



Weatherford®

Weatherford
2000 Oil Drive
Casper, WY 82604

Survey Certification

Operating Company:	Anadarko Petroleum Corp.
Well Name:	SPARBOE 7N-3HZ
State:	CO
County:	WELD
API Number:	512336235
Datum:	NAD 83
Survey Calculation Method:	Minimum Curvature
North Reference:	True North

I, J. Aaron Underwood, hereby certify the attached
directional survey run from the measure depth of 1,903.00 feet
to the measured depth of 13,900.00 feet as accurate and true
to the best of my knowledge.

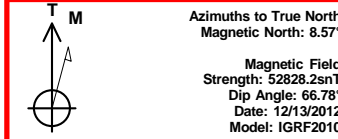
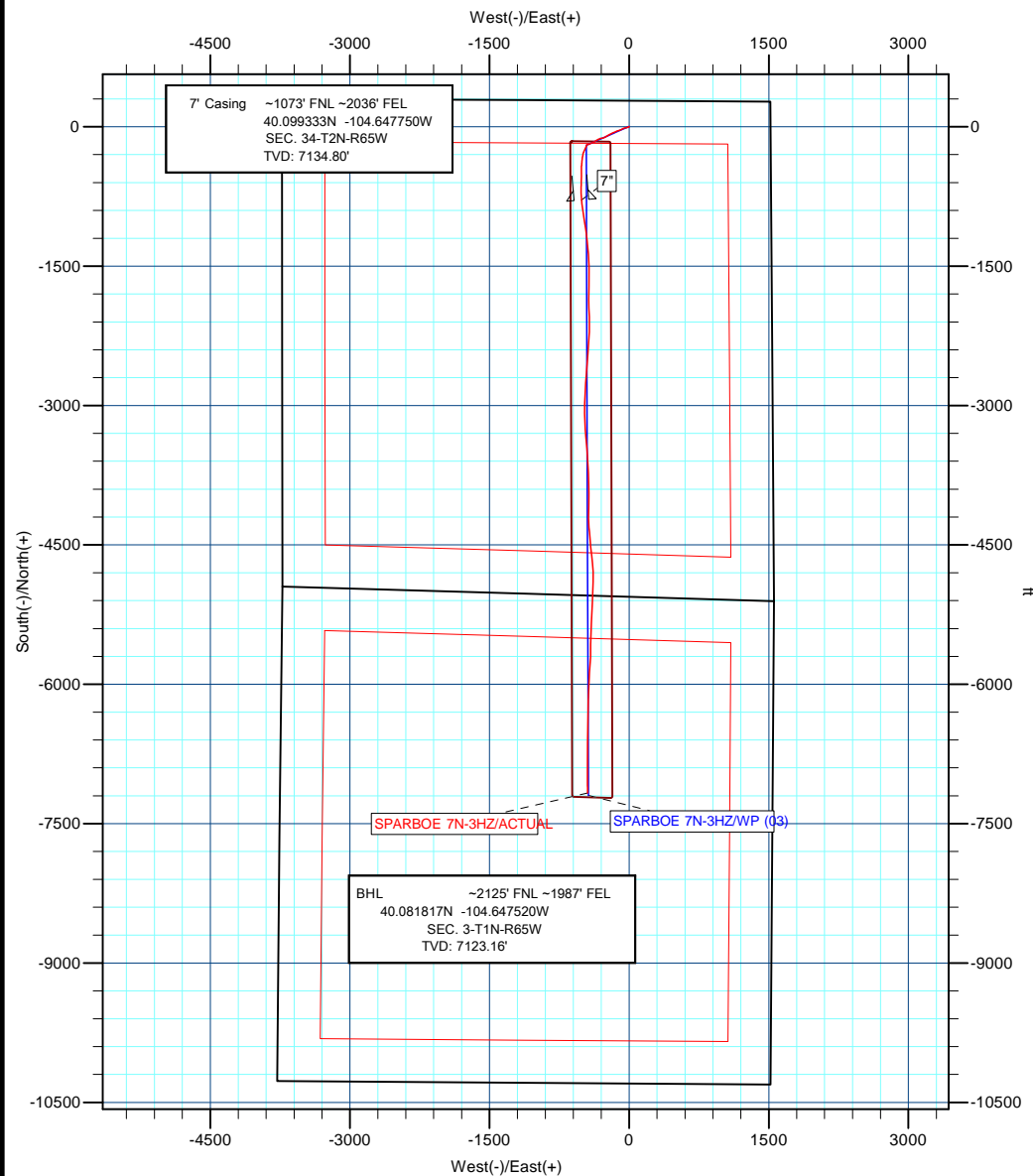
Signature

22-Feb-13

Date

J. Aaron Underwood

Directional Planning
Weatherford - Rockies District



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



Project: COLORADO NORTHERN ZONE - 83
Site: WELD SPARBOE 4 PAD
Well: SPARBOE 7N-3HZ
Wellbore: Wellbore #1
Design: ACTUAL
Latitude: 40.101501
Longitude: -104.645921
GL: 4977.00
KB: 16'RKB+4977'GL @ 4993.00ft (XTREME 23)

WELL DETAILS: SPARBOE 7N-3HZ

+N/-S	+E/-W	Northing	Ground Level: Easting	4977.00 Latitude	Longitude	Slot
0.00	0.00	1280971.75	3238913.48	40.101501	-104.645921	

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	V/Sect	Departure	Annotation
1775.99	1776.00	0.15	338.09	2.93	-0.59	-2.93	5.35	TIE ON
1902.99	1903.00	0.53	144.71	2.60	-0.31	-2.61	6.11	FIRST MWD SURVEY
7134.80	7504.50	86.30	175.49	-789.77	-511.45	788.16	1110.71	7 IN. CASING
7117.33	13843.00	84.13	178.19	-7113.77	-447.46	7112.33	7446.62	LAST MWD SURVEY
7123.16	13900.00	84.13	178.19	-7170.45	-445.67	7169.01	7503.32	PROJECTION TO TD

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

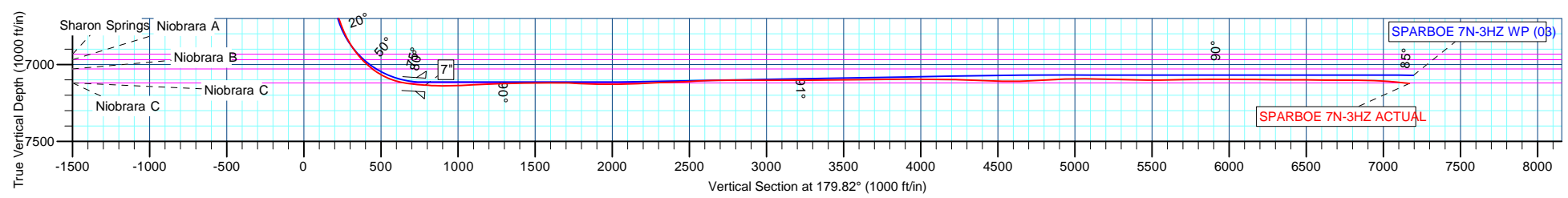
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
SPARBOE 7N-3HZ Rev. PBHL	7070.00	-7196.67	-438.76	40.081745	-104.647489	Point

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
746.00	746.00	Fox Hills
4992.00	5017.08	Sussex
6933.00	7001.48	Sharon Springs
6969.00	7048.87	Niobrara A
7029.00	7138.67	Niobrara B
7120.00	7365.59	Niobrara C

CASING DETAILS

TVD	MD	Name	Size
7134.80	7504.50	7"	7"



US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_SPARBOE 4 PAD

SPARBOE 7N-3HZ

Wellbore #1

Design: ACTUAL

Standard Survey Report

21 February, 2013

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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 7N-3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,280,971.75 usft	Latitude:	40.101501
	+E/-W	0.00 ft	Easting:	3,238,913.49 usft	Longitude:	-104.645921
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
			(°)	(°)	(nT)
	IGRF2010	12/13/2012	8.57	66.78	52,828

Design	ACTUAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.00	0.00	0.00	348.66	

Survey Program	Date	2/21/2013			
From	To	Survey (Wellbore)	Tool Name	Description	
(ft)	(ft)				
16.00	1,776.00	Survey #1 (Wellbore #1)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
1,903.00	13,900.00	Survey #2 (Wellbore #1)	MWD	MWD - STANDARD	

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00	0.00	0.00	
116.00	0.18	43.90	116.00	0.11	0.11	0.09	0.18	0.18	0.00	
216.00	0.17	132.93	216.00	0.13	0.33	0.06	0.25	-0.01	89.03	
316.00	0.16	66.45	316.00	0.08	0.56	-0.03	0.18	-0.01	-66.48	
416.00	0.11	195.15	416.00	0.04	0.67	-0.09	0.24	-0.05	128.70	
516.00	0.09	147.66	516.00	-0.12	0.68	-0.25	0.08	-0.02	-47.49	
616.00	0.14	279.14	616.00	-0.16	0.60	-0.28	0.21	0.05	131.48	
716.00	0.04	223.58	716.00	-0.17	0.46	-0.26	0.12	-0.10	-55.56	
816.00	0.30	327.78	816.00	0.03	0.30	-0.03	0.31	0.26	104.20	

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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)
916.00	0.03	66.00	916.00	0.26	0.18	0.22	0.31	-0.27	98.22
1,016.00	0.06	66.56	1,016.00	0.29	0.25	0.24	0.03	0.03	0.56
1,116.00	0.28	5.04	1,116.00	0.56	0.32	0.48	0.26	0.22	-61.52
1,216.00	0.14	0.16	1,216.00	0.92	0.34	0.84	0.14	-0.14	-4.88
1,316.00	0.37	308.59	1,316.00	1.24	0.09	1.20	0.30	0.23	-51.57
1,416.00	0.09	60.52	1,416.00	1.48	-0.09	1.47	0.41	-0.28	111.93
1,516.00	0.22	7.62	1,515.99	1.71	0.00	1.68	0.18	0.13	-52.90
1,616.00	0.37	331.27	1,615.99	2.19	-0.13	2.17	0.23	0.15	-36.35
1,716.00	0.34	324.61	1,715.99	2.71	-0.46	2.75	0.05	-0.03	-6.66
1,776.00	0.15	338.09	1,775.99	2.93	-0.59	2.99	0.33	-0.32	22.47
TIE ON									
1,903.00	0.53	144.71	1,902.99	2.60	-0.31	2.61	0.53	0.30	131.20
FIRST MWD SURVEY									
1,979.00	1.26	202.97	1,978.98	1.55	-0.43	1.60	1.42	0.96	76.66
2,072.00	3.01	237.27	2,071.92	-0.71	-2.89	-0.13	2.25	1.88	36.88
2,166.00	4.47	248.24	2,165.71	-3.41	-8.37	-1.69	1.72	1.55	11.67
2,259.00	6.28	254.36	2,258.30	-6.12	-16.63	-2.73	2.04	1.95	6.58
2,352.00	7.60	255.06	2,350.62	-9.08	-27.47	-3.50	1.42	1.42	0.75
2,446.00	6.51	255.52	2,443.91	-12.01	-38.64	-4.18	1.16	-1.16	0.49
2,539.00	8.13	256.26	2,536.14	-14.89	-50.13	-4.74	1.74	1.74	0.80
2,633.00	7.71	247.76	2,629.25	-18.86	-62.42	-6.21	1.32	-0.45	-9.04
2,726.00	7.98	242.71	2,721.38	-24.18	-73.93	-9.16	0.80	0.29	-5.43
2,819.00	7.20	243.31	2,813.57	-29.76	-84.88	-12.48	0.84	-0.84	0.65
2,905.00	7.19	249.52	2,898.89	-34.06	-94.74	-14.76	0.90	-0.01	7.22
2,990.00	8.32	250.10	2,983.11	-38.02	-105.50	-16.52	1.33	1.33	0.68
3,075.00	7.75	251.62	3,067.28	-41.92	-116.72	-18.14	0.72	-0.67	1.79
3,161.00	7.15	251.41	3,152.55	-45.45	-127.30	-19.52	0.70	-0.70	-0.24
3,246.00	6.26	249.37	3,236.97	-48.77	-136.65	-20.94	1.08	-1.05	-2.40
3,332.00	7.02	245.84	3,322.39	-52.57	-145.83	-22.86	1.00	0.88	-4.10
3,417.00	7.48	247.79	3,406.71	-56.79	-155.69	-25.05	0.61	0.54	2.29
3,502.00	6.24	248.60	3,491.10	-60.57	-165.12	-26.90	1.46	-1.46	0.95
3,588.00	6.10	241.00	3,576.60	-64.49	-173.47	-29.11	0.96	-0.16	-8.84
3,673.00	6.12	240.21	3,661.12	-68.93	-181.35	-31.91	0.10	0.02	-0.93
3,759.00	6.65	245.01	3,746.59	-73.31	-189.84	-34.53	0.87	0.62	5.58
3,844.00	7.06	248.48	3,830.98	-77.31	-199.16	-36.62	0.69	0.48	4.08
3,930.00	8.28	239.56	3,916.21	-82.38	-209.42	-39.58	1.98	1.42	-10.37
4,015.00	8.02	237.14	4,000.36	-88.70	-219.67	-43.76	0.51	-0.31	-2.85
4,100.00	7.24	240.07	4,084.60	-94.59	-229.30	-47.64	1.03	-0.92	3.45
4,186.00	6.87	241.70	4,169.95	-99.73	-238.52	-50.86	0.49	-0.43	1.90
4,271.00	7.02	232.79	4,254.33	-105.28	-247.14	-54.61	1.28	0.18	-10.48
4,356.00	6.96	241.42	4,338.70	-110.89	-255.80	-58.41	1.24	-0.07	10.15
4,442.00	7.02	245.58	4,424.06	-115.55	-265.16	-61.14	0.59	0.07	4.84
4,527.00	9.26	255.12	4,508.20	-119.46	-276.50	-62.74	3.07	2.64	11.22

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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)
4,612.00	9.94	259.65	4,592.01	-122.53	-290.32	-63.03	1.20	0.80	5.33
4,698.00	9.80	256.52	4,676.74	-125.57	-304.74	-63.17	0.64	-0.16	-3.64
4,783.00	9.61	247.95	4,760.53	-129.92	-318.35	-64.76	1.71	-0.22	-10.08
4,868.00	9.20	243.77	4,844.39	-135.59	-331.03	-67.82	0.94	-0.48	-4.92
4,954.00	7.70	239.58	4,929.45	-141.54	-342.16	-71.47	1.88	-1.74	-4.87
5,039.00	6.96	235.95	5,013.76	-147.31	-351.34	-75.32	1.03	-0.87	-4.27
5,125.00	7.18	236.79	5,099.10	-153.17	-360.15	-79.34	0.28	0.26	0.98
5,210.00	7.69	239.19	5,183.39	-159.00	-369.48	-83.21	0.70	0.60	2.82
5,295.00	6.81	249.51	5,267.71	-163.67	-379.09	-85.91	1.85	-1.04	12.14
5,381.00	7.79	246.55	5,353.01	-167.78	-389.21	-87.94	1.22	1.14	-3.44
5,466.00	5.74	243.97	5,437.42	-171.94	-398.32	-90.22	2.44	-2.41	-3.04
5,552.00	6.69	246.86	5,522.91	-175.79	-406.79	-92.34	1.16	1.10	3.36
5,637.00	6.73	245.19	5,607.33	-179.83	-415.86	-94.51	0.23	0.05	-1.96
5,723.00	5.28	245.03	5,692.86	-183.61	-424.02	-96.62	1.69	-1.69	-0.19
5,808.00	4.20	247.84	5,777.56	-186.44	-430.45	-98.12	1.30	-1.27	3.31
5,893.00	3.51	248.17	5,862.37	-188.58	-435.75	-99.18	0.81	-0.81	0.39
5,979.00	3.47	257.38	5,948.21	-190.13	-440.73	-99.72	0.65	-0.05	10.71
6,064.00	3.30	258.65	6,033.06	-191.17	-445.64	-99.77	0.22	-0.20	1.49
6,150.00	1.88	242.70	6,118.98	-192.30	-449.32	-100.16	1.84	-1.65	-18.55
6,235.00	1.35	239.03	6,203.94	-193.46	-451.42	-100.88	0.63	-0.62	-4.32
6,320.00	1.24	238.25	6,288.92	-194.46	-453.06	-101.54	0.13	-0.13	-0.92
6,406.00	0.85	239.53	6,374.91	-195.27	-454.40	-102.07	0.45	-0.45	1.49
6,487.00	0.70	279.26	6,455.90	-195.50	-455.41	-102.09	0.67	-0.19	49.05
6,535.00	0.49	254.72	6,503.90	-195.50	-455.90	-102.01	0.68	-0.44	-51.13
6,578.00	5.67	199.65	6,546.82	-197.55	-456.79	-103.84	12.57	12.05	-128.07
6,620.00	10.71	199.82	6,588.38	-203.18	-458.81	-108.96	12.00	12.00	0.40
6,663.00	12.64	200.24	6,630.49	-211.36	-461.79	-116.39	4.49	4.49	0.98
6,706.00	15.50	202.66	6,672.19	-221.07	-465.64	-125.16	6.79	6.65	5.63
6,748.00	19.81	202.78	6,712.21	-232.82	-470.56	-135.71	10.26	10.26	0.29
6,791.00	23.94	205.48	6,752.10	-247.42	-477.13	-148.73	9.88	9.60	6.28
6,834.00	25.80	205.13	6,791.11	-263.77	-484.86	-163.24	4.34	4.33	-0.81
6,876.00	28.17	198.68	6,828.55	-281.44	-491.92	-179.18	8.96	5.64	-15.36
6,919.00	31.57	190.48	6,865.84	-302.14	-497.22	-198.43	12.34	7.91	-19.07
6,962.00	36.14	188.64	6,901.55	-325.76	-501.18	-220.81	10.89	10.63	-4.28
7,004.00	38.35	187.30	6,934.98	-350.93	-504.69	-244.80	5.60	5.26	-3.19
7,047.00	42.79	185.96	6,967.63	-378.70	-507.91	-271.40	10.52	10.33	-3.12
7,090.00	47.91	183.75	6,997.84	-409.17	-510.47	-300.77	12.45	11.91	-5.14
7,132.00	51.83	182.42	7,024.91	-441.23	-512.18	-331.86	9.64	9.33	-3.17
7,175.00	56.54	180.63	7,050.07	-476.08	-513.10	-365.85	11.46	10.95	-4.16
7,218.00	61.46	179.28	7,072.21	-512.92	-513.06	-401.98	11.75	11.44	-3.14
7,260.00	67.49	179.97	7,090.30	-550.80	-512.81	-439.17	14.43	14.36	1.64
7,303.00	71.94	181.98	7,105.20	-591.12	-513.51	-478.56	11.24	10.35	4.67
7,346.00	78.17	182.22	7,116.29	-632.62	-515.03	-518.95	14.50	14.49	0.56
7,389.00	82.13	180.39	7,123.64	-674.96	-515.99	-560.27	10.12	9.21	-4.26

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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)
7,454.00	84.96	177.23	7,130.95	-739.52	-514.65	-623.84	6.50	4.35	-4.86
7,504.50	86.30	175.49	7,134.80	-789.77	-511.45	-673.73	4.34	2.64	-3.45
7 IN. CASING									
7,614.00	89.20	171.72	7,139.11	-898.47	-499.26	-782.71	4.34	2.65	-3.44
7,739.00	92.96	170.81	7,136.75	-1,021.98	-480.28	-907.53	3.09	3.01	-0.73
7,832.00	93.21	171.19	7,131.74	-1,113.70	-465.76	-1,000.32	0.49	0.27	0.41
7,926.00	92.22	173.71	7,127.29	-1,206.77	-453.42	-1,094.00	2.88	-1.05	2.68
8,019.00	91.23	175.08	7,124.49	-1,299.28	-444.34	-1,186.49	1.82	-1.06	1.47
8,112.00	91.42	175.89	7,122.34	-1,391.96	-437.02	-1,278.80	0.89	0.20	0.87
8,206.00	90.56	178.08	7,120.72	-1,485.81	-432.08	-1,371.79	2.50	-0.91	2.33
8,299.00	89.69	180.07	7,120.51	-1,578.80	-430.58	-1,463.25	2.34	-0.94	2.14
8,392.00	90.25	181.24	7,120.56	-1,671.79	-431.64	-1,554.22	1.39	0.60	1.26
8,485.00	87.16	180.61	7,122.66	-1,764.74	-433.14	-1,645.06	3.39	-3.32	-0.68
8,579.00	88.15	180.33	7,126.51	-1,858.66	-433.91	-1,736.99	1.09	1.05	-0.30
8,672.00	88.77	177.59	7,129.01	-1,951.60	-432.23	-1,828.45	3.02	0.67	-2.95
8,766.00	91.17	178.32	7,129.06	-2,045.53	-428.87	-1,921.21	2.67	2.55	0.78
8,859.00	92.71	179.71	7,125.91	-2,138.46	-427.27	-2,012.63	2.23	1.66	1.49
8,953.00	93.09	182.77	7,121.15	-2,232.31	-429.30	-2,104.25	3.28	0.40	3.26
9,038.00	91.17	184.37	7,117.99	-2,317.08	-434.59	-2,186.32	2.94	-2.26	1.88
9,124.00	92.47	184.37	7,115.26	-2,402.78	-441.14	-2,269.06	1.51	1.51	0.00
9,209.00	93.02	184.23	7,111.19	-2,487.44	-447.51	-2,350.82	0.67	0.65	-0.16
9,294.00	93.08	184.71	7,106.67	-2,572.06	-454.12	-2,432.48	0.57	0.07	0.56
9,380.00	91.23	183.51	7,103.44	-2,657.78	-460.28	-2,515.31	2.56	-2.15	-1.40
9,465.00	90.06	183.38	7,102.48	-2,742.62	-465.39	-2,597.49	1.38	-1.38	-0.15
9,551.00	90.06	183.42	7,102.39	-2,828.47	-470.49	-2,680.66	0.05	0.00	0.05
9,637.00	90.12	181.93	7,102.25	-2,914.37	-474.50	-2,764.09	1.73	0.07	-1.73
9,721.00	90.12	181.99	7,102.08	-2,998.32	-477.38	-2,845.84	0.07	0.00	0.07
9,807.00	89.63	179.66	7,102.27	-3,084.30	-478.61	-2,929.90	2.77	-0.57	-2.71
9,892.00	90.12	177.11	7,102.45	-3,169.26	-476.22	-3,013.67	3.05	0.58	-3.00
9,978.00	90.37	176.37	7,102.08	-3,255.12	-471.33	-3,098.81	0.91	0.29	-0.86
10,063.00	89.94	174.46	7,101.85	-3,339.85	-464.53	-3,183.22	2.30	-0.51	-2.25
10,148.00	90.06	175.82	7,101.85	-3,424.54	-457.33	-3,267.67	1.61	0.14	1.60
10,234.00	92.22	176.48	7,100.14	-3,510.32	-451.56	-3,352.91	2.63	2.51	0.77
10,319.00	90.49	175.89	7,098.13	-3,595.11	-445.91	-3,437.15	2.15	-2.04	-0.69
10,405.00	89.57	176.88	7,098.09	-3,680.93	-440.48	-3,522.37	1.57	-1.07	1.15
10,490.00	90.68	178.04	7,097.90	-3,765.85	-436.72	-3,606.37	1.89	1.31	1.36
10,575.00	90.99	178.40	7,096.66	-3,850.80	-434.08	-3,690.18	0.56	0.36	0.42
10,661.00	90.06	179.12	7,095.88	-3,936.77	-432.22	-3,774.84	1.37	-1.08	0.84
10,746.00	89.69	182.02	7,096.06	-4,021.76	-433.06	-3,858.00	3.44	-0.44	3.41
10,832.00	88.71	180.87	7,097.26	-4,107.72	-435.23	-3,941.85	1.76	-1.14	-1.34
10,917.00	89.57	180.28	7,098.54	-4,192.70	-436.08	-4,025.01	1.23	1.01	-0.69
11,002.00	87.84	176.64	7,100.46	-4,277.63	-433.80	-4,108.73	4.74	-2.04	-4.28
11,087.00	87.47	173.84	7,103.94	-4,362.26	-426.75	-4,193.09	3.32	-0.44	-3.29

Anadarko Petroleum Corp

Survey Report

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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)
11,173.00	88.46	175.95	7,106.99	-4,447.86	-419.11	-4,278.52	2.71	1.15	2.45
11,258.00	87.72	173.72	7,109.83	-4,532.46	-411.46	-4,362.97	2.76	-0.87	-2.62
11,344.00	92.10	173.83	7,109.96	-4,617.93	-402.14	-4,448.61	5.09	5.09	0.13
11,429.00	92.84	173.59	7,106.30	-4,702.34	-392.83	-4,533.20	0.92	0.87	-0.28
11,515.00	92.59	179.00	7,102.22	-4,788.04	-387.29	-4,618.31	6.29	-0.29	6.29
11,600.00	92.04	180.08	7,098.79	-4,872.96	-386.60	-4,701.71	1.42	-0.65	1.27
11,685.00	92.78	182.14	7,095.21	-4,957.87	-388.25	-4,784.63	2.57	0.87	2.42
11,771.00	90.12	183.75	7,093.04	-5,043.71	-392.67	-4,867.93	3.62	-3.09	1.87
11,856.00	88.59	182.80	7,093.99	-5,128.57	-397.52	-4,950.17	2.12	-1.80	-1.12
11,942.00	88.64	182.60	7,096.07	-5,214.45	-401.57	-5,033.58	0.24	0.06	-0.23
12,027.00	88.34	182.00	7,098.31	-5,299.35	-404.98	-5,116.15	0.79	-0.35	-0.71
12,112.00	89.14	181.14	7,100.18	-5,384.29	-407.31	-5,198.98	1.38	0.94	-1.01
12,198.00	89.57	181.57	7,101.15	-5,470.26	-409.34	-5,282.87	0.71	0.50	0.50
12,283.00	90.12	180.66	7,101.38	-5,555.25	-411.00	-5,365.86	1.25	0.65	-1.07
12,368.00	90.56	180.94	7,100.87	-5,640.24	-412.18	-5,448.96	0.61	0.52	0.33
12,454.00	92.16	184.28	7,098.83	-5,726.11	-416.10	-5,532.38	4.31	1.86	3.88
12,539.00	89.81	183.56	7,097.37	-5,810.89	-421.91	-5,614.37	2.89	-2.76	-0.85
12,625.00	90.86	184.35	7,096.87	-5,896.68	-427.84	-5,697.32	1.53	1.22	0.92
12,710.00	89.94	182.75	7,096.28	-5,981.51	-433.10	-5,779.46	2.17	-1.08	-1.88
12,796.00	89.38	181.72	7,096.79	-6,067.44	-436.45	-5,863.05	1.36	-0.65	-1.20
12,881.00	89.26	181.57	7,097.79	-6,152.40	-438.89	-5,945.87	0.23	-0.14	-0.18
12,966.00	88.77	181.62	7,099.26	-6,237.36	-441.26	-6,028.70	0.58	-0.58	0.06
13,052.00	89.69	180.83	7,100.41	-6,323.33	-443.10	-6,112.63	1.41	1.07	-0.92
13,137.00	89.82	181.07	7,100.78	-6,408.32	-444.51	-6,195.68	0.32	0.15	0.28
13,223.00	89.94	181.20	7,100.96	-6,494.30	-446.21	-6,279.64	0.21	0.14	0.15
13,308.00	89.63	180.07	7,101.27	-6,579.29	-447.15	-6,362.79	1.38	-0.36	-1.33
13,394.00	89.81	179.83	7,101.69	-6,665.29	-447.08	-6,447.12	0.35	0.21	-0.28
13,479.00	89.88	180.60	7,101.92	-6,750.29	-447.40	-6,530.40	0.91	0.08	0.91
13,564.00	89.07	180.59	7,102.70	-6,835.28	-448.28	-6,613.56	0.95	-0.95	-0.01
13,650.00	88.15	180.51	7,104.79	-6,921.25	-449.11	-6,697.68	1.07	-1.07	-0.09
13,735.00	86.67	180.05	7,108.63	-7,006.16	-449.52	-6,780.85	1.82	-1.74	-0.54
13,820.00	84.63	178.15	7,115.08	-7,090.90	-448.19	-6,864.20	3.28	-2.40	-2.24
13,843.00	84.13	178.19	7,117.33	-7,113.77	-447.46	-6,886.77	2.18	-2.17	0.17
LAST MWD SURVEY									
13,900.00	84.13	178.19	7,123.16	-7,170.45	-445.67	-6,942.69	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 7N-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 7N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,776.00	1,775.99	2.93	-0.59	TIE ON
1,903.00	1,902.99	2.60	-0.31	FIRST MWD SURVEY
7,504.50	7,134.80	-789.77	-511.45	7 IN. CASING
13,843.00	7,117.33	-7,113.77	-447.46	LAST MWD SURVEY
13,900.00	7,123.16	-7,170.45	-445.67	PROJECTION TO TD

Checked By: _____ Approved By: _____ Date: _____

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

WELD_SPARBOE 4 PAD

SPARBOE 7N-3HZ

Wellbore #1

Design: ACTUAL

Survey Report - Geographic

21 February, 2013

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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 7N-3HZ					
Well Position	+N/-S	0.00 ft	Northing:	1,280,971.75 usft	Latitude:	40.101501
	+E/-W	0.00 ft	Easting:	3,238,913.49 usft	Longitude:	-104.645921
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 (nT)
	IGRF2010	12/13/2012	8.57	66.78	52,828

Design	ACTUAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.00	0.00	0.00		348.66

Survey Program	Date	2/21/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
16.00	1,776.00	Survey #1 (Wellbore #1)	NS-GYRO-MS	NORTH SENSING GYROCOMPASSING M/S	
1,903.00	13,900.00	Survey #2 (Wellbore #1)	MWD	MWD - STANDARD	

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.00	0.00	0.00	0.00	0.00	0.00	1,280,971.75	3,238,913.49	40.101501	-104.645921
16.00	0.00	0.00	16.00	0.00	0.00	1,280,971.75	3,238,913.49	40.101501	-104.645921
116.00	0.18	43.90	116.00	0.11	0.11	1,280,971.86	3,238,913.59	40.101501	-104.645921
216.00	0.17	132.93	216.00	0.13	0.33	1,280,971.88	3,238,913.81	40.101501	-104.645920
316.00	0.16	66.45	316.00	0.08	0.56	1,280,971.83	3,238,914.05	40.101501	-104.645919
416.00	0.11	195.15	416.00	0.04	0.67	1,280,971.80	3,238,914.15	40.101501	-104.645919
516.00	0.09	147.66	516.00	-0.12	0.68	1,280,971.64	3,238,914.17	40.101501	-104.645919
616.00	0.14	279.14	616.00	-0.16	0.60	1,280,971.59	3,238,914.09	40.101501	-104.645919
716.00	0.04	223.58	716.00	-0.17	0.46	1,280,971.58	3,238,913.95	40.101501	-104.645920
816.00	0.30	327.78	816.00	0.03	0.30	1,280,971.78	3,238,913.78	40.101501	-104.645920
916.00	0.03	66.00	916.00	0.26	0.18	1,280,972.01	3,238,913.66	40.101502	-104.645921

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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	
1,016.00	0.06	66.56	1,016.00	0.29	0.25	1,280,972.04	3,238,913.74	40.101502	-104.645920	
1,116.00	0.28	5.04	1,116.00	0.56	0.32	1,280,972.31	3,238,913.80	40.101503	-104.645920	
1,216.00	0.14	0.16	1,216.00	0.92	0.34	1,280,972.67	3,238,913.82	40.101504	-104.645920	
1,316.00	0.37	308.59	1,316.00	1.24	0.09	1,280,972.99	3,238,913.57	40.101504	-104.645921	
1,416.00	0.09	60.52	1,416.00	1.48	-0.09	1,280,973.23	3,238,913.38	40.101505	-104.645922	
1,516.00	0.22	7.62	1,515.99	1.71	0.00	1,280,973.46	3,238,913.47	40.101506	-104.645921	
1,616.00	0.37	331.27	1,615.99	2.19	-0.13	1,280,973.93	3,238,913.34	40.101507	-104.645922	
1,716.00	0.34	324.61	1,715.99	2.71	-0.46	1,280,974.45	3,238,913.00	40.101509	-104.645923	
1,776.00	0.15	338.09	1,775.99	2.93	-0.59	1,280,974.67	3,238,912.87	40.101509	-104.645923	
TIE ON										
1,903.00	0.53	144.71	1,902.99	2.60	-0.31	1,280,974.35	3,238,913.15	40.101508	-104.645922	
FIRST MWD SURVEY										
1,979.00	1.26	202.97	1,978.98	1.55	-0.43	1,280,973.29	3,238,913.04	40.101505	-104.645923	
2,072.00	3.01	237.27	2,071.92	-0.71	-2.89	1,280,971.01	3,238,910.61	40.101499	-104.645932	
2,166.00	4.47	248.24	2,165.71	-3.41	-8.37	1,280,968.26	3,238,905.15	40.101492	-104.645951	
2,259.00	6.28	254.36	2,258.30	-6.12	-16.63	1,280,965.47	3,238,896.92	40.101484	-104.645981	
2,352.00	7.60	255.06	2,350.62	-9.08	-27.47	1,280,962.41	3,238,886.10	40.101476	-104.646019	
2,446.00	6.51	255.52	2,443.91	-12.01	-38.64	1,280,959.36	3,238,874.97	40.101468	-104.646059	
2,539.00	8.13	256.26	2,536.14	-14.89	-50.13	1,280,956.37	3,238,863.50	40.101460	-104.646100	
2,633.00	7.71	247.76	2,629.25	-18.86	-62.42	1,280,952.29	3,238,851.25	40.101449	-104.646144	
2,726.00	7.98	242.71	2,721.38	-24.18	-73.93	1,280,946.86	3,238,839.79	40.101435	-104.646186	
2,819.00	7.20	243.31	2,813.57	-29.76	-84.88	1,280,941.17	3,238,828.90	40.101419	-104.646225	
2,905.00	7.19	249.52	2,898.89	-34.06	-94.74	1,280,936.78	3,238,819.08	40.101408	-104.646260	
2,990.00	8.32	250.10	2,983.11	-38.02	-105.50	1,280,932.72	3,238,808.36	40.101397	-104.646298	
3,075.00	7.75	251.62	3,067.28	-41.92	-116.72	1,280,928.71	3,238,797.17	40.101386	-104.646339	
3,161.00	7.15	251.41	3,152.55	-45.45	-127.30	1,280,925.07	3,238,786.63	40.101376	-104.646376	
3,246.00	6.26	249.37	3,236.97	-48.77	-136.65	1,280,921.66	3,238,777.31	40.101367	-104.646410	
3,332.00	7.02	245.84	3,322.39	-52.57	-145.83	1,280,917.77	3,238,768.17	40.101357	-104.646443	
3,417.00	7.48	247.79	3,406.71	-56.79	-155.69	1,280,913.46	3,238,758.35	40.101345	-104.646478	
3,502.00	6.24	248.60	3,491.10	-60.57	-165.12	1,280,909.59	3,238,748.96	40.101335	-104.646512	
3,588.00	6.10	241.00	3,576.60	-64.49	-173.47	1,280,905.59	3,238,740.65	40.101324	-104.646541	
3,673.00	6.12	240.21	3,661.12	-68.93	-181.35	1,280,901.08	3,238,732.81	40.101312	-104.646570	
3,759.00	6.65	245.01	3,746.59	-73.31	-189.84	1,280,896.61	3,238,724.36	40.101300	-104.646600	
3,844.00	7.06	248.48	3,830.98	-77.31	-199.16	1,280,892.53	3,238,715.08	40.101289	-104.646633	
3,930.00	8.28	239.56	3,916.21	-82.38	-209.42	1,280,887.35	3,238,704.87	40.101275	-104.646670	
4,015.00	8.02	237.14	4,000.36	-88.70	-219.67	1,280,880.94	3,238,694.68	40.101258	-104.646707	
4,100.00	7.24	240.07	4,084.60	-94.59	-229.30	1,280,874.95	3,238,685.11	40.101241	-104.646741	
4,186.00	6.87	241.70	4,169.95	-99.73	-238.52	1,280,869.72	3,238,675.94	40.101227	-104.646774	
4,271.00	7.02	232.79	4,254.33	-105.28	-247.14	1,280,864.09	3,238,667.38	40.101212	-104.646805	
4,356.00	6.96	241.42	4,338.70	-110.89	-255.80	1,280,858.40	3,238,658.77	40.101197	-104.646836	
4,442.00	7.02	245.58	4,424.06	-115.55	-265.16	1,280,853.65	3,238,649.46	40.101184	-104.646869	
4,527.00	9.26	255.12	4,508.20	-119.46	-276.50	1,280,849.63	3,238,638.15	40.101173	-104.646910	
4,612.00	9.94	259.65	4,592.01	-122.53	-290.32	1,280,846.42	3,238,624.36	40.101165	-104.646959	
4,698.00	9.80	256.52	4,676.74	-125.57	-304.74	1,280,843.25	3,238,609.97	40.101156	-104.647011	
4,783.00	9.61	247.95	4,760.53	-129.92	-318.35	1,280,838.77	3,238,596.40	40.101144	-104.647059	
4,868.00	9.20	243.77	4,844.39	-135.59	-331.03	1,280,832.98	3,238,583.78	40.101129	-104.647105	
4,954.00	7.70	239.58	4,929.45	-141.54	-342.16	1,280,826.91	3,238,572.70	40.101112	-104.647144	
5,039.00	6.96	235.95	5,013.76	-147.31	-351.34	1,280,821.06	3,238,563.58	40.101097	-104.647177	
5,125.00	7.18	236.79	5,099.10	-153.17	-360.15	1,280,815.11	3,238,554.82	40.101081	-104.647209	
5,210.00	7.69	239.19	5,183.39	-159.00	-369.48	1,280,809.20	3,238,545.55	40.101065	-104.647242	
5,295.00	6.81	249.51	5,267.71	-163.67	-379.09	1,280,804.43	3,238,535.99	40.101052	-104.647276	
5,381.00	7.79	246.55	5,353.01	-167.78	-389.21	1,280,800.23	3,238,525.91	40.101040	-104.647313	
5,466.00	5.74	243.97	5,437.42	-171.94	-398.32	1,280,795.98	3,238,516.84	40.101029	-104.647345	
5,552.00	6.69	246.86	5,522.91	-175.79	-406.79	1,280,792.05	3,238,508.41	40.101018	-104.647375	
5,637.00	6.73	245.19	5,607.33	-179.83	-415.86	1,280,787.92	3,238,499.38	40.101007	-104.647408	

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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
5,723.00	5.28	245.03	5,692.86	-183.61	-424.02	1,280,784.06	3,238,491.25	40.100997	-104.647437
5,808.00	4.20	247.84	5,777.56	-186.44	-430.45	1,280,781.17	3,238,484.85	40.100989	-104.647460
5,893.00	3.51	248.17	5,862.37	-188.58	-435.75	1,280,778.98	3,238,479.57	40.100983	-104.647479
5,979.00	3.47	257.38	5,948.21	-190.13	-440.73	1,280,777.39	3,238,474.60	40.100979	-104.647497
6,064.00	3.30	258.65	6,033.06	-191.17	-445.64	1,280,776.29	3,238,469.71	40.100976	-104.647514
6,150.00	1.88	242.70	6,118.98	-192.30	-449.32	1,280,775.13	3,238,466.04	40.100973	-104.647527
6,235.00	1.35	239.03	6,203.94	-193.46	-451.42	1,280,773.95	3,238,463.95	40.100970	-104.647535
6,320.00	1.24	238.25	6,288.92	-194.46	-453.06	1,280,772.94	3,238,462.32	40.100967	-104.647541
6,406.00	0.85	239.53	6,374.91	-195.27	-454.40	1,280,772.11	3,238,460.99	40.100965	-104.647546
6,487.00	0.70	279.26	6,455.90	-195.50	-455.41	1,280,771.87	3,238,459.98	40.100964	-104.647549
6,535.00	0.49	254.72	6,503.90	-195.50	-455.90	1,280,771.86	3,238,459.50	40.100964	-104.647551
6,578.00	5.67	199.65	6,546.82	-197.55	-456.79	1,280,769.80	3,238,458.62	40.100959	-104.647554
6,620.00	10.71	199.82	6,588.38	-203.18	-458.81	1,280,764.16	3,238,456.65	40.100943	-104.647561
6,663.00	12.64	200.24	6,630.49	-211.36	-461.79	1,280,755.95	3,238,453.75	40.100921	-104.647572
6,706.00	15.50	202.66	6,672.19	-221.07	-465.64	1,280,746.20	3,238,450.00	40.100894	-104.647586
6,748.00	19.81	202.78	6,712.21	-232.82	-470.56	1,280,734.41	3,238,445.20	40.100862	-104.647603
6,791.00	23.94	205.48	6,752.10	-247.42	-477.13	1,280,719.74	3,238,438.76	40.100822	-104.647627
6,834.00	25.80	205.13	6,791.11	-263.77	-484.86	1,280,703.32	3,238,431.19	40.100777	-104.647655
6,876.00	28.17	198.68	6,828.55	-281.44	-491.92	1,280,685.58	3,238,424.30	40.100728	-104.647680
6,919.00	31.57	190.48	6,865.84	-302.14	-497.22	1,280,664.83	3,238,419.20	40.100672	-104.647699
6,962.00	36.14	188.64	6,901.55	-325.76	-501.18	1,280,641.18	3,238,415.47	40.100607	-104.647713
7,004.00	38.35	187.30	6,934.98	-350.93	-504.69	1,280,615.97	3,238,412.20	40.100538	-104.647725
7,047.00	42.79	185.96	6,967.63	-378.70	-507.91	1,280,588.17	3,238,409.25	40.100461	-104.647737
7,090.00	47.91	183.75	6,997.84	-409.17	-510.47	1,280,557.68	3,238,406.98	40.100378	-104.647746
7,132.00	51.83	182.42	7,024.91	-441.23	-512.18	1,280,525.60	3,238,405.58	40.100290	-104.647752
7,175.00	56.54	180.63	7,050.07	-476.08	-513.10	1,280,490.75	3,238,405.00	40.100194	-104.647755
7,218.00	61.46	179.28	7,072.21	-512.92	-513.06	1,280,453.91	3,238,405.39	40.100093	-104.647755
7,260.00	67.49	179.97	7,090.30	-550.80	-512.81	1,280,416.03	3,238,406.00	40.099989	-104.647754
7,303.00	71.94	181.98	7,105.20	-591.12	-513.51	1,280,375.71	3,238,405.69	40.099878	-104.647757
7,346.00	78.17	182.22	7,116.29	-632.62	-515.03	1,280,334.20	3,238,404.57	40.099764	-104.647762
7,389.00	82.13	180.39	7,123.64	-674.96	-515.99	1,280,291.85	3,238,404.02	40.099648	-104.647766
7,454.00	84.96	177.23	7,130.95	-739.52	-514.65	1,280,227.31	3,238,405.99	40.099471	-104.647761
7,504.50	86.30	175.49	7,134.80	-789.77	-511.45	1,280,177.09	3,238,409.67	40.099333	-104.647750
7 IN. CASING									
7,614.00	89.20	171.72	7,139.11	-898.47	-499.26	1,280,068.51	3,238,422.91	40.099035	-104.647706
7,739.00	92.96	170.81	7,136.75	-1,021.98	-480.28	1,279,945.20	3,238,443.07	40.098696	-104.647638
7,832.00	93.21	171.19	7,131.74	-1,113.70	-465.76	1,279,853.62	3,238,458.48	40.098444	-104.647586
7,926.00	92.22	173.71	7,127.29	-1,206.77	-453.42	1,279,760.67	3,238,471.71	40.098188	-104.647542
8,019.00	91.23	175.08	7,124.49	-1,299.28	-444.34	1,279,668.25	3,238,481.68	40.097934	-104.647510
8,112.00	91.42	175.89	7,122.34	-1,391.96	-437.02	1,279,575.64	3,238,489.89	40.097680	-104.647483
8,206.00	90.56	178.08	7,120.72	-1,485.81	-432.08	1,279,481.84	3,238,495.74	40.097422	-104.647466
8,299.00	89.69	180.07	7,120.51	-1,578.80	-430.58	1,279,388.88	3,238,498.13	40.097167	-104.647460
8,392.00	90.25	181.24	7,120.56	-1,671.79	-431.64	1,279,295.88	3,238,497.97	40.096912	-104.647464
8,485.00	87.16	180.61	7,122.66	-1,764.74	-433.14	1,279,202.92	3,238,497.36	40.096657	-104.647470
8,579.00	88.15	180.33	7,126.51	-1,858.66	-433.91	1,279,109.00	3,238,497.50	40.096399	-104.647472
8,672.00	88.77	177.59	7,129.01	-1,951.60	-432.23	1,279,016.08	3,238,500.08	40.096144	-104.647466
8,766.00	91.17	178.32	7,129.06	-2,045.53	-428.87	1,278,922.18	3,238,504.34	40.095886	-104.647454
8,859.00	92.71	179.71	7,125.91	-2,138.46	-427.27	1,278,829.28	3,238,506.83	40.095631	-104.647449
8,953.00	93.09	182.77	7,121.15	-2,232.31	-429.30	1,278,735.41	3,238,505.70	40.095373	-104.647456
9,038.00	91.17	184.37	7,117.99	-2,317.08	-434.59	1,278,650.60	3,238,501.23	40.095140	-104.647475
9,124.00	92.47	184.37	7,115.26	-2,402.78	-441.14	1,278,564.83	3,238,495.51	40.094905	-104.647498
9,209.00	93.02	184.23	7,111.19	-2,487.44	-447.51	1,278,480.11	3,238,489.96	40.094673	-104.647521
9,294.00	93.08	184.71	7,106.67	-2,572.06	-454.12	1,278,395.43	3,238,484.16	40.094440	-104.647544
9,380.00	91.23	183.51	7,103.44	-2,657.78	-460.28	1,278,309.67	3,238,478.82	40.094205	-104.647566
9,465.00	90.06	183.38	7,102.48	-2,742.62	-465.39	1,278,224.78	3,238,474.53	40.093972	-104.647585

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-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
9,551.00	90.06	183.42	7,102.39	-2,828.47	-470.49	1,278,138.89	3,238,470.26	40.093736	-104.647603
9,637.00	90.12	181.93	7,102.25	-2,914.37	-474.50	1,278,052.95	3,238,467.07	40.093501	-104.647617
9,721.00	90.12	181.99	7,102.08	-2,998.32	-477.38	1,277,968.97	3,238,465.01	40.093270	-104.647628
9,807.00	89.63	179.66	7,102.27	-3,084.30	-478.61	1,277,882.98	3,238,464.60	40.093034	-104.647632
9,892.00	90.12	177.11	7,102.45	-3,169.26	-476.22	1,277,798.05	3,238,467.81	40.092801	-104.647623
9,978.00	90.37	176.37	7,102.08	-3,255.12	-471.33	1,277,712.24	3,238,473.53	40.092565	-104.647606
10,063.00	89.94	174.46	7,101.85	-3,339.85	-464.53	1,277,627.59	3,238,481.14	40.092333	-104.647582
10,148.00	90.06	175.82	7,101.85	-3,424.54	-457.33	1,277,542.97	3,238,489.16	40.092100	-104.647556
10,234.00	92.22	176.48	7,100.14	-3,510.32	-451.56	1,277,457.25	3,238,495.76	40.091865	-104.647535
10,319.00	90.49	175.89	7,098.13	-3,595.11	-445.91	1,277,372.52	3,238,502.23	40.091632	-104.647515
10,405.00	89.57	176.88	7,098.09	-3,680.93	-440.48	1,277,286.75	3,238,508.48	40.091396	-104.647496
10,490.00	90.68	178.04	7,097.90	-3,765.85	-436.72	1,277,201.88	3,238,513.06	40.091163	-104.647482
10,575.00	90.99	178.40	7,096.66	-3,850.80	-434.08	1,277,116.96	3,238,516.52	40.090930	-104.647473
10,661.00	90.06	179.12	7,095.88	-3,936.77	-432.22	1,277,031.00	3,238,519.21	40.090694	-104.647466
10,746.00	89.69	182.02	7,096.06	-4,021.76	-433.06	1,276,946.01	3,238,519.18	40.090461	-104.647469
10,832.00	88.71	180.87	7,097.26	-4,107.72	-435.23	1,276,860.03	3,238,517.84	40.090225	-104.647477
10,917.00	89.57	180.28	7,098.54	-4,192.70	-436.08	1,276,775.05	3,238,517.81	40.089991	-104.647480
11,002.00	87.84	176.64	7,100.46	-4,277.63	-433.80	1,276,690.14	3,238,520.91	40.089758	-104.647472
11,087.00	87.47	173.84	7,103.94	-4,362.26	-426.75	1,276,605.59	3,238,528.77	40.089526	-104.647447
11,173.00	88.46	175.95	7,106.99	-4,447.86	-419.11	1,276,520.07	3,238,537.24	40.089291	-104.647419
11,258.00	87.72	173.72	7,109.83	-4,532.46	-411.46	1,276,435.54	3,238,545.70	40.089059	-104.647392
11,344.00	92.10	173.83	7,109.96	-4,617.93	-402.14	1,276,350.16	3,238,555.84	40.088824	-104.647359
11,429.00	92.84	173.59	7,106.30	-4,702.34	-392.83	1,276,265.85	3,238,565.96	40.088592	-104.647325
11,515.00	92.59	179.00	7,102.22	-4,788.04	-387.29	1,276,180.21	3,238,572.33	40.088357	-104.647305
11,600.00	92.04	180.08	7,098.79	-4,872.96	-386.60	1,276,095.30	3,238,573.83	40.088124	-104.647303
11,685.00	92.78	182.14	7,095.21	-4,957.87	-388.25	1,276,010.38	3,238,573.01	40.087891	-104.647309
11,771.00	90.12	183.75	7,093.04	-5,043.71	-392.67	1,275,924.50	3,238,569.42	40.087655	-104.647325
11,856.00	88.59	182.80	7,093.99	-5,128.57	-397.52	1,275,839.60	3,238,565.38	40.087422	-104.647342
11,942.00	88.64	182.60	7,096.07	-5,214.45	-401.57	1,275,753.69	3,238,562.16	40.087187	-104.647356
12,027.00	88.34	182.00	7,098.31	-5,299.35	-404.98	1,275,668.76	3,238,559.56	40.086954	-104.647369
12,112.00	89.14	181.14	7,100.18	-5,384.29	-407.31	1,275,583.79	3,238,558.05	40.086720	-104.647377
12,198.00	89.57	181.57	7,101.15	-5,470.26	-409.34	1,275,497.81	3,238,556.85	40.086484	-104.647384
12,283.00	90.12	180.66	7,101.38	-5,555.25	-411.00	1,275,412.81	3,238,556.01	40.086251	-104.647390
12,368.00	90.56	180.94	7,100.87	-5,640.24	-412.18	1,275,327.81	3,238,555.65	40.086018	-104.647394
12,454.00	92.16	184.28	7,098.83	-5,726.11	-416.10	1,275,241.91	3,238,552.56	40.085782	-104.647408
12,539.00	89.81	183.56	7,097.37	-5,810.89	-421.91	1,275,157.08	3,238,547.57	40.085549	-104.647429
12,625.00	90.86	184.35	7,096.87	-5,896.68	-427.84	1,275,071.23	3,238,542.46	40.085314	-104.647450
12,710.00	89.94	182.75	7,096.28	-5,981.51	-433.10	1,274,986.35	3,238,538.02	40.085081	-104.647469
12,796.00	89.38	181.72	7,096.79	-6,067.44	-436.45	1,274,900.39	3,238,535.49	40.084845	-104.647481
12,881.00	89.26	181.57	7,097.79	-6,152.40	-438.89	1,274,815.41	3,238,533.87	40.084612	-104.647490
12,966.00	88.77	181.62	7,099.26	-6,237.36	-441.26	1,274,730.44	3,238,532.32	40.084379	-104.647498
13,052.00	89.69	180.83	7,100.41	-6,323.33	-443.10	1,274,644.46	3,238,531.31	40.084143	-104.647505
13,137.00	89.82	181.07	7,100.78	-6,408.32	-444.51	1,274,559.46	3,238,530.72	40.083909	-104.647510
13,223.00	89.94	181.20	7,100.96	-6,494.30	-446.21	1,274,473.47	3,238,529.85	40.083673	-104.647516
13,308.00	89.63	180.07	7,101.27	-6,579.29	-447.15	1,274,388.47	3,238,529.72	40.083440	-104.647519
13,394.00	89.81	179.83	7,101.69	-6,665.29	-447.08	1,274,302.47	3,238,530.63	40.083204	-104.647519
13,479.00	89.88	180.60	7,101.92	-6,750.29	-447.40	1,274,217.48	3,238,531.13	40.082970	-104.647520
13,564.00	89.07	180.59	7,102.70	-6,835.28	-448.28	1,274,132.48	3,238,531.06	40.082737	-104.647523
13,650.00	88.15	180.51	7,104.79	-6,921.25	-449.11	1,274,046.51	3,238,531.06	40.082501	-104.647526
13,735.00	86.67	180.05	7,108.63	-7,006.16	-449.52	1,273,961.60	3,238,531.47	40.082268	-104.647528
13,820.00	84.63	178.15	7,115.08	-7,090.90	-448.19	1,273,876.88	3,238,533.61	40.082035	-104.647523
13,843.00	84.13	178.19	7,117.33	-7,113.77	-447.46	1,273,854.01	3,238,534.56	40.081973	-104.647520
LAST MWD SURVEY									
13,900.00	84.13	178.19	7,123.16	-7,170.45	-445.67	1,273,797.36	3,238,536.90	40.081817	-104.647514
PROJECTION TO TD									

Anadarko Petroleum Corp

Survey Report - Geographic

Company:	US ROCKIES REGION PLANNING	Local Co-ordinate Reference:	Well SPARBOE 7N-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 7N-3HZ	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL	Database:	edmp

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,776.00	1,775.99	2.93	-0.59	TIE ON
1,903.00	1,902.99	2.60	-0.31	FIRST MWD SURVEY
7,504.50	7,134.80	-789.77	-511.45	7 IN. CASING
13,843.00	7,117.33	-7,113.77	-447.46	LAST MWD SURVEY
13,900.00	7,123.16	-7,170.45	-445.67	PROJECTION TO TD

Checked By: _____ Approved By: _____ Date: _____