

**5D Plan Report****Anadarko Petroleum**

**Field Name:** *WATTENBURG\_NAD83*  
**Site Name:** *BERRY FARMS 41N-8HZ PAD*  
**Well Name:** *BERRY FARMS 31N-8HZ*  
**Plan:** *PLAN 1*





### 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)	(DLSU)	(°)	(DLSU)	(DLSU)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00									
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00									
1898.67	15.97	125.15	1888.37	-63.67	90.45	-91.21	2.00	125.1	2.00	0.00									
2205.80	15.97	125.15	2183.64	-112.33	159.56	-160.90	0.00	0.0	0.00	0.00									
3004.47	0.00	0.00	2972.00	-176.00	250.00	-252.11	2.00	180.0	-2.00	0.00									
6400.51	0.00	0.00	6368.04	-176.00	250.00	-252.11	0.00	0.0	0.00	0.00									
7301.54	90.10	270.69	6941.00	-169.11	-323.94	321.88	10.00	270.7	10.00	0.00									
11776.86	90.10	270.69	6933.00	-115.37	-4798.93	4797.19	0.00	0.0	0.00	0.00									

### Plan Data for BERRY FARMS 31N-8HZ

Field: WATTENBURG\_NAD83  
Map Unit: USFT Vertical Reference Datum (VRD): Mean Sea Level  
Projected Coordinate System: NAD83 / Colorado North (ftUS)

### Site: BERRY FARMS 41N-8HZ PAD

Unit: USFeet TVD Reference:  
Company Name: Anadarko Petroleum  
Position: Northing: 1332293.10USft Latitude: 40.244018°  
Easting: 3165843.86USft Longitude: -104.905895°  
North Reference: True Grid Convergence: 0.38°  
Elevation Above VRD: 4821.00USft

### Slot: BERRY FARMS 31N-8HZ

Position:  
Offset is from Site centre  
+N/-S: -60.11USft Northing: 1332232.99USft Latitude: 40.243853°  
+E/-W: 0.00USft Easting: 3165844.27USft Longitude: -104.905895°  
Elevation Above VRD: 4820.70USft

### Well: BERRY FARMS 31N-8HZ

Type: Main-Well  
File Number:  
Vertical Section: Position offset of origin from Slot centre:  
+N/-S: 60.11USft Azimuth: 270.69°  
+E/-W: -0.00USft  
Magnetic Parameters:  
Model: Field Strength: Declination: Dip: Date:  
BGGM 52755(nT) 8.65° 66.81° 2013-10-17

### Target Set Information:

Name: BERRY FARMS 31N-8HZ  
Name TVD Lat Long  
(USft) (USft) (°) (°)  
PBHL 6933.00 40.243535 -104.923086

### Casing Point Information:

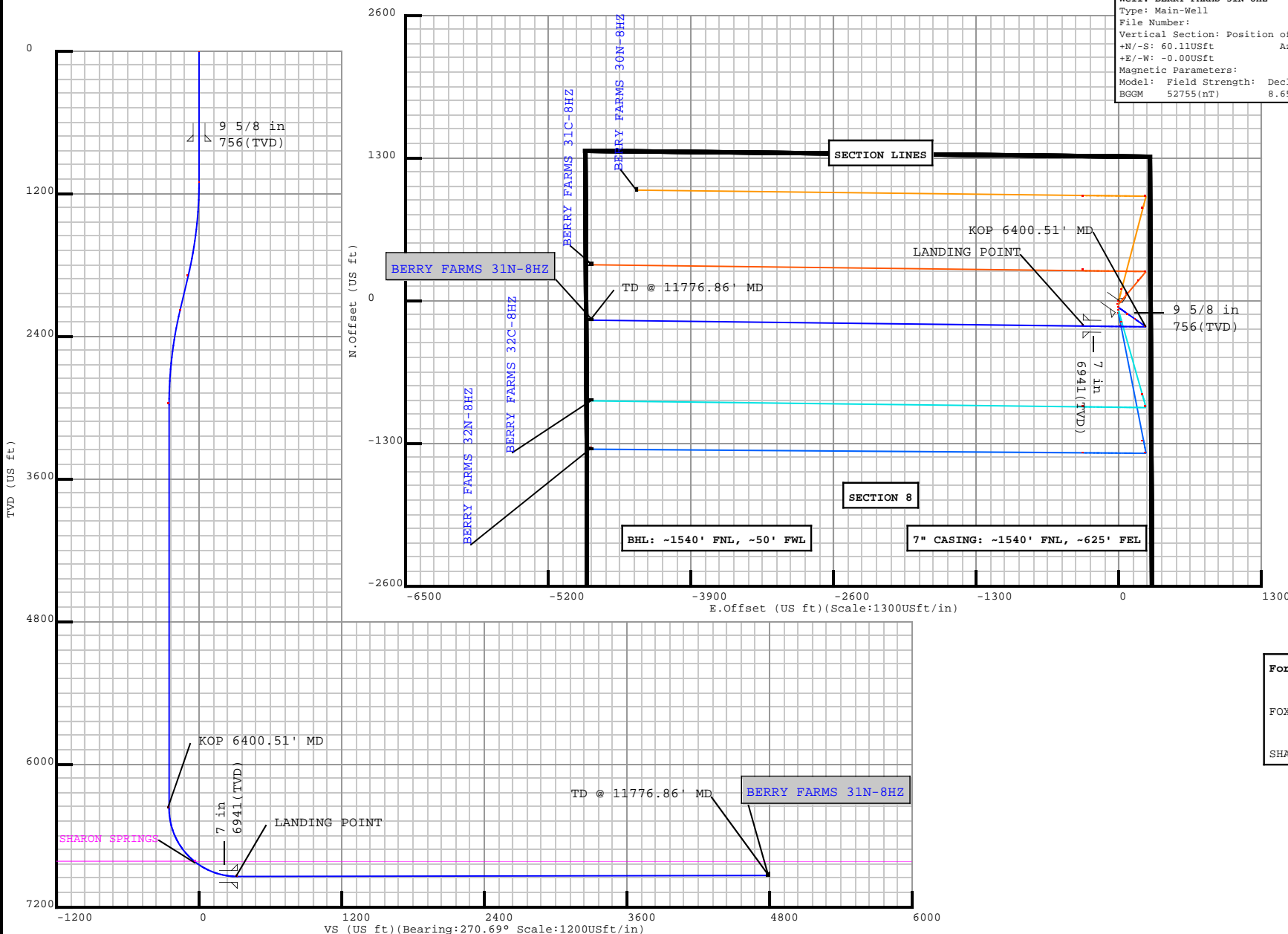
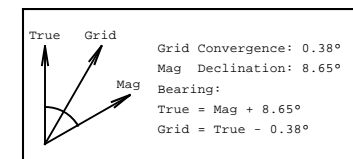
Name	MD	TVD
	(USft)	(USft)
9 5/8 in	756.00	756.00
7 in	7301.54	6941.00

### LINER: 6300.51' MD

KOP: 6400.51' MD

### Formation Point Information:

Name	TVD Elevation	MD
	(USft)	(USft)
FOX HILLS BASE	706.00	4131.70
SUSSEX	4123.00	714.70
SHANNON	4532.00	305.70
SHARON SPRINGS	6823.00	-1985.30



## Plan Surveys for the BERRY FARMS 31N-8HZ

<b>Site Name</b> BERRY FARMS 41N-8HZ PAD	<b>Units :</b> US ft	<b>North Reference :</b> True	<b>Convergence Angle :</b> 0.38
	<b>Position</b>	<b>Northing :</b> 1332293.10 US ft	<b>Latitude :</b> 40.244018
		<b>Easting :</b> 3165843.86 US ft	<b>Longitude :</b> -104.905895
	<b>Elevation above:</b> 4821.00 US ft <b>Comment :</b>		
<b>Slot Name</b> BERRY FARMS 31N-8HZ	<b>Position (Offsets relative to Site Centre)</b>		
	<b>+N / -S :</b> -60.11 US ft	<b>Northing :</b> 1332232.99 US ft	<b>Latitude :</b> 40.243853
	<b>+E / -W :</b> 0.00 US ft	<b>Easting :</b> 3165844.27 US ft	<b>Longitude :</b> -104.905895
	<b>Slot TVD Reference :</b> Ground Elevation <b>Elevation above :</b> 4820.70 US ft <b>Comment :</b>		
<b>Well Name</b> BERRY FARMS 31N-8HZ	<b>Type :</b> Main well	<b>UWI :</b>	<b>Plan :</b> PLAN 1
	<b>Rig Height</b> <b>Drill Floor :</b> 17.00 US ft	<b>Comment :</b>	
	<b>Relative to :</b> 4837.70 US ft		
	<b>Closure Distance :</b> 4800.31 US ft	<b>Closure Azimuth :</b> 268.623°	
	<b>Vertical Section (Position of Origin Relative to Slot )</b>		
	<b>+N / -S :</b> 60.11 US ft	<b>+E / -W :</b> -0.00 US ft	<b>Az :</b> 270.69°
	<b>Magnetic Parameters</b>		
	<b>Model :</b> BGGM	<b>Field Strength :</b> 52755.6nT	<b>Dec :</b> 8.65°
			<b>Dip :</b> 66.81°
			<b>Date :</b> 17/Oct/2013

**Target Set****Name :** BERRY FARMS 31N-8HZ**Number of Targets :** 1**Comment :**

TargetName:	Position (Relative to centre)			
PBHL	+N / -S : -115.37US ft	Northing : 1332085.47 US ft	Latitude : 40°14'36.726000"	
Shape:	+E / -W : -4798.93 US ft	Easting : 3161046.22US ft	Longitude : -104°55'23.109600"	
Cuboid	TVD (Drill Floor) : 6933.00 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 (°)
9 5/8 in	756.00	0.00	0.00	756.00	0.00	0.00	40.243853	-104.905895
7 in	7301.54	90.10	270.69	6941.00	-169.11	-323.94	40.243389	-104.907055

**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
0.00	0.00	0.00	0.00	0.00	0.00	40.243853	-104.905895	0.00	0.00	-0.73	
706.00	0.00	0.00	706.00	0.00	0.00	40.243853	-104.905895	0.00	0.00	-0.73	FOX HILLS BASE :
756.00	0.00	0.00	756.00	0.00	0.00	40.243853	-104.905895	0.00	0.00	-0.73	9 5/8 in
1100.00	0.00	0.00	1100.00	0.00	0.00	40.243853	-104.905895	0.00	0.00	-0.73	
1898.67	15.97	125.15	1888.37	-63.67	90.45	40.243678	-104.905571	2.00	125.15	-91.94	
2205.80	15.97	125.15	2183.64	-112.33	159.56	40.243545	-104.905323	0.00	0.00	-161.63	
3004.47	0.00	0.00	2972.00	-176.00	250.00	40.243370	-104.904999	2.00	180.00	-252.83	
4155.47	0.00	0.00	4123.00	-176.00	250.00	40.243370	-104.904999	0.00	0.00	-252.83	SUSSEX :
4564.47	0.00	0.00	4532.00	-176.00	250.00	40.243370	-104.904999	0.00	0.00	-252.83	SHANNON :
6400.51	0.00	0.00	6368.04	-176.00	250.00	40.243370	-104.904999	0.00	0.00	-252.83	KOP 6400.51' MD
6926.17	52.57	270.69	6823.00	-173.30	25.34	40.243377	-104.905804	10.00	270.69	-28.15	SHARON SPRINGS :
7301.54	90.10	270.69	6941.00	-169.11	-323.94	40.243389	-104.907055	10.00	0.00	321.15	LANDING POINT; 7 in
11776.86	90.10	270.69	6933.00	-115.37	-4798.93	40.243535	-104.923086	0.00	0.00	4796.46	TD @ 11776.86' MD

## 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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.73	FOX HILLS BASE : 9 5/8 in
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	-0.73	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	-0.73	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	-0.73	
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	-0.73	
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	-0.73	
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	-0.73	
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	-0.73	
706.00	0.00	0.00	706.00	0.00	0.00	0.00	0.00	-0.73	
756.00	0.00	0.00	756.00	0.00	0.00	0.00	0.00	-0.73	
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	-0.73	
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	-0.73	
1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	-0.73	
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	-0.73	
1200.00	2.00	125.15	1199.98	-1.00	1.43	2.00	125.15	-2.17	
1300.00	4.00	125.15	1299.84	-4.02	5.71	2.00	0.00	-6.48	
1400.00	6.00	125.15	1399.45	-9.03	12.83	2.00	0.00	-13.67	
1500.00	8.00	125.15	1498.70	-16.05	22.80	2.00	0.00	-23.72	
1600.00	10.00	125.15	1597.47	-25.05	35.59	2.00	0.00	-36.62	
1700.00	12.00	125.15	1695.62	-36.04	51.19	2.00	0.00	-52.35	
1800.00	14.00	125.15	1793.06	-48.99	69.58	2.00	0.00	-70.90	
1898.67	15.97	125.15	1888.37	-63.67	90.45	2.00	0.00	-91.94	
1900.00	15.97	125.15	1889.64	-63.88	90.75	0.00	0.00	-92.24	
2000.00	15.97	125.15	1985.78	-79.73	113.25	0.00	0.00	-114.93	
2100.00	15.97	125.15	2081.92	-95.57	135.75	0.00	0.00	-137.62	
2200.00	15.97	125.15	2178.06	-111.41	158.25	0.00	0.00	-160.31	
2205.80	15.97	125.15	2183.64	-112.33	159.56	0.00	0.00	-161.63	
2300.00	14.09	125.15	2274.61	-126.39	179.53	2.00	180.00	-181.77	
2400.00	12.09	125.15	2372.01	-139.43	198.05	2.00	180.00	-200.44	
2500.00	10.09	125.15	2470.13	-150.50	213.78	2.00	180.00	-216.30	
2600.00	8.09	125.15	2568.87	-159.59	226.70	2.00	180.00	-229.33	
2700.00	6.09	125.15	2668.10	-166.70	236.79	2.00	180.00	-239.50	
2800.00	4.09	125.15	2767.70	-171.80	244.04	2.00	180.00	-246.82	
2900.00	2.09	125.15	2867.55	-174.90	248.45	2.00	180.00	-251.26	
3000.00	0.09	125.15	2967.53	-176.00	250.00	2.00	180.00	-252.83	
3004.47	0.00	0.00	2972.00	-176.00	250.00	2.00	180.00	-252.83	
3100.00	0.00	0.00	3067.53	-176.00	250.00	0.00	0.00	-252.83	
3200.00	0.00	0.00	3167.53	-176.00	250.00	0.00	0.00	-252.83	
3300.00	0.00	0.00	3267.53	-176.00	250.00	0.00	0.00	-252.83	
3400.00	0.00	0.00	3367.53	-176.00	250.00	0.00	0.00	-252.83	
3500.00	0.00	0.00	3467.53	-176.00	250.00	0.00	0.00	-252.83	

## 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
3600.00	0.00	0.00	3567.53	-176.00	250.00	0.00	0.00	-252.83	
3700.00	0.00	0.00	3667.53	-176.00	250.00	0.00	0.00	-252.83	
3800.00	0.00	0.00	3767.53	-176.00	250.00	0.00	0.00	-252.83	
3900.00	0.00	0.00	3867.53	-176.00	250.00	0.00	0.00	-252.83	
4000.00	0.00	0.00	3967.53	-176.00	250.00	0.00	0.00	-252.83	
4100.00	0.00	0.00	4067.53	-176.00	250.00	0.00	0.00	-252.83	
4155.47	0.00	0.00	4123.00	-176.00	250.00	0.00	0.00	-252.83	SUSSEX :
4200.00	0.00	0.00	4167.53	-176.00	250.00	0.00	0.00	-252.83	
4300.00	0.00	0.00	4267.53	-176.00	250.00	0.00	0.00	-252.83	
4400.00	0.00	0.00	4367.53	-176.00	250.00	0.00	0.00	-252.83	
4500.00	0.00	0.00	4467.53	-176.00	250.00	0.00	0.00	-252.83	
4564.47	0.00	0.00	4532.00	-176.00	250.00	0.00	0.00	-252.83	SHANNON :
4600.00	0.00	0.00	4567.53	-176.00	250.00	0.00	0.00	-252.83	
4700.00	0.00	0.00	4667.53	-176.00	250.00	0.00	0.00	-252.83	
4800.00	0.00	0.00	4767.53	-176.00	250.00	0.00	0.00	-252.83	
4900.00	0.00	0.00	4867.53	-176.00	250.00	0.00	0.00	-252.83	
5000.00	0.00	0.00	4967.53	-176.00	250.00	0.00	0.00	-252.83	
5100.00	0.00	0.00	5067.53	-176.00	250.00	0.00	0.00	-252.83	
5200.00	0.00	0.00	5167.53	-176.00	250.00	0.00	0.00	-252.83	
5300.00	0.00	0.00	5267.53	-176.00	250.00	0.00	0.00	-252.83	
5400.00	0.00	0.00	5367.53	-176.00	250.00	0.00	0.00	-252.83	
5500.00	0.00	0.00	5467.53	-176.00	250.00	0.00	0.00	-252.83	
5600.00	0.00	0.00	5567.53	-176.00	250.00	0.00	0.00	-252.83	
5700.00	0.00	0.00	5667.53	-176.00	250.00	0.00	0.00	-252.83	
5800.00	0.00	0.00	5767.53	-176.00	250.00	0.00	0.00	-252.83	
5900.00	0.00	0.00	5867.53	-176.00	250.00	0.00	0.00	-252.83	
6000.00	0.00	0.00	5967.53	-176.00	250.00	0.00	0.00	-252.83	
6100.00	0.00	0.00	6067.53	-176.00	250.00	0.00	0.00	-252.83	
6200.00	0.00	0.00	6167.53	-176.00	250.00	0.00	0.00	-252.83	
6300.00	0.00	0.00	6267.53	-176.00	250.00	0.00	0.00	-252.83	
6400.00	0.00	0.00	6367.53	-176.00	250.00	0.00	0.00	-252.83	
6400.51	0.00	0.00	6368.04	-176.00	250.00	0.00	0.00	-252.83	KOP 6400.51' MD
6500.00	9.95	270.69	6467.03	-175.90	241.39	10.00	270.69	-244.22	
6600.00	19.95	270.69	6563.52	-175.59	215.63	10.00	0.00	-218.46	
6700.00	29.95	270.69	6654.08	-175.08	173.51	10.00	0.00	-176.33	
6800.00	39.95	270.69	6735.94	-174.40	116.30	10.00	0.00	-119.12	
6900.00	49.95	270.69	6806.62	-173.55	45.75	10.00	0.00	-48.56	
6926.17	52.57	270.69	6823.00	-173.30	25.34	10.00	0.00	-28.15	SHARON SPRINGS :
7000.00	59.95	270.69	6863.98	-172.57	-36.01	10.00	0.00	33.20	
7100.00	69.95	270.69	6906.27	-171.48	-126.48	10.00	0.00	123.68	
7200.00	79.95	270.69	6932.21	-170.32	-222.92	10.00	0.00	220.12	

## 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
7300.00	89.95	270.69	6941.00	-169.13	-322.40	10.00	0.00	319.61	LANDING POINT; 7 in
7301.54	90.10	270.69	6941.00	-169.11	-323.94	10.00	0.00	321.15	
7400.00	90.10	270.69	6940.83	-167.93	-422.39	0.00	0.00	419.61	
7500.00	90.10	270.69	6940.65	-166.73	-522.38	0.00	0.00	519.61	
7600.00	90.10	270.69	6940.47	-165.53	-622.37	0.00	0.00	619.61	
7700.00	90.10	270.69	6940.29	-164.32	-722.37	0.00	0.00	719.61	
7800.00	90.10	270.69	6940.11	-163.12	-822.36	0.00	0.00	819.61	
7900.00	90.10	270.69	6939.93	-161.92	-922.35	0.00	0.00	919.61	
8000.00	90.10	270.69	6939.75	-160.72	-1022.35	0.00	0.00	1019.61	
8100.00	90.10	270.69	6939.57	-159.52	-1122.34	0.00	0.00	1119.61	
8200.00	90.10	270.69	6939.40	-158.32	-1222.33	0.00	0.00	1219.61	
8300.00	90.10	270.69	6939.22	-157.12	-1322.32	0.00	0.00	1319.61	
8400.00	90.10	270.69	6939.04	-155.92	-1422.32	0.00	0.00	1419.61	
8500.00	90.10	270.69	6938.86	-154.72	-1522.31	0.00	0.00	1519.61	
8600.00	90.10	270.69	6938.68	-153.52	-1622.30	0.00	0.00	1619.61	
8700.00	90.10	270.69	6938.50	-152.32	-1722.29	0.00	0.00	1719.61	
8800.00	90.10	270.69	6938.32	-151.12	-1822.29	0.00	0.00	1819.61	
8900.00	90.10	270.69	6938.14	-149.92	-1922.28	0.00	0.00	1919.61	
9000.00	90.10	270.69	6937.96	-148.72	-2022.27	0.00	0.00	2019.61	
9100.00	90.10	270.69	6937.79	-147.52	-2122.26	0.00	0.00	2119.61	
9200.00	90.10	270.69	6937.61	-146.31	-2222.26	0.00	0.00	2219.61	
9300.00	90.10	270.69	6937.43	-145.11	-2322.25	0.00	0.00	2319.61	
9400.00	90.10	270.69	6937.25	-143.91	-2422.24	0.00	0.00	2419.61	
9500.00	90.10	270.69	6937.07	-142.71	-2522.23	0.00	0.00	2519.61	
9600.00	90.10	270.69	6936.89	-141.51	-2622.23	0.00	0.00	2619.61	
9700.00	90.10	270.69	6936.71	-140.31	-2722.22	0.00	0.00	2719.60	
9800.00	90.10	270.69	6936.53	-139.11	-2822.21	0.00	0.00	2819.60	
9900.00	90.10	270.69	6936.36	-137.91	-2922.21	0.00	0.00	2919.60	
10000.00	90.10	270.69	6936.18	-136.71	-3022.20	0.00	0.00	3019.60	
10100.00	90.10	270.69	6936.00	-135.51	-3122.19	0.00	0.00	3119.60	
10200.00	90.10	270.69	6935.82	-134.31	-3222.18	0.00	0.00	3219.60	
10300.00	90.10	270.69	6935.64	-133.11	-3322.18	0.00	0.00	3319.60	
10400.00	90.10	270.69	6935.46	-131.91	-3422.17	0.00	0.00	3419.60	
10500.00	90.10	270.69	6935.28	-130.71	-3522.16	0.00	0.00	3519.60	
10600.00	90.10	270.69	6935.10	-129.50	-3622.15	0.00	0.00	3619.60	
10700.00	90.10	270.69	6934.93	-128.30	-3722.15	0.00	0.00	3719.60	
10800.00	90.10	270.69	6934.75	-127.10	-3822.14	0.00	0.00	3819.60	
10900.00	90.10	270.69	6934.57	-125.90	-3922.13	0.00	0.00	3919.60	
11000.00	90.10	270.69	6934.39	-124.70	-4022.12	0.00	0.00	4019.60	
11100.00	90.10	270.69	6934.21	-123.50	-4122.12	0.00	0.00	4119.60	
11200.00	90.10	270.69	6934.03	-122.30	-4222.11	0.00	0.00	4219.60	

## 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
11300.00	90.10	270.69	6933.85	-121.10	-4322.10	0.00	0.00	4319.60	
11400.00	90.10	270.69	6933.67	-119.90	-4422.09	0.00	0.00	4419.60	
11500.00	90.10	270.69	6933.50	-118.70	-4522.09	0.00	0.00	4519.60	
11600.00	90.10	270.69	6933.32	-117.50	-4622.08	0.00	0.00	4619.60	
11700.00	90.10	270.69	6933.14	-116.30	-4722.07	0.00	0.00	4719.60	
11776.86	90.10	270.69	6933.00	-115.37	-4798.93	0.00	0.00	4796.46	TD @ 11776.86' MD

Formation Points (Relative to centre, TVD relative to Drill Floor )			
Name	MD (US ft)	TVD (US ft)	
FOX HILLS BASE	706.00	706.00	
SUSSEX	4155.47	4123.00	
SHANNON	4564.47	4532.00	
SHARON SPRINGS	6926.17	6823.00	