

RECEIVED

JUN 13 2010

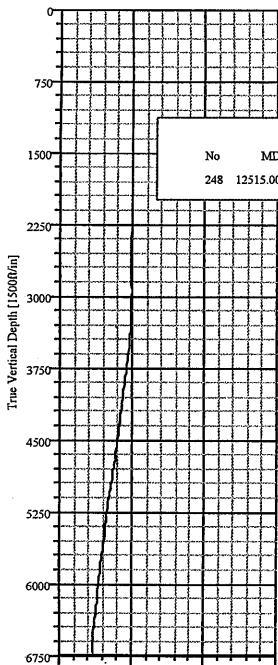
WV GEOLOGICAL SURVEY
MORGANTOWN, WV



APPALACHIA 1H
WETZEL COUNTY, WV



PLAN 2 VS ACTUAL

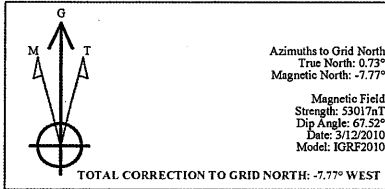


EXTRAPOLATED TD: WFT #1 (APPALACHIA 1H/HORIZONTAL)

No	MD	Inc	Az	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
248	12515.00	90.43	312.97	7165.42	3092.81	-4014.54	0.00	0.00	5045.33

LEGEND

- APPALACHIA 1H, HORIZONTAL, Plan #2
- HORIZONTAL
- WFT #1



SITE DETAILS

BROGAN LEASE

Site Centre Northing: 439218.00
Easting: 1676992.00

Ground Level: 1379.00
Positional Uncertainty: 0.00
Convergence: -0.73

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	8551.00	89.57	313.32	7247.44	410.88	-1098.58	0.00	0.00	1083.67	
2	8569.00	89.57	313.32	7247.57	423.23	-1111.67	0.00	0.00	1101.67	
3	8690.50	92.00	312.91	7245.91	506.25	-1200.35	2.03	-9.65	1223.15	
4	11648.43	92.00	312.91	7163.62	2110.58	-2926.40	0.00	0.00	3379.64	
5	11183.44	89.30	312.92	7162.09	2202.49	-3025.25	2.00	179.66	3714.62	
6	12514.66	89.30	312.92	7178.35	3109.00	-4000.00	0.00	0.00	5045.75	PBHL

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
APPALACHIA 1H	0.00	0.00	439218.00	1676992.00	39°42'00.859"N	080°38'52.776"W	N/A

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL	7195.00	3109.00	-4000.00	442327.00	1672992.00	Point
BEND 'A'	7242.56	-301.00	-343.00	438917.00	1676649.00	Point

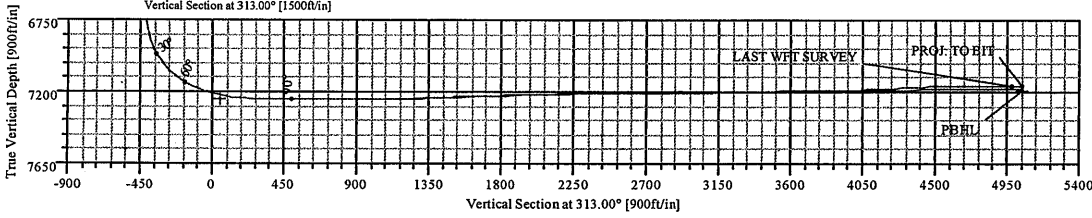
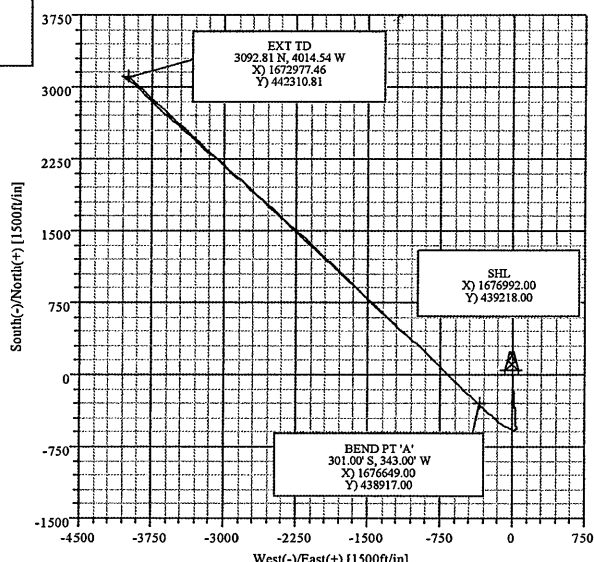
FIELD DETAILS

WETZEL COUNTY, WV

Geodetic System: US State Plane Coordinate System 1927
Ellipsoid: NAD27 (Clarke 1866)
Zone: West Virginia, Northern Zone
Magnetic Model: IGRF2010

System Datum: Mean Sea Level
Local North: Grid North

VERTICAL SECTION PLANE: 313.00°



Survey: WFT #1 (APPALACHIA 1H/HORIZONTAL)
Created By: Joseph Boyd
Date: 4/26/2010

Weatherford International Ltd.

SURVEY REPORT



Company: CHESAPEAKE	Date: 4/26/2010	Time: 08:51:42	Page: 1
Field: WETZEL COUNTY, WV	Co-ordinate(NE) Reference: Well: APPALACHIA 1H, Grid North		
Site: BROGAN LEASE	Vertical (TVD) Reference: SITE 1398.0		
Well: APPALACHIA 1H	Section (VS) Reference: User (0.00N,0.00E,313.00Azi)		
Wellpath: HORIZONTAL	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey: WFT #1	Start Date: 4/12/2010
Company: Weatherford International Ltd.	Engineer: Joseph Boyd
Tool: MWD;MWD - Standard	Tied-to: From Surface

Field: WETZEL COUNTY, WV

Map System: US State Plane Coordinate System 1927	Map Zone: West Virginia, Northern Zone
Geo Datum: NAD27 (Clarke 1866)	Coordinate System: Well Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site: BROGAN LEASE

Site Position:	Northing: 439218.00 ft	Latitude: 39 42 0.859 N	
From: Map	Easting: 1676992.00 ft	Longitude: 80 38 52.776 W	
Position Uncertainty: 0.00 ft		North Reference: Grid	
Ground Level: 1379.00 ft		Grid Convergence: -0.73 deg	

Well: APPALACHIA 1H

Well Position:	Slot Name:
+N/-S 0.00 ft Northing: 439218.00 ft	Latitude: 39 42 0.859 N
+E/-W 0.00 ft Easting : 1676992.00 ft	Longitude: 80 38 52.776 W
Position Uncertainty: 0.00 ft	

Wellpath: HORIZONTAL

Current Datum: SITE	Height 1398.00 ft	Drilled From: Surface
Magnetic Data: 3/12/2010		Tie-on Depth: 0.00 ft
Field Strength: 53017 nT		Above System Datum: Mean Sea Level
Vertical Section: Depth From (TVD)	+N/-S	Declination: -8.50 deg
ft	ft	Mag Dip Angle: 67.52 deg
		+E/-W
		ft
		Direction
		deg
0.00	0.00	0.00
		313.00

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.71	113.96	100.00	-0.25	0.57	-0.59	0.71	0.71	0.00	
200.00	0.25	114.12	199.99	-0.59	1.33	-1.38	0.46	-0.46	0.16	
300.00	0.18	105.63	299.99	-0.72	1.68	-1.72	0.08	-0.07	-8.49	
400.00	0.19	39.00	399.99	-0.64	1.94	-1.85	0.20	0.01	-66.63	
500.00	0.07	75.20	499.99	-0.49	2.10	-1.87	0.14	-0.12	36.20	
600.00	0.32	48.96	599.99	-0.29	2.37	-1.93	0.26	0.25	-26.24	
700.00	0.11	131.93	699.99	-0.17	2.65	-2.06	0.33	-0.21	82.97	
800.00	0.14	194.27	799.99	-0.36	2.69	-2.21	0.13	0.03	62.34	
900.00	0.14	297.56	899.99	-0.42	2.56	-2.15	0.22	0.00	103.29	
1000.00	0.22	183.35	999.99	-0.55	2.44	-2.16	0.31	0.08	-114.21	
1100.00	0.09	112.41	1099.99	-0.78	2.50	-2.36	0.21	-0.13	-70.94	
1200.00	0.17	265.50	1199.99	-0.82	2.42	-2.33	0.25	0.08	153.09	
1300.00	0.21	95.80	1299.99	-0.85	2.46	-2.37	0.38	0.04	-169.70	
1400.00	0.36	106.84	1399.99	-0.96	2.94	-2.80	0.16	0.15	11.04	
1500.00	0.34	72.15	1499.99	-0.96	3.52	-3.23	0.21	-0.02	-34.69	
1600.00	0.41	104.41	1599.98	-0.96	4.15	-3.69	0.22	0.07	32.26	
1700.00	0.47	89.73	1699.98	-1.04	4.91	-4.30	0.13	0.06	-14.68	
1800.00	0.45	82.13	1799.98	-0.99	5.71	-4.85	0.06	-0.02	-7.60	
1900.00	0.32	82.53	1899.98	-0.90	6.37	-5.27	0.13	-0.13	0.40	
2000.00	0.46	104.45	1999.97	-0.96	7.04	-5.80	0.20	0.14	21.92	
2100.00	0.50	91.68	2099.97	-1.07	7.86	-6.48	0.11	0.04	-12.77	
2200.00	0.23	114.18	2199.97	-1.17	8.48	-7.00	0.30	-0.27	22.50	
2300.00	0.31	172.03	2299.97	-1.52	8.70	-7.40	0.27	0.08	57.85	

RECEIVED

JUN 13 2012

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Weatherford International Ltd.

SURVEY REPORT



Company: CHESAPEAKE	Date: 4/26/2010	Time: 08:51:42	Page: 2
Field: WETZEL COUNTY, WV	Co-ordinate(NE) Reference: Well: APPALACHIA 1H, Grid North		
Site: BROGAN LEASE	Vertical (TVD) Reference: SITE 1398.0		
Well: APPALACHIA 1H	Section (VS) Reference: User (0.00N,0.00E,313.00Azi)		
Wellpath: HORIZONTAL	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
2400.00	0.42	139.89	2399.97	-2.07	8.98	-7.98	0.23	0.11	-32.14	
2500.00	0.37	107.40	2499.96	-2.44	9.52	-8.63	0.23	-0.05	-32.49	
2600.00	0.25	126.85	2599.96	-2.67	10.00	-9.14	0.16	-0.12	19.45	
2747.00	0.43	318.74	2746.96	-2.45	9.90	-8.91	0.46	0.12	-114.36	
2792.00	0.39	316.70	2791.96	-2.21	9.68	-8.59	0.09	-0.09	-4.53	
2836.00	0.39	346.24	2835.96	-1.96	9.54	-8.31	0.45	0.00	67.14	
2881.00	0.44	327.86	2880.96	-1.66	9.41	-8.02	0.31	0.11	-40.84	
2925.00	0.19	275.23	2924.96	-1.51	9.25	-7.80	0.81	-0.57	-119.61	
2968.00	0.44	209.86	2967.96	-1.65	9.10	-7.78	0.93	0.58	-152.02	
3013.00	1.19	195.36	3012.95	-2.25	8.89	-8.03	1.72	1.67	-32.22	
3058.00	2.19	208.61	3057.93	-3.45	8.35	-8.46	2.37	2.22	29.44	
3102.00	3.19	214.98	3101.88	-5.19	7.25	-8.84	2.37	2.27	14.48	
3147.00	3.88	203.11	3146.80	-7.62	5.93	-9.54	2.23	1.53	-26.38	
3190.00	4.81	195.73	3189.67	-10.69	4.87	-10.86	2.52	2.16	-17.16	
3233.00	5.88	194.11	3232.49	-14.57	3.85	-12.75	2.51	2.49	-3.77	
3275.00	6.69	194.11	3274.23	-19.03	2.73	-14.97	1.93	1.93	0.00	
3320.00	7.44	189.11	3318.89	-24.44	1.63	-17.86	2.15	1.67	-11.11	
3363.00	7.75	185.48	3361.51	-30.08	0.91	-21.18	1.33	0.72	-8.44	
3408.00	8.44	184.36	3406.07	-36.39	0.37	-25.09	1.57	1.53	-2.49	
3453.00	9.00	184.23	3450.55	-43.20	-0.14	-29.35	1.25	1.24	-0.29	
3494.00	8.56	185.23	3491.07	-49.43	-0.66	-33.23	1.14	-1.07	2.44	
3537.00	7.94	179.86	3533.62	-55.59	-0.94	-37.22	2.30	-1.44	-12.49	
3625.00	8.56	175.73	3620.71	-68.20	-0.44	-46.19	0.97	0.70	-4.69	
3670.00	8.94	176.11	3665.19	-75.03	0.05	-51.20	0.85	0.84	0.84	
3714.00	9.56	174.98	3708.61	-82.08	0.60	-56.41	1.47	1.41	-2.57	
3759.00	9.06	175.36	3753.02	-89.33	1.21	-61.81	1.12	-1.11	0.84	
3804.00	9.13	174.23	3797.46	-96.41	1.86	-67.11	0.43	0.16	-2.51	
3849.00	9.44	174.36	3841.87	-103.64	2.58	-72.57	0.69	0.69	0.29	
3936.00	8.88	174.61	3927.76	-117.42	3.91	-82.94	0.65	-0.64	0.29	
3979.00	8.88	174.73	3970.24	-124.03	4.53	-87.90	0.04	0.00	0.28	
4024.00	10.00	175.98	4014.63	-131.39	5.12	-93.35	2.53	2.49	2.78	
4067.00	9.56	176.61	4057.01	-138.68	5.59	-98.67	1.05	-1.02	1.47	
4112.00	9.38	176.11	4101.39	-146.07	6.06	-104.05	0.44	-0.40	-1.11	
4154.00	8.88	174.23	4142.86	-152.71	6.62	-108.99	1.39	-1.19	-4.48	
4196.00	9.19	176.11	4184.34	-159.28	7.18	-113.88	1.02	0.74	4.48	
4241.00	10.40	177.35	4228.68	-166.92	7.61	-119.40	2.73	2.69	2.76	
4286.00	9.88	177.23	4272.98	-174.84	7.98	-125.07	1.16	-1.16	-0.27	
4331.00	9.38	175.86	4317.35	-182.35	8.43	-130.53	1.22	-1.11	-3.04	
4376.00	9.00	175.11	4361.77	-189.51	9.00	-135.83	0.89	-0.84	-1.67	
4418.00	9.44	176.11	4403.22	-196.22	9.51	-140.78	1.11	1.05	2.38	
4460.00	10.38	176.36	4444.60	-203.44	9.98	-146.05	2.24	2.24	0.60	
4505.00	10.25	177.23	4488.87	-211.48	10.44	-151.86	0.45	-0.29	1.93	
4550.00	9.88	177.98	4533.18	-219.34	10.77	-157.46	0.87	-0.82	1.67	
4593.00	9.78	178.43	4575.55	-226.68	11.00	-162.63	0.29	-0.23	1.05	
4636.00	9.69	178.36	4617.93	-233.94	11.20	-167.74	0.21	-0.21	-0.16	
4680.00	10.31	178.48	4661.26	-241.58	11.41	-173.10	1.41	1.41	0.27	
4723.00	11.31	174.86	4703.50	-249.63	11.89	-178.94	2.81	2.33	-8.42	
4766.00	11.44	174.98	4745.65	-258.08	12.64	-185.25	0.31	0.30	0.28	
4808.00	11.19	175.11	4786.83	-266.29	13.35	-191.37	0.60	-0.60	0.31	
4850.00	11.38	175.73	4828.02	-274.48	14.01	-197.44	0.54	0.45	1.48	
4893.00	11.44	176.11	4870.17	-282.96	14.61	-203.67	0.22	0.14	0.88	
4936.00	11.56	176.36	4912.31	-291.52	15.18	-209.91	0.30	0.28	0.58	

RECEIVED

JUN 13 2012

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Weatherford International Ltd.

SURVEY REPORT



Company: CHESAPEAKE	Date: 4/26/2010	Time: 08:51:42	Page: 3
Field: WETZEL COUNTY, WV	Co-ordinate(NE) Reference: Well: APPALACHIA 1H, Grid North		
Site: BROGAN LEASE	Vertical (TVD) Reference: SITE 1398.0		
Well: APPALACHIA 1H	Section (VS) Reference: User (0.00N,0.00E,313.00Azi)		
Wellpath: HORIZONTAL	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
4981.00	11.75	173.61	4956.38	-300.57	15.97	-216.67	1.30	0.42	-6.11	
5026.00	11.50	168.23	5000.46	-309.52	17.40	-223.81	2.47	-0.56	-11.96	
5068.00	11.19	167.61	5041.64	-317.59	19.13	-230.59	0.79	-0.74	-1.48	
5113.00	9.81	167.10	5085.88	-325.60	20.92	-237.36	3.07	-3.07	-1.13	
5156.00	9.88	169.98	5128.25	-332.80	22.38	-243.34	1.16	0.16	6.70	
5200.00	9.63	174.11	5171.62	-340.18	23.41	-249.12	1.69	-0.57	9.39	
5245.00	9.69	173.98	5215.98	-347.69	24.20	-254.82	0.14	0.13	-0.29	
5288.00	9.38	174.73	5258.38	-354.78	24.90	-260.17	0.78	-0.72	1.74	
5330.00	8.47	176.72	5299.88	-361.27	25.39	-264.96	2.29	-2.17	4.74	
5375.00	8.13	175.98	5344.40	-367.76	25.80	-269.68	0.79	-0.76	-1.64	
5420.00	8.19	176.11	5388.95	-374.13	26.24	-274.35	0.14	0.13	0.29	
5465.00	8.31	176.73	5433.48	-380.57	26.64	-279.04	0.33	0.27	1.38	
5510.00	8.69	177.48	5477.99	-387.22	26.98	-283.81	0.88	0.84	1.67	
5555.00	8.94	178.36	5522.46	-394.11	27.23	-288.69	0.63	0.56	1.96	
5597.00	9.31	179.23	5563.92	-400.77	27.37	-293.34	0.94	0.88	2.07	
5684.00	9.44	174.23	5649.76	-414.90	28.18	-303.57	0.95	0.15	-5.75	
5727.00	9.69	172.73	5692.17	-422.00	28.99	-309.01	0.82	0.58	-3.49	
5772.00	9.63	170.11	5736.53	-429.46	30.12	-314.92	0.99	-0.13	-5.82	
5817.00	9.00	169.61	5780.94	-436.63	31.40	-320.75	1.41	-1.40	-1.11	
5862.00	8.88	168.40	5825.39	-443.50	32.73	-326.40	0.50	-0.27	-2.69	
5907.00	8.75	171.48	5869.86	-450.29	33.94	-331.92	1.09	-0.29	6.84	
5921.00	8.75	176.60	5883.69	-452.40	34.16	-333.52	5.56	0.00	36.57	
5963.00	8.63	177.98	5925.21	-458.74	34.46	-338.06	0.57	-0.29	3.29	
6007.00	8.19	176.48	5968.74	-465.17	34.77	-342.67	1.12	-1.00	-3.41	
6050.00	7.69	173.73	6011.33	-471.08	35.27	-347.07	1.46	-1.16	-6.40	
6093.00	7.94	170.23	6053.93	-476.87	36.09	-351.62	1.25	0.58	-8.14	
6138.00	8.19	170.23	6098.48	-483.09	37.16	-356.65	0.56	0.56	0.00	
6183.00	7.88	169.11	6143.04	-489.28	38.29	-361.69	0.77	-0.69	-2.49	
6228.00	8.69	178.23	6187.57	-495.71	38.97	-366.58	3.43	1.80	20.27	
6273.00	9.38	184.36	6232.02	-502.76	38.80	-371.26	2.63	1.53	13.62	
6318.00	9.13	182.36	6276.43	-509.99	38.38	-375.88	0.91	-0.56	-4.44	
6361.00	8.33	179.29	6318.93	-516.51	38.27	-380.25	2.15	-1.86	-7.14	
6406.00	8.38	177.61	6363.45	-523.05	38.45	-384.84	0.55	0.11	-3.73	
6451.00	9.06	178.48	6407.93	-529.86	38.68	-389.66	1.54	1.51	1.93	
6494.00	8.13	177.11	6450.45	-536.28	38.92	-394.21	2.21	-2.16	-3.19	
6539.00	7.69	175.48	6495.02	-542.46	39.32	-398.72	1.10	-0.98	-3.62	
6584.00	7.06	174.61	6539.65	-548.22	39.82	-403.01	1.42	-1.40	-1.93	
6628.00	6.50	175.61	6583.34	-553.39	40.26	-406.86	1.30	-1.27	2.27	
6673.00	6.00	172.86	6628.07	-558.27	40.75	-410.54	1.29	-1.11	-6.11	
6718.00	7.06	200.48	6672.79	-563.19	40.08	-413.41	7.28	2.36	61.38	
6763.00	10.17	229.22	6717.30	-568.38	36.10	-414.04	11.60	6.91	63.87	
6807.00	12.63	252.48	6760.45	-572.37	28.56	-411.25	11.74	5.59	52.86	
6852.00	15.75	270.73	6804.09	-573.77	17.76	-404.30	12.04	6.93	40.56	
6897.00	20.00	279.23	6846.92	-572.46	4.05	-393.38	11.06	9.44	18.89	
6939.00	23.88	283.48	6885.87	-569.33	-11.32	-380.00	9.98	9.24	10.12	
6984.00	25.75	295.11	6926.74	-563.05	-29.04	-362.76	11.59	4.16	25.84	
7026.00	29.63	298.36	6963.92	-554.24	-46.44	-344.03	9.91	9.24	7.74	
7069.00	34.13	301.73	7000.43	-542.84	-66.07	-321.90	11.25	10.47	7.84	
7112.00	38.81	303.98	7035.00	-528.96	-87.52	-296.74	11.32	10.88	5.23	
7157.00	44.31	306.11	7068.66	-511.80	-111.93	-267.19	12.62	12.22	4.73	
7202.00	49.69	306.98	7099.34	-492.20	-138.35	-234.50	12.04	11.96	1.93	
7244.00	55.19	307.98	7124.94	-471.94	-164.75	-201.37	13.23	13.10	2.38	
7286.00	60.81	308.36	7147.18	-449.94	-192.74	-165.89	13.40	13.38	0.90	

RECEIVED

JUN 13 2012

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Weatherford International Ltd.

SURVEY REPORT



Company: CHESAPEAKE Field: WETZEL COUNTY, WV Site: BROGAN LEASE Well: APPALACHIA 1H Wellpath: HORIZONTAL	Date: 4/26/2010 Co-ordinate(NE) Reference: Vertical (TVD) Reference: Section (VS) Reference: Survey Calculation Method:	Time: 08:51:42 Well: APPALACHIA 1H, Grid North SITE 1398.0 User (0.00N,0.00E,313.00Azi) Minimum Curvature	Page: 4 Db: Sybase
---------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
7328.00	65.50	309.61	7166.15	-426.36	-221.86	-128.52	11.48	11.17	2.98	
7371.00	69.63	310.73	7182.55	-400.73	-252.22	-88.83	9.90	9.60	2.60	
7416.00	72.31	312.61	7197.23	-372.44	-283.99	-46.31	7.15	5.96	4.18	
7461.00	74.88	312.48	7209.93	-343.26	-315.79	-3.15	5.72	5.71	-0.29	
7506.00	76.81	313.36	7220.94	-313.55	-347.74	40.48	4.69	4.29	1.96	
7549.00	79.56	313.48	7229.74	-284.62	-378.31	82.57	6.40	6.40	0.28	
7591.00	82.81	313.36	7236.18	-256.10	-408.45	124.06	7.74	7.74	-0.29	
7636.00	87.13	313.61	7240.12	-225.25	-440.96	168.88	9.62	9.60	0.56	
7668.00	87.86	315.20	7241.52	-202.89	-463.80	200.84	5.46	2.28	4.97	
7712.00	88.26	314.80	7243.01	-171.79	-494.90	244.78	1.29	0.91	-0.91	
7757.00	88.20	314.64	7244.40	-140.14	-526.86	289.74	0.38	-0.13	-0.36	
7802.00	88.26	314.45	7245.79	-108.59	-558.91	334.70	0.44	0.13	-0.42	
7847.00	89.17	314.40	7246.80	-77.10	-591.04	379.68	2.03	2.02	-0.11	
7890.00	89.23	314.08	7247.40	-47.10	-621.85	422.66	0.76	0.14	-0.74	
7935.00	89.34	314.23	7247.96	-15.76	-654.13	467.65	0.41	0.24	0.33	
7980.00	90.31	314.49	7248.10	15.70	-686.30	512.64	2.23	2.16	0.58	
8025.00	90.09	314.23	7247.94	47.17	-718.47	557.63	0.76	-0.49	-0.58	
8070.00	89.97	314.21	7247.92	78.55	-750.72	602.62	0.27	-0.27	-0.04	
8112.00	89.74	314.08	7248.02	107.80	-780.86	644.61	0.63	-0.55	-0.31	
8157.00	90.60	315.16	7247.89	139.41	-812.89	689.59	3.07	1.91	2.40	
8202.00	91.51	315.75	7247.06	171.47	-844.45	734.54	2.41	2.02	1.31	
8247.00	92.23	312.30	7245.59	202.73	-876.79	779.50	7.83	1.60	-7.67	
8292.00	90.26	313.01	7244.61	233.21	-909.87	824.49	4.65	-4.38	1.58	
8334.00	89.00	312.93	7244.89	261.84	-940.60	866.48	3.01	-3.00	-0.19	
8377.00	89.17	312.82	7245.57	291.09	-972.11	909.48	0.47	0.40	-0.26	
8421.00	89.57	313.58	7246.06	321.21	-1004.18	953.48	1.95	0.91	1.73	
8465.00	89.06	312.99	7246.58	351.37	-1036.21	997.47	1.77	-1.16	-1.34	
8508.00	89.34	313.08	7247.18	380.71	-1067.64	1040.47	0.68	0.65	0.21	
8551.00	89.57	313.32	7247.59	410.15	-1098.98	1083.46	0.77	0.53	0.56	
8596.00	90.03	311.81	7247.75	440.59	-1132.12	1128.46	3.51	1.02	-3.36	
8641.00	91.85	313.42	7247.01	471.05	-1165.23	1173.45	5.40	4.04	3.58	
8686.00	92.14	313.27	7245.44	501.92	-1197.94	1218.42	0.73	0.64	-0.33	
8731.00	91.74	312.67	7243.92	532.57	-1230.85	1263.40	1.60	-0.89	-1.33	
8773.00	92.03	312.91	7242.54	561.09	-1261.65	1305.37	0.90	0.69	0.57	
8818.00	92.03	312.49	7240.95	591.59	-1294.70	1350.34	0.93	0.00	-0.93	
8859.00	91.97	312.48	7239.51	619.26	-1324.92	1391.32	0.15	-0.15	-0.02	
8901.00	92.82	313.20	7237.76	647.79	-1355.69	1433.28	2.65	2.02	1.71	
8946.00	93.68	313.70	7235.21	678.69	-1388.30	1478.21	2.21	1.91	1.11	
8991.00	92.48	313.41	7232.79	709.65	-1420.87	1523.14	2.74	-2.67	-0.64	
9036.00	92.77	313.84	7230.73	740.67	-1453.41	1568.09	1.15	0.64	0.96	
9081.00	92.03	313.99	7228.84	771.85	-1485.80	1613.04	1.68	-1.64	0.33	
9124.00	92.20	313.92	7227.26	801.68	-1516.73	1656.01	0.43	0.40	-0.16	
9167.00	91.28	314.26	7225.95	831.58	-1547.60	1698.98	2.28	-2.14	0.79	
9212.00	91.40	314.38	7224.90	863.01	-1579.79	1743.96	0.38	0.27	0.27	
9257.00	91.68	314.70	7223.69	894.56	-1611.85	1788.92	0.94	0.62	0.71	
9299.00	91.80	314.90	7222.42	924.14	-1641.64	1830.88	0.56	0.29	0.48	
9342.00	90.94	314.40	7221.39	954.35	-1672.22	1873.85	2.31	-2.00	-1.16	
9385.00	91.51	314.62	7220.47	984.49	-1702.88	1916.83	1.42	1.33	0.51	
9429.00	91.74	314.80	7219.22	1015.43	-1734.13	1960.79	0.66	0.52	0.41	
9472.00	91.00	314.23	7218.19	1045.57	-1764.79	2003.76	2.17	-1.72	-1.33	
9517.00	90.94	314.31	7217.43	1076.98	-1797.00	2048.74	0.22	-0.13	0.18	
9559.00	90.94	313.27	7216.74	1106.04	-1827.32	2090.73	2.48	0.00	-2.48	

RECEIVED
 JUN 13 2012
 WV GEOLOGICAL SURVEY
 MORGANTOWN, WV

Weatherford International Ltd.

SURVEY REPORT



Company: CHESAPEAKE	Date: 4/26/2010	Time: 08:51:42	Page: 5
Field: WETZEL COUNTY, WV	Co-ordinate(NE) Reference: Well: APPALACHIA 1H, Grid North		
Site: BROGAN LEASE	Vertical (TVD) Reference: SITE 1398.0		
Well: APPALACHIA 1H	Section (VS) Reference: User (0.00N,0.00E,313.00Azi)		
Wellpath: HORIZONTAL	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
9601.00	90.88	313.13	7216.07	1134.79	-1857.93	2132.73	0.36	-0.14	-0.33	
9646.00	90.88	313.13	7215.38	1165.55	-1890.77	2177.72	0.00	0.00	0.00	
9689.00	90.88	313.61	7214.72	1195.07	-1922.02	2220.72	1.12	0.00	1.12	
9733.00	91.28	313.63	7213.89	1225.42	-1953.87	2264.71	0.91	0.91	0.05	
9778.00	91.63	314.19	7212.75	1256.62	-1986.28	2309.69	1.47	0.78	1.24	
9823.00	90.94	312.93	7211.74	1287.62	-2018.88	2354.67	3.19	-1.53	-2.80	
9867.00	90.71	312.80	7211.11	1317.55	-2051.13	2398.67	0.60	-0.52	-0.30	
9910.00	90.83	313.01	7210.53	1346.82	-2082.62	2441.66	0.56	0.28	0.49	
9954.00	91.00	313.60	7209.83	1377.00	-2114.64	2485.66	1.40	0.39	1.34	
9996.00	91.05	313.55	7209.08	1405.94	-2145.06	2527.65	0.17	0.12	-0.12	
10041.00	89.57	311.91	7208.83	1436.47	-2178.11	2572.64	4.91	-3.29	-3.64	
10086.00	89.63	312.13	7209.15	1466.60	-2211.54	2617.64	0.51	0.13	0.49	
10129.00	89.74	312.16	7209.38	1495.45	-2243.42	2660.63	0.27	0.26	0.07	
10174.00	89.80	312.21	7209.56	1525.67	-2276.77	2705.63	0.17	0.13	0.11	
10216.00	89.80	312.11	7209.71	1553.86	-2307.90	2747.62	0.24	0.00	-0.24	
10261.00	90.09	312.06	7209.75	1584.02	-2341.30	2792.61	0.65	0.64	-0.11	
10304.00	91.06	312.03	7209.32	1612.81	-2373.23	2835.61	2.26	2.26	-0.07	
10349.00	91.23	312.18	7208.42	1642.98	-2406.61	2880.59	0.50	0.38	0.33	
10393.00	90.77	311.88	7207.66	1672.44	-2439.29	2924.58	1.25	-1.05	-0.68	
10438.00	90.71	311.49	7207.07	1702.36	-2472.89	2969.56	0.88	-0.13	-0.87	
10483.00	90.77	311.71	7206.49	1732.23	-2506.54	3014.55	0.51	0.13	0.49	
10528.00	91.00	311.80	7205.80	1762.20	-2540.10	3059.53	0.55	0.51	0.20	
10573.00	91.17	312.09	7204.95	1792.27	-2573.57	3104.51	0.75	0.38	0.64	
10616.00	91.34	312.08	7204.00	1821.08	-2605.47	3147.50	0.40	0.40	-0.02	
10661.00	91.45	312.33	7202.91	1851.30	-2638.80	3192.48	0.61	0.24	0.56	
10706.00	91.57	312.43	7201.72	1881.63	-2672.03	3237.46	0.35	0.27	0.22	
10748.00	91.45	311.66	7200.62	1909.74	-2703.20	3279.44	1.85	-0.29	-1.83	
10791.00	91.34	311.03	7199.57	1938.14	-2735.48	3322.41	1.49	-0.26	-1.47	
10836.00	90.94	310.31	7198.67	1967.46	-2769.60	3367.36	1.83	-0.89	-1.60	
10881.00	91.23	310.50	7197.82	1996.62	-2803.86	3412.31	0.77	0.64	0.42	
10923.00	91.62	311.09	7196.78	2024.06	-2835.65	3454.27	1.68	0.93	1.40	
10966.00	92.14	311.25	7195.37	2052.35	-2868.00	3497.22	1.27	1.21	0.37	
11011.00	92.37	311.28	7193.60	2082.00	-2901.80	3542.16	0.52	0.51	0.07	
11056.00	91.57	311.82	7192.05	2111.83	-2935.45	3587.12	2.14	-1.78	1.20	
11101.00	91.68	311.90	7190.77	2141.85	-2968.96	3632.10	0.30	0.24	0.18	
11146.00	91.34	311.71	7189.59	2171.84	-3002.49	3677.07	0.87	-0.76	-0.42	
11188.00	90.14	312.48	7189.04	2199.99	-3033.65	3719.06	3.39	-2.86	1.83	
11233.00	90.20	312.25	7188.91	2230.31	-3066.90	3764.06	0.53	0.13	-0.51	
11278.00	90.48	312.29	7188.64	2260.58	-3100.20	3809.05	0.63	0.62	0.09	
11323.00	90.31	312.19	7188.33	2290.83	-3133.51	3854.05	0.44	-0.38	-0.22	
11365.00	90.43	311.67	7188.06	2318.90	-3164.76	3896.04	1.27	0.29	-1.24	
11410.00	90.26	311.69	7187.79	2348.82	-3198.37	3941.03	0.38	-0.38	0.04	
11453.00	90.26	311.43	7187.60	2377.34	-3230.54	3984.01	0.60	0.00	-0.60	
11499.00	92.65	312.19	7186.43	2408.00	-3264.81	4029.98	5.45	5.20	1.65	
11543.00	92.37	311.61	7184.50	2437.35	-3297.53	4073.93	1.46	-0.64	-1.32	
11584.00	91.97	310.88	7182.95	2464.37	-3328.34	4114.88	2.03	-0.98	-1.78	
11627.00	92.48	311.01	7181.28	2492.52	-3360.79	4157.82	1.22	1.19	0.30	
11670.00	92.77	311.14	7179.31	2520.75	-3393.17	4200.76	0.74	0.67	0.30	
11715.00	93.05	312.05	7177.03	2550.58	-3426.78	4245.68	2.11	0.62	2.02	
11760.00	93.05	311.83	7174.63	2580.61	-3460.21	4290.61	0.49	0.00	-0.49	
11802.00	93.11	311.53	7172.37	2608.50	-3491.53	4332.54	0.73	0.14	-0.71	
11845.00	93.28	311.51	7169.98	2636.96	-3523.68	4375.46	0.40	0.40	-0.05	
11890.00	93.17	311.73	7167.45	2666.80	-3557.26	4420.37	0.55	-0.24	0.49	

RECEIVED

JUN 13 2012

WV GEOLOGICAL SURVEY
MORGANTOWN, WV

Weatherford International Ltd.

SURVEY REPORT



Company: CHESAPEAKE Field: WETZEL COUNTY, WV Site: BROGAN LEASE Well: APPALACHIA 1H Wellpath: HORIZONTAL	Date: 4/26/2010 Co-ordinate(NE) Reference: Vertical (TVD) Reference: Section (VS) Reference: Survey Calculation Method:	Time: 08:51:42 Well: APPALACHIA 1H, Grid North SITE 1398.0 User (0.00N,0.00E,313.00Azi) Minimum Curvature	Page: 6 Db: Sybase
---------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Comment
11933.00	90.54	312.96	7166.05	2695.75	-3589.03	4463.34	6.75	-6.12	2.86	
11978.00	90.31	313.08	7165.72	2726.45	-3621.92	4508.34	0.58	-0.51	0.27	
12023.00	90.26	312.70	7165.50	2757.08	-3654.89	4553.34	0.85	-0.11	-0.84	
12066.00	89.69	313.16	7165.52	2786.36	-3686.38	4596.34	1.70	-1.33	1.07	
12109.00	89.63	313.04	7165.77	2815.74	-3717.77	4639.34	0.31	-0.14	-0.28	
12151.00	89.63	313.05	7166.04	2844.41	-3748.47	4681.34	0.02	0.00	0.02	
12196.00	89.91	313.34	7166.22	2875.21	-3781.27	4726.34	0.90	0.62	0.64	
12241.00	89.74	312.90	7166.36	2905.97	-3814.12	4771.34	1.05	-0.38	-0.98	
12286.00	89.91	313.00	7166.50	2936.63	-3847.06	4816.34	0.44	0.38	0.22	
12329.00	90.03	313.24	7166.52	2966.02	-3878.44	4859.34	0.62	0.28	0.56	
12374.00	90.31	313.00	7166.39	2996.78	-3911.29	4904.34	0.82	0.62	-0.53	
12418.00	90.37	312.79	7166.13	3026.73	-3943.52	4948.34	0.50	0.14	-0.48	
12452.00	90.43	312.97	7165.89	3049.87	-3968.44	4982.34	0.56	0.18	0.53	LAST WFT SURVEY
12515.00	90.43	312.97	7165.42	3092.81	-4014.54	5045.33	0.00	0.00	0.00	PROJ. TO BIT

Annotation

MD ft	TVD ft	Comment
12452.00	7165.89	LAST WFT SURVEY
12515.00	7165.42	PROJ. TO BIT

RECEIVED

JUN 13 2010

WV GEOLOGICAL SURVEY
MORGANTOWN, WV