

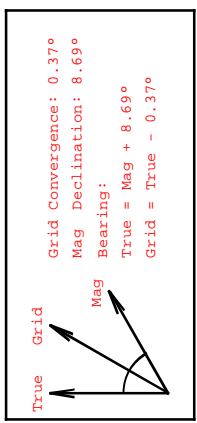
Survey Data for GRIFFITHS 34N-20HZ

Field: WATTENBERG_ANADARKO_NAD83
Map Unit: USFT Vertical Reference Datum (VRD): Mean Sea Level
Projected Coordinate System: NAD83 / Colorado North (ftUS)

Site: GRIFFITHS PAD
Unit: USFeet TVD Reference:
Company Name: ANADARKO
Position: Northing: 1264176.37USft Latitude: 40.057105°
Easting: 3161841.59USft Longitude: -104.921823°
North Reference: True Grid Convergence: 0.37°
Elevation Above VRD: 5071.00USft

SLOT: GRIFFITHS 34N-20HZ
Position:
Offset is from Site centre
+N/-S: -0.00USft Northing: 1264176.37USft Latitude: 40.057105°
+E/-W: 0.00USft Easting: 3161841.59USft Longitude: -104.921823°
Elevation Above VRD: 5071.00USft

Survey Point Information:									
DogLeg	Severity	Unit:	°/100.00ft	Position	offsets	from	Slot	centre	
MD	Inc	Az	TVD	+N/-S	+E/-W	VSec	DLS	Toolface	Build
(USft)	(°)	(°)	(USft)	(USft)	(USft)	(USft)	(°)	(DLSU)	(°)
17284.00	85.59	176.52	7611.14	-9574.60	-302.70	9573.31	1.31	212.6	-1.10
17341.00	85.59	176.52	7615.52	-9631.33	-299.25	9630.05	0.00	0.00	0.00
LAST WFT MWD SVY PROJECTION TO TD									



BHL @ 17341' MD
~487 FSL, ~260' FWL

GRIFFITHS 34N-20HZ

LAST SURVEY - 17284' MD

GRIFFITHS 34N-20HZ



5D Survey Report

ANADARKO

Field Name:

WATTENBERG_ANADARKO_NAD83

Site Name:

GRIFFITHS PAD

Well Name:

GRIFFITHS 34N-20HZ

Survey:

Definitive Survey



Weatherford®

DEFINITIVE SURVEYS FOR THE GRIFFITHS 34N-20HZ

Site Name GRIFFITHS PAD	Units : US ft		North Reference : True		Convergence Angle : 0.37	
	Position		Northing : 1264176.37 US ft		Latitude : 40.057105	
			Easting : 3161841.59 US ft		Longitude : -104.921823	
Elevation above:5071.00 US ft						
Comment :						
Slot Name GRIFFITHS 34N-20HZ	Position (Offsets relative to Site Centre)					
	+ N / -S : -0.00 US ft		Northing :1264176.37 US ft		Latitude : 40.057105	
	+ E / -W : 0.00 US ft		Easting :3161841.59 US ft		Longitude : -104.921823	
Slot TVD Reference : Ground Elevation						
Elevation above : 5071.00 US ft						
Comment :						
Well Name GRIFFITHS 34N-20HZ	Type : Main well					
	Rig Height <i>Drill Floor</i> : 25.00 US ft					
	Relative to : 5096.00 US ft					
	Closure Distance : 9635.98 US ft					
	Vertical Section (Position of Origin Relative to Slot)					
	+ N / -S : 0.00 US ft		+ E / -W : -0.00 US ft		Az :179.77°	
Target Set						
Name : 34N-20HZ			Number of Targets : 1			
Comment :						
TargetName:			Position (Relative to centre)			
PBHL			Northing : 1254515.80 US ft		Latitude : 40°1'50.124000"	
Shape:			Easting : 3161595.14US ft		Longitude : -104°55'22.540800"	
Cuboid			TVD (Drill Floor) : 7584.00 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 : 29/May/2013		Survey Tool :		Company :
Magnetic Model				
Model Name: BGGM		Date: 29/May/2013	Field Strength: 52701.8 nT	Declination: 8.69° Dip: 66.67°
Survey Tool Ranges				
Name		Start MD (us ft)	End MD (us ft)	Source Survey
NSG Static GMS		0.00	925.00	GYRO - SURFACE
MWD		925.00	17341.00	WFT MWD

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)	VS (US ft)
0.00	0.00	0.00	0.00	0.00	0.00	40.057105	-104.921823	0.00	0.00	0.00	0.00
25.00	0.00	0.00	25.00	0.00	0.00	40.057105	-104.921823	0.00	0.00	25.00	0.00
125.00	0.33	14.36	125.00	0.28	0.07	40.057106	-104.921823	0.33	14.36	100.00	-0.27
225.00	0.35	223.55	225.00	0.34	-0.07	40.057106	-104.921823	0.66	195.03	100.00	-0.33
325.00	0.34	33.66	325.00	0.36	-0.11	40.057106	-104.921823	0.69	175.13	100.00	-0.36
425.00	0.40	312.95	425.00	0.85	-0.20	40.057107	-104.921824	0.48	235.10	100.00	-0.84
525.00	0.33	74.52	525.00	1.16	-0.18	40.057108	-104.921824	0.64	153.85	100.00	-1.16
625.00	0.41	54.34	624.99	1.45	0.39	40.057109	-104.921822	0.15	291.19	100.00	-1.44
725.00	0.32	130.99	724.99	1.47	0.89	40.057109	-104.921820	0.46	137.19	100.00	-1.47
825.00	0.50	150.96	824.99	0.91	1.31	40.057107	-104.921818	0.23	48.72	100.00	-0.90
925.00	0.55	145.80	924.99	0.13	1.79	40.057105	-104.921817	0.07	314.00	100.00	-0.12
968.00	0.55	162.54	967.98	-0.24	1.97	40.057104	-104.921816	0.37	98.37	43.00	0.25
1139.00	0.73	221.53	1138.97	-1.84	1.49	40.057100	-104.921818	0.38	105.53	171.00	1.85
1231.00	0.64	231.14	1230.97	-2.60	0.70	40.057098	-104.921820	0.16	132.81	92.00	2.60
1323.00	2.78	305.98	1322.93	-1.61	-1.50	40.057101	-104.921828	2.92	88.13	92.00	1.61
1415.00	4.52	320.44	1414.74	2.50	-5.62	40.057112	-104.921843	2.13	35.22	92.00	-2.52
1506.00	6.41	325.99	1505.32	9.47	-10.74	40.057131	-104.921861	2.15	18.40	91.00	-9.51
1598.00	8.33	327.12	1596.56	19.33	-17.23	40.057158	-104.921885	2.09	4.88	92.00	-19.39
1690.00	8.91	323.05	1687.52	30.62	-25.13	40.057189	-104.921913	0.91	311.53	92.00	-30.71
1782.00	9.28	319.24	1778.36	41.93	-34.26	40.057220	-104.921945	0.77	299.67	92.00	-42.06
1874.00	9.26	316.82	1869.16	52.95	-44.17	40.057250	-104.921981	0.42	265.87	92.00	-53.12
1966.00	9.15	317.85	1959.98	63.77	-54.14	40.057280	-104.922016	0.22	124.24	92.00	-63.98
2058.00	9.64	318.32	2050.74	74.94	-64.17	40.057311	-104.922052	0.54	9.13	92.00	-75.20
2150.00	10.98	317.73	2141.26	87.18	-75.19	40.057344	-104.922092	1.46	355.20	92.00	-87.48
2245.00	10.87	318.01	2234.53	100.53	-87.27	40.057381	-104.922135	0.13	154.38	95.00	-100.88
2339.00	10.97	315.51	2326.83	113.50	-99.46	40.057417	-104.922178	0.51	280.69	94.00	-113.90
2434.00	10.17	318.92	2420.22	126.27	-111.31	40.057452	-104.922221	1.07	143.65	95.00	-126.71
2529.00	9.64	317.60	2513.80	138.47	-122.18	40.057485	-104.922260	0.61	202.54	95.00	-138.95
2624.00	9.79	314.11	2607.44	149.96	-133.35	40.057517	-104.922295	0.64	282.57	95.00	-150.49

Weatherford International Limited

5D 7.5.5 : 15 August 2013, 13:34:50 UTC

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			
2718.00	8.66	314.65	2700.23	160.50	-144.12	40.057546	-104.922338	1.21	175.89	94.00	-161.07	-3.94	6.07				
2813.00	8.32	313.62	2794.18	170.27	-154.18	40.057572	-104.922374	0.39	203.59	95.00	-170.88	-1.65	7.68				
2903.00	9.45	314.66	2889.03	180.60	-164.82	40.057635	-104.922412	1.19	8.60	96.00	-181.26	0.29	9.36				
3003.00	10.07	327.85	2981.68	192.98	-174.68	40.057635	-104.922447	2.46	81.07	94.00	-193.68	2.82	8.56				
3098.00	9.20	325.56	3075.34	206.28	-183.40	40.057671	-104.922478	1.00	202.65	95.00	-207.01	3.01	6.71				
3193.00	9.09	324.50	3169.13	218.65	-192.05	40.057705	-104.922509	0.21	236.34	95.00	-219.42	4.25	5.30				
3287.00	9.71	325.20	3261.87	231.21	-200.89	40.057740	-104.922541	0.67	10.79	94.00	-232.01	5.22	3.84				
3382.00	9.19	320.87	3355.58	243.67	-210.25	40.057774	-104.922574	0.93	231.69	95.00	-244.51	5.85	3.33				
3477.00	10.02	320.68	3449.25	255.95	-220.27	40.057808	-104.922610	0.87	357.72	95.00	-256.83	6.48	3.10				
3571.00	7.76	320.35	3542.11	267.16	-229.50	40.057838	-104.922643	2.40	181.13	94.00	-268.08	8.27	2.97				
3666.00	8.60	318.94	3636.15	277.46	-238.26	40.057867	-104.922674	0.91	345.87	95.00	-278.41	11.21	3.29				
3760.00	8.95	318.35	3729.05	288.22	-247.74	40.057896	-104.922708	0.38	345.29	94.00	-289.21	13.18	3.77				
3855.00	8.79	321.59	3822.91	298.43	-257.16	40.057927	-104.922742	0.55	109.35	95.00	-300.46	15.24	2.96				
3949.00	9.56	324.33	3915.71	311.40	-266.17	40.057960	-104.922774	0.94	30.93	94.00	-312.46	16.67	1.33				
4044.00	10.98	315.39	4009.19	324.25	-277.13	40.057995	-104.922813	2.24	307.24	95.00	-325.36	15.86	3.94				
4139.00	11.06	316.25	4102.44	337.20	-289.86	40.058031	-104.922859	0.09	24.51	95.00	-338.36	14.13	5.16				
4233.00	9.40	318.55	4194.94	349.18	-301.48	40.058064	-104.922900	1.77	176.23	94.00	-350.39	13.77	6.14				
4328.00	10.49	318.55	4288.51	361.27	-312.57	40.058097	-104.922940	1.22	21.16	95.00	-362.52	14.09	6.29				
4423.00	12.67	321.27	4381.57	375.88	-324.81	40.058137	-104.922983	2.36	15.40	95.00	-377.18	11.28	5.66				
4517.00	9.95	313.90	4473.74	389.56	-337.12	40.058174	-104.923027	3.27	204.41	94.00	-390.90	5.14	7.10				
4612.00	5.45	316.95	4567.86	396.55	-346.11	40.058199	-104.923059	4.75	176.32	95.00	-399.93	2.93	7.78				
4706.00	3.64	317.80	4661.56	404.02	-351.17	40.058214	-104.923078	1.93	178.29	94.00	-405.43	2.57	8.06				
4801.00	2.95	317.35	4756.41	408.06	-354.85	40.058225	-104.923091	0.73	181.92	95.00	-409.47	0.95	8.23				
4896.00	1.78	320.10	4851.32	410.99	-357.45	40.058233	-104.923100	1.24	175.83	95.00	-412.41	-1.70	8.29				
4990.00	1.32	274.44	4945.29	412.19	-359.47	40.058237	-104.923107	1.36	227.76	94.00	-413.63	-9.22	3.53				
5085.00	0.41	217.38	5040.28	412.00	-360.76	40.058236	-104.923112	1.21	197.42	95.00	-413.45	-8.91	-6.73				
5180.00	2.53	206.89	5135.25	408.86	-361.92	40.058230	-104.923116	2.24	347.50	95.00	-411.31	-9.96	-8.31				
5274.00	0.72	185.35	5229.20	407.43	-362.91	40.058223	-104.923120	2.00	188.09	94.00	-408.88	-8.74	-12.15				
5369.00	0.77	40.90	5324.20	407.31	-362.55	40.058223	-104.923118	1.49	198.39	95.00	-408.76	14.02	4.45				
5464.00	0.45	28.99	5419.20	406.12	-361.95	40.058225	-104.923116	0.36	195.73	95.00	-409.57	11.80	7.12				
5558.00	0.50	354.88	5513.19	408.85	-361.81	40.058227	-104.923116	0.06	262.68	94.00	-410.30	5.06	12.31				
5653.00	0.45	351.26	5608.19	405.64	-361.90	40.058230	-104.923116	0.06	209.17	95.00	-411.08	3.49	12.58				
5747.00	0.47	341.94	5702.19	410.37	-362.08	40.058232	-104.923117	0.08	280.27	94.00	-411.81	0.66	12.92				
5842.00	0.25	348.83	5797.18	410.94	-362.24	40.058233	-104.923117	0.24	172.30	95.00	-412.39	1.61	12.79				
5936.00	0.38	19.00	5891.18	411.44	-362.18	40.058234	-104.923117	0.22	67.65	94.00	-412.88	7.33	10.35				
6031.00	0.38	339.13	5986.18	412.03	-362.19	40.058236	-104.923117	0.27	250.07	95.00	-413.48	-1.57	12.44				
6126.00	0.38	317.96	6081.18	412.56	-362.51	40.058238	-104.923118	0.15	259.42	95.00	-414.01	-6.56	10.92				
6220.00	0.50	4.71	6175.18	413.20	-362.69	40.058239	-104.923119	0.39	95.86	94.00	-414.65	2.84	12.49				
6315.00	0.79	3.86	6270.17	414.26	-362.61	40.058242	-104.923118	0.31	357.69	95.00	-415.71	1.58	12.53				
6410.00	1.11	6.94	6365.16	415.83	-362.45	40.058247	-104.923118	0.34	10.61	95.00	-417.28	0.68	12.46				
6504.00	0.74	344.92	6459.15	417.32	-362.50	40.058251	-104.923118	0.54	213.20	94.00	-418.77	-5.49	11.46				

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)				
6599.00	0.60	329.50	6554.14	418.34	-362.91	40.058253	-104.923120	0.24	224.63	95.00	-419.79	-9.43	9.43				
6693.00	0.25	291.50	6648.14	418.84	-363.35	40.058255	-104.923121	0.46	200.90	94.00	-420.29	-13.83	1.32				
6778.00	0.26	301.44	6733.14	419.01	-363.69	40.058255	-104.923122	0.05	82.26	85.00	-420.46	-13.77	3.72				
6883.00	0.16	285.85	6838.13	419.17	-364.03	40.058256	-104.923124	0.11	202.10	105.00	-420.63	-14.64	-0.19				
6978.00	5.43	167.72	6932.99	414.81	-363.21	40.058244	-104.923121	5.80	240.41	95.00	-416.27	2.62	-12.94				
7025.00	9.24	171.29	6979.60	408.91	-362.16	40.058228	-104.923117	8.16	8.60	47.00	-410.36	-2.30	-12.66				
7072.00	12.88	167.74	7025.72	400.06	-360.48	40.058203	-104.923111	7.88	347.65	47.00	-401.50	-4.95	-11.79				
7118.00	15.87	168.49	7070.28	388.88	-358.13	40.058173	-104.923102	6.51	3.93	46.00	-390.31	-7.41	-9.81				
7167.00	20.06	172.73	7116.88	373.97	-355.73	40.058132	-104.923094	8.95	19.36	49.00	-375.40	-9.39	-7.02				
7214.00	24.18	175.12	7160.41	356.38	-353.89	40.058083	-104.923087	8.97	13.43	47.00	-357.75	-10.26	-4.90				
7261.00	28.95	175.72	7202.44	335.43	-352.22	40.058026	-104.923081	10.16	3.49	47.00	-336.84	-10.63	-3.20				
7308.00	34.13	178.33	7242.48	310.89	-350.99	40.057958	-104.923077	11.40	15.89	47.00	-312.29	-11.17	-1.64				
7356.00	38.63	180.90	7281.12	282.43	-350.83	40.057880	-104.923076	9.90	19.76	48.00	-283.84	-11.64	-1.18				
7403.00	44.24	181.34	7316.34	251.35	-351.45	40.057795	-104.923079	11.95	3.14	47.00	-252.76	-12.24	-1.86				
7450.00	50.43	181.31	7348.18	216.82	-352.24	40.057700	-104.923081	13.17	359.79	47.00	-218.22	-13.72	-2.79				
7497.00	56.36	180.51	7376.19	179.11	-352.83	40.057597	-104.923083	12.69	353.58	47.00	-180.52	-16.18	-3.65				
7544.00	59.74	179.12	7401.06	139.24	-352.69	40.057487	-104.923083	7.62	340.39	47.00	-140.65	-18.52	-3.91				
7591.00	53.31	176.58	7423.47	97.96	-351.13	40.057374	-104.923077	8.96	327.36	47.00	-99.37	-19.72	-2.91				
7639.00	55.93	175.81	7444.04	54.70	-348.25	40.057255	-104.923067	5.65	344.96	48.00	-56.09	-19.49	-0.21				
7686.00	57.77	176.85	7462.52	11.57	-345.49	40.057137	-104.923057	4.41	27.67	47.00	-12.95	-17.03	2.62				
7733.00	70.55	177.49	7479.24	-32.30	-343.32	40.057016	-104.923049	6.05	12.26	47.00	30.92	-12.50	4.77				
7780.00	75.66	178.54	7492.89	-77.23	-341.77	40.056893	-104.923044	11.08	11.28	47.00	75.86	-7.33	6.23				
7827.00	79.38	178.93	7503.05	-123.10	-340.76	40.056767	-104.923040	7.96	5.89	47.00	121.73	-1.91	7.08				
7859.00	82.07	179.58	7508.20	-154.67	-340.35	40.056680	-104.923039	8.64	13.47	32.00	153.31	2.17	7.36				
7890.00	85.31	179.95	7511.61	-185.48	-340.22	40.056596	-104.923038	10.52	6.50	31.00	184.12	5.33	7.36				
8042.00	88.58	180.33	7519.71	-337.24	-340.59	40.056179	-104.923040	2.17	6.63	152.00	335.88	12.20	6.38				
8136.00	90.55	180.39	7520.42	-431.23	-341.18	40.055921	-104.923042	2.10	1.74	94.00	429.86	12.14	5.41				
8230.00	90.43	180.67	7519.62	-525.23	-342.05	40.055663	-104.923045	0.32	113.20	94.00	523.85	10.57	4.16				
8325.00	90.74	181.02	7518.65	-620.21	-343.45	40.055402	-104.923050	0.49	48.47	95.00	618.83	8.82	2.38				
8420.00	90.00	180.98	7518.04	-715.19	-345.11	40.055142	-104.923056	0.78	183.09	95.00	713.80	7.43	0.34				
8514.00	89.20	180.56	7518.69	-809.18	-346.37	40.054884	-104.923060	0.96	207.70	94.00	807.79	7.31	-1.30				
8609.00	89.57	180.48	7519.71	-904.17	-347.24	40.054623	-104.923063	0.40	347.80	95.00	902.77	7.55	-2.55				
8703.00	89.65	180.22	7520.35	-998.17	-347.81	40.054365	-104.923065	0.29	287.10	94.00	996.77	7.42	-3.50				
8798.00	89.01	179.15	7521.46	-1093.16	-347.29	40.054104	-104.923064	1.31	239.11	95.00	1091.76	7.75	-3.36				
8893.00	90.43	180.69	7521.93	-1188.15	-347.16	40.053843	-104.923063	2.20	47.33	95.00	1186.75	7.44	-3.61				
8987.00	89.08	179.56	7522.33	-1282.15	-347.36	40.053585	-104.923064	1.87	219.93	94.00	1280.74	7.07	-4.19				
9082.00	90.86	179.43	7522.38	-1377.14	-346.52	40.053325	-104.923061	1.88	355.82	95.00	1375.74	6.34	-3.74				
9176.00	90.06	178.29	7521.62	-1471.11	-344.65	40.053067	-104.923054	1.48	234.95	94.00	1469.72	4.81	-2.24				
9271.00	90.37	178.09	7521.27	-1566.07	-341.65	40.052806	-104.923043	0.39	327.17	95.00	1564.69	3.68	0.37				
9366.00	89.75	177.41	7521.17	-1660.99	-337.92	40.052545	-104.923030	0.97	227.64	95.00	1659.63	2.80	3.72				
9460.00	89.26	178.01	7521.98	-1754.91	-334.17	40.052287	-104.923017	0.82	129.24	94.00	1753.56	2.84	7.09				

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
9554.00	88.77	177.45	7523.60	-1848.82	-330.44	40.052030	-104.923003	0.79	228.81	94.00	1847.49	3.67	10.43	
9649.00	89.51	178.85	7525.02	-1943.76	-327.38	40.051769	-104.922992	1.67	62.15	95.00	1942.43	4.33	13.12	
9743.00	88.02	179.95	7527.05	-2037.73	-326.39	40.051511	-104.922985	1.97	143.58	94.00	2036.41	5.59	13.73	
9837.00	88.68	180.39	7529.76	-2131.69	-326.67	40.051253	-104.922990	0.84	33.69	94.00	2130.37	7.52	13.07	
9931.00	88.83	180.32	7531.80	-2225.67	-327.25	40.050995	-104.922992	0.18	334.99	94.00	2224.34	8.79	12.11	
10026.00	90.12	179.99	7532.67	-2320.66	-327.51	40.050734	-104.922993	1.40	345.65	95.00	2319.33	8.88	11.47	
10120.00	89.75	179.80	7532.77	-2414.66	-327.34	40.050476	-104.922992	0.44	207.18	94.00	2413.33	8.22	11.27	
10214.00	89.75	179.47	7533.18	-2508.66	-326.74	40.050218	-104.922990	0.35	270.00	94.00	2507.33	7.86	11.49	
10308.00	89.94	179.41	7533.44	-2602.65	-325.82	40.049960	-104.922987	0.21	342.47	94.00	2601.33	7.34	12.03	
10402.00	89.75	179.12	7533.69	-2696.64	-324.62	40.049702	-104.922983	0.37	236.77	94.00	2695.32	6.82	12.85	
10494.00	89.32	178.82	7534.44	-2788.62	-322.96	40.049450	-104.922977	0.57	214.90	92.00	2787.31	6.81	14.14	
10585.00	89.63	179.02	7535.27	-2879.60	-321.25	40.049200	-104.922971	0.41	32.83	91.00	2878.30	6.90	15.49	
10677.00	90.80	179.74	7534.93	-2971.60	-320.25	40.048947	-104.922967	1.49	31.61	92.00	2970.29	5.80	16.11	
10768.00	89.38	181.48	7534.79	-3062.59	-321.22	40.048698	-104.922970	2.47	129.21	91.00	3061.27	4.92	14.77	
10860.00	90.68	181.10	7534.74	-3154.56	-323.29	40.048445	-104.922978	1.47	343.71	92.00	3153.24	4.11	12.33	
10951.00	91.06	180.22	7533.36	-3245.54	-324.34	40.048195	-104.922982	1.05	293.36	91.00	3244.22	1.98	10.92	
11042.00	90.74	181.10	7531.93	-3336.52	-325.39	40.047946	-104.922985	1.03	109.98	91.00	3335.19	-0.20	9.50	
11136.00	89.47	180.39	7531.75	-3430.51	-326.61	40.047688	-104.922990	1.55	209.21	94.00	3429.18	-1.14	7.90	
11227.00	88.95	179.81	7533.01	-3521.50	-326.77	40.047438	-104.922990	0.86	228.12	91.00	3520.17	-0.63	7.38	
11318.00	88.28	179.18	7535.21	-3612.47	-325.97	40.047188	-104.922987	1.01	223.22	91.00	3611.14	0.82	7.82	
11409.00	87.10	176.18	7538.88	-3703.37	-323.87	40.046939	-104.922980	1.70	220.24	91.00	3702.05	3.73	9.54	
11500.00	88.83	179.34	7542.11	-3794.29	-321.91	40.046689	-104.922973	2.29	33.85	91.00	3792.97	6.23	11.14	
11592.00	91.23	180.76	7542.06	-3886.28	-321.99	40.046436	-104.922973	3.03	30.61	92.00	3884.96	5.42	10.69	
11684.00	90.06	180.06	7541.02	-3978.27	-322.64	40.046184	-104.922975	1.48	210.89	92.00	3976.95	3.64	9.67	
11775.00	89.81	179.62	7541.13	-4069.27	-322.39	40.045934	-104.922975	0.56	240.40	91.00	4067.94	2.99	9.55	
11867.00	88.83	179.03	7542.22	-4161.25	-321.31	40.045682	-104.922971	1.24	211.04	92.00	4159.93	3.33	10.27	
11958.00	88.21	180.79	7544.57	-4252.22	-321.16	40.045432	-104.922970	2.05	109.43	91.00	4250.90	4.94	10.04	
12050.00	87.22	180.37	7548.24	-4344.14	-322.09	40.045180	-104.922973	1.17	202.96	92.00	4342.82	7.85	8.74	
12142.00	88.15	180.37	7551.95	-4436.06	-322.69	40.044927	-104.922976	1.01	0.00	92.00	4434.73	10.81	7.78	
12234.00	88.28	180.99	7554.82	-4528.01	-323.78	40.044675	-104.922979	0.69	78.16	92.00	4526.68	12.92	6.31	
12326.00	89.38	181.28	7556.70	-4619.97	-325.60	40.044422	-104.922986	1.24	14.77	92.00	4618.63	14.05	4.12	
12418.00	88.89	180.94	7558.09	-4711.94	-327.38	40.044170	-104.922992	0.65	214.75	92.00	4710.59	14.68	1.97	
12510.00	90.44	180.39	7558.62	-4803.93	-328.45	40.043917	-104.922996	1.79	340.46	92.00	4802.58	14.46	0.53	
12602.00	90.00	179.65	7558.27	-4895.93	-328.48	40.043665	-104.922996	0.94	239.27	92.00	4894.58	13.35	0.13	
12694.00	90.31	178.63	7558.02	-4987.92	-327.10	40.043412	-104.922991	1.16	286.91	92.00	4986.57	12.35	1.14	
12785.00	89.01	177.23	7558.56	-5078.85	-323.82	40.043163	-104.922980	2.10	227.12	91.00	5077.52	12.14	4.06	
12877.00	88.83	178.30	7560.30	-5170.77	-320.23	40.042910	-104.922967	1.18	99.56	92.00	5169.44	13.12	7.28	
12969.00	89.14	176.99	7561.93	-5262.73	-318.05	40.042658	-104.922955	0.82	65.81	92.00	5261.41	14.00	9.08	
13061.00	89.57	179.32	7562.96	-5354.71	-316.70	40.042405	-104.922954	0.59	37.50	92.00	5353.40	14.28	10.07	
13153.00	89.26	180.92	7563.90	-5446.70	-316.89	40.042153	-104.922955	1.77	100.97	92.00	5445.39	14.47	9.50	
13244.00	88.15	180.06	7565.96	-5537.67	-317.67	40.041903	-104.922958	1.54	217.75	91.00	5536.36	15.77	8.36	

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		
13336.00	88.40	180.08	7568.73	-5629.63	-317.78	40.041651	-104.922958	0.27	4.57	92.00	5628.31	17.79	7.88			
13428.00	89.12	180.75	7570.72	-5721.61	-318.45	40.041398	-104.922960	1.07	42.94	92.00	5720.28	19.03	6.84			
13520.00	88.34	180.47	7572.76	-5813.58	-319.42	40.041146	-104.922964	0.90	199.74	92.00	5812.25	20.31	5.49			
13613.00	89.32	180.89	7574.66	-5906.55	-320.53	40.040890	-104.922968	1.15	23.20	93.00	5905.22	21.45	4.01			
13707.00	91.11	182.66	7574.30	-6000.50	-323.44	40.040633	-104.922978	2.68	44.68	94.00	5999.15	20.31	0.72			
13801.00	90.31	182.39	7573.14	-6094.40	-327.58	40.040375	-104.922993	0.90	198.65	94.00	6093.04	18.39	-3.80			
13896.00	89.75	182.13	7573.09	-6189.32	-331.33	40.040114	-104.923006	0.65	204.90	95.00	6187.95	17.56	-7.92			
13990.00	88.70	181.93	7574.36	-6283.25	-334.66	40.039856	-104.923018	1.14	190.78	94.00	6281.86	18.05	-11.63			
14084.00	88.71	181.80	7576.48	-6377.18	-337.71	40.039599	-104.923029	0.14	274.40	94.00	6375.78	19.40	-15.06			
14178.00	89.20	181.51	7578.20	-6471.12	-340.43	40.039341	-104.923039	0.61	329.38	94.00	6469.71	20.35	-18.16			
14273.00	89.14	180.19	7579.58	-6566.10	-341.84	40.039080	-104.923044	1.39	267.39	95.00	6564.68	20.95	-19.95			
14367.00	91.67	179.51	7578.91	-6660.09	-341.59	40.038822	-104.923043	2.79	344.96	94.00	6658.67	19.50	-20.08			
14461.00	90.86	179.96	7576.84	-6754.07	-341.16	40.038564	-104.923041	0.99	150.95	94.00	6752.65	16.67	-20.03			
14555.00	90.12	179.81	7576.03	-6848.06	-340.97	40.038306	-104.923041	0.80	191.46	94.00	6846.64	15.10	-20.22			
14650.00	89.81	179.59	7576.09	-6943.06	-340.47	40.038045	-104.923039	0.40	215.36	95.00	6941.64	14.38	-20.10			
14744.00	88.77	178.54	7577.25	-7037.04	-338.91	40.037787	-104.923033	1.59	226.07	94.00	7035.62	14.78	-18.92			
14838.00	89.14	177.54	7578.97	-7130.96	-335.67	40.037529	-104.923022	1.10	290.87	94.00	7129.56	15.72	-16.04			
14932.00	88.52	178.68	7580.89	-7224.89	-332.57	40.037271	-104.923011	1.38	118.56	94.00	7223.50	16.86	-13.34			
15026.00	90.00	178.48	7582.10	-7318.85	-330.25	40.037013	-104.923002	1.59	352.30	94.00	7317.47	17.30	-11.38			
15120.00	90.99	178.67	7581.29	-7412.82	-327.91	40.036756	-104.922994	1.07	10.86	94.00	7411.45	15.71	-9.43			
15215.00	89.94	179.59	7580.52	-7507.80	-326.47	40.036495	-104.922989	1.47	138.77	95.00	7506.43	14.17	-8.37			
15309.00	89.03	180.57	7581.36	-7601.80	-326.60	40.036237	-104.922989	1.42	132.88	94.00	7600.43	14.24	-8.88			
15403.00	88.83	179.85	7583.12	-7695.78	-326.94	40.035979	-104.922991	0.79	254.47	94.00	7694.41	15.23	-9.60			
15497.00	89.29	178.10	7584.66	-7789.75	-325.26	40.035721	-104.922985	1.92	284.71	94.00	7788.38	16.00	-8.29			
15591.00	90.49	176.62	7584.84	-7883.64	-320.93	40.035463	-104.922969	2.03	309.03	94.00	7882.29	15.40	-4.34			
15686.00	90.97	175.99	7583.63	-7978.44	-314.81	40.035203	-104.922947	0.83	307.31	95.00	7977.11	13.42	1.39			
15780.00	90.62	177.10	7582.33	-8072.26	-309.14	40.034945	-104.922927	1.24	107.49	94.00	8070.95	11.35	6.67			
15875.00	91.67	178.81	7580.43	-8167.17	-305.75	40.034685	-104.922915	2.11	58.43	95.00	8165.88	8.67	9.68			
15969.00	90.79	179.34	7578.41	-8261.14	-304.24	40.034427	-104.922910	1.09	148.94	94.00	8259.85	5.88	10.82			
16064.00	90.56	181.93	7577.29	-8356.12	-305.29	40.034166	-104.922913	2.74	95.06	95.00	8354.83	3.98	9.38			
16159.00	89.29	181.63	7577.42	-8451.07	-308.24	40.033905	-104.922924	1.37	193.29	95.00	8449.77	3.33	6.05			
16253.00	89.94	181.60	7578.05	-8545.03	-310.89	40.033647	-104.922933	0.69	357.36	94.00	8543.71	3.19	3.02			
16348.00	89.07	181.59	7578.87	-8639.99	-313.53	40.033387	-104.922943	0.92	180.66	95.00	8638.66	3.23	-0.00			
16442.00	89.94	181.40	7579.68	-8733.95	-315.99	40.033129	-104.922951	0.95	347.68	94.00	8732.61	3.27	-2.83			
16537.00	88.83	181.54	7580.70	-8828.91	-318.42	40.032868	-104.922960	1.18	172.81	95.00	8827.57	3.51	-5.65			
16632.00	90.37	181.21	7581.36	-8923.88	-320.70	40.032607	-104.922968	1.66	347.90	95.00	8922.52	3.40	-8.31			
16726.00	89.14	180.30	7581.77	-9017.87	-321.94	40.032349	-104.922973	1.63	216.49	94.00	9016.51	3.02	-9.93			
16821.00	87.47	179.75	7584.58	-9112.82	-321.98	40.032089	-104.922975	1.85	198.21	95.00	9111.46	5.05	-10.35			
16915.00	86.98	177.92	7589.13	-9206.69	-320.08	40.031831	-104.922966	2.01	254.95	94.00	9205.33	8.84	-8.82			
17009.00	87.09	177.57	7593.99	-9300.49	-316.38	40.031574	-104.922953	0.39	287.46	94.00	9299.15	12.93	-5.50			
17104.00	86.36	177.22	7599.42	-9395.23	-312.07	40.031313	-104.922937	0.85	205.57	95.00	9393.91	17.56	-1.57			

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
17198.00	86.54	177.13	7605.24	-9488.94	-307.45	40.031056	-104.922921	0.21	333.48	94.00	9487.63	22.59	2.67	
17284.00	85.59	176.52	7611.14	-9574.60	-302.70	40.030821	-104.922904	1.31	212.62	86.00	9573.32	27.73	7.08	
17341.00	85.59	176.52	7615.52	-9631.33	-299.25	40.030665	-104.922892	0.00	0.00	57.00	9630.06	31.63	10.29	PROJECTION TO TD

Formation Points (Relative to centre, TVD relative to Drill Floor)		
Name	MD (US ft)	TVD (US ft)
SUSSEX	4622.18	4578.00
SHANNON	5213.78	5169.00
SHARON SPRINGS	7449.72	7348.00
NIORARA A	7513.15	7385.00
NIORARA B	7754.56	7486.00