



# Weatherford®

Weatherford  
2000 Oil Drive  
Casper, WY 82604

## Survey Certification

Operating Company:	Anadarko Petroleum Corp.
Well Name:	CANNON 34C-10HZ
State:	CO
County:	WELD
API Number:	512336695
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 1,004.00 feet  
to the measured depth of 12,001.00 feet as accurate and true  
to the best of my knowledge.

Signature

16-May-13

Date

**J. Aaron Underwood**  
Directional Planning  
Weatherford - Rockies District



# Weatherford®



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## END OF WELL REPORT

FINAL SURVEYS

SECTION 1

DAILY ACTIVITIES

SECTION 2

BHA REPORTS

SECTION 3

MOTOR REPORTS

SECTION 4

SLIDE SHEET REPORTS

SECTION 5



## FINAL SURVEYS

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Map Unit: USFt                      Vertical Reference Datum (VRD): Mean S  
Projected Coordinate System: NAD83 / Colorado North (ftUS)

Position:

Elevation Above VRD: 4949.00USft

**Formation Point Information:**

Plan Data for CANNON

## Casing Point Information

Name	MD	
	(USft)	(M)
9 5/8 in	954.00	93.00
7 in	7844.33	73.00

## Plan Data for CANNON 34C-10HZ

## Target Set Information:

Name: 1

Name	TVD (USft)	Lat (°)	Long (°)	Shape
PBHL	7430.00	40.146638	-104.772588	Cuboid



**5D Survey Report****Anadarko Petroleum**

**Field Name:** *WATTENBERG\_ANADARKO\_NAD 83*  
**Site Name:** *CANNON 29-10HZ*  
**Well Name:** *CANNON 34C-10HZ*  
**Survey:** *Definitive Survey*





## Surveys for the CANNON 34C-10HZ

Site Name  CANNON 29-10HZ	Units : US ft	North Reference : True	Convergence Angle : 0.47
	Position	Northing : 1301569.32 US ft	Latitude : 40.158889
		Easting : 3204399.75 US ft	Longitude : -104.768689
		Elevation above:4949.00 US ft	
Comment :			
Slot Name  CANNON 34C-10HZ	Position (Offsets relative to Site Centre)		
	+N / -S : 0.00 US ft	Northing :1301569.32 US ft	Latitude : 40.158889
	+E / -W : 0.00 US ft	Easting :3204399.75 US ft	Longitude : -104.768689
	Slot TVD Reference : Ground Elevation		
	Elevation above : 4949.00 US ft		
	Comment :		
Well Name  CANNON 34C-10HZ	Type : Main well		UWI :
	Rig Height Drill Floor : 16.00 US ft		Comment :
	Relative to : 4965.00 US ft		
	Closure Distance : 4560.61 US ft		Closure Azimuth : 193.658°
	Vertical Section (Position of Origin Relative to Slot )		
	+N / -S : 0.00 US ft		+E / -W : 0.00 US ft Az :179.64°

## 5D Survey Report

## Target Set

Name : 1

Number of Targets : 1

## Comment :

TargetName:	Position (Relative to centre)			
PBHL	+N / -S : -4462.78US ft	Northing : 1297097.71 US ft	Latitude : 40°8'47.896800"	
Shape:	+E / -W : -1089.97 US ft	Easting : 3203346.62US ft	Longitude : -104°46'21.316800"	
Cuboid	TVD (Drill Floor) : 7430.00 US ft			
	Orientation	Azimuth : 0.00°	Inclination : 0.00°	
	Dimensions	Length : 1.00 US ft	Breadth : 1.00 US ft	Height : 1.00 US ft

## Survey Name :Definitive Survey

Date : 04/Apr/2013

Survey Tool :

Comment :

Company :

## Magnetic Model

Model Name: Default

Date: 04/Apr/2013

Field Strength: 50000.0 nT

Declination: 0.00°

Dip: 0.00°

## Survey Tool Ranges

Name	Start MD (US ft)	End MD (US ft)	Source Survey
NSG Static GMS	0.00	896.00	surface gyros
MWD	896.00	12001.00	WFT MWD

## Casing Points (Relative to centre, TVD relative to Drill Floor )

Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Latitude (°)	Longitude (°)
7 in	7780.00	83.79	183.03	7394.97	-215.01	-1140.95	40.158299	-104.772771

## Well path created using minimum curvature

## Survey Points (Relative to centre, TVD relative to Drill Floor )

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	1301569.32	3204399.75	40.158889	-104.768689	0.00	0.00	-0.00	
16.00	0.00	0.00	16.00	0.00	0.00	1301569.32	3204399.75	40.158889	-104.768689	0.00	0.00	-0.00	
116.00	0.49	187.21	116.00	-0.42	-0.05	1301568.90	3204399.70	40.158888	-104.768689	0.49	187.21	0.42	
216.00	0.46	213.50	216.00	-1.18	-0.33	1301568.14	3204399.43	40.158886	-104.768690	0.22	110.85	1.18	
316.00	0.36	249.24	315.99	-1.63	-0.84	1301567.69	3204398.92	40.158885	-104.768692	0.27	128.59	1.62	
416.00	0.13	244.52	415.99	-1.79	-1.24	1301567.52	3204398.53	40.158884	-104.768693	0.23	182.66	1.78	
516.00	0.20	242.28	515.99	-1.92	-1.50	1301567.39	3204398.27	40.158884	-104.768694	0.07	353.61	1.91	
616.00	0.40	332.06	615.99	-1.69	-1.82	1301567.62	3204397.95	40.158884	-104.768695	0.45	116.39	1.68	

## 5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor )													
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
716.00	0.32	335.05	715.99	-1.13	-2.10	1301568.17	3204397.66	40.158886	-104.768697	0.08	168.28	1.12	
816.00	0.34	29.11	815.99	-0.62	-2.07	1301568.69	3204397.69	40.158887	-104.768696	0.30	113.63	0.61	
896.00	0.23	357.05	895.99	-0.25	-1.96	1301569.06	3204397.79	40.158888	-104.768696	0.24	220.08	0.24	TIE ON
1004.00	0.41	288.45	1003.98	0.09	-2.34	1301569.39	3204397.41	40.158889	-104.768697	0.36	258.11	-0.10	FIRST WFT MWD SURVEY
1066.00	0.70	290.18	1065.98	0.29	-2.91	1301569.59	3204396.84	40.158890	-104.768699	0.47	4.17	-0.31	
1158.00	2.83	300.60	1157.93	1.64	-5.39	1301570.92	3204394.35	40.158893	-104.768708	2.33	13.80	-1.67	
1248.00	4.52	293.07	1247.75	4.16	-10.56	1301573.40	3204389.15	40.158900	-104.768727	1.95	340.28	-4.23	
1339.00	6.17	287.57	1338.35	7.04	-18.53	1301576.21	3204381.17	40.158908	-104.768755	1.90	340.00	-7.16	
1429.00	8.13	287.42	1427.64	10.41	-29.21	1301579.49	3204370.46	40.158918	-104.768794	2.18	359.38	-10.59	
1526.00	9.45	285.79	1523.50	14.63	-43.42	1301583.59	3204356.22	40.158929	-104.768844	1.38	348.51	-14.90	
1619.00	11.05	285.72	1615.01	19.12	-59.34	1301587.95	3204340.25	40.158941	-104.768901	1.72	359.52	-19.49	
1713.00	11.13	279.92	1707.26	23.12	-76.95	1301591.81	3204322.61	40.158952	-104.768964	1.19	271.25	-23.61	
1805.00	11.17	279.52	1797.53	26.13	-94.49	1301594.67	3204305.05	40.158961	-104.769027	0.09	297.15	-26.72	
1899.00	11.69	282.75	1889.66	29.73	-112.76	1301598.13	3204286.75	40.158971	-104.769092	0.88	52.50	-30.44	
1991.00	13.02	284.51	1979.53	34.39	-131.88	1301602.62	3204267.59	40.158983	-104.769161	1.50	16.67	-35.22	
2085.00	13.66	284.12	2070.99	39.75	-152.90	1301607.81	3204246.53	40.158998	-104.769236	0.69	351.81	-40.71	
2177.00	12.05	283.27	2160.68	44.60	-172.78	1301612.50	3204226.61	40.159011	-104.769307	1.76	186.29	-45.69	
2271.00	11.42	283.57	2252.72	49.04	-191.38	1301616.78	3204207.98	40.159024	-104.769374	0.67	174.61	-50.24	
2363.00	11.60	290.48	2342.87	54.41	-208.90	1301622.01	3204190.41	40.159038	-104.769436	1.51	85.96	-55.73	
2455.00	12.64	292.13	2432.82	61.44	-226.89	1301628.89	3204172.37	40.159058	-104.769501	1.19	19.23	-62.87	
2548.00	13.39	286.32	2523.44	68.30	-246.65	1301635.59	3204152.55	40.159076	-104.769571	1.62	296.97	-69.85	
2641.00	13.24	285.89	2613.94	74.24	-267.22	1301641.36	3204131.92	40.159093	-104.769645	0.19	213.22	-75.92	
2734.00	13.22	283.55	2704.47	79.65	-287.81	1301646.60	3204111.30	40.159108	-104.769719	0.58	266.72	-81.46	
2826.00	13.65	280.89	2793.95	84.17	-308.69	1301650.94	3204090.38	40.159120	-104.769793	0.82	303.53	-86.10	
2912.00	13.77	282.37	2877.50	88.28	-328.66	1301654.89	3204070.38	40.159131	-104.769865	0.43	71.83	-90.34	
2997.00	12.57	281.95	2960.26	92.36	-347.59	1301658.81	3204051.42	40.159143	-104.769933	1.42	184.35	-94.54	
3082.00	12.10	288.09	3043.30	97.04	-365.10	1301663.35	3204033.86	40.159155	-104.769995	1.64	112.70	-99.33	
3168.00	13.77	287.08	3127.12	102.85	-383.46	1301669.00	3204015.46	40.159171	-104.770061	1.96	351.80	-105.25	
3253.00	11.49	285.59	3210.06	108.09	-401.28	1301674.10	3203997.59	40.159186	-104.770125	2.71	187.41	-110.61	
3339.00	11.52	289.98	3294.33	113.33	-417.61	1301679.20	3203981.23	40.159200	-104.770183	1.02	90.19	-115.95	
3424.00	12.27	290.41	3377.51	119.38	-434.05	1301685.12	3203964.73	40.159217	-104.770242	0.89	6.95	-122.10	
3510.00	13.66	293.22	3461.31	126.57	-451.95	1301692.16	3203946.78	40.159236	-104.770306	1.77	25.77	-129.41	
3595.00	13.76	287.81	3543.89	133.62	-470.79	1301699.05	3203927.87	40.159256	-104.770373	1.51	271.83	-136.57	
3681.00	13.94	290.67	3627.39	140.40	-490.22	1301705.68	3203908.39	40.159274	-104.770443	0.82	76.66	-143.48	
3766.00	14.43	292.05	3709.80	147.99	-509.62	1301713.11	3203888.93	40.159295	-104.770512	0.70	35.28	-151.19	
3851.00	14.35	285.26	3792.14	154.74	-529.60	1301719.69	3203868.89	40.159314	-104.770584	1.99	264.00	-158.07	
3937.00	14.43	284.66	3875.44	160.26	-550.25	1301725.04	3203848.20	40.159329	-104.770658	0.20	297.92	-163.71	
4022.00	15.12	281.78	3957.63	165.20	-571.35	1301729.81	3203827.06	40.159342	-104.770733	1.19	311.81	-168.79	
4108.00	14.36	284.41	4040.80	170.15	-592.66	1301734.58	3203805.71	40.159356	-104.770809	1.18	139.90	-173.87	
4193.00	15.96	283.59	4122.84	175.52	-614.23	1301739.77	3203784.10	40.159371	-104.770887	1.90	351.97	-179.37	



## 5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor )													
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
4279.00	17.67	282.65	4205.16	181.15	-638.46	1301745.20	3203759.82	40.159386	-104.770973	2.01	350.51	-185.16	
4364.00	14.66	276.32	4286.80	185.16	-661.74	1301749.02	3203736.51	40.159397	-104.771057	4.10	207.34	-189.32	
4450.00	13.38	278.36	4370.24	187.81	-682.40	1301751.50	3203715.82	40.159405	-104.771131	1.60	159.88	-192.09	
4535.00	12.90	285.59	4453.02	191.79	-701.27	1301755.32	3203696.92	40.159415	-104.771198	2.01	109.78	-196.19	
4620.00	13.47	288.43	4535.78	197.47	-719.80	1301760.85	3203678.34	40.159431	-104.771264	1.01	50.04	-201.99	
4705.00	14.05	287.76	4618.34	203.75	-739.02	1301766.97	3203659.07	40.159448	-104.771333	0.71	344.31	-208.39	
4791.00	15.61	284.45	4701.47	209.82	-760.17	1301772.86	3203637.88	40.159465	-104.771409	2.06	329.89	-214.59	
4876.00	16.72	282.53	4783.11	215.32	-783.18	1301778.18	3203614.82	40.159480	-104.771491	1.45	333.36	-220.24	
4961.00	15.36	280.39	4864.80	220.01	-806.19	1301782.67	3203591.77	40.159493	-104.771573	1.74	202.47	-225.07	
5047.00	14.27	280.93	4947.94	224.07	-827.80	1301786.56	3203570.13	40.159504	-104.771651	1.28	173.04	-229.27	
5132.00	13.32	285.78	5030.49	228.72	-847.51	1301791.05	3203550.38	40.159517	-104.771721	1.76	131.74	-234.04	
5217.00	14.81	288.40	5112.94	234.81	-867.24	1301796.98	3203530.60	40.159534	-104.771792	1.91	24.41	-240.26	
5303.00	15.01	286.38	5196.04	241.42	-888.36	1301803.41	3203509.43	40.159552	-104.771867	0.65	290.07	-247.00	
5388.00	15.03	283.00	5278.14	247.01	-909.66	1301808.82	3203488.09	40.159567	-104.771944	1.03	269.68	-252.72	
5474.00	14.74	280.94	5361.26	251.59	-931.27	1301813.23	3203466.44	40.159580	-104.772021	0.70	240.28	-257.44	
5559.00	14.89	281.22	5443.43	255.77	-952.59	1301817.23	3203445.08	40.159591	-104.772097	0.20	25.65	-261.75	
5645.00	15.49	282.81	5526.43	260.47	-974.63	1301821.74	3203423.01	40.159604	-104.772176	0.85	35.54	-266.58	
5730.00	12.42	281.04	5608.91	264.73	-994.68	1301825.84	3203402.93	40.159616	-104.772248	3.65	187.06	-270.98	
5816.00	11.93	281.74	5692.97	268.31	-1012.46	1301829.28	3203385.12	40.159625	-104.772311	0.60	163.58	-274.67	
5901.00	12.14	282.13	5776.11	271.98	-1029.80	1301832.80	3203367.75	40.159636	-104.772373	0.26	21.36	-278.44	
5986.00	10.59	284.36	5859.44	275.79	-1046.10	1301836.48	3203351.41	40.159646	-104.772432	1.90	165.26	-282.36	
6071.00	10.38	286.68	5943.02	279.93	-1061.00	1301840.49	3203336.48	40.159657	-104.772485	0.55	117.58	-286.59	
6157.00	9.10	291.04	6027.78	284.59	-1074.77	1301845.04	3203322.67	40.159670	-104.772534	1.72	152.18	-291.34	
6242.00	6.87	283.87	6111.95	288.23	-1085.98	1301848.58	3203311.43	40.159680	-104.772574	2.87	200.55	-295.05	
6328.00	6.61	284.10	6197.36	290.67	-1095.78	1301850.94	3203301.61	40.159687	-104.772610	0.30	174.19	-297.55	
6413.00	4.91	279.33	6281.92	292.45	-1104.11	1301852.65	3203293.26	40.159692	-104.772639	2.08	193.36	-299.38	
6499.00	3.36	269.34	6367.70	293.02	-1110.27	1301853.17	3203287.11	40.159693	-104.772661	1.98	200.00	-299.99	
6584.00	1.83	263.05	6452.61	292.82	-1114.10	1301852.95	3203283.27	40.159693	-104.772675	1.83	187.41	-299.82	
6669.00	1.39	263.60	6537.57	292.54	-1116.48	1301852.65	3203280.90	40.159692	-104.772684	0.52	178.26	-299.55	
6754.00	0.97	263.00	6622.56	292.34	-1118.21	1301852.43	3203279.17	40.159691	-104.772690	0.49	181.39	-299.36	
6865.00	0.45	163.04	6733.55	291.81	-1119.02	1301851.89	3203278.36	40.159690	-104.772693	1.02	202.93	-298.83	
7003.00	10.22	190.10	6870.79	279.21	-1121.01	1301839.28	3203276.47	40.159655	-104.772700	7.12	28.24	-286.25	
7088.00	17.26	190.80	6953.31	259.37	-1124.70	1301819.41	3203272.95	40.159601	-104.772713	8.28	1.69	-266.43	
7173.00	23.17	194.95	7033.04	230.80	-1131.39	1301790.79	3203266.50	40.159523	-104.772737	7.15	15.60	-237.91	
7216.00	26.06	190.86	7072.13	213.35	-1135.35	1301773.30	3203262.68	40.159475	-104.772751	7.80	327.61	-220.48	
7259.00	27.39	184.08	7110.54	194.20	-1137.83	1301754.13	3203260.36	40.159422	-104.772760	7.73	290.51	-201.35	
7302.00	31.36	185.03	7148.01	173.18	-1139.52	1301733.10	3203258.84	40.159364	-104.772766	9.30	7.11	-180.34	
7344.00	35.39	184.50	7183.08	150.16	-1141.43	1301710.06	3203257.12	40.159301	-104.772773	9.62	355.64	-157.33	
7387.00	39.74	184.45	7217.15	124.03	-1143.48	1301683.92	3203255.29	40.159229	-104.772780	10.12	359.58	-131.21	
7430.00	45.13	182.23	7248.88	95.08	-1145.14	1301654.95	3203253.87	40.159150	-104.772786	13.01	343.64	-102.27	
7472.00	49.65	178.51	7277.31	64.19	-1145.30	1301624.06	3203253.96	40.159065	-104.772787	12.58	327.52	-71.38	

## 5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor )													
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
7515.00	53.64	176.82	7303.99	30.50	-1143.91	1301590.39	3203255.63	40.158973	-104.772782	9.78	341.10	-37.69	
7558.00	59.21	176.58	7327.76	-5.25	-1141.85	1301554.66	3203257.99	40.158875	-104.772774	12.96	357.88	-1.93	
7600.00	64.98	177.27	7347.41	-42.30	-1139.86	1301517.63	3203260.28	40.158773	-104.772767	13.81	6.20	35.13	
7643.00	70.33	178.95	7363.75	-82.03	-1138.56	1301477.91	3203261.90	40.158664	-104.772763	12.96	16.52	74.87	
7686.00	73.65	179.96	7377.04	-122.91	-1138.18	1301437.03	3203262.63	40.158552	-104.772761	8.04	16.29	115.76	
7748.00	80.88	182.40	7390.70	-183.33	-1139.44	1301376.60	3203261.86	40.158386	-104.772766	12.28	18.50	176.17	
7780.00	83.79	183.03	7394.97	-215.01	-1140.95	1301344.91	3203260.62	40.158299	-104.772771	9.31	12.17	207.83	7 in
7840.00	89.26	184.20	7398.60	-274.75	-1144.72	1301285.14	3203257.33	40.158135	-104.772785	9.31	12.08	267.55	
7925.00	90.55	184.20	7398.74	-359.52	-1150.95	1301200.32	3203251.81	40.157902	-104.772807	1.52	0.00	352.28	
8010.00	91.91	181.85	7396.92	-444.38	-1155.43	1301115.43	3203248.02	40.157669	-104.772823	3.19	300.09	437.11	
8095.00	92.22	179.46	7393.86	-529.31	-1156.40	1301030.49	3203247.75	40.157436	-104.772826	2.83	277.44	522.03	
8181.00	91.17	178.21	7391.31	-615.25	-1154.66	1300944.57	3203250.21	40.157200	-104.772820	1.90	229.98	607.98	
8266.00	90.00	177.45	7390.45	-700.18	-1151.44	1300859.67	3203254.13	40.156967	-104.772809	1.64	213.01	692.94	
8351.00	90.06	176.50	7390.40	-785.06	-1146.95	1300774.83	3203259.31	40.156734	-104.772792	1.12	273.61	777.84	
8437.00	90.06	177.13	7390.31	-870.93	-1142.17	1300689.00	3203264.80	40.156498	-104.772775	0.73	90.00	863.74	
8522.00	88.95	176.02	7391.04	-955.77	-1137.10	1300604.20	3203270.58	40.156265	-104.772757	1.85	225.00	948.61	
8607.00	89.75	176.63	7392.01	-1040.59	-1131.65	1300519.43	3203276.72	40.156032	-104.772738	1.18	37.33	1033.46	
8693.00	89.44	177.42	7392.62	-1126.47	-1127.18	1300433.59	3203281.90	40.155797	-104.772722	0.99	111.43	1119.37	
8779.00	89.26	178.18	7393.59	-1212.40	-1123.88	1300347.69	3203285.91	40.155561	-104.772710	0.91	103.33	1205.32	
8864.00	88.68	176.84	7395.12	-1297.31	-1120.19	1300262.82	3203290.30	40.155328	-104.772697	1.72	246.58	1290.24	
8950.00	88.34	177.72	7397.36	-1383.18	-1116.11	1300176.98	3203295.09	40.155092	-104.772682	1.10	111.14	1376.14	
9035.00	89.82	179.26	7398.72	-1468.14	-1113.87	1300092.05	3203298.03	40.154859	-104.772674	2.51	46.15	1461.11	
9121.00	90.06	179.05	7398.81	-1554.13	-1112.60	1300006.07	3203300.00	40.154623	-104.772669	0.37	318.81	1547.10	
9206.00	89.91	178.95	7398.83	-1639.11	-1111.12	1299921.10	3203302.19	40.154389	-104.772664	0.21	213.69	1632.10	
9291.00	89.20	177.95	7399.49	-1724.08	-1108.82	1299836.16	3203305.19	40.154156	-104.772656	1.44	234.62	1717.08	
9376.00	89.57	177.49	7400.41	-1809.00	-1105.44	1299751.26	3203309.27	40.153923	-104.772644	0.69	308.81	1802.02	
9462.00	90.12	178.03	7400.64	-1894.94	-1102.08	1299665.36	3203313.34	40.153687	-104.772632	0.90	44.48	1887.98	
9547.00	89.88	178.03	7400.64	-1979.89	-1099.16	1299580.44	3203316.96	40.153454	-104.772621	0.28	180.00	1972.94	
9632.00	89.14	178.19	7401.37	-2064.84	-1096.35	1299495.51	3203320.46	40.153221	-104.772611	0.89	167.80	2057.91	
9718.00	89.51	178.53	7402.38	-2150.80	-1093.89	1299409.58	3203323.63	40.152985	-104.772602	0.58	42.58	2143.88	
9803.00	89.57	177.59	7403.06	-2235.74	-1091.02	1299324.66	3203327.21	40.152752	-104.772592	1.11	273.65	2228.84	
9889.00	90.68	176.67	7402.87	-2321.63	-1086.71	1299238.81	3203332.23	40.152516	-104.772577	1.68	320.35	2314.76	
9974.00	91.11	176.63	7401.55	-2406.48	-1081.74	1299154.01	3203337.89	40.152283	-104.772559	0.51	354.69	2399.63	
10059.00	90.18	175.23	7400.59	-2491.25	-1075.71	1299069.28	3203344.62	40.152050	-104.772537	1.98	236.41	2484.45	
10144.00	89.32	177.64	7400.96	-2576.08	-1070.43	1298984.50	3203350.61	40.151817	-104.772518	3.01	109.64	2569.31	
10230.00	90.12	177.39	7401.38	-2662.00	-1066.70	1298898.62	3203355.04	40.151581	-104.772505	0.97	342.65	2655.25	
10315.00	90.25	179.09	7401.11	-2746.96	-1064.09	1298813.68	3203358.36	40.151348	-104.772496	2.01	85.62	2740.22	
10401.00	90.43	180.47	7400.60	-2832.95	-1063.76	1298727.69	3203359.40	40.151112	-104.772494	1.62	82.56	2826.21	
10486.00	90.12	180.57	7400.19	-2917.95	-1064.53	1298642.70	3203359.32	40.150879	-104.772497	0.38	162.12	2911.20	
10571.00	89.26	181.79	7400.65	-3002.93	-1066.28	1298557.71	3203358.28	40.150645	-104.772503	1.76	125.18	2996.17	
10657.00	90.18	184.01	7401.07	-3088.81	-1070.63	1298471.79	3203354.63	40.150410	-104.772519	2.79	67.50	3082.02	

## 5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor )													
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
10742.00	89.63	184.69	7401.21	-3173.56	-1077.08	1298386.99	3203348.89	40.150177	-104.772542	1.03	128.97	3166.73	
10828.00	89.81	183.16	7401.63	-3259.36	-1082.96	1298301.14	3203343.71	40.149942	-104.772563	1.79	276.71	3252.49	
10913.00	89.38	181.59	7402.23	-3344.28	-1086.48	1298216.20	3203340.88	40.149708	-104.772576	1.92	254.68	3337.39	
10998.00	88.83	179.88	7403.56	-3429.26	-1087.57	1298131.21	3203340.50	40.149475	-104.772580	2.11	252.16	3422.36	
11084.00	88.34	179.11	7405.68	-3515.23	-1086.82	1298045.25	3203341.96	40.149239	-104.772577	1.06	237.51	3508.33	
11169.00	88.21	177.76	7408.24	-3600.16	-1084.50	1297960.35	3203344.98	40.149006	-104.772569	1.59	264.48	3593.27	
11254.00	88.77	178.67	7410.48	-3685.08	-1081.85	1297875.44	3203348.33	40.148773	-104.772559	1.26	58.40	3678.21	
11340.00	90.99	180.37	7410.66	-3771.07	-1081.13	1297789.46	3203349.76	40.148537	-104.772556	3.25	37.45	3764.20	
11425.00	88.09	179.09	7411.34	-3856.06	-1080.73	1297704.48	3203350.86	40.148304	-104.772555	3.73	203.81	3849.19	
11511.00	86.55	179.72	7415.36	-3941.96	-1079.84	1297618.60	3203352.46	40.148068	-104.772552	1.93	157.79	3935.09	
11596.00	87.16	179.51	7420.03	-4026.83	-1079.27	1297533.73	3203353.73	40.147835	-104.772550	0.76	341.02	4019.96	
11681.00	87.10	179.88	7424.28	-4111.72	-1078.82	1297448.85	3203354.88	40.147602	-104.772548	0.44	99.23	4104.86	
11767.00	89.51	180.28	7426.83	-4197.67	-1078.94	1297362.89	3203355.47	40.147366	-104.772549	2.84	9.43	4190.81	
11853.00	89.26	178.78	7427.75	-4283.66	-1078.23	1297276.91	3203356.89	40.147130	-104.772546	1.77	260.53	4276.80	
11938.00	90.80	179.76	7427.71	-4368.65	-1077.15	1297191.94	3203358.67	40.146896	-104.772542	2.15	32.47	4361.80	
11947.00	90.99	179.77	7427.57	-4377.65	-1077.11	1297182.94	3203358.78	40.146872	-104.772542	2.11	3.01	4370.80	LAST WFT MWD SURVEY
12001.00	90.99	179.77	7426.63	-4431.64	-1076.89	1297128.95	3203359.44	40.146723	-104.772541	0.00	0.00	4424.79	PROJECTION TO TD

Formation Points (Relative to centre, TVD relative to Drill Floor )			
Name	MD (US ft)	TVD (US ft)	
PARKMAN	4061.71	3996.00	
SUSSEX	4483.66	4403.00	
SHARON SPRINGS	7296.15	7143.00	
NIOBRARA A	7402.63	7229.00	
NIOBRARA B	7485.60	7286.00	
NIOBRARA C	7560.44	7329.00	
FORT HAYS	7640.79	7363.00	
CODELL	7717.79	7385.00	