

**5D Plan Report**

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**Anadarko Petroleum**

**Field Name:** *WATTENBERG\_ANADARKO\_NAD 83*  
**Site Name:** *HOWARD 15-27HZ*  
**Well Name:** *HOWARD 25C-22HZ - ST1*  
**Plan:** *REGULATORY*

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Plan Data for HOWARD 25C-22HZ - ST1

Field: WATTENBERG\_ANADARKO\_NAD 83

Map Unit: USFT Vertical Reference Datum (VRD): Mean Sea Level  
Projected Coordinate System: NAD83 / Colorado North (ftUS)

Site: HOWARD 15-27HZ

Unit: USFeet TVD Reference:  
Company Name: Anadarko Petroleum  
Position: Northing: 1249373.86USft Latitude: 40.016224°  
Easting: 3175072.22USft Longitude: -104.874931°  
North Reference: True Grid Convergence: 0.40°  
Elevation Above VRD: 5033.00USft

Slot: HOWARD 25C-22HZ

Position:  
Offset is from Site centre  
+N/-S: -0.00USft Northing: 1249373.86USft Latitude: 40.016224°  
+E/-W: -0.00USft Easting: 3175072.22USft Longitude: -104.874931°  
Elevation Above VRD: 5033.00USft

Well: HOWARD 25C-22HZ - ST1

Type: Side-Track  
File Number:  
Vertical Section: Position offset of origin from Slot centre:  
+N/-S: 0.00USft Azimuth: 1.30°  
+E/-W: 0.00USft  
Magnetic Parameters:  
Model: Field Strength: Declination: Dip: Date:  
BGM 52632(nT) 8.61° 66.63° 2013-10-28

Plan Point Information:

DogLeg Severity Unit: °/100.00ft										Position offsets from Slot centre			
MD	Inc	Az	TVD	+N/-S	+E/-W	VSec	DLS	Toolface	Build	Turn			
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(DLSU)	(°)	(DLSU)	(DLSU)			
7101.00	0.94	105.22	7040.53	-447.80	-276.92	-453.97	0.00	0.0	0.00	0.00			
7160.00	0.98	101.71	7099.52	-448.03	-275.96	-454.18	0.12	302.5	0.07	-5.95			
8218.44	90.00	1.31	7774.00	224.03	-249.24	218.32	8.52	259.6	8.41	-9.49			
11018.44	90.00	1.31	7774.00	3023.30	-185.23	3018.32	0.00	0.0	0.00	0.00			
11114.35	90.96	1.30	7773.20	3119.18	-183.04	3114.22	1.00	359.4	1.00	-0.01			
14949.95	90.96	1.30	7709.00	6953.25	-96.07	6949.28	0.00	0.0	0.00	0.00			

Formation Point Information:

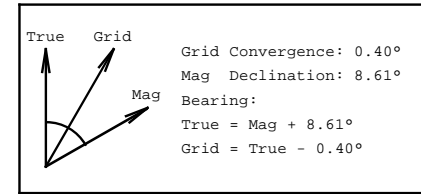
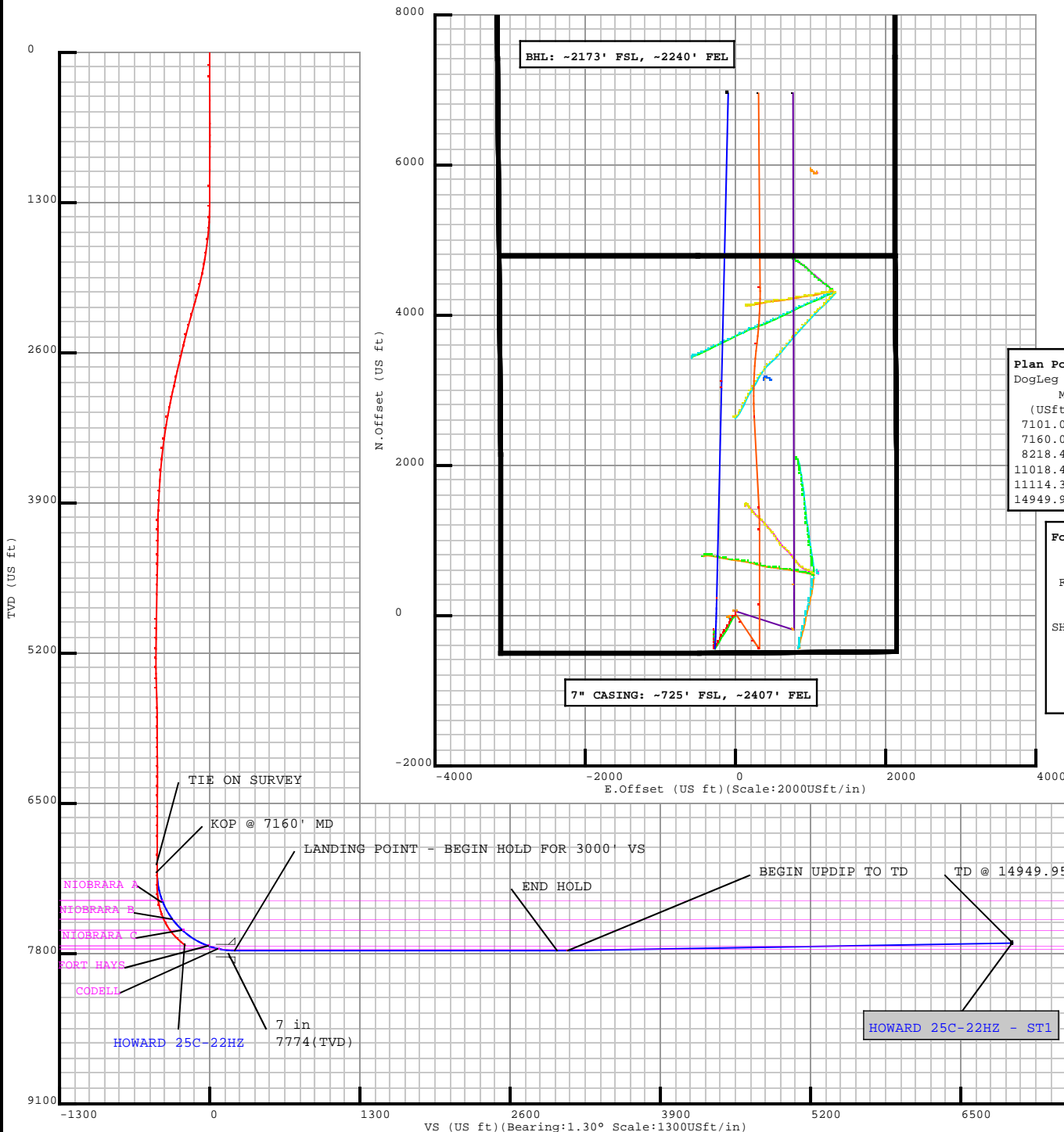
Name	TVD	Elevation	MD
	(USft)	(USft)	(USft)
FOXHILLSBASE	0.00	0.00	27200.00
SHANNON	0.00	0.00	799.00
SUSSEX	0.00	0.00	5329.00
SHARONSPRINGS	7325.00	-2276.00	7389.84
NIOBRARAA	7351.00	-2302.00	7417.62
NIOBRARAB	7509.00	-2460.00	7599.80
NIOBRARAC	7606.00	-2557.00	7732.55
FORTHAYS	7735.00	-2686.00	7988.27
CODELL	7760.00	-2711.00	8080.97

Target Set Information:

Name: HOWARD 25C-2HZ - ST1			
Name	TVD	Lat	Long
	(USft)	(°)	(°)
PBHL	7709.00	40.035312	-104.875274

Casing Point Information:

Name	MD	TVD
	(USft)	(USft)
7 in	8218.44	7774.00



## Plan Surveys for the HOWARD 25C-22HZ - ST1

<b>Site Name</b> HOWARD 15-27HZ	<b>Units :</b> US ft	<b>North Reference :</b> True	<b>Convergence Angle :</b> 0.40
	<b>Position</b>	<b>Northing :</b> 1249373.86 US ft	<b>Latitude :</b> 40.016224
		<b>Easting :</b> 3175072.22 US ft	<b>Longitude :</b> -104.874931
	<b>Elevation above:</b> 5033.00 US ft <b>Comment :</b>		
<b>Slot Name</b> HOWARD 25C-22HZ	<b>Position (Offsets relative to Site Centre)</b>		
	<b>+N / -S :</b> -0.00 US ft	<b>Northing :</b> 1249373.86 US ft	<b>Latitude :</b> 40.016224
	<b>+E / -W :</b> -0.00 US ft	<b>Easting :</b> 3175072.22 US ft	<b>Longitude :</b> -104.874931
	<b>Slot TVD Reference :</b> Ground Elevation <b>Elevation above :</b> 5033.00 US ft <b>Comment :</b>		
<b>Well Name</b> HOWARD 25C-22HZ - ST1	<b>Type :</b> Sidetrack	<b>UWI :</b>	<b>Plan :</b> REGULATORY
	<b>Parent :</b> HOWARD 25C-22HZ	<b>Tie Point Method :</b> MD	<b>Tie Point :</b> 7101.00 US ft
	<b>Rig Height <i>Drill Floor</i> :</b> 16.00 US ft	<b>Comment :</b>	
	<b>Relative to :</b> 5049.00 US ft		
	<b>Closure Distance :</b> 7403.26 US ft	<b>Closure Azimuth :</b> 1.39981°	
	<b>Vertical Section (Position of Origin Relative to Slot )</b>		
	<b>+N / -S :</b> 0.00 US ft	<b>+E / -W :</b> 0.00 US ft	<b>Az :</b> 1.30°
	<b>Magnetic Parameters</b>		
	<b>Model :</b> BGGM	<b>Field Strength :</b> 52632.6nT	<b>Dec :</b> 8.61°
			<b>Dip :</b> 66.63°
			<b>Date :</b> 28/Oct/2013

**Target Set****Name :** HOWARD 25C-2HZ - ST1**Number of Targets :** 1**Comment :**

TargetName:	Position (Relative to centre)			
PBHL	+N / -S : 6953.28US ft		Northing : 1256326.29 US ft	
Shape:	+E / -W : -96.04 US ft		Easting : 3174927.17US ft	
	Longitude : -104°52'30.986400"			
Cuboid	TVD (Drill Floor) : 7709.00 US ft			
	Orientation	Azimuth : 0.00°	Inclination : 0.00°	
	Dimensions	Length : 20.00 US ft	Breadth : 20.00 US ft	Height : 20.00 US ft

**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	8220.01	90.00	1.31	7775.00	225.03	-249.20	40.016842	-104.875821

**Well path created using minimum curvature****Salient 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)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
7101.00	0.94	105.22	7040.53	-447.80	-276.92	40.014995	-104.875920	0.00	0.00	-453.97	TIE ON SURVEY
7160.00	0.98	101.71	7099.52	-448.03	-275.96	40.014994	-104.875916	0.12	302.46	-454.18	KOP @ 7160' MD
7389.83	19.40	4.05	7325.00	-409.99	-271.30	40.015099	-104.875900	8.51	259.60	-416.04	SHARON SPRINGS :
7417.60	21.76	3.73	7351.00	-400.25	-270.64	40.015125	-104.875897	8.51	357.10	-406.29	NIOBRARA A :
7599.69	37.24	2.58	7509.00	-310.99	-265.94	40.015370	-104.875880	8.51	357.40	-316.94	NIOBRARA B :
7732.27	48.51	2.16	7606.00	-221.00	-262.24	40.015617	-104.875867	8.51	358.41	-226.90	NIOBRARA C :
7986.71	70.16	1.66	7735.00	-3.56	-255.10	40.016214	-104.875842	8.51	358.71	-9.35	FORT HAYS :
8077.59	77.89	1.52	7760.00	83.71	-252.69	40.016454	-104.875833	8.51	358.98	77.96	CODELL :
8220.01	90.00	1.31	7775.00	225.03	-249.20	40.016842	-104.875821	8.51	359.01	219.32	LANDING POINT; 7 in
8282.45	90.62	1.30	7774.66	287.45	-247.78	40.017013	-104.875816	1.00	359.43	281.76	
14950.37	90.62	1.30	7702.00	6953.25	-96.07	40.035312	-104.875274	0.00	0.00	6949.28	TD @ 14950.37' MD

**Interpolated 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)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.00	

## 5D Plan Report

Interpolated 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)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
100.00	0.16	103.20	100.00	-0.03	0.11	0.19	103.20	-0.02	
200.00	0.32	99.53	200.00	-0.11	0.53	0.15	350.83	-0.10	
300.00	0.51	51.69	300.00	0.07	1.15	0.44	270.28	0.09	
400.00	0.37	38.97	399.99	0.65	1.73	0.24	194.14	0.69	
500.00	0.22	358.82	499.99	1.09	1.93	0.24	221.81	1.13	
600.00	0.23	293.74	599.99	1.38	1.74	0.25	244.50	1.41	
700.00	0.13	85.91	699.99	1.46	1.60	0.45	173.21	1.49	
800.00	0.27	107.30	799.99	1.40	1.98	0.11	54.55	1.44	
800.01	0.27	107.30	800.00	1.40	1.98	0.00	0.00	1.44	FOX HILLS BASE : 9 5/8 in
850.00	0.09	154.60	849.99	1.32	2.14	0.66	162.85	1.37	
900.00	0.30	256.28	899.99	1.25	2.03	0.66	117.78	1.30	
1000.00	0.49	205.49	999.99	0.86	1.49	0.50	253.21	0.90	
1100.00	0.40	209.13	1099.98	0.10	1.17	0.20	154.94	0.13	
1200.00	0.25	278.11	1199.98	-0.28	0.83	0.73	129.27	-0.26	
1300.00	1.55	266.94	1299.97	0.19	-0.05	4.54	278.21	0.19	
1400.00	4.34	244.22	1399.81	-1.62	-5.29	2.26	328.47	-1.74	
1500.00	6.43	234.23	1499.36	-6.49	-13.30	2.30	330.33	-6.79	
1600.00	8.54	223.20	1598.51	-15.09	-23.04	2.64	317.66	-15.60	
1700.00	9.34	213.22	1697.27	-27.42	-32.72	1.69	284.94	-28.15	
1800.00	10.69	208.74	1795.78	-42.29	-41.29	1.79	353.16	-43.22	
1900.00	12.79	206.95	1893.70	-60.18	-50.77	2.32	347.69	-61.31	
2000.00	14.67	207.05	1990.82	-81.46	-61.49	1.74	7.69	-82.84	
2100.00	16.02	206.48	2087.23	-105.12	-73.50	1.26	347.49	-106.77	
2200.00	17.59	207.39	2182.97	-130.88	-86.53	1.66	12.74	-132.81	
2300.00	17.23	206.94	2278.37	-157.56	-100.21	0.84	68.84	-159.79	
2400.00	17.41	209.66	2373.80	-183.87	-114.34	1.30	125.88	-186.42	
2500.00	16.49	212.23	2469.42	-208.87	-129.58	1.79	196.37	-211.76	
2600.00	15.46	212.84	2565.67	-231.95	-143.79	2.05	70.34	-235.16	
2700.00	16.19	216.68	2661.87	-254.11	-159.76	0.71	320.06	-257.67	
2800.00	15.51	215.16	2757.91	-276.68	-176.10	2.22	190.02	-280.61	
2900.00	14.48	210.11	2854.63	-297.86	-190.11	2.05	269.09	-302.10	
3000.00	13.32	205.58	2951.58	-319.63	-201.28	2.12	193.29	-324.11	
3100.00	12.94	210.71	3049.08	-339.44	-211.33	2.01	80.07	-344.15	
3200.00	12.02	212.90	3146.64	-357.92	-223.16	1.44	180.36	-362.89	
3300.00	10.46	211.83	3244.72	-374.38	-233.64	1.61	188.30	-379.58	
3400.00	9.00	211.15	3343.28	-388.78	-242.46	1.44	183.66	-394.18	
3500.00	7.76	211.57	3442.21	-401.24	-250.04	1.39	180.36	-406.81	
3600.00	6.41	211.59	3541.44	-411.73	-256.48	1.07	175.59	-417.44	
3700.00	5.30	212.74	3640.92	-420.41	-261.91	1.32	170.47	-426.24	
3800.00	4.09	213.79	3740.58	-427.16	-266.44	1.05	196.53	-433.10	
3900.00	3.48	209.10	3840.38	-432.62	-269.78	0.25	252.06	-438.63	

## 5D Plan Report

Interpolated 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)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
4000.00	3.24	206.82	3940.20	-437.87	-272.52	0.36	188.53	-443.95	
4100.00	1.15	230.50	4040.10	-441.51	-274.67	3.01	167.38	-447.63	
4200.00	0.92	103.86	4140.10	-442.04	-274.77	0.95	130.47	-448.16	
4300.00	0.76	167.15	4240.09	-442.92	-273.87	0.56	77.41	-449.02	
4400.00	1.08	196.60	4340.08	-444.47	-273.99	0.56	71.20	-450.57	
4500.00	1.08	196.85	4440.06	-446.30	-274.59	0.37	318.51	-452.42	
4600.00	1.30	192.99	4540.03	-448.38	-275.02	0.66	100.44	-454.50	
4700.00	1.32	219.98	4640.01	-450.40	-276.06	0.53	99.74	-456.55	
4800.00	1.39	232.91	4739.98	-451.93	-277.83	0.10	15.90	-458.11	
4850.03	1.43	233.45	4790.00	-452.66	-278.82	0.10	15.37	-458.87	SUSSEX :
4900.00	1.48	233.96	4839.95	-453.42	-279.84	0.10	14.83	-459.65	
5000.00	1.50	235.89	4939.91	-454.95	-282.01	0.19	146.13	-461.24	
5100.00	1.29	234.67	5039.88	-456.30	-284.06	0.33	210.89	-462.63	
5200.00	1.03	241.75	5139.86	-457.46	-285.71	0.42	133.62	-463.83	
5300.00	1.25	255.51	5239.85	-458.11	-287.49	0.42	37.72	-464.52	
5390.18	1.67	282.80	5330.00	-458.11	-289.72	0.94	74.27	-464.56	SHANNON :
5400.00	1.61	287.56	5339.81	-458.04	-290.00	2.29	128.04	-464.50	
5500.00	1.68	358.09	5439.78	-455.99	-291.16	0.42	42.94	-462.48	
5600.00	1.90	15.23	5539.73	-452.84	-290.94	1.08	94.42	-459.32	
5700.00	1.78	26.57	5639.67	-449.81	-289.47	0.57	204.75	-456.26	
5800.00	0.92	79.76	5739.64	-447.93	-288.16	2.07	145.06	-454.36	
5900.00	0.63	85.06	5839.63	-448.10	-286.69	0.62	205.50	-454.48	
6000.00	0.30	48.97	5939.63	-447.88	-285.97	0.39	278.37	-454.25	
6100.00	0.53	351.37	6039.63	-447.24	-285.76	0.78	279.34	-453.61	
6200.00	0.88	317.25	6139.62	-446.14	-286.47	0.20	264.47	-452.53	
6300.00	0.31	284.41	6239.61	-445.33	-287.43	1.20	192.70	-451.74	
6400.00	0.71	122.57	6339.61	-445.74	-287.22	1.01	267.51	-452.15	
6500.00	0.78	93.20	6439.60	-446.20	-285.89	0.46	242.40	-452.57	
6600.00	1.06	101.12	6539.58	-446.40	-284.28	0.16	130.16	-452.74	
6700.00	0.90	102.73	6639.57	-446.82	-282.58	0.42	210.15	-453.12	
6800.00	0.82	99.39	6739.56	-446.98	-281.23	0.41	46.49	-453.25	
6900.00	0.88	102.68	6839.55	-447.36	-279.69	0.19	209.27	-453.60	
7000.00	0.72	94.36	6939.54	-447.58	-278.31	0.19	212.67	-453.78	
7016.00	0.70	92.70	6955.53	-447.59	-278.11	0.19	220.98	-453.79	
7100.00	0.94	105.11	7039.53	-447.80	-276.94	0.35	43.11	-453.96	
7101.00	0.94	105.22	7040.53	-447.80	-276.92	0.35	30.70	-453.97	TIE ON SURVEY
7160.00	0.98	101.71	7099.52	-448.03	-275.96	0.12	302.46	-454.18	KOP @ 7160' MD
7200.00	3.37	17.93	7139.49	-446.98	-275.26	8.51	259.60	-453.11	
7300.00	11.77	5.94	7238.54	-434.02	-273.30	8.51	343.35	-440.11	
7389.83	19.40	4.05	7325.00	-409.99	-271.30	8.51	355.27	-416.04	SHARON SPRINGS :
7400.00	20.26	3.92	7334.57	-406.55	-271.06	8.51	357.10	-412.59	

## 5D Plan Report

Interpolated 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)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
7417.60	21.76	3.73	7351.00	-400.25	-270.64	8.51	357.22	-406.29	NIOBRARA A :
7500.00	28.76	3.07	7425.47	-365.17	-268.58	8.51	357.40	-371.17	
7599.69	37.24	2.58	7509.00	-310.99	-265.94	8.51	358.00	-316.94	NIOBRARA B :
7600.00	37.27	2.58	7509.25	-310.80	-265.93	8.51	358.41	-316.75	
7700.00	45.77	2.25	7584.05	-244.64	-263.15	8.51	358.41	-250.54	
7732.27	48.51	2.16	7606.00	-221.00	-262.24	8.51	358.65	-226.90	NIOBRARA C :
7800.00	54.27	2.00	7648.24	-168.13	-260.32	8.51	358.71	-173.99	
7900.00	62.78	1.81	7700.41	-82.96	-257.50	8.51	358.81	-88.79	
7986.71	70.16	1.66	7735.00	-3.56	-255.10	8.51	358.92	-9.35	FORT HAYS :
8000.00	71.29	1.64	7739.39	8.98	-254.74	8.51	358.98	3.20	
8077.59	77.89	1.52	7760.00	83.71	-252.69	8.51	358.98	77.96	CODELL :
8100.00	79.79	1.48	7764.34	105.69	-252.11	8.51	359.01	99.94	
8200.00	88.30	1.34	7774.70	205.03	-249.66	8.51	359.02	199.31	
8220.01	90.00	1.31	7775.00	225.03	-249.20	8.51	359.04	219.32	LANDING POINT; 7 in
8282.45	90.62	1.30	7774.66	287.45	-247.78	1.00	359.43	281.76	
8300.00	90.62	1.30	7774.47	305.00	-247.38	0.00	0.00	299.31	
8400.00	90.62	1.30	7773.38	404.97	-245.10	0.00	0.00	399.30	
8500.00	90.62	1.30	7772.29	504.93	-242.83	0.00	0.00	499.29	
8600.00	90.62	1.30	7771.20	604.90	-240.55	0.00	0.00	599.29	
8700.00	90.62	1.30	7770.11	704.87	-238.28	0.00	0.00	699.28	
8800.00	90.62	1.30	7769.02	804.84	-236.00	0.00	0.00	799.28	
8900.00	90.62	1.30	7767.93	904.81	-233.73	0.00	0.00	899.27	
9000.00	90.62	1.30	7766.84	1004.77	-231.45	0.00	0.00	999.26	
9100.00	90.62	1.30	7765.75	1104.74	-229.18	0.00	0.00	1099.26	
9200.00	90.62	1.30	7764.66	1204.71	-226.90	0.00	0.00	1199.25	
9300.00	90.62	1.30	7763.57	1304.68	-224.63	0.00	0.00	1299.25	
9400.00	90.62	1.30	7762.48	1404.65	-222.35	0.00	0.00	1399.24	
9500.00	90.62	1.30	7761.39	1504.62	-220.08	0.00	0.00	1499.23	
9600.00	90.62	1.30	7760.30	1604.58	-217.80	0.00	0.00	1599.23	
9700.00	90.62	1.30	7759.21	1704.55	-215.52	0.00	0.00	1699.22	
9800.00	90.62	1.30	7758.12	1804.52	-213.25	0.00	0.00	1799.22	
9900.00	90.62	1.30	7757.03	1904.49	-210.97	0.00	0.00	1899.21	
10000.00	90.62	1.30	7755.94	2004.46	-208.70	0.00	0.00	1999.20	
10100.00	90.62	1.30	7754.85	2104.42	-206.42	0.00	0.00	2099.20	
10200.00	90.62	1.30	7753.76	2204.39	-204.15	0.00	0.00	2199.19	
10300.00	90.62	1.30	7752.68	2304.36	-201.87	0.00	0.00	2299.19	
10400.00	90.62	1.30	7751.59	2404.33	-199.60	0.00	0.00	2399.18	
10500.00	90.62	1.30	7750.50	2504.30	-197.32	0.00	0.00	2499.18	
10600.00	90.62	1.30	7749.41	2604.27	-195.05	0.00	0.00	2599.17	
10700.00	90.62	1.30	7748.32	2704.23	-192.77	0.00	0.00	2699.16	
10800.00	90.62	1.30	7747.23	2804.20	-190.50	0.00	0.00	2799.16	

## 5D Plan Report

Interpolated 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)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
10900.00	90.62	1.30	7746.14	2904.17	-188.22	0.00	0.00	2899.15	
11000.00	90.62	1.30	7745.05	3004.14	-185.95	0.00	0.00	2999.15	
11100.00	90.62	1.30	7743.96	3104.11	-183.67	0.00	0.00	3099.14	
11200.00	90.62	1.30	7742.87	3204.07	-181.40	0.00	0.00	3199.13	
11300.00	90.62	1.30	7741.78	3304.04	-179.12	0.00	0.00	3299.13	
11400.00	90.62	1.30	7740.69	3404.01	-176.85	0.00	0.00	3399.12	
11500.00	90.62	1.30	7739.60	3503.98	-174.57	0.00	0.00	3499.12	
11600.00	90.62	1.30	7738.51	3603.95	-172.30	0.00	0.00	3599.11	
11700.00	90.62	1.30	7737.42	3703.92	-170.02	0.00	0.00	3699.10	
11800.00	90.62	1.30	7736.33	3803.88	-167.75	0.00	0.00	3799.10	
11900.00	90.62	1.30	7735.24	3903.85	-165.47	0.00	0.00	3899.09	
12000.00	90.62	1.30	7734.15	4003.82	-163.20	0.00	0.00	3999.09	
12100.00	90.62	1.30	7733.06	4103.79	-160.92	0.00	0.00	4099.08	
12200.00	90.62	1.30	7731.97	4203.76	-158.64	0.00	0.00	4199.07	
12300.00	90.62	1.30	7730.88	4303.72	-156.37	0.00	0.00	4299.07	
12400.00	90.62	1.30	7729.79	4403.69	-154.09	0.00	0.00	4399.06	
12500.00	90.62	1.30	7728.70	4503.66	-151.82	0.00	0.00	4499.06	
12600.00	90.62	1.30	7727.61	4603.63	-149.54	0.00	0.00	4599.05	
12700.00	90.62	1.30	7726.52	4703.60	-147.27	0.00	0.00	4699.04	
12800.00	90.62	1.30	7725.43	4803.57	-144.99	0.00	0.00	4799.04	
12900.00	90.62	1.30	7724.34	4903.53	-142.72	0.00	0.00	4899.03	
13000.00	90.62	1.30	7723.25	5003.50	-140.44	0.00	0.00	4999.03	
13100.00	90.62	1.30	7722.16	5103.47	-138.17	0.00	0.00	5099.02	
13200.00	90.62	1.30	7721.07	5203.44	-135.89	0.00	0.00	5199.01	
13300.00	90.62	1.30	7719.98	5303.41	-133.62	0.00	0.00	5299.01	
13400.00	90.62	1.30	7718.89	5403.37	-131.34	0.00	0.00	5399.00	
13500.00	90.62	1.30	7717.80	5503.34	-129.07	0.00	0.00	5499.00	
13600.00	90.62	1.30	7716.72	5603.31	-126.79	0.00	0.00	5598.99	
13700.00	90.62	1.30	7715.63	5703.28	-124.52	0.00	0.00	5698.99	
13800.00	90.62	1.30	7714.54	5803.25	-122.24	0.00	0.00	5798.98	
13900.00	90.62	1.30	7713.45	5903.22	-119.97	0.00	0.00	5898.97	
14000.00	90.62	1.30	7712.36	6003.18	-117.69	0.00	0.00	5998.97	
14100.00	90.62	1.30	7711.27	6103.15	-115.42	0.00	0.00	6098.96	
14200.00	90.62	1.30	7710.18	6203.12	-113.14	0.00	0.00	6198.96	
14300.00	90.62	1.30	7709.09	6303.09	-110.87	0.00	0.00	6298.95	
14400.00	90.62	1.30	7708.00	6403.06	-108.59	0.00	0.00	6398.94	
14500.00	90.62	1.30	7706.91	6503.02	-106.32	0.00	0.00	6498.94	
14600.00	90.62	1.30	7705.82	6602.99	-104.04	0.00	0.00	6598.93	
14700.00	90.62	1.30	7704.73	6702.96	-101.76	0.00	0.00	6698.93	
14800.00	90.62	1.30	7703.64	6802.93	-99.49	0.00	0.00	6798.92	
14900.00	90.62	1.30	7702.55	6902.90	-97.21	0.00	0.00	6898.91	



## 5D Plan Report

Interpolated 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)	DLS (°/100 US ft)	T.Face (°)	VS (US ft)	Comment
14950.37	90.62	1.30	7702.00	6953.25	-96.07	0.00	0.00	6949.28	TD @ 14950.37' MD

Formation Points (Relative to centre, TVD relative to Drill Floor )			
Name	MD (US ft)	TVD (US ft)	
FOX HILLS BASE	0.00	0.00	
SHANNON	799.00	0.00	
SUSSEX	5329.00	0.00	
SHARON SPRINGS	7389.83	7325.00	
NIOBRARA A	7417.60	7351.00	
NIOBRARA B	7599.69	7509.00	
NIOBRARA C	7732.27	7606.00	
FORT HAYS	7986.71	7735.00	
CODELL	8077.59	7760.00	