

**5D Plan Report**

Anadarko Petroleum

Field Name: *WATTENBURG_NAD83*
Site Name: *BROTEMARKLE 4C-13HZ PAD*
Well Name: *BROTEMARKLE 4N-13HZ*
Plan: *PLAN 1*



Plan Data for BROTEMARKLE 4N-13HZ

Field: WATTENBURG_NAD83

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

Site: BROTEMARKLE 4C-13HZ PAD

Unit: USFeet TVD Reference:
Company Name: Anadarko Petroleum
Position: Northing: 1323477.82USft Latitude: 40.218780°
Easting: 3215084.96USft Longitude: -104.729780°
North Reference: True Grid Convergence: 0.50°
Elevation Above VRD: 5024.00USft

Slot: BROTEMARKLE 4N-13HZ

Position:
Offset is from Site centre
+N/-S: -0.36USft Northing: 1323477.72USft Latitude: 40.218779°
+E/-W: 30.16USft Easting: 3215115.12USft Longitude: -104.729672°
Elevation Above VRD: 5024.00USft

Well: BROTEMARKLE 4N-13HZ

Type: Main-Well
File Number:
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.36USft Azimuth: 359.83°
+E/-W: -30.16USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
BGGM 52749(nT) 8.54° 66.82° 2013-11-17

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)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.0	0.00	0.00	
2200.01	16.00	252.92	2189.65	-32.59	-106.09	-32.28	2.00	252.9	2.00	0.00	
4396.81	16.00	252.92	4301.35	-210.41	-684.92	-208.38	0.00	0.0	0.00	0.00	
5196.82	0.00	0.00	5091.00	-243.00	-791.00	-240.65	2.00	180.0	-2.00	0.00	
6759.86	0.00	0.00	6654.04	-243.00	-791.00	-240.65	0.00	0.0	0.00	0.00	
7658.48	89.86	359.83	7227.00	328.58	-792.72	330.93	10.00	359.8	10.00	0.00	
11827.04	89.86	359.83	7237.00	4497.10	-805.23	4499.47	0.00	0.0	0.00	0.00	

Formation Point Information:

Name	TVD Elevation	MD
(USft)	(USft)	(USft)
FOX HILLS MARKER	1230.00	3811.00
PARKMAN	4056.00	985.00
SUSSEX	4440.00	601.00
SHARON SPRINGS	7111.00	-2070.00
NIOBRARA A	7167.00	-2126.00
NIOBRARA B	7219.00	-2178.00

Target Set Information:

Name: BROTEMARKLE 4N-13HZ		
Name	TVD	Lat
(USft)	(°)	(°)
PBHL 7237.00	40.231124	-104.732556

LINER: 6659.86' MD

KOP: 6759.86' MD

Casing Point Information:

Name	MD	TVD
(USft)	(USft)	(USft)
9 5/8 in	1280.00	1280.00
7 in	7658.48	7227.00

True Grid

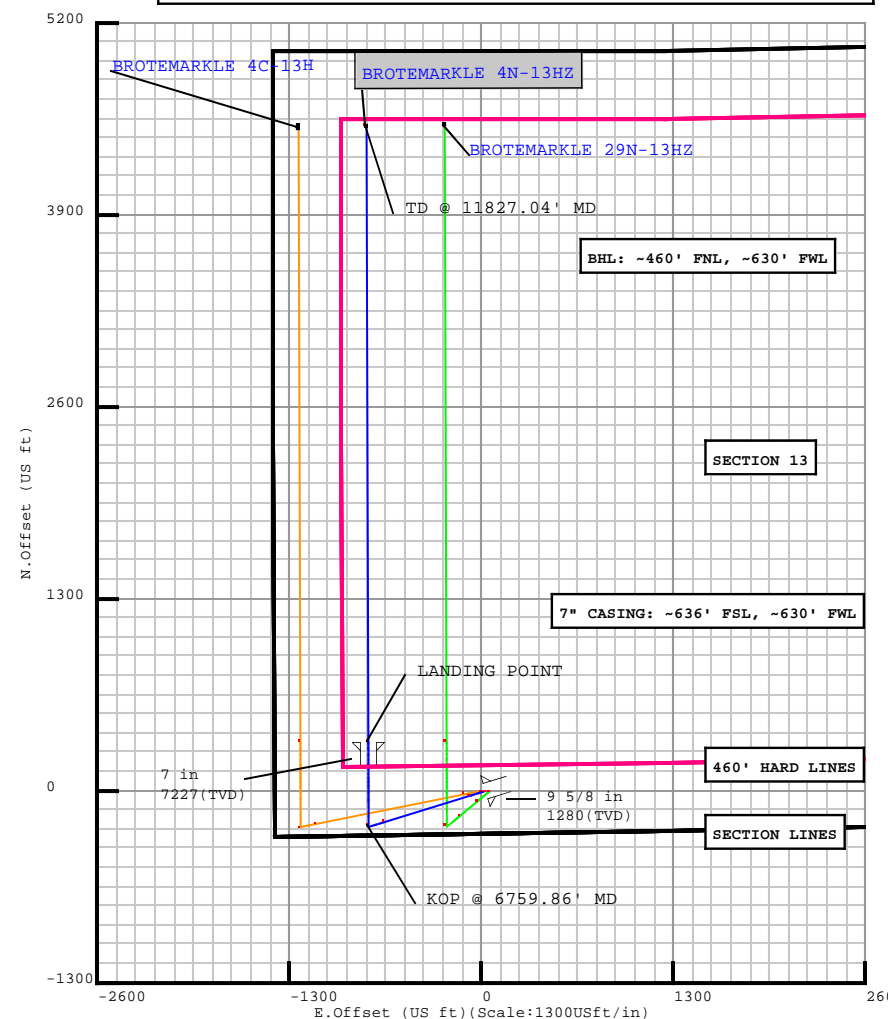
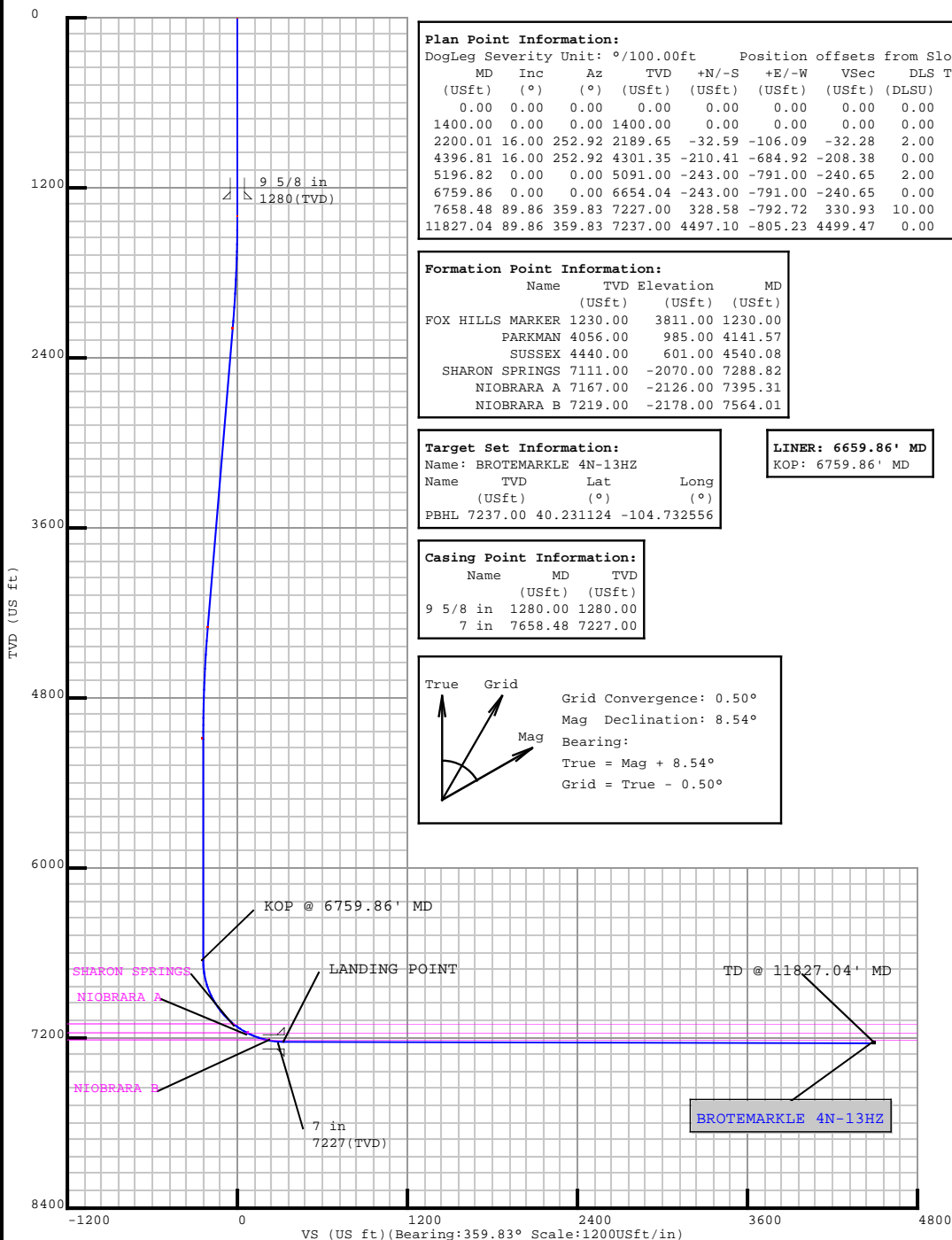
Grid Convergence: 0.50°

Mag Declination: 8.54°

Bearing:

True = Mag + 8.54°

Grid = True - 0.50°



Plan Surveys for the BROTEMARKLE 4N-13HZ

Site Name BROTEMARKLE 4C-13HZ PAD	Units : US ft	North Reference : True	Convergence Angle : 0.50
	Position	Northing : 1323477.82 US ft	Latitude : 40.218780
		Easting : 3215084.96 US ft	Longitude : -104.729780
	Elevation above: 5024.00 US ft Comment :		
Slot Name BROTEMARKLE 4N-13HZ	Position (Offsets relative to Site Centre)		
	+N / -S : -0.36 US ft	Northing : 1323477.72 US ft	Latitude : 40.218779
	+E / -W : 30.16 US ft	Easting : 3215115.12 US ft	Longitude : -104.729672
	Slot TVD Reference : Ground Elevation Elevation above : 5024.00 US ft Comment :		
Well Name BROTEMARKLE 4N-13HZ	Type : Main well	UWI :	Plan : PLAN 1
	Rig Height Drill Floor : 17.00 US ft	Comment :	
	Relative to : 5041.00 US ft		
	Closure Distance : 4568.62 US ft	Closure Azimuth : 349.849°	
Vertical Section (Position of Origin Relative to Slot)			
		+N / -S : 0.36 US ft	Az : 359.83°
Magnetic Parameters			
Model : BGGM	Field Strength : 52749.1nT	Dec : 8.54°	Dip : 66.82°
			Date : 17/Nov/2013

Target Set

Name : BROTEMARKLE 4N-13HZ

Number of Targets : 1

Comment :

TargetName:	Position (Relative to centre)			
PBHL	+N / -S : 4497.10US ft	Northing : 1327967.66 US ft	Latitude : 40°13'52.046400"	
Shape:	+E / -W : -805.23 US ft	Easting : 3214270.86US ft	Longitude : -104°43'57.201600"	
Cuboid	TVD (Drill Floor) : 7237.00 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	1280.00	0.00	0.00	1280.00	0.00	0.00	40.218779	-104.729672
7 in	7658.48	89.86	359.83	7227.00	328.58	-792.72	40.219681	-104.732511

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	40.218779	-104.729672	0.00	0.00	-0.45	
1230.00	0.00	0.00	1230.00	0.00	0.00	40.218779	-104.729672	0.00	0.00	-0.45	FOX HILLS MARKER :
1280.00	0.00	0.00	1280.00	0.00	0.00	40.218779	-104.729672	0.00	0.00	-0.45	9 5/8 in
1400.00	0.00	0.00	1400.00	0.00	0.00	40.218779	-104.729672	0.00	0.00	-0.45	
2200.01	16.00	252.92	2189.65	-32.59	-106.09	40.218690	-104.730052	2.00	252.92	-32.73	
4141.57	16.00	252.92	4056.00	-189.75	-617.66	40.218258	-104.731884	0.00	0.00	-188.37	PARKMAN :
4396.81	16.00	252.92	4301.35	-210.41	-684.92	40.218201	-104.732125	0.00	0.00	-208.83	
4540.08	13.13	252.92	4440.00	-220.99	-719.36	40.218172	-104.732248	2.00	180.00	-219.31	SUSSEX :
5196.82	0.00	0.00	5091.00	-243.00	-791.00	40.218112	-104.732505	2.00	180.00	-241.10	
6759.86	0.00	0.00	6654.04	-243.00	-791.00	40.218112	-104.732505	0.00	0.00	-241.10	KOP @ 6759.86' MD
7288.82	52.90	359.83	7111.00	-15.69	-791.68	40.218736	-104.732507	10.00	359.83	-13.79	SHARON SPRINGS :
7395.31	63.54	359.83	7167.00	74.70	-791.96	40.218984	-104.732508	10.00	0.00	76.60	NIOBRARA A :
7564.01	80.41	359.83	7219.00	234.55	-792.44	40.219423	-104.732510	10.00	0.00	236.45	NIOBRARA B :
7658.48	89.86	359.83	7227.00	328.58	-792.72	40.219681	-104.732511	10.00	0.00	330.48	7 in

5D Plan Report

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
7658.48	89.86	359.83	7227.00	328.58	-792.72	40.219681	-104.732511	0.00	0.00	330.48	LANDING POINT
11827.04	89.86	359.83	7237.00	4497.10	-805.23	40.231124	-104.732556	0.00	0.00	4499.02	TD @ 11827.04' 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		-0.45	
100.00	0.00	0.00	100.00	0.00	0.00		0.00	0.00		-0.45	
200.00	0.00	0.00	200.00	0.00	0.00		0.00	0.00		-0.45	
300.00	0.00	0.00	300.00	0.00	0.00		0.00	0.00		-0.45	
400.00	0.00	0.00	400.00	0.00	0.00		0.00	0.00		-0.45	
500.00	0.00	0.00	500.00	0.00	0.00		0.00	0.00		-0.45	
600.00	0.00	0.00	600.00	0.00	0.00		0.00	0.00		-0.45	
700.00	0.00	0.00	700.00	0.00	0.00		0.00	0.00		-0.45	
800.00	0.00	0.00	800.00	0.00	0.00		0.00	0.00		-0.45	
900.00	0.00	0.00	900.00	0.00	0.00		0.00	0.00		-0.45	
1000.00	0.00	0.00	1000.00	0.00	0.00		0.00	0.00		-0.45	
1100.00	0.00	0.00	1100.00	0.00	0.00		0.00	0.00		-0.45	
1200.00	0.00	0.00	1200.00	0.00	0.00		0.00	0.00		-0.45	
1230.00	0.00	0.00	1230.00	0.00	0.00		0.00	0.00		-0.45	FOX HILLS MARKER : 9 5/8 in
1280.00	0.00	0.00	1280.00	0.00	0.00		0.00	0.00		-0.45	
1300.00	0.00	0.00	1300.00	0.00	0.00		0.00	0.00		-0.45	
1400.00	0.00	0.00	1400.00	0.00	0.00		0.00	0.00		-0.45	
1500.00	2.00	252.92	1499.98	-0.51	-1.67		2.00	252.92		-0.96	
1600.00	4.00	252.92	1599.84	-2.05	-6.67		2.00	0.00		-2.48	
1700.00	6.00	252.92	1699.45	-4.61	-15.00		2.00	0.00		-5.01	
1800.00	8.00	252.92	1798.70	-8.19	-26.65		2.00	0.00		-8.56	
1900.00	10.00	252.92	1897.47	-12.78	-41.60		2.00	0.00		-13.11	
2000.00	12.00	252.92	1995.62	-18.38	-59.84		2.00	0.00		-18.66	
2100.00	14.00	252.92	2093.06	-24.99	-81.34		2.00	0.00		-25.20	
2200.00	16.00	252.92	2189.64	-32.59	-106.08		2.00	0.00		-32.72	
2200.01	16.00	252.92	2189.65	-32.59	-106.09		0.00	0.00		-32.73	
2300.00	16.00	252.92	2285.77	-40.68	-132.43		0.00	0.00		-40.74	
2400.00	16.00	252.92	2381.90	-48.78	-158.78		0.00	0.00		-48.76	
2500.00	16.00	252.92	2478.02	-56.87	-185.13		0.00	0.00		-56.77	
2600.00	16.00	252.92	2574.15	-64.97	-211.48		0.00	0.00		-64.79	
2700.00	16.00	252.92	2670.27	-73.06	-237.83		0.00	0.00		-72.81	
2800.00	16.00	252.92	2766.40	-81.16	-264.18		0.00	0.00		-80.82	
2900.00	16.00	252.92	2862.53	-89.25	-290.53		0.00	0.00		-88.84	
3000.00	16.00	252.92	2958.65	-97.35	-316.87		0.00	0.00		-96.85	
3100.00	16.00	252.92	3054.78	-105.44	-343.22		0.00	0.00		-104.87	

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
3200.00	16.00	252.92	3150.90	-113.53	-369.57	0.00	0.00	-112.89	
3300.00	16.00	252.92	3247.03	-121.63	-395.92	0.00	0.00	-120.90	
3400.00	16.00	252.92	3343.16	-129.72	-422.27	0.00	0.00	-128.92	
3500.00	16.00	252.92	3439.28	-137.82	-448.62	0.00	0.00	-136.94	
3600.00	16.00	252.92	3535.41	-145.91	-474.97	0.00	0.00	-144.95	
3700.00	16.00	252.92	3631.53	-154.01	-501.32	0.00	0.00	-152.97	
3800.00	16.00	252.92	3727.66	-162.10	-527.66	0.00	0.00	-160.98	
3900.00	16.00	252.92	3823.79	-170.20	-554.01	0.00	0.00	-169.00	
4000.00	16.00	252.92	3919.91	-178.29	-580.36	0.00	0.00	-177.02	
4100.00	16.00	252.92	4016.04	-186.39	-606.71	0.00	0.00	-185.03	
4141.57	16.00	252.92	4056.00	-189.75	-617.66	0.00	0.00	-188.37	PARKMAN :
4200.00	16.00	252.92	4112.16	-194.48	-633.06	0.00	0.00	-193.05	
4300.00	16.00	252.92	4208.29	-202.57	-659.41	0.00	0.00	-201.07	
4396.81	16.00	252.92	4301.35	-210.41	-684.92	0.00	0.00	-208.83	
4400.00	15.94	252.92	4304.42	-210.67	-685.75	2.00	180.00	-209.08	
4500.00	13.94	252.92	4401.03	-218.24	-710.39	2.00	180.00	-216.58	
4540.08	13.13	252.92	4440.00	-220.99	-719.36	2.00	180.00	-219.31	SUSSEX :
4600.00	11.94	252.92	4498.49	-224.81	-731.79	2.00	180.00	-223.09	
4700.00	9.94	252.92	4596.67	-230.38	-749.92	2.00	180.00	-228.60	
4800.00	7.94	252.92	4695.45	-234.94	-764.77	2.00	180.00	-233.12	
4900.00	5.94	252.92	4794.71	-238.49	-776.32	2.00	180.00	-236.63	
5000.00	3.94	252.92	4894.34	-241.02	-784.54	2.00	180.00	-239.14	
5100.00	1.94	252.92	4994.20	-242.52	-789.44	2.00	180.00	-240.63	
5196.82	0.00	0.00	5091.00	-243.00	-791.00	2.00	180.00	-241.10	
5200.00	0.00	0.00	5094.18	-243.00	-791.00	0.00	0.00	-241.10	
5300.00	0.00	0.00	5194.18	-243.00	-791.00	0.00	0.00	-241.10	
5400.00	0.00	0.00	5294.18	-243.00	-791.00	0.00	0.00	-241.10	
5500.00	0.00	0.00	5394.18	-243.00	-791.00	0.00	0.00	-241.10	
5600.00	0.00	0.00	5494.18	-243.00	-791.00	0.00	0.00	-241.10	
5700.00	0.00	0.00	5594.18	-243.00	-791.00	0.00	0.00	-241.10	
5800.00	0.00	0.00	5694.18	-243.00	-791.00	0.00	0.00	-241.10	
5900.00	0.00	0.00	5794.18	-243.00	-791.00	0.00	0.00	-241.10	
6000.00	0.00	0.00	5894.18	-243.00	-791.00	0.00	0.00	-241.10	
6100.00	0.00	0.00	5994.18	-243.00	-791.00	0.00	0.00	-241.10	
6200.00	0.00	0.00	6094.18	-243.00	-791.00	0.00	0.00	-241.10	
6300.00	0.00	0.00	6194.18	-243.00	-791.00	0.00	0.00	-241.10	
6400.00	0.00	0.00	6294.18	-243.00	-791.00	0.00	0.00	-241.10	
6500.00	0.00	0.00	6394.18	-243.00	-791.00	0.00	0.00	-241.10	
6600.00	0.00	0.00	6494.18	-243.00	-791.00	0.00	0.00	-241.10	
6700.00	0.00	0.00	6594.18	-243.00	-791.00	0.00	0.00	-241.10	
6759.86	0.00	0.00	6654.04	-243.00	-791.00	0.00	0.00	-241.10	KOP @ 6759.86' 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
6800.00	4.01	359.83	6694.15	-241.60	-791.01	10.00	359.83	-239.70	
6900.00	14.01	359.83	6792.79	-225.95	-791.05	10.00	0.00	-224.05	
7000.00	24.01	359.83	6887.21	-193.41	-791.15	10.00	0.00	-191.51	
7100.00	34.01	359.83	6974.55	-144.97	-791.30	10.00	0.00	-143.07	
7200.00	44.01	359.83	7052.15	-82.10	-791.48	10.00	0.00	-80.20	
7288.82	52.90	359.83	7111.00	-15.69	-791.68	10.00	0.00	-13.79	SHARON SPRINGS :
7300.00	54.01	359.83	7117.66	-6.71	-791.71	10.00	0.00	-4.81	
7395.31	63.54	359.83	7167.00	74.70	-791.96	10.00	0.00	76.60	NIOBRARA A :
7400.00	64.01	359.83	7169.07	78.91	-791.97	10.00	0.00	80.81	
7500.00	74.01	359.83	7204.84	172.16	-792.25	10.00	0.00	174.06	
7564.01	80.41	359.83	7219.00	234.55	-792.44	10.00	0.00	236.45	NIOBRARA B :
7600.00	84.01	359.83	7223.88	270.21	-792.54	10.00	0.00	272.11	
7658.48	89.86	359.83	7227.00	328.58	-792.72	10.00	0.00	330.48	7 in
7658.48	89.86	359.83	7227.00	328.58	-792.72	0.00	0.00	330.48	LANDING POINT
7700.00	89.86	359.83	7227.10	370.10	-792.84	0.00	0.00	372.00	
7800.00	89.86	359.83	7227.34	470.10	-793.14	0.00	0.00	472.00	
7900.00	89.86	359.83	7227.58	570.09	-793.44	0.00	0.00	572.00	
8000.00	89.86	359.83	7227.82	670.09	-793.74	0.00	0.00	672.00	
8100.00	89.86	359.83	7228.06	770.09	-794.04	0.00	0.00	772.00	
8200.00	89.86	359.83	7228.30	870.09	-794.34	0.00	0.00	872.00	
8300.00	89.86	359.83	7228.54	970.09	-794.64	0.00	0.00	972.00	
8400.00	89.86	359.83	7228.78	1070.09	-794.94	0.00	0.00	1071.99	
8500.00	89.86	359.83	7229.02	1170.09	-795.24	0.00	0.00	1171.99	
8600.00	89.86	359.83	7229.26	1270.09	-795.54	0.00	0.00	1271.99	
8700.00	89.86	359.83	7229.50	1370.09	-795.84	0.00	0.00	1371.99	
8800.00	89.86	359.83	7229.74	1470.09	-796.14	0.00	0.00	1471.99	
8900.00	89.86	359.83	7229.98	1570.09	-796.44	0.00	0.00	1571.99	
9000.00	89.86	359.83	7230.22	1670.09	-796.74	0.00	0.00	1671.99	
9100.00	89.86	359.83	7230.46	1770.09	-797.04	0.00	0.00	1771.99	
9200.00	89.86	359.83	7230.70	1870.08	-797.34	0.00	0.00	1871.99	
9300.00	89.86	359.83	7230.94	1970.08	-797.64	0.00	0.00	1971.99	
9400.00	89.86	359.83	7231.18	2070.08	-797.94	0.00	0.00	2071.99	
9500.00	89.86	359.83	7231.42	2170.08	-798.24	0.00	0.00	2171.99	
9600.00	89.86	359.83	7231.66	2270.08	-798.54	0.00	0.00	2271.99	
9700.00	89.86	359.83	7231.90	2370.08	-798.84	0.00	0.00	2371.99	
9800.00	89.86	359.83	7232.14	2470.08	-799.14	0.00	0.00	2471.99	
9900.00	89.86	359.83	7232.38	2570.08	-799.44	0.00	0.00	2571.99	
10000.00	89.86	359.83	7232.62	2670.08	-799.74	0.00	0.00	2671.99	
10100.00	89.86	359.83	7232.86	2770.08	-800.04	0.00	0.00	2771.99	
10200.00	89.86	359.83	7233.10	2870.08	-800.34	0.00	0.00	2871.99	
10300.00	89.86	359.83	7233.34	2970.08	-800.64	0.00	0.00	2971.99	

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
10400.00	89.86	359.83	7233.58	3070.08	-800.94	0.00	0.00	3071.99	
10500.00	89.86	359.83	7233.82	3170.08	-801.24	0.00	0.00	3171.99	
10600.00	89.86	359.83	7234.06	3270.07	-801.54	0.00	0.00	3271.99	
10700.00	89.86	359.83	7234.30	3370.07	-801.84	0.00	0.00	3371.99	
10800.00	89.86	359.83	7234.54	3470.07	-802.14	0.00	0.00	3471.99	
10900.00	89.86	359.83	7234.78	3570.07	-802.44	0.00	0.00	3571.99	
11000.00	89.86	359.83	7235.02	3670.07	-802.74	0.00	0.00	3671.99	
11100.00	89.86	359.83	7235.26	3770.07	-803.05	0.00	0.00	3771.99	
11200.00	89.86	359.83	7235.50	3870.07	-803.35	0.00	0.00	3871.99	
11300.00	89.86	359.83	7235.74	3970.07	-803.65	0.00	0.00	3971.99	
11400.00	89.86	359.83	7235.98	4070.07	-803.95	0.00	0.00	4071.99	
11500.00	89.86	359.83	7236.22	4170.07	-804.25	0.00	0.00	4171.99	
11600.00	89.86	359.83	7236.46	4270.07	-804.55	0.00	0.00	4271.99	
11700.00	89.86	359.83	7236.70	4370.07	-804.85	0.00	0.00	4371.99	
11800.00	89.86	359.83	7236.94	4470.07	-805.15	0.00	0.00	4471.99	
11827.04	89.86	359.83	7237.00	4497.10	-805.23	0.00	0.00	4499.02	TD @ 11827.04' MD

Formation Points (Relative to centre, TVD relative to Drill Floor)		
Name	MD (US ft)	TVD (US ft)
FOX HILLS MARKER	1230.00	1230.00
PARKMAN	4141.57	4056.00
SUSSEX	4540.08	4440.00
SHARON SPRINGS	7288.82	7111.00
NIOBRARA A	7395.31	7167.00
NIOBRARA B	7564.01	7219.00