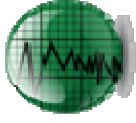




Weatherford[®]



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





Weatherford®

Weatherford
2000 Oil Drive
Casper, WY 82604

Survey Certification

Operating Company:	Anadarko Petroleum Corp.
Well Name:	HOWARD 10N-22HZ
State:	CO
County:	WELD
API Number:	512338230
Datum:	NAD 83
Survey Calculation Method:	Minimum Curvature
North Reference:	True North

I, Matt Maydew, hereby certify the attached
directional survey run from the measure depth of 1,364.00 feet
to the measured depth of 14,631.00 feet as accurate and true
to the best of my knowledge.

Signature

9-Dec-13

Date

Matt Maydew

Directional Planning
Weatherford - Rockies District



Plan Data for HOWARD 10N-22HZ

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

Slot: HOWARD 10N-22HZ

Position:
Offset is from Site centre
+N/-S: 29.87USft Northing: 1249403.73USft Latitude: 40.016306°
+E/-W: -0.00USft Eastng: 3175072.01USft Longitude: -104.874931°
Elevation Above VRD: 5033.00USft

Well: HOWARD 10N-22HZ

Type: Main-Well
File Number:
Vertical Section: Position offset of origin from Slot centre:
+N/-S: 0.00USft Azimuth: 360.04°
+E/-W: 0.00USft
Magnetic Parameters:
Model: Field Strength: Declination: Dip: Date:
BGGM 52629(nT) 8.61° 66.63° 2013-11-05

Survey Point Information:

Dogleg Severity Unit: °/100.00ft	MD	Inc	Az	TVD	+N/-S	+E/-W	VSec	DLS Toolface	Build	Turn Annotations
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(DLSU)	(°)	(DLSU)	(DLSU)
1156.00	0.27	47.32	1155.99	-1.08	0.56	-1.08	0.40	231.1	-0.18	-68.60 TIE ON
1364.00	0.30	73.18	1363.99	-0.59	1.44	-0.59	0.06	90.0	0.01	12.43 FIRST WFT MWD+IFR SVY
14631.00	91.23	357.62	7467.32	6854.78	274.28	6854.97	1.36	243.6	-0.60	-1.22 LAST WFT MWD+IFR SVY
14676.00	91.23	357.62	7466.35	6899.73	272.41	6899.92	0.00	0.00	0.00	PROJECTION TO TD

Casing Point Information:

Name	MD	TVD
(USft)	(USft)	(USft)
7 in 8003.00	7523.09	

Formation Point Information:

Name	MD	TVD
(USft)	(USft)	(USft)
FOX HILLS BASE	799.00	4250.00
SUSSEX	4789.00	260.00
SHANNON	5329.00	-280.00
SHARON SPRINGS	7305.00	-2256.00
NIORARA A	7348.00	-2299.00
NIORARA B	7506.00	-2457.00

Target Set Information:

Name	TVD	Lat	Long
(USft)	(°)	(°)	(°)
PBHL 7466.00	40.035317	-104.873831	

BHL: ~2149' FSL, ~1872' FEL

HOWARD 25C-22HZ -

STL - ACTUAL

HOWARD 10N-22HZ

HOWARD 24C-22HZ

SECTION 22

SECTION LINES

SECTION 27

PROJECTION TO TD

LAST WFT MWD+IFR SVY

TIE ON

FIRST WFT MWD SVY

7" CASING: ~764' FSL, ~1835' FEL

E.Offset (US ft) (Scale:1500mp/chtunit)

3000

1500

0

-1500

-3000

-4500

-6000

N.Offset (US ft)

7 in

7523.09(TVD)

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°

True = Mag + 8.61°

Grid = True - 0.40°

True Grid

Mag

Bearing:

True = Mag + 8.61°

Grid = True - 0.40°

Grid Convergence: 0.40°

Mag Declination: 8.61°



5D Survey Report

Anadarko Petroleum

Field Name: WATTENBERG_ANADARKO_NAD 83
Site Name: HOWARD 15-27HZ PAD
Well Name: HOWARD 10N-22HZ
Survey: Definitive Survey



DEFINITIVE SURVEYS FOR THE HOWARD 10N-22HZ

Site Name HOWARD 15-27HZ PAD	Units : US ft		North Reference : True		Convergence Angle : 0.40	
	Position		Northing : 1249373.86 US ft		Latitude : 40.016224	
			Easting : 3175072.22 US ft		Longitude : -104.874931	
Elevation above:5033.00 US ft						
Comment :						
Slot Name HOWARD 10N-22HZ	Position (Offsets relative to Site Centre)					
	+ N / -S : 29.87 US ft		Northing :1249403.73 US ft		Latitude : 40.016306	
	+ E / -W : -0.00 US ft		Easting :3175072.01 US ft		Longitude : -104.874931	
Slot TVD Reference : Ground Elevation						
Elevation above : 5033.00 US ft						
Comment :						
Well Name HOWARD 10N-22HZ	Type : Main well					
	Rig Height <i>Drill Floor</i> : 16.00 US ft					
	Relative to : 5049.00 US ft					
	Closure Distance : 6905.11 US ft					
	Vertical Section (Position of Origin Relative to Slot)					
	+ N / -S : 0.00 US ft		+ E / -W : 0.00 US ft		Az :0.03°	
Target Set						
Name : HOWARD 10N			Number of Targets : 1			
Comment :						
TargetName:						
PBHL			Position (Relative to centre)		Latitude : 40°2'7.141200"	
Shape:			Northing : 1256330.96 US ft		Longitude : -104°52'25.791600"	
Cuboid			Easting : 3175331.20US ft			
TVD (Drill Floor) : 7466.00 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	

5D Survey Report

Survey Name :Definitive Survey			
Date : 19/Jun/2013		Survey Tool :	Company :
Magnetic Model			
Model Name: BGGM	Date: 22/May/2013	Field Strength: 52684.0 nT	Dip: 66.64°
Survey Tool Ranges			
Name	Start MD (us ft)	End MD (us ft)	Source Survey
NSG Static GMS	0.00	1156.00	SURFACE SURVEYS
MWD + IFR	1156.00	14676.00	WFT MWD + IFR SURVEYS

Casing Points (Relative to centre, TVD relative to Drill Floor)						
Name	MD (US ft)	Inc (°)	TVD (US ft)	Lat (°)	Long (°)	Alt (US ft)
7 in	8003.00	88.03		40.016306	-104.874931	7523.09
				40.016306	-104.874931	322.01
				40.016306	-104.874932	234.06
				40.016305	-104.874932	40.016949
				40.016305	-104.874931	-104.873781

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)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T.Face (°)	CL (US ft)	V.S (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
0.00	0.00	0.00	0.00	0.00	0.00	40.016306	-104.874931	0.00	0.00	0.00	-0.00	0.00	0.00	2
16.00	0.00	0.00	16.00	0.00	0.00	40.016306	-104.874931	0.00	0.00	16.00	-0.00	0.00	0.00	
116.00	0.07	184.13	116.00	-0.06	-0.00	40.016306	-104.874931	0.07	184.13	100.00	-0.06	-0.00	0.00	
216.00	0.26	284.62	216.00	-0.06	-0.23	40.016306	-104.874932	0.28	114.65	100.00	-0.06	-0.00	0.00	
316.00	0.21	181.25	316.00	-0.19	-0.45	40.016305	-104.874933	0.37	213.51	100.00	-0.19	-0.00	0.00	
416.00	0.35	89.87	416.00	-0.37	-0.15	40.016305	-104.874932	0.41	238.03	100.00	-0.37	-0.00	0.00	
516.00	0.23	269.64	516.00	-0.37	-0.05	40.016305	-104.874931	0.58	179.91	100.00	-0.37	-0.00	0.00	
616.00	0.33	136.60	616.00	-0.59	-0.06	40.016304	-104.874931	0.51	209.13	100.00	-0.59	-0.00	0.00	
716.00	0.22	78.04	716.00	-0.77	0.32	40.016304	-104.874930	0.29	220.81	100.00	-0.77	-0.00	0.00	
816.00	0.16	306.02	816.00	-0.65	0.40	40.016304	-104.874930	0.35	199.97	100.00	-0.65	-0.00	0.00	
916.00	0.31	215.88	916.00	-0.78	0.13	40.016304	-104.874931	0.35	242.59	100.00	-0.78	-0.00	0.00	
1016.00	0.16	153.30	1015.99	-1.13	0.03	40.016303	-104.874931	0.28	211.01	100.00	-1.13	-0.00	0.00	
1116.00	0.34	74.76	1115.99	-1.17	0.38	40.016303	-104.874930	0.35	254.49	100.00	-1.17	-0.00	0.00	
1156.00	0.27	47.32	1155.99	-1.08	0.56	40.016303	-104.874929	0.40	231.11	40.00	-1.08	-0.00	0.00	TIE ON
1364.00	0.30	73.18	1363.99	-0.59	1.44	40.016304	-104.874926	0.06	90.02	208.00	-0.59	-0.48	-0.03	FIRST WFT MWD SVY
1458.00	1.50	204.26	1457.98	-1.64	1.17	40.016302	-104.874927	1.82	138.67	94.00	-1.64	-0.48	0.06	
1552.00	3.88	145.95	1551.88	-5.40	2.45	40.016291	-104.874922	3.56	279.29	94.00	-5.40	-0.69	-1.40	
1646.00	6.04	151.64	1645.53	-12.38	6.58	40.016272	-104.874908	2.35	15.68	94.00	-12.38	-2.45	-1.63	
1740.00	7.81	144.36	1738.84	-21.93	12.65	40.016246	-104.874886	2.10	329.98	94.00	-21.92	-3.93	-2.23	
1928.00	11.66	144.94	1924.10	-47.87	31.01	40.016175	-104.874820	2.05	1.75	188.00	-47.85	-7.40	-1.42	
2022.00	13.38	143.70	2015.86	-64.41	42.91	40.016129	-104.874778	1.85	350.51	94.00	-64.39	-9.04	-0.95	
2113.00	14.43	142.61	2104.19	-81.91	56.03	40.016081	-104.874731	1.19	345.46	91.00	-81.88	-9.92	0.02	
2205.00	15.49	145.76	2193.07	-101.17	69.90	40.016028	-104.874681	1.45	39.02	92.00	-101.13	-9.50	1.39	
2296.00	17.34	148.44	2280.36	-122.77	83.84	40.015969	-104.874632	2.20	23.55	91.00	-122.73	-8.44	1.35	

5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor)													Comment
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	N. Offset (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T. Face (°)	CL (US ft)	VS (US ft)	High to Plan (US ft)	Right to Plan (US ft)	
2387.00	16.45	146.96	2367.43	-145.13	40.015908	-104.874581	1.09	205.09	91.00	-145.08	-6.70	0.44	
2479.00	15.31	145.65	2455.92	-166.08	40.015850	-104.874531	1.30	196.83	92.00	-166.02	-3.28	0.29	
2572.00	15.53	148.41	2545.57	-186.82	40.015793	-104.874483	0.82	74.65	93.00	-186.75	0.93	-0.05	
2663.00	15.97	148.82	2633.16	-207.91	40.015735	-104.874437	0.50	14.39	91.00	-207.84	4.49	-1.24	
2754.00	17.23	147.21	2720.36	-229.95	40.015675	-104.874388	1.47	339.17	91.00	-229.87	6.76	-1.94	
2848.00	16.70	140.80	2810.28	-252.12	40.015614	-104.874331	2.07	251.13	94.00	-252.03	8.60	-0.01	
2940.00	17.32	141.94	2898.26	-273.15	40.015556	-104.874271	0.77	28.82	92.00	-273.05	10.13	2.22	
3032.00	17.72	142.53	2985.99	-295.04	40.015496	-104.874210	0.48	24.22	92.00	-294.94	10.88	4.11	
3125.00	17.71	146.22	3074.58	-318.30	40.015432	-104.874153	1.86	93.04	93.00	-318.19	11.75	3.47	
3216.00	16.21	147.27	3161.62	-340.75	40.015371	-104.874102	1.68	190.01	91.00	-340.63	13.35	2.92	
3309.00	16.86	147.81	3250.78	-363.09	40.015309	-104.874052	0.72	13.56	93.00	-362.96	15.35	2.15	
3402.00	15.43	147.93	3340.11	-384.99	40.015249	-104.874003	1.54	176.72	93.00	-384.85	15.25	1.38	
3495.00	13.87	146.93	3430.08	-404.81	40.015195	-104.873957	1.70	188.73	93.00	-404.67	14.52	1.15	
3587.00	12.48	144.94	3519.66	-422.19	40.015147	-104.873916	1.59	197.11	92.00	-422.04	13.17	1.70	
3680.00	10.48	143.17	3610.79	-437.19	40.015106	-104.873877	2.18	189.12	93.00	-437.03	11.50	2.70	
3772.00	9.09	141.96	3701.45	-449.61	40.015072	-104.873843	1.53	187.82	92.00	-449.45	9.57	3.80	
3857.00	7.79	144.39	3785.53	-459.58	40.015044	-104.873816	1.59	165.86	85.00	-459.42	7.39	4.01	
3943.00	5.06	146.43	3870.98	-467.48	40.015023	-104.873797	3.18	176.23	86.00	-467.31	5.63	3.93	
4028.00	3.01	153.29	3955.77	-472.60	40.015009	-104.873786	2.47	170.16	85.00	-472.43	5.16	3.05	
4114.00	0.78	182.81	4041.72	-475.20	40.015001	-104.873782	2.75	170.64	86.00	-475.03	5.53	-0.32	
4199.00	0.79	201.08	4126.71	-476.33	40.014998	-104.873783	0.29	96.87	85.00	-476.16	4.20	-2.13	
4284.00	0.80	212.80	4211.70	-477.37	40.014996	-104.873785	0.19	92.35	85.00	-477.20	2.52	-2.82	
4370.00	1.00	220.67	4297.69	-478.44	40.014993	-104.873788	0.27	35.69	86.00	-478.28	0.76	-3.05	
4455.00	1.26	211.21	4382.67	-479.75	40.014989	-104.873792	0.32	343.84	85.00	-479.58	-0.73	-3.04	
4540.00	1.51	228.67	4467.65	-481.23	40.014985	-104.873797	0.44	53.58	85.00	-481.07	-3.36	-2.65	
4626.00	0.43	191.32	4553.64	-482.30	40.014982	-104.873800	1.39	192.59	86.00	-482.13	-2.28	-4.83	
4712.00	0.49	185.22	4639.63	-482.98	40.014980	-104.873800	0.09	317.70	86.00	-482.82	-2.44	-5.08	
4797.00	0.31	202.28	4724.63	-483.56	40.014979	-104.873801	0.25	154.84	85.00	-483.39	-4.40	-4.04	
4967.00	0.41	280.67	4894.63	-483.87	40.014978	-104.873803	0.27	119.53	170.00	-483.70	-5.54	3.95	
5138.00	0.53	232.38	5065.62	-484.24	40.014977	-104.873808	0.23	261.75	171.00	-484.07	-7.84	-1.96	
5224.00	0.56	237.17	5151.62	-484.71	40.014975	-104.873810	0.06	59.05	86.00	-484.55	-8.79	-1.27	
5310.00	0.16	264.24	5237.62	-484.95	40.014975	-104.873812	0.49	170.11	86.00	-484.79	-8.90	3.06	
5396.00	0.35	328.55	5323.62	-484.74	40.014975	-104.873813	0.37	91.50	86.00	-484.57	-1.41	9.45	
5481.00	0.60	358.97	5408.61	-484.07	40.014977	-104.873813	0.41	61.14	85.00	-483.91	2.90	9.00	
5566.00	0.41	310.28	5493.61	-483.43	40.014979	-104.873814	0.53	223.08	85.00	-483.27	-5.44	7.78	
5651.00	0.41	213.44	5578.61	-483.49	40.014979	-104.873816	0.72	221.58	85.00	-483.32	-7.35	-6.63	
5737.00	0.76	54.35	5664.61	-483.41	40.014979	-104.873814	1.34	193.62	86.00	-483.25	8.95	3.47	
5822.00	1.16	30.62	5749.60	-482.94	40.014982	-104.873811	0.65	302.90	85.00	-482.18	5.42	6.55	
5907.00	0.49	29.23	5834.59	-481.28	40.014985	-104.873805	0.79	181.02	85.00	-481.12	4.04	6.66	
5993.00	0.38	27.92	5920.58	-480.71	40.014986	-104.873808	0.13	184.51	86.00	-480.55	3.23	6.74	
6078.00	0.43	30.78	6005.58	-480.19	40.014988	-104.873807	0.06	23.45	85.00	-480.02	2.96	6.58	

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)	Latitude (°)	-Longitude (°)	DLS (°/100 US ft)	T.Face (°)	CL (US ft)	VS (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment	
6164.00	0.80	43.98	6091.58	-479.48	315.43	40.014990	-104.873805	0.46	27.64	86.00	-479.31	3.47	5.81		
6249.00	0.80	77.71	6176.57	-478.93	316.42	40.014991	-104.873801	0.55	106.86	85.00	-478.76	5.02	3.23		
6334.00	0.82	86.29	6261.56	-478.76	317.61	40.014992	-104.873797	0.14	84.94	85.00	-478.59	4.26	2.53		
6420.00	0.69	74.44	6347.55	-478.58	318.72	40.014992	-104.873793	0.24	224.40	86.00	-478.41	2.52	3.23		
6505.00	0.60	76.12	6432.55	-478.34	319.65	40.014993	-104.873790	0.11	168.97	85.00	-478.17	1.66	3.17		
6591.00	0.44	50.49	6518.55	-478.02	320.34	40.014994	-104.873787	0.32	223.11	86.00	-477.85	-0.61	3.38		
6676.00	0.55	76.91	6603.54	-477.72	320.99	40.014995	-104.873785	0.29	77.88	85.00	-477.55	0.26	3.44		
6847.00	0.63	244.93	6774.54	-477.93	320.94	40.014994	-104.873785	0.69	173.60	171.00	-477.76	0.32	-3.25		
6932.00	2.12	271.13	6859.51	-478.10	318.94	40.014994	-104.873792	1.86	36.34	85.00	-477.93	-3.13	-2.85		
7018.00	9.18	355.80	6945.12	-471.21	316.84	40.015012	-104.873800	10.73	97.78	86.00	-471.04	-10.02	4.44		
7103.00	17.80	770.71	7027.71	-451.53	318.09	40.015066	-104.873795	10.60	23.73	85.00	-451.37	-23.78	7.20		
7188.00	23.17	9.07	7107.31	-422.12	322.47	40.015147	-104.873780	6.34	5.75	85.00	-421.95	-36.77	5.21		
7274.00	33.26	4.36	7183.00	-381.81	327.19	40.015258	-104.873763	11.94	347.26	86.00	-381.64	-47.88	-1.40		
7359.00	41.01	0.50	7250.72	-330.62	329.45	40.015398	-104.873755	9.65	339.04	85.00	-330.45	-58.08	-7.01		
7445.00	48.91	357.78	7311.53	-269.92	328.44	40.015565	-104.873758	9.45	345.35	86.00	-269.74	-66.02	-8.25		
7530.00	52.11	355.74	7365.58	-204.44	324.71	40.015745	-104.873772	4.20	333.15	85.00	-204.27	-68.02	-5.66		
7616.00	59.98	357.73	7413.58	-133.28	320.70	40.015940	-104.873786	9.35	12.41	86.00	-133.11	-63.79	0.19		
7701.00	56.15	0.21	7452.07	-57.56	319.39	40.016148	-104.873791	7.71	20.29	85.00	-57.39	-55.45	2.69		
7787.00	71.50	1.09	7483.13	22.60	320.31	40.016368	-104.873787	6.29	8.88	86.00	22.77	-41.56	1.82		
7872.00	77.09	1.07	7506.13	104.38	321.85	40.016593	-104.873782	6.58	359.80	85.00	104.55	-23.16	0.16		
7948.00	83.41	0.28	7518.99	179.24	322.73	40.016798	-104.873775	8.38	352.91	76.00	179.41	-10.16	-0.71	7 in	
8003.00	88.03	358.22	7523.09	234.06	322.01	40.016949	-104.873781	9.19	335.92	55.00	234.23	-5.61	0.02		
8033.00	90.55	357.10	7523.47	264.03	320.78	40.017031	-104.873786	9.19	336.07	30.00	264.20	-4.96	1.24		
8100.00	90.31	356.77	7522.96	330.94	317.20	40.017214	-104.873798	0.61	233.97	67.00	331.10	-4.84	4.82		
8194.00	89.14	356.92	7523.41	424.86	313.66	40.017472	-104.873811	2.60	118.56	94.00	425.02	-3.50	8.35		
8286.00	89.63	358.57	7524.40	516.83	311.65	40.017725	-104.873818	0.65	324.46	92.00	517.00	-1.65	10.37		
8378.00	89.01	359.57	7525.49	508.81	310.16	40.017977	-104.873824	1.28	121.81	92.00	608.97	0.31	11.86		
8471.00	91.29	1.14	7525.25	701.80	310.73	40.018233	-104.873822	2.98	34.55	93.00	701.96	0.94	11.29		
8562.00	92.65	2.21	7522.12	792.71	313.39	40.018482	-104.873812	1.90	38.16	91.00	792.87	-1.34	8.62		
8655.00	91.54	1.05	7518.72	885.60	316.03	40.018737	-104.873803	1.73	226.27	93.00	885.77	-3.85	5.98		
8748.00	91.29	1.34	7516.43	978.55	317.97	40.018992	-104.873796	0.41	130.77	93.00	978.72	-5.27	4.05		
8841.00	89.81	0.78	7515.53	1071.53	319.69	40.019248	-104.873790	1.70	200.73	93.00	1071.70	-5.29	2.33		
8934.00	88.89	0.30	7516.59	1164.52	320.57	40.019503	-104.873786	1.12	207.55	93.00	1164.69	-3.35	1.06		
9026.00	89.32	358.81	7518.02	1256.50	319.85	40.019755	-104.873789	1.69	286.09	92.00	1256.67	-1.05	-0.05		
9118.00	88.21	356.89	7520.01	1348.41	316.40	40.020008	-104.873801	2.41	239.94	92.00	1348.58	1.80	0.11		
9204.00	88.52	356.13	7522.46	1434.22	311.17	40.020243	-104.873820	0.95	292.19	86.00	1434.38	5.06	1.05		
9289.00	89.57	357.11	7523.88	1519.05	306.16	40.020476	-104.873838	1.69	43.03	85.00	1519.21	7.28	1.62		
9374.00	91.05	357.66	7523.42	1603.96	302.28	40.020709	-104.873852	1.86	20.39	85.00	1604.12	7.62	1.05		
9460.00	91.85	357.18	7521.24	1689.85	298.41	40.020945	-104.873866	1.08	329.05	86.00	1690.00	6.25	0.41		
9545.00	90.74	356.77	7519.32	1774.70	293.93	40.021178	-104.873882	1.39	200.27	85.00	1774.86	5.14	0.45		
9630.00	90.18	356.11	7518.64	1859.54	288.65	40.021411	-104.873900	1.02	229.69	85.00	1859.69	5.25	1.28		

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)	Latitude (°)	-Longitude (°)	DLS (°/100 US ft)	T. Face (°)	CL (US ft)	VS (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
9716.00	88.58	355.83	7519.57	1945.32	282.61	40.021646	-104.873922	1.89	189.92	86.00	1945.46	6.99	2.83	
9801.00	90.56	356.07	7520.21	2030.10	276.60	40.021879	-104.873943	2.35	6.91	85.00	2030.24	8.43	4.38	
9887.00	89.32	355.56	7520.30	2115.87	270.33	40.022114	-104.873966	1.56	202.36	86.00	2116.01	9.33	6.16	
9972.00	91.32	356.08	7519.82	2200.63	264.13	40.022347	-104.873988	2.43	14.57	85.00	2200.77	9.66	7.91	
10057.00	89.20	356.90	7519.44	2285.47	258.93	40.022580	-104.874006	2.67	158.85	85.00	2285.60	10.07	8.67	
10143.00	89.01	357.94	7520.78	2371.37	255.06	40.022816	-104.874020	1.23	100.36	86.00	2371.50	12.23	8.04	
10228.00	88.95	357.09	7522.29	2456.27	251.37	40.023049	-104.874033	1.00	265.95	85.00	2456.41	14.54	7.28	
10314.00	88.95	357.54	7523.87	2542.17	247.35	40.023285	-104.874048	0.52	90.00	86.00	2542.29	16.92	6.81	
10399.00	87.84	357.61	7526.25	2627.05	243.75	40.023518	-104.874061	1.31	176.39	85.00	2627.18	20.09	6.04	
10484.00	87.90	358.71	7529.41	2711.95	241.02	40.023751	-104.874070	1.30	86.90	85.00	2712.08	24.05	5.43	
10570.00	88.46	359.61	7532.14	2797.90	239.76	40.023987	-104.874075	1.23	58.11	86.00	2798.02	27.59	4.58	
10655.00	89.88	0.03	7533.37	2882.89	239.50	40.024220	-104.874076	1.74	16.48	85.00	2883.01	29.64	4.03	
10740.00	91.23	359.41	7532.55	2967.88	239.08	40.024453	-104.874077	1.75	335.34	85.00	2968.00	29.63	4.89	
10825.00	91.79	359.46	7530.31	3052.84	236.24	40.024687	-104.874080	0.66	5.10	85.00	3052.97	28.19	7.42	
10911.00	91.60	1.20	7527.77	3138.80	236.74	40.024923	-104.874079	2.03	96.21	86.00	3138.93	26.46	9.94	
10996.00	88.77	1.33	7527.49	3223.77	240.61	40.025156	-104.874072	3.33	177.37	85.00	3223.90	26.96	12.29	
11082.00	85.18	1.40	7532.03	3309.61	242.66	40.025391	-104.874065	4.18	178.89	86.00	3309.74	32.12	15.78	
11167.00	87.16	2.28	7537.71	3394.37	245.38	40.025624	-104.874055	2.55	23.95	85.00	3394.50	38.69	19.80	
11252.00	87.72	3.62	7541.50	3479.18	249.75	40.025857	-104.874039	1.71	67.33	85.00	3479.31	43.31	23.44	
11337.00	89.44	5.66	7543.61	3563.86	256.63	40.026089	-104.874015	3.14	49.89	85.00	3564.00	46.30	25.06	
11423.00	90.93	4.88	7543.33	3649.50	264.53	40.026325	-104.873986	1.96	332.37	86.00	3649.63	46.84	24.50	
11509.00	91.05	4.51	7541.85	3735.19	271.57	40.026560	-104.873961	0.45	287.97	86.00	3735.34	46.16	23.49	
11594.00	92.59	3.78	7539.15	3819.93	277.71	40.026792	-104.873939	2.00	334.66	85.00	3820.07	44.22	22.05	
11679.00	92.04	3.32	7535.71	3904.69	282.96	40.027025	-104.873921	0.84	219.89	85.00	3904.84	41.60	20.22	
11765.00	91.23	2.17	7533.26	3990.56	287.08	40.027261	-104.873906	1.64	234.85	86.00	3990.71	39.97	18.29	
11850.00	91.05	2.05	7531.57	4075.48	290.21	40.027494	-104.873895	0.25	213.69	85.00	4075.63	39.07	16.05	
11936.00	89.51	0.69	7531.15	4161.45	292.27	40.027730	-104.873887	2.39	221.45	86.00	4161.61	39.46	14.06	
12021.00	89.63	1.48	7531.79	4246.43	293.88	40.027963	-104.873882	0.94	81.37	85.00	4246.59	40.89	12.51	
12107.00	89.94	1.83	7532.11	4332.40	296.36	40.028199	-104.873873	0.54	48.47	86.00	4332.55	42.01	10.08	
12192.00	91.36	0.31	7531.14	4417.37	297.95	40.028432	-104.873867	2.45	313.06	85.00	4417.53	41.83	8.54	
12277.00	91.05	359.38	7529.36	4502.35	297.72	40.028666	-104.873868	1.15	251.57	85.00	4502.51	40.84	8.81	
12363.00	92.04	0.00	7527.04	4588.32	297.25	40.028902	-104.873870	1.36	32.04	86.00	4588.47	39.30	9.34	
12448.00	90.74	0.77	7524.98	4673.29	297.82	40.029135	-104.873867	1.78	149.36	85.00	4673.44	38.04	8.82	
12533.00	91.23	2.27	7523.51	4758.24	300.08	40.029368	-104.873859	1.86	71.90	85.00	4758.40	37.37	6.62	
12619.00	90.49	0.84	7522.22	4844.20	302.41	40.029604	-104.873851	1.87	242.65	86.00	4844.36	36.88	4.34	
12704.00	89.69	1.51	7522.09	4929.18	304.15	40.029837	-104.873845	1.23	140.05	85.00	4929.34	37.53	2.65	
12789.00	90.49	1.14	7521.96	5014.16	306.12	40.030071	-104.873838	1.04	335.18	85.00	5014.32	38.19	0.74	
12875.00	90.86	358.92	7520.94	5100.15	306.16	40.030307	-104.873838	2.62	279.47	86.00	5100.30	37.98	0.73	
12960.00	91.73	358.79	7519.02	5185.11	304.47	40.030540	-104.873844	1.03	351.50	85.00	5185.26	36.84	2.48	
13045.00	91.91	358.32	7516.32	5270.04	302.32	40.030773	-104.873851	0.59	290.97	85.00	5270.19	34.93	4.67	
13130.00	91.36	359.93	7513.90	5354.99	301.03	40.031006	-104.873856	2.00	108.84	85.00	5355.14	33.30	6.03	

5D Survey Report

Survey Points (Relative to centre, TVD relative to Drill Floor)														
MD (US ft)	Inc (°)	Az (US ft)	TVD (°)	N. Offset (US ft)	E. Offset (US ft)	Latitude (°)	Longitude (°)	DLS (°/100 US ft)	T. Face (°)	CL (US ft)	VS (US ft)	High to Plan (US ft)	Right to Plan (US ft)	Comment
13216.00	91.36	359.06	7511.86	5440.96	300.27	40.031242	-104.873859	1.01	270.01	86.00	5441.12	32.06	6.93	
13301.00	90.12	358.28	7510.76	5525.93	298.30	40.031476	-104.873866	1.72	212.18	85.00	5526.08	31.75	8.85	
13386.00	90.93	356.07	7509.98	5610.88	295.59	40.031709	-104.873875	0.98	345.47	85.00	5611.03	31.77	11.61	
13472.00	91.73	358.49	7507.98	5696.83	293.76	40.031945	-104.873882	1.89	60.58	86.00	5696.99	30.56	13.50	
13557.00	90.00	358.19	7506.70	5781.80	292.04	40.032178	-104.873888	2.55	216.93	85.00	5781.95	30.07	15.26	
13642.00	91.23	358.62	7505.79	5866.76	289.67	40.032411	-104.873897	1.53	19.27	85.00	5866.91	29.96	17.68	
13728.00	92.59	359.46	7502.92	5952.70	288.23	40.032647	-104.873902	1.86	31.67	86.00	5952.85	27.87	19.18	
13813.00	91.73	358.85	7499.72	6037.63	286.98	40.032880	-104.873906	1.24	215.34	85.00	6037.78	25.47	20.48	
13898.00	90.68	358.82	7497.93	6122.59	285.25	40.033114	-104.873912	1.24	181.64	85.00	6122.74	24.48	22.26	
14026.00	92.16	359.88	7494.76	6250.54	283.80	40.033465	-104.873917	1.42	35.59	128.00	6250.69	22.48	23.80	
14112.00	92.16	359.10	7491.52	6336.47	283.03	40.033701	-104.873920	0.91	270.01	86.00	6336.62	20.05	24.61	
14197.00	92.59	359.51	7487.99	6421.39	282.00	40.033934	-104.873924	0.70	43.60	85.00	6421.54	17.31	25.70	
14282.00	93.58	359.26	7483.42	6506.26	281.09	40.034167	-104.873927	1.20	345.85	85.00	6506.41	13.53	26.66	
14368.00	93.33	359.39	7478.24	6592.10	280.08	40.034403	-104.873931	0.33	152.56	86.00	6592.25	9.15	27.72	
14453.00	93.15	359.00	7473.43	6676.96	278.89	40.034635	-104.873935	0.50	245.20	85.00	6677.10	5.15	28.97	
14538.00	91.79	358.75	7469.77	6761.86	277.22	40.034869	-104.873941	1.63	190.41	85.00	6762.00	2.27	30.68	
14631.00	91.23	357.62	7467.32	6854.78	274.28	40.035124	-104.873951	1.36	243.65	93.00	6854.92	0.69	33.66	LAST WFT MWD+IFR SVY
14676.00	91.23	357.62	7466.35	6899.73	272.41	40.035247	-104.873958	0.00	0.00	45.00	6899.87	0.15	35.56	PROJECTION TO TD

Formation Points (Relative to centre, TVD relative to Drill Floor)				MD (US ft)	TVD (US ft)
FOX HILLS BASE				799.00	799.00
SUSSEX				4861.37	4789.00
SHANNON				5401.38	5329.00
SHARON SPRINGS				7435.15	7305.00
NIOBRARA A				7501.71	7348.00
NIOBRARA B				7871.44	7506.00