87	0.46	0.22	169.58	
1,316.00	0.35	279.63	1,315.99	-0.72	0.38	0.72	0.06	0.01	-9.98	
1,416.00	0.29	328.73	1,415.99	-0.45	-0.05	0.45	0.27	-0.06	49.10	
1,516.00	0.19	57.90	1,515.99	-0.14	-0.04	0.14	0.34	-0.10	89.17	
1,616.00	0.34	330.82	1,615.99	0.20	-0.05	-0.20	0.38	0.15	-87.08	
1,716.00	0.31	327.33	1,715.99	0.69	-0.34	-0.69	0.04	-0.03	-3.49	
1,791.00	0.13	348.27	1,790.99	0.94	-0.47	-0.94	0.26	-0.24	27.92	
TIE ON										
1,888.00	0.28	224.52	1,887.99	0.88	-0.65	-0.88	0.38	0.15	-127.58	
FIRST WFT SURVEY										
1,981.00	0.60	3.28	1,980.99	1.21	-0.79	-1.21	0.89	0.34	149.20	
2,074.00	2.17	37.84	2,073.96	3.08	0.32	-3.08	1.84	1.69	37.16	
2,168.00	3.43	40.30	2,167.84	6.63	3.23	-6.62	1.35	1.34	2.62	
2,261.00	4.43	42.69	2,260.62	11.40	7.47	-11.37	1.09	1.08	2.57	
2,354.00	4.20	40.26	2,353.36	16.63	12.10	-16.60	0.32	-0.25	-2.61	
2,447.00	4.13	38.09	2,446.11	21.87	16.37	-21.82	0.19	-0.08	-2.33	
2,541.00	4.26	35.96	2,539.86	27.36	20.51	-27.30	0.22	0.14	-2.27	
2,634.00	3.89	38.31	2,632.63	32.63	24.49	-32.56	0.44	-0.40	2.53	
2,727.00	3.18	32.58	2,725.45	37.28	27.84	-37.20	0.85	-0.76	-6.16	
2,821.00	3.53	23.20	2,819.29	42.14	30.38	-42.05	0.69	0.37	-9.98	
2,906.00	3.75	28.83	2,904.12	46.98	32.75	-46.88	0.49	0.26	6.62	
2,991.00	4.56	30.74	2,988.89	52.32	35.82	-52.21	0.97	0.95	2.25	
3,077.00	4.39	32.32	3,074.63	58.04	39.33	-57.92	0.24	-0.20	1.84	
3,162.00	3.76	37.02	3,159.42	63.01	42.75	-62.88	0.84	-0.74	5.53	
3,248.00	4.34	42.51	3,245.20	67.66	46.64	-67.52	0.81	0.67	6.38	
3,333.00	4.01	51.10	3,329.98	71.90	51.13	-71.75	0.83	-0.39	10.11	
3,419.00	4.18	54.03	3,415.76	75.63	56.00	-75.46	0.31	0.20	3.41	
3,504.00	3.89	38.78	3,500.55	79.69	60.32	-79.51	1.30	-0.34	-17.94	
3,589.00	3.51	38.63	3,585.37	83.97	63.75	-83.78	0.45	-0.45	-0.18	
3,675.00	3.50	34.05	3,671.21	88.21	66.86	-88.01	0.33	-0.01	-5.33	
3,760.00	3.68	39.25	3,756.04	92.47	70.04	-92.26	0.44	0.21	6.12	
3,846.00	3.83	32.91	3,841.86	97.02	73.35	-96.80	0.51	0.17	-7.37	
3,931.00	3.37	34.89	3,926.69	101.45	76.32	-101.22	0.56	-0.54	2.33	
4,017.00	3.16	37.02	4,012.55	105.41	79.19	-105.18	0.28	-0.24	2.48	
4,102.00	3.89	33.76	4,097.39	109.68	82.20	-109.44	0.89	0.86	-3.84	
4,188.00	3.56	31.68	4,183.21	114.38	85.23	-114.13	0.41	-0.38	-2.42	
4,273.00	3.99	25.98	4,268.02	119.28	87.91	-119.02	0.67	0.51	-6.71	
4,358.00	4.50	25.04	4,352.79	124.96	90.62	-124.69	0.61	0.60	-1.11	
4,444.00	3.92	20.52	4,438.56	130.77	93.07	-130.50	0.78	-0.67	-5.26	
4,529.00	4.99	18.48	4,523.30	137.00	95.26	-136.72	1.27	1.26	-2.40	
4,615.00	6.11	14.90	4,608.90	144.97	97.63	-144.68	1.36	1.30	-4.16	

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)	
4,700.00	5.79	24.70	4,693.44	153.24	100.58	-152.94	1.25	-0.38	11.53	
4,785.00	5.48	27.11	4,778.03	160.75	104.22	-160.44	0.46	-0.36	2.84	
4,870.00	5.28	26.16	4,862.66	167.87	107.80	-167.55	0.26	-0.24	-1.12	
4,956.00	4.85	45.51	4,948.33	173.97	112.14	-173.64	2.04	-0.50	22.50	
5,041.00	5.18	54.92	5,033.00	178.69	117.84	-178.34	1.04	0.39	11.07	
5,127.00	3.92	42.51	5,118.73	183.09	123.00	-182.73	1.85	-1.47	-14.43	
5,212.00	3.23	39.63	5,203.57	187.08	126.49	-186.70	0.84	-0.81	-3.39	
5,298.00	3.53	43.41	5,289.42	190.87	129.86	-190.48	0.43	0.35	4.40	
5,383.00	3.44	42.42	5,374.26	194.65	133.38	-194.25	0.13	-0.11	-1.16	
5,469.00	2.15	33.75	5,460.15	197.90	136.01	-197.49	1.57	-1.50	-10.08	
5,554.00	2.43	41.79	5,545.09	200.57	138.10	-200.16	0.50	0.33	9.46	
5,639.00	2.23	11.49	5,630.02	203.53	139.63	-203.11	1.45	-0.24	-35.65	
5,724.00	2.50	23.87	5,714.95	206.85	140.71	-206.43	0.68	0.32	14.56	
5,810.00	3.22	30.22	5,800.84	210.65	142.68	-210.22	0.91	0.84	7.38	
5,895.00	4.04	33.35	5,885.67	215.21	145.53	-214.78	0.99	0.96	3.68	
5,981.00	3.46	39.65	5,971.49	219.74	148.85	-219.30	0.83	-0.67	7.33	
6,066.00	3.00	34.50	6,056.35	223.55	151.75	-223.10	0.64	-0.54	-6.06	
6,152.00	2.96	41.91	6,142.23	227.06	154.51	-226.60	0.45	-0.05	8.62	
6,237.00	3.22	52.52	6,227.11	230.14	157.87	-229.67	0.74	0.31	12.48	
6,323.00	2.77	47.17	6,312.99	233.02	161.31	-232.54	0.62	-0.52	-6.22	
6,422.00	1.78	47.27	6,411.91	235.69	164.19	-235.21	1.00	-1.00	0.10	
6,451.00	1.78	49.45	6,440.90	236.29	164.87	-235.80	0.23	0.00	7.52	
6,494.00	2.13	135.41	6,483.88	236.16	165.93	-235.66	6.23	0.81	199.91	
6,537.00	5.05	160.86	6,526.80	233.80	167.12	-233.30	7.58	6.79	59.19	
6,579.00	9.61	169.13	6,568.44	228.61	168.38	-228.11	11.12	10.86	19.69	
6,622.00	13.97	168.43	6,610.53	219.99	170.10	-219.49	10.14	10.14	-1.63	
6,665.00	17.10	167.99	6,651.95	208.72	172.46	-208.21	7.28	7.28	-1.02	
6,707.00	21.22	171.21	6,691.62	195.17	174.91	-194.65	10.12	9.81	7.67	
6,750.00	25.94	175.57	6,731.02	178.09	176.82	-177.56	11.70	10.98	10.14	
6,793.00	30.21	178.24	6,768.95	157.89	177.88	-157.36	10.35	9.93	6.21	
6,835.00	32.70	178.39	6,804.78	135.98	178.53	-135.45	5.93	5.93	0.36	
6,878.00	37.49	178.47	6,839.95	111.28	179.20	-110.74	11.14	11.14	0.19	
6,921.00	41.53	181.77	6,873.12	83.93	179.11	-83.40	10.59	9.40	7.67	
6,964.00	44.44	182.74	6,904.57	54.64	177.95	-54.11	6.94	6.77	2.26	
7,006.00	49.42	182.40	6,933.25	24.00	176.58	-23.48	11.87	11.86	-0.81	
7,049.00	54.66	181.95	6,959.69	-9.87	175.30	10.39	12.21	12.19	-1.05	
7,092.00	57.64	180.17	6,983.64	-45.57	174.65	46.08	7.74	6.93	-4.14	
7,135.00	61.87	178.66	7,005.29	-82.70	175.04	83.22	10.29	9.84	-3.51	
7,177.00	66.37	180.34	7,023.62	-120.47	175.36	120.99	11.30	10.71	4.00	
7,220.00	68.82	181.04	7,040.01	-160.22	174.88	160.74	5.89	5.70	1.63	
7,263.00	72.53	180.26	7,054.24	-200.79	174.42	201.31	8.80	8.63	-1.81	
7,306.00	78.23	180.13	7,065.09	-242.38	174.28	242.90	13.26	13.26	-0.30	
7,348.00	83.47	179.46	7,071.76	-283.83	174.43	284.35	12.58	12.48	-1.60	
7,404.00	85.44	179.72	7,077.17	-339.56	174.83	340.08	3.55	3.52	0.47	

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)
7 IN. CASING									
7,451.00	87.10	179.94	7,080.23	-386.46	174.96	386.98	3.55	3.52	0.46
7,545.00	87.71	179.21	7,084.48	-480.36	175.66	480.88	1.01	0.65	-0.78
7,638.00	88.83	179.25	7,087.29	-573.31	176.91	573.83	1.21	1.20	0.04
7,731.00	90.18	180.06	7,088.09	-666.30	177.47	666.83	1.69	1.45	0.87
7,825.00	88.21	179.47	7,089.41	-760.29	177.86	760.81	2.19	-2.10	-0.63
7,918.00	88.71	179.53	7,091.91	-853.25	178.67	853.78	0.54	0.54	0.06
8,011.00	90.18	180.51	7,092.81	-946.24	178.63	946.77	1.90	1.58	1.05
8,105.00	88.64	180.09	7,093.78	-1,040.23	178.14	1,040.76	1.70	-1.64	-0.45
8,198.00	89.88	179.99	7,094.98	-1,133.22	178.08	1,133.75	1.34	1.33	-0.11
8,291.00	90.31	179.38	7,094.83	-1,226.22	178.59	1,226.75	0.80	0.46	-0.66
8,384.00	88.83	177.53	7,095.53	-1,319.18	181.10	1,319.71	2.55	-1.59	-1.99
8,478.00	90.43	177.88	7,096.13	-1,413.10	184.86	1,413.64	1.74	1.70	0.37
8,571.00	92.10	178.34	7,094.08	-1,506.02	187.93	1,506.57	1.86	1.80	0.49
8,664.00	91.79	178.37	7,090.92	-1,598.93	190.59	1,599.49	0.33	-0.33	0.03
8,750.00	89.51	178.03	7,089.95	-1,684.88	193.30	1,685.44	2.68	-2.65	-0.40
8,835.00	89.38	178.15	7,090.77	-1,769.82	196.13	1,770.40	0.21	-0.15	0.14
8,921.00	90.80	178.51	7,090.64	-1,855.78	198.63	1,856.37	1.70	1.65	0.42
9,006.00	92.34	179.80	7,088.31	-1,940.74	199.89	1,941.32	2.36	1.81	1.52
9,091.00	93.39	181.71	7,084.06	-2,025.62	198.77	2,026.20	2.56	1.24	2.25
9,177.00	93.52	181.80	7,078.88	-2,111.42	196.14	2,112.00	0.18	0.15	0.10
9,262.00	92.22	182.14	7,074.62	-2,196.27	193.22	2,196.83	1.58	-1.53	0.40
9,348.00	90.00	182.47	7,072.96	-2,282.17	189.76	2,282.73	2.61	-2.58	0.38
9,433.00	91.36	181.42	7,071.95	-2,367.12	186.88	2,367.66	2.02	1.60	-1.24
9,519.00	91.23	180.88	7,070.00	-2,453.08	185.15	2,453.61	0.65	-0.15	-0.63
9,604.00	89.26	180.51	7,069.64	-2,538.06	184.12	2,538.60	2.36	-2.32	-0.44
9,689.00	88.21	180.52	7,071.52	-2,623.04	183.36	2,623.57	1.24	-1.24	0.01
9,775.00	89.14	180.24	7,073.50	-2,709.01	182.79	2,709.54	1.13	1.08	-0.33
9,860.00	88.83	179.50	7,075.01	-2,794.00	182.98	2,794.53	0.94	-0.36	-0.87
9,946.00	89.20	179.87	7,076.49	-2,879.99	183.45	2,880.52	0.61	0.43	0.43
10,031.00	90.06	180.20	7,077.04	-2,964.98	183.40	2,965.51	1.08	1.01	0.39
10,117.00	90.62	179.53	7,076.53	-3,050.98	183.61	3,051.51	1.02	0.65	-0.78
10,202.00	88.64	178.39	7,077.08	-3,135.96	185.15	3,136.49	2.69	-2.33	-1.34
10,287.00	89.26	178.73	7,078.63	-3,220.92	187.28	3,221.46	0.83	0.73	0.40
10,373.00	89.75	180.15	7,079.38	-3,306.91	188.12	3,307.45	1.75	0.57	1.65
10,458.00	91.60	181.17	7,078.38	-3,391.89	187.15	3,392.43	2.49	2.18	1.20
10,543.00	91.73	180.44	7,075.91	-3,476.85	185.95	3,477.38	0.87	0.15	-0.86
10,629.00	91.91	180.17	7,073.17	-3,562.80	185.49	3,563.34	0.38	0.21	-0.31
10,714.00	91.73	180.29	7,070.47	-3,647.76	185.15	3,648.29	0.25	-0.21	0.14
10,800.00	90.43	180.69	7,068.85	-3,733.74	184.42	3,734.27	1.58	-1.51	0.47
10,885.00	89.88	179.64	7,068.62	-3,818.73	184.17	3,819.26	1.39	-0.65	-1.24
10,971.00	90.00	179.57	7,068.71	-3,904.73	184.77	3,905.26	0.16	0.14	-0.08
11,056.00	90.55	178.76	7,068.31	-3,989.72	186.00	3,990.26	1.15	0.65	-0.95

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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)	
11,141.00	90.31	178.45	7,067.67	-4,074.69	188.07	4,075.23	0.46	-0.28	-0.36	
11,227.00	91.91	180.64	7,066.00	-4,160.67	188.76	4,161.21	3.15	1.86	2.55	
11,312.00	92.41	180.10	7,062.80	-4,245.60	188.21	4,246.14	0.87	0.59	-0.64	
11,398.00	91.48	181.28	7,059.88	-4,331.55	187.17	4,332.08	1.75	-1.08	1.37	
11,483.00	89.63	181.69	7,059.06	-4,416.51	184.97	4,417.04	2.23	-2.18	0.48	
11,568.00	88.64	180.65	7,060.34	-4,501.48	183.23	4,502.00	1.69	-1.16	-1.22	
11,654.00	88.89	181.65	7,062.19	-4,587.44	181.51	4,587.96	1.20	0.29	1.16	
11,739.00	89.51	180.05	7,063.38	-4,672.42	180.25	4,672.94	2.02	0.73	-1.88	
11,824.00	89.26	179.57	7,064.29	-4,757.42	180.53	4,757.93	0.64	-0.29	-0.56	
11,910.00	90.43	179.38	7,064.52	-4,843.41	181.32	4,843.93	1.38	1.36	-0.22	
11,996.00	92.90	178.89	7,062.03	-4,929.36	182.62	4,929.88	2.93	2.87	-0.57	
12,081.00	93.45	178.12	7,057.32	-5,014.20	184.83	5,014.72	1.11	0.65	-0.91	
12,166.00	91.30	178.10	7,053.80	-5,099.07	187.63	5,099.61	2.53	-2.53	-0.02	
12,252.00	91.05	178.02	7,052.03	-5,185.00	190.54	5,185.55	0.31	-0.29	-0.09	
12,337.00	91.91	178.52	7,049.84	-5,269.94	193.11	5,270.49	1.17	1.01	0.59	
12,422.00	91.42	179.41	7,047.37	-5,354.89	194.64	5,355.44	1.19	-0.58	1.05	
12,508.00	92.71	179.44	7,044.27	-5,440.82	195.50	5,441.38	1.50	1.50	0.03	
12,593.00	90.49	180.53	7,041.90	-5,525.78	195.53	5,526.34	2.91	-2.61	1.28	
12,678.00	89.82	180.59	7,041.67	-5,610.78	194.69	5,611.33	0.79	-0.79	0.07	
12,764.00	89.81	181.02	7,041.94	-5,696.77	193.49	5,697.32	0.50	-0.01	0.50	
12,849.00	89.63	181.17	7,042.36	-5,781.75	191.86	5,782.30	0.28	-0.21	0.18	
12,934.00	89.26	181.25	7,043.18	-5,866.73	190.07	5,867.27	0.45	-0.44	0.09	
13,019.00	88.52	181.53	7,044.83	-5,951.69	188.01	5,952.22	0.93	-0.87	0.33	
13,105.00	89.82	180.57	7,046.07	-6,037.66	186.43	6,038.19	1.88	1.51	-1.12	
13,190.00	89.38	180.75	7,046.67	-6,122.65	185.45	6,123.18	0.56	-0.52	0.21	
13,276.00	89.14	179.61	7,047.78	-6,208.65	185.18	6,209.17	1.35	-0.28	-1.33	
13,361.00	88.89	180.45	7,049.24	-6,293.63	185.14	6,294.15	1.03	-0.29	0.99	
13,447.00	88.64	178.97	7,051.09	-6,379.61	185.57	6,380.13	1.74	-0.29	-1.72	
13,532.00	89.01	177.45	7,052.84	-6,464.55	188.23	6,465.08	1.84	0.44	-1.79	
13,618.00	89.32	178.48	7,054.09	-6,550.48	191.28	6,551.02	1.25	0.36	1.20	
13,703.00	89.75	178.72	7,054.78	-6,635.45	193.36	6,636.00	0.58	0.51	0.28	
13,788.00	91.42	178.92	7,053.91	-6,720.43	195.11	6,720.98	1.98	1.96	0.24	
13,874.00	90.49	178.97	7,052.48	-6,806.40	196.69	6,806.95	1.08	-1.08	0.06	
13,959.00	89.69	178.95	7,052.34	-6,891.39	198.23	6,891.94	0.94	-0.94	-0.02	
14,045.00	89.01	179.23	7,053.32	-6,977.37	199.60	6,977.93	0.86	-0.79	0.33	
14,130.00	87.59	178.71	7,055.84	-7,062.31	201.13	7,062.88	1.78	-1.67	-0.61	
14,185.00	86.98	178.49	7,058.45	-7,117.24	202.47	7,117.81	1.18	-1.11	-0.40	
LAST WFT SURVEY										
14,242.00	86.98	178.49	7,061.45	-7,174.14	203.97	7,174.71	0.00	0.00	0.00	
PROJECTION TO TD										

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
7,404.00	7,077.17	7"	7	8-3/4	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
746.00	746.00	Fox Hills			
4,999.84	4,992.00	Sussex			
7,005.62	6,933.00	Sharon Springs			
7,065.33	6,969.00	Niobrara A			
7,190.63	7,029.00	Niobrara B			

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,791.00	1,790.99	0.94	-0.47	TIE ON	
1,888.00	1,887.99	0.88	-0.65	FIRST WFT SURVEY	
7,404.00	7,077.17	-339.56	174.83	7 IN. CASING	
14,185.00	7,058.45	-7,117.24	202.47	LAST WFT SURVEY	
14,242.00	7,061.45	-7,174.14	203.97	PROJECTION TO TD	

Checked By: _____ Approved By: _____ Date: _____

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_SPARBOE 4 PAD

SPARBOE 24N-3HZ

Wellbore #1

Design: ACTUAL

Survey Report - Geographic

13 March, 2013

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

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_SPARBOE 4 PAD				
Site Position:		Northing:	1,280,971.47 usft	Latitude:	40.101501
From:	Lat/Long	Easting:	3,238,883.56 usft	Longitude:	-104.646028
Position Uncertainty:	0.00 ft	Slot Radius:	13-3/16 "	Grid Convergence:	0.55 °

Well	SPARBOE 24N-3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,280,971.65 usft	Latitude:	40.101500
	+E/-W	0.00 ft	Easting:	3,238,943.70 usft	Longitude:	-104.645813
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	4,977.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	12/13/2012	(°)	(°)	(nT)
			8.57	66.78	52,828

Design	ACTUAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	16.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	16.00	0.00	0.00	333.74	

Survey Program	Date	3/13/2013			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
116.00	1,791.00	Survey #1 (Wellbore #1)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
1,888.00	14,242.00	Survey #2 (Wellbore #1)	MWD+IFR	MWD + IFR CORRECTION	

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude	
Depth	(°)	(°)	Depth	(ft)	(ft)	Northing	Easting			
(ft)			(ft)	(ft)	(ft)	(usft)	(usft)			
16.00	0.00	0.00	16.00	0.00	0.00	1,280,971.65	3,238,943.70	40.101500	-104.645813	
116.00	0.22	128.34	116.00	-0.12	0.15	1,280,971.54	3,238,943.85	40.101500	-104.645813	
216.00	0.21	147.68	216.00	-0.39	0.40	1,280,971.26	3,238,944.10	40.101499	-104.645812	
316.00	0.24	122.41	316.00	-0.66	0.67	1,280,971.00	3,238,944.38	40.101498	-104.645811	
416.00	0.16	123.10	416.00	-0.85	0.97	1,280,970.81	3,238,944.68	40.101498	-104.645810	
516.00	0.27	0.77	516.00	-0.69	1.09	1,280,970.97	3,238,944.79	40.101498	-104.645809	
616.00	0.32	56.23	616.00	-0.30	1.32	1,280,971.37	3,238,945.03	40.101499	-104.645809	
716.00	0.03	136.48	716.00	-0.16	1.57	1,280,971.51	3,238,945.27	40.101500	-104.645808	
816.00	0.22	259.07	816.00	-0.22	1.40	1,280,971.45	3,238,945.10	40.101499	-104.645808	
916.00	0.18	197.62	915.99	-0.40	1.17	1,280,971.26	3,238,944.87	40.101499	-104.645809	
1,016.00	0.18	191.17	1,015.99	-0.71	1.09	1,280,970.96	3,238,944.80	40.101498	-104.645809	

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
1,116.00	0.12	120.03	1,115.99	-0.91	1.15	1,280,970.75	3,238,944.86	40.101497	-104.645809	
1,216.00	0.34	289.61	1,215.99	-0.87	0.96	1,280,970.80	3,238,944.67	40.101498	-104.645810	
1,316.00	0.35	279.63	1,315.99	-0.72	0.38	1,280,970.94	3,238,944.09	40.101498	-104.645812	
1,416.00	0.29	328.73	1,415.99	-0.45	-0.05	1,280,971.20	3,238,943.65	40.101499	-104.645813	
1,516.00	0.19	57.90	1,515.99	-0.14	-0.04	1,280,971.51	3,238,943.66	40.101500	-104.645813	
1,616.00	0.34	330.82	1,615.99	0.20	-0.05	1,280,971.86	3,238,943.65	40.101501	-104.645813	
1,716.00	0.31	327.33	1,715.99	0.69	-0.34	1,280,972.34	3,238,943.35	40.101502	-104.645814	
1,791.00	0.13	348.27	1,790.99	0.94	-0.47	1,280,972.59	3,238,943.23	40.101503	-104.645815	
TIE ON										
1,888.00	0.28	224.52	1,887.99	0.88	-0.65	1,280,972.53	3,238,943.04	40.101502	-104.645816	
FIRST WFT SURVEY										
1,981.00	0.60	3.28	1,980.99	1.21	-0.79	1,280,972.85	3,238,942.90	40.101503	-104.645816	
2,074.00	2.17	37.84	2,073.96	3.08	0.32	1,280,974.74	3,238,943.99	40.101508	-104.645812	
2,168.00	3.43	40.30	2,167.84	6.63	3.23	1,280,978.32	3,238,946.87	40.101518	-104.645802	
2,261.00	4.43	42.69	2,260.62	11.40	7.47	1,280,983.12	3,238,951.06	40.101531	-104.645787	
2,354.00	4.20	40.26	2,353.36	16.63	12.10	1,280,988.40	3,238,955.64	40.101546	-104.645770	
2,447.00	4.13	38.09	2,446.11	21.87	16.37	1,280,993.68	3,238,959.86	40.101560	-104.645755	
2,541.00	4.26	35.96	2,539.86	27.36	20.51	1,280,999.21	3,238,963.94	40.101575	-104.645740	
2,634.00	3.89	38.31	2,632.63	32.63	24.49	1,281,004.52	3,238,967.88	40.101590	-104.645726	
2,727.00	3.18	32.58	2,725.45	37.28	27.84	1,281,009.20	3,238,971.18	40.101602	-104.645714	
2,821.00	3.53	23.20	2,819.29	42.14	30.38	1,281,014.08	3,238,973.67	40.101616	-104.645705	
2,906.00	3.75	28.83	2,904.12	46.98	32.75	1,281,018.94	3,238,976.00	40.101629	-104.645696	
2,991.00	4.56	30.74	2,988.89	52.32	35.82	1,281,024.31	3,238,979.01	40.101644	-104.645685	
3,077.00	4.39	32.32	3,074.63	58.04	39.33	1,281,030.06	3,238,982.47	40.101659	-104.645673	
3,162.00	3.76	37.02	3,159.42	63.01	42.75	1,281,035.07	3,238,985.84	40.101673	-104.645660	
3,248.00	4.34	42.51	3,245.20	67.66	46.64	1,281,039.76	3,238,989.69	40.101686	-104.645647	
3,333.00	4.01	51.10	3,329.98	71.90	51.13	1,281,044.04	3,238,994.13	40.101697	-104.645630	
3,419.00	4.18	54.03	3,415.76	75.63	56.00	1,281,047.82	3,238,998.97	40.101708	-104.645613	
3,504.00	3.89	38.78	3,500.55	79.69	60.32	1,281,051.92	3,239,003.25	40.101719	-104.645598	
3,589.00	3.51	38.63	3,585.37	83.97	63.75	1,281,056.24	3,239,006.64	40.101731	-104.645585	
3,675.00	3.50	34.05	3,671.21	88.21	66.86	1,281,060.50	3,239,009.71	40.101742	-104.645574	
3,760.00	3.68	39.25	3,756.04	92.47	70.04	1,281,064.79	3,239,012.85	40.101754	-104.645563	
3,846.00	3.83	32.91	3,841.86	97.02	73.35	1,281,069.37	3,239,016.11	40.101766	-104.645551	
3,931.00	3.37	34.89	3,926.69	101.45	76.32	1,281,073.83	3,239,019.04	40.101778	-104.645540	
4,017.00	3.16	37.02	4,012.55	105.41	79.19	1,281,077.83	3,239,021.87	40.101789	-104.645530	
4,102.00	3.89	33.76	4,097.39	109.68	82.20	1,281,082.12	3,239,024.84	40.101801	-104.645519	
4,188.00	3.56	31.68	4,183.21	114.38	85.23	1,281,086.85	3,239,027.82	40.101814	-104.645509	
4,273.00	3.99	25.98	4,268.02	119.28	87.91	1,281,091.78	3,239,030.46	40.101827	-104.645499	
4,358.00	4.50	25.04	4,352.79	124.96	90.62	1,281,097.48	3,239,033.11	40.101843	-104.645489	
4,444.00	3.92	20.52	4,438.56	130.77	93.07	1,281,103.32	3,239,035.51	40.101859	-104.645481	
4,529.00	4.99	18.48	4,523.30	137.00	95.26	1,281,109.57	3,239,037.64	40.101876	-104.645473	
4,615.00	6.11	14.90	4,608.90	144.97	97.63	1,281,117.56	3,239,039.93	40.101898	-104.645464	
4,700.00	5.79	24.70	4,693.44	153.24	100.58	1,281,125.85	3,239,042.80	40.101921	-104.645454	
4,785.00	5.48	27.11	4,778.03	160.75	104.22	1,281,133.40	3,239,046.37	40.101941	-104.645441	
4,870.00	5.28	26.16	4,862.66	167.87	107.80	1,281,140.55	3,239,049.87	40.101961	-104.645428	
4,956.00	4.85	45.51	4,948.33	173.97	112.14	1,281,146.69	3,239,054.15	40.101978	-104.645412	
5,041.00	5.18	54.92	5,033.00	178.69	117.84	1,281,151.47	3,239,059.81	40.101991	-104.645392	
5,127.00	3.92	42.51	5,118.73	183.09	123.00	1,281,155.92	3,239,064.93	40.102003	-104.645374	
5,212.00	3.23	39.63	5,203.57	187.08	126.49	1,281,159.94	3,239,068.39	40.102014	-104.645361	
5,298.00	3.53	43.41	5,289.42	190.87	129.86	1,281,163.76	3,239,071.71	40.102024	-104.645349	
5,383.00	3.44	42.42	5,374.26	194.65	133.38	1,281,167.58	3,239,075.20	40.102034	-104.645336	
5,469.00	2.15	33.75	5,460.15	197.90	136.01	1,281,170.85	3,239,077.80	40.102043	-104.645327	
5,554.00	2.43	41.79	5,545.09	200.57	138.10	1,281,173.54	3,239,079.86	40.102051	-104.645320	
5,639.00	2.23	11.49	5,630.02	203.53	139.63	1,281,176.52	3,239,081.36	40.102059	-104.645314	
5,724.00	2.50	23.87	5,714.95	206.85	140.71	1,281,179.84	3,239,082.41	40.102068	-104.645310	

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
5,810.00	3.22	30.22	5,800.84	210.65	142.68	1,281,183.67	3,239,084.35	40.102078	-104.645303	
5,895.00	4.04	33.35	5,885.67	215.21	145.53	1,281,188.26	3,239,087.15	40.102091	-104.645293	
5,981.00	3.46	39.65	5,971.49	219.74	148.85	1,281,192.82	3,239,090.43	40.102103	-104.645281	
6,066.00	3.00	34.50	6,056.35	223.55	151.75	1,281,196.65	3,239,093.29	40.102114	-104.645271	
6,152.00	2.96	41.91	6,142.23	227.06	154.51	1,281,200.19	3,239,096.01	40.102123	-104.645261	
6,237.00	3.22	52.52	6,227.11	230.14	157.87	1,281,203.30	3,239,099.34	40.102132	-104.645249	
6,323.00	2.77	47.17	6,312.99	233.02	161.31	1,281,206.22	3,239,102.76	40.102140	-104.645237	
6,422.00	1.78	47.27	6,411.91	235.69	164.19	1,281,208.92	3,239,105.61	40.102147	-104.645226	
6,451.00	1.78	49.45	6,440.90	236.29	164.87	1,281,209.52	3,239,106.28	40.102149	-104.645224	
6,494.00	2.13	135.41	6,483.88	236.16	165.93	1,281,209.40	3,239,107.35	40.102148	-104.645220	
6,537.00	5.05	160.86	6,526.80	233.80	167.12	1,281,207.05	3,239,108.56	40.102142	-104.645216	
6,579.00	9.61	169.13	6,568.44	228.61	168.38	1,281,201.87	3,239,109.87	40.102128	-104.645211	
6,622.00	13.97	168.43	6,610.53	219.99	170.10	1,281,193.28	3,239,111.68	40.102104	-104.645205	
6,665.00	17.10	167.99	6,651.95	208.72	172.46	1,281,182.03	3,239,114.14	40.102073	-104.645197	
6,707.00	21.22	171.21	6,691.62	195.17	174.91	1,281,168.49	3,239,116.72	40.102036	-104.645188	
6,750.00	25.94	175.57	6,731.02	178.09	176.82	1,281,151.43	3,239,118.80	40.101989	-104.645181	
6,793.00	30.21	178.24	6,768.95	157.89	177.88	1,281,131.25	3,239,120.05	40.101933	-104.645177	
6,835.00	32.70	178.39	6,804.78	135.98	178.53	1,281,109.35	3,239,120.91	40.101873	-104.645175	
6,878.00	37.49	178.47	6,839.95	111.28	179.20	1,281,084.65	3,239,121.82	40.101805	-104.645173	
6,921.00	41.53	181.77	6,873.12	83.93	179.11	1,281,057.31	3,239,122.00	40.101730	-104.645173	
6,964.00	44.44	182.74	6,904.57	54.64	177.95	1,281,028.01	3,239,121.12	40.101650	-104.645177	
7,006.00	49.42	182.40	6,933.25	24.00	176.58	1,280,997.35	3,239,120.04	40.101566	-104.645182	
7,049.00	54.66	181.95	6,959.69	-9.87	175.30	1,280,963.48	3,239,119.09	40.101473	-104.645187	
7,092.00	57.64	180.17	6,983.64	-45.57	174.65	1,280,927.77	3,239,118.78	40.101375	-104.645189	
7,135.00	61.87	178.66	7,005.29	-82.70	175.04	1,280,890.64	3,239,119.53	40.101273	-104.645188	
7,177.00	66.37	180.34	7,023.62	-120.47	175.36	1,280,852.87	3,239,120.21	40.101169	-104.645186	
7,220.00	68.82	181.04	7,040.01	-160.22	174.88	1,280,813.12	3,239,120.11	40.101060	-104.645188	
7,263.00	72.53	180.26	7,054.24	-200.79	174.42	1,280,772.55	3,239,120.04	40.100949	-104.645190	
7,306.00	78.23	180.13	7,065.09	-242.38	174.28	1,280,730.96	3,239,120.30	40.100835	-104.645190	
7,348.00	83.47	179.46	7,071.76	-283.83	174.43	1,280,689.52	3,239,120.85	40.100721	-104.645190	
7,404.00	85.44	179.72	7,077.17	-339.56	174.83	1,280,633.79	3,239,121.79	40.100568	-104.645188	
7 IN. CASING										
7,451.00	87.10	179.94	7,080.23	-386.46	174.96	1,280,586.89	3,239,122.38	40.100439	-104.645188	
7,545.00	87.71	179.21	7,084.48	-480.36	175.66	1,280,493.01	3,239,123.98	40.100181	-104.645185	
7,638.00	88.83	179.25	7,087.29	-573.31	176.91	1,280,400.07	3,239,126.12	40.099926	-104.645181	
7,731.00	90.18	180.06	7,088.09	-666.30	177.47	1,280,307.09	3,239,127.58	40.099671	-104.645179	
7,825.00	88.21	179.47	7,089.41	-760.29	177.86	1,280,213.12	3,239,128.87	40.099413	-104.645177	
7,918.00	88.71	179.53	7,091.91	-853.25	178.67	1,280,120.17	3,239,130.58	40.099158	-104.645175	
8,011.00	90.18	180.51	7,092.81	-946.24	178.63	1,280,027.18	3,239,131.44	40.098902	-104.645175	
8,105.00	88.64	180.09	7,093.78	-1,040.23	178.14	1,279,933.19	3,239,131.85	40.098644	-104.645176	
8,198.00	89.88	179.99	7,094.98	-1,133.22	178.08	1,279,840.20	3,239,132.68	40.098389	-104.645177	
8,291.00	90.31	179.38	7,094.83	-1,226.22	178.59	1,279,747.21	3,239,134.09	40.098134	-104.645175	
8,384.00	88.83	177.53	7,095.53	-1,319.18	181.10	1,279,654.28	3,239,137.49	40.097879	-104.645166	
8,478.00	90.43	177.88	7,096.13	-1,413.10	184.86	1,279,560.40	3,239,142.16	40.097621	-104.645152	
8,571.00	92.10	178.34	7,094.08	-1,506.02	187.93	1,279,467.52	3,239,146.12	40.097366	-104.645142	
8,664.00	91.79	178.37	7,090.92	-1,598.93	190.59	1,279,374.64	3,239,149.69	40.097111	-104.645132	
8,750.00	89.51	178.03	7,089.95	-1,684.88	193.30	1,279,288.72	3,239,153.22	40.096875	-104.645122	
8,835.00	89.38	178.15	7,090.77	-1,769.82	196.13	1,279,203.80	3,239,156.87	40.096642	-104.645112	
8,921.00	90.80	178.51	7,090.64	-1,855.78	198.63	1,279,117.87	3,239,160.20	40.096406	-104.645103	
9,006.00	92.34	179.80	7,088.31	-1,940.74	199.89	1,279,032.93	3,239,162.27	40.096172	-104.645099	
9,091.00	93.39	181.71	7,084.06	-2,025.62	198.77	1,278,948.05	3,239,161.97	40.095939	-104.645103	
9,177.00	93.52	181.80	7,078.88	-2,111.42	196.14	1,278,862.22	3,239,160.17	40.095704	-104.645112	
9,262.00	92.22	182.14	7,074.62	-2,196.27	193.22	1,278,777.36	3,239,158.07	40.095471	-104.645123	
9,348.00	90.00	182.47	7,072.96	-2,282.17	189.76	1,278,691.42	3,239,155.44	40.095235	-104.645135	
9,433.00	91.36	181.42	7,071.95	-2,367.12	186.88	1,278,606.45	3,239,153.37	40.095002	-104.645145	

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude	
9,519.00	91.23	180.88	7,070.00	-2,453.08	185.15	1,278,520.48	3,239,152.47	40.094766	-104.645151	
9,604.00	89.26	180.51	7,069.64	-2,538.06	184.12	1,278,435.48	3,239,152.26	40.094533	-104.645155	
9,689.00	88.21	180.52	7,071.52	-2,623.04	183.36	1,278,350.51	3,239,152.32	40.094299	-104.645158	
9,775.00	89.14	180.24	7,073.50	-2,709.01	182.79	1,278,264.53	3,239,152.58	40.094063	-104.645160	
9,860.00	88.83	179.50	7,075.01	-2,794.00	182.98	1,278,179.55	3,239,153.59	40.093830	-104.645159	
9,946.00	89.20	179.87	7,076.49	-2,879.99	183.45	1,278,093.57	3,239,154.89	40.093594	-104.645158	
10,031.00	90.06	180.20	7,077.04	-2,964.98	183.40	1,278,008.58	3,239,155.65	40.093361	-104.645158	
10,117.00	90.62	179.53	7,076.53	-3,050.98	183.61	1,277,922.59	3,239,156.69	40.093125	-104.645157	
10,202.00	88.64	178.39	7,077.08	-3,135.96	185.15	1,277,837.63	3,239,159.05	40.092891	-104.645151	
10,287.00	89.26	178.73	7,078.63	-3,220.92	187.28	1,277,752.70	3,239,162.00	40.092658	-104.645144	
10,373.00	89.75	180.15	7,079.38	-3,306.91	188.12	1,277,666.72	3,239,163.67	40.092422	-104.645141	
10,458.00	91.60	181.17	7,078.38	-3,391.89	187.15	1,277,581.73	3,239,163.51	40.092189	-104.645144	
10,543.00	91.73	180.44	7,075.91	-3,476.85	185.95	1,277,496.77	3,239,163.13	40.091956	-104.645149	
10,629.00	91.91	180.17	7,073.17	-3,562.80	185.49	1,277,410.81	3,239,163.50	40.091720	-104.645150	
10,714.00	91.73	180.29	7,070.47	-3,647.76	185.15	1,277,325.86	3,239,163.98	40.091486	-104.645151	
10,800.00	90.43	180.69	7,068.85	-3,733.74	184.42	1,277,239.87	3,239,164.07	40.091250	-104.645154	
10,885.00	89.88	179.64	7,068.62	-3,818.73	184.17	1,277,154.88	3,239,164.65	40.091017	-104.645155	
10,971.00	90.00	179.57	7,068.71	-3,904.73	184.77	1,277,068.89	3,239,166.07	40.090781	-104.645153	
11,056.00	90.55	178.76	7,068.31	-3,989.72	186.00	1,276,983.92	3,239,168.13	40.090548	-104.645148	
11,141.00	90.31	178.45	7,067.67	-4,074.69	188.07	1,276,898.97	3,239,171.01	40.090314	-104.645141	
11,227.00	91.91	180.64	7,066.00	-4,160.67	188.76	1,276,813.01	3,239,172.53	40.090078	-104.645139	
11,312.00	92.41	180.10	7,062.80	-4,245.60	188.21	1,276,728.07	3,239,172.80	40.089845	-104.645141	
11,398.00	91.48	181.28	7,059.88	-4,331.55	187.17	1,276,642.12	3,239,172.59	40.089609	-104.645144	
11,483.00	89.63	181.69	7,059.06	-4,416.51	184.97	1,276,557.14	3,239,171.20	40.089376	-104.645152	
11,568.00	88.64	180.65	7,060.34	-4,501.48	183.23	1,276,472.16	3,239,170.29	40.089143	-104.645158	
11,654.00	88.89	181.65	7,062.19	-4,587.44	181.51	1,276,386.18	3,239,169.39	40.088907	-104.645165	
11,739.00	89.51	180.05	7,063.38	-4,672.42	180.25	1,276,301.19	3,239,168.95	40.088673	-104.645169	
11,824.00	89.26	179.57	7,064.29	-4,757.42	180.53	1,276,216.21	3,239,170.05	40.088440	-104.645168	
11,910.00	90.43	179.38	7,064.52	-4,843.41	181.32	1,276,130.22	3,239,171.66	40.088204	-104.645165	
11,996.00	92.90	178.89	7,062.03	-4,929.36	182.62	1,276,044.29	3,239,173.79	40.087968	-104.645161	
12,081.00	93.45	178.12	7,057.32	-5,014.20	184.83	1,275,959.48	3,239,176.82	40.087735	-104.645153	
12,166.00	91.30	178.10	7,053.80	-5,099.07	187.63	1,275,874.64	3,239,180.44	40.087502	-104.645143	
12,252.00	91.05	178.02	7,052.03	-5,185.00	190.54	1,275,788.73	3,239,184.18	40.087266	-104.645132	
12,337.00	91.91	178.52	7,049.84	-5,269.94	193.11	1,275,703.83	3,239,187.56	40.087033	-104.645123	
12,422.00	91.42	179.41	7,047.37	-5,354.89	194.64	1,275,618.90	3,239,189.91	40.086800	-104.645118	
12,508.00	92.71	179.44	7,044.27	-5,440.82	195.50	1,275,532.98	3,239,191.60	40.086564	-104.645115	
12,593.00	90.49	180.53	7,041.90	-5,525.78	195.53	1,275,448.02	3,239,192.44	40.086331	-104.645114	
12,678.00	89.82	180.59	7,041.67	-5,610.78	194.69	1,275,363.02	3,239,192.43	40.086098	-104.645117	
12,764.00	89.81	181.02	7,041.94	-5,696.77	193.49	1,275,277.02	3,239,192.05	40.085861	-104.645122	
12,849.00	89.63	181.17	7,042.36	-5,781.75	191.86	1,275,192.03	3,239,191.25	40.085628	-104.645128	
12,934.00	89.26	181.25	7,043.18	-5,866.73	190.07	1,275,107.04	3,239,190.27	40.085395	-104.645134	
13,019.00	88.52	181.53	7,044.83	-5,951.69	188.01	1,275,022.06	3,239,189.03	40.085162	-104.645141	
13,105.00	89.82	180.57	7,046.07	-6,037.66	186.43	1,274,936.08	3,239,188.28	40.084926	-104.645147	
13,190.00	89.38	180.75	7,046.67	-6,122.65	185.45	1,274,851.08	3,239,188.12	40.084692	-104.645150	
13,276.00	89.14	179.61	7,047.78	-6,208.65	185.18	1,274,765.09	3,239,188.68	40.084456	-104.645151	
13,361.00	88.89	180.45	7,049.24	-6,293.63	185.14	1,274,680.11	3,239,189.45	40.084223	-104.645152	
13,447.00	88.64	178.97	7,051.09	-6,379.61	185.57	1,274,594.14	3,239,190.72	40.083987	-104.645150	
13,532.00	89.01	177.45	7,052.84	-6,464.55	188.23	1,274,509.23	3,239,194.19	40.083754	-104.645141	
13,618.00	89.32	178.48	7,054.09	-6,550.48	191.28	1,274,423.33	3,239,198.07	40.083518	-104.645130	
13,703.00	89.75	178.72	7,054.78	-6,635.45	193.36	1,274,338.38	3,239,200.96	40.083285	-104.645122	
13,788.00	91.42	178.92	7,053.91	-6,720.43	195.11	1,274,253.43	3,239,203.53	40.083051	-104.645116	
13,874.00	90.49	178.97	7,052.48	-6,806.40	196.69	1,274,167.48	3,239,205.94	40.082815	-104.645110	
13,959.00	89.69	178.95	7,052.34	-6,891.39	198.23	1,274,082.51	3,239,208.31	40.082582	-104.645105	
14,045.00	89.01	179.23	7,053.32	-6,977.37	199.60	1,273,996.54	3,239,210.50	40.082346	-104.645100	
14,130.00	87.59	178.71	7,055.84	-7,062.31	201.13	1,273,911.62	3,239,212.84	40.082113	-104.645094	

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 24N-3HZ
Project:	COLORADO NORTHERN ZONE - 83	TVD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Site:	WELD_SPARBOE 4 PAD	MD Reference:	16'RKB+4977'GL @ 4993.00ft (XTREME 23)
Well:	SPARBOE 24N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
14,185.00	86.98	178.49	7,058.45	-7,117.24	202.47	1,273,856.71	3,239,214.72	40.081962	-104.645090
LAST WFT SURVEY									
14,242.00	86.98	178.49	7,061.45	-7,174.14	203.97	1,273,799.83	3,239,216.76	40.081806	-104.645084
PROJECTION TO TD									

Checked By: _____ Approved By: _____ Date: _____