

DEC 8 2011

Ryan Energy Technologies

Survey Report



WV GEOL Chesapeake
MORGANTOWN, WV

Company: Chesapeake Operating, Inc.	Date: 9/10/2010	Time: 09:13:54	Page: 1
Field: Marshall Co. WV	Co-ordinate(NE) Reference: Site: McDowell B8H, Grid North		
Site: McDowell B8H	Vertical (TVD) Reference: SITE 1371.0		
Well: McDowell B8H	Section (VS) Reference: Well (0.00N,0.00E,133.00Azi)		
Wellpath: B8H	Survey Calculation Method: Minimum Curvature	Db: Sybase	

Field: Marshall Co. WV
Marshall Co. WV

Map System: US State Plane Coordinate System 1927
Geo Datum: NAD27 (Clarke 1866)
Sys Datum: Mean Sea Level

Map Zone: West Virginia, Northern Zone
Coordinate System: Site Centre
Geomagnetic Model: IGRF2010

Site: McDowell B8H
Marshall Co. WV

Site Position: Northing: 452764.00 ft Latitude: 39 44 13.939 N
From: Map Easting: 1670787.30 ft Longitude: 80 40 14.413 W
Position Uncertainty: 2.00 ft North Reference: Grid
Ground Level: 1356.00 ft Grid Convergence: -0.75 deg

Well: McDowell B8H **Slot Name:**

Well Position: +N/-S 0.00 ft Northing: 452764.00 ft Latitude: 39 44 13.939 N
+E/-W 0.00 ft Easting: 1670787.30 ft Longitude: 80 40 14.413 W
Position Uncertainty: 0.00 ft

Wellpath: B8H **Drilled From:** Surface

Current Datum: SITE **Height** 1371.00 ft **Tie-on Depth:** 0.00 ft
Magnetic Data: 8/16/2010 **Above System Datum:** Mean Sea Level
Field Strength: 52986 nT **Declination:** -8.51 deg
Vertical Section: Depth From (TVD) +N/-S +E/-W Mag Dip Angle: 67.51 deg
ft ft ft Direction deg

0.00 0.00 0.00 133.00

Survey Program for Definitive Wellpath

Date: 9/10/2010 **Validated:** No **Version:** 1

Actual From	To	Survey	Toolcode	Tool Name
ft	ft			
249.00	1172.00	Survey #1 (249.00-1172.00)	SS	SS
1245.00	10434.00	Survey #2 (1245.00-10434.00)	Ryan MWD	Ryan MWD
10492.00	10492.00	Survey #3 (10492.00-10492.00)	Projection	Projection

Survey

MD	Incl	Azim	TVD	+N/-S	+E/-W	VS	DLS	Build	Turn	Tool/Comment
ft	deg	deg	ft	ft	ft	ft	deg/100ft	deg/100ft	deg/100ft	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
249.00	0.30	122.00	249.00	-0.35	0.55	0.64	0.12	0.12	0.00	SS
498.00	0.10	90.16	498.00	-0.69	1.32	1.44	0.09	-0.08	-12.79	SS
813.00	0.43	121.32	812.99	-1.31	2.61	2.80	0.11	0.10	9.89	SS
1037.00	0.31	155.35	1036.99	-2.29	3.58	4.18	0.11	-0.05	15.19	SS
1172.00	0.39	96.45	1171.99	-2.68	4.19	4.89	0.26	0.06	-43.63	SS
1245.00	0.30	61.30	1244.99	-2.61	4.60	5.15	0.31	-0.12	-48.15	Ryan MWD
1287.00	0.20	57.30	1286.99	-2.52	4.76	5.20	0.24	-0.24	-9.52	Ryan MWD
1330.00	0.20	89.80	1329.99	-2.48	4.90	5.27	0.26	0.00	75.58	Ryan MWD
1372.00	0.40	82.50	1371.98	-2.46	5.12	5.42	0.48	0.48	-17.38	Ryan MWD
1415.00	0.40	72.80	1414.98	-2.40	5.41	5.59	0.16	0.00	-22.56	Ryan MWD
1458.00	0.40	67.00	1457.98	-2.29	5.69	5.73	0.09	0.00	-13.49	Ryan MWD
1500.00	0.40	32.10	1499.98	-2.11	5.90	5.76	0.57	0.00	-83.10	Ryan MWD
1543.00	0.70	343.80	1542.98	-1.73	5.91	5.50	1.23	0.70	-112.33	Ryan MWD
1586.00	1.00	344.10	1585.97	-1.12	5.73	4.96	0.70	0.70	0.70	Ryan MWD
1628.00	1.10	337.30	1627.97	-0.40	5.48	4.28	0.38	0.24	-16.19	Ryan MWD
1671.00	1.20	343.70	1670.96	0.42	5.19	3.51	0.38	0.23	14.88	Ryan MWD
1714.00	1.20	340.50	1713.95	1.27	4.92	2.73	0.16	0.00	-7.44	Ryan MWD
1756.00	1.00	340.00	1755.94	2.03	4.64	2.01	0.48	-0.48	-1.19	Ryan MWD
1799.00	1.00	340.20	1798.94	2.74	4.39	1.34	0.01	0.00	0.47	Ryan MWD
1842.00	0.90	330.20	1841.93	3.38	4.09	0.69	0.45	-0.23	-23.26	Ryan MWD

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WV GEOLOGICAL SURVEY
Chesapeake
MORGANTOWN, WV

Ryan Energy Technologies Survey Report



Company: Chesapeake Operating, Inc.	Date: 9/10/2010	Time: 09:13:54	Page: 2
Field: Marshall Co. WV	Co-ordinate(NE) Reference:	Site: McDowell B8H, Grid North	
Site: McDowell B8H	Vertical (TVD) Reference:	SITE 1371.0	
Well: McDowell B8H	Section (VS) Reference:	Well (0.00N,0.00E,133.00Azi)	
Wellpath: B8H	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	Tool/Comment
1884.00	0.90	296.40	1883.92	3.82	3.63	0.05	1.25	0.00	-80.48	Ryan MWD
1927.00	0.90	273.50	1926.92	3.99	2.99	-0.53	0.83	0.00	-53.26	Ryan MWD
1970.00	1.20	255.50	1969.91	3.90	2.22	-1.03	1.03	0.70	-41.86	Ryan MWD
2012.00	1.50	243.00	2011.90	3.54	1.31	-1.46	1.00	0.71	-29.76	Ryan MWD
2055.00	1.70	242.00	2054.88	2.98	0.24	-1.86	0.47	0.47	-2.33	Ryan MWD
2098.00	1.80	232.00	2097.86	2.27	-0.85	-2.17	0.75	0.23	-23.26	Ryan MWD
2140.00	2.10	225.60	2139.84	1.32	-1.92	-2.31	0.88	0.71	-15.24	Ryan MWD
2183.00	2.20	221.60	2182.81	0.15	-3.04	-2.32	0.42	0.23	-9.30	Ryan MWD
2226.00	2.20	209.10	2225.78	-1.19	-3.98	-2.11	1.11	0.00	-29.07	Ryan MWD
2268.00	2.10	191.10	2267.75	-2.64	-4.52	-1.51	1.62	-0.24	-42.86	Ryan MWD
2311.00	2.00	179.40	2310.72	-4.17	-4.67	-0.57	1.00	-0.23	-27.21	Ryan MWD
2354.00	2.00	175.20	2353.70	-5.67	-4.60	0.50	0.34	0.00	-9.77	Ryan MWD
2396.00	2.10	173.20	2395.67	-7.16	-4.45	1.63	0.29	0.24	-4.76	Ryan MWD
2439.00	2.00	172.60	2438.64	-8.69	-4.26	2.81	0.24	-0.23	-1.40	Ryan MWD
2481.00	1.90	167.80	2480.62	-10.09	-4.01	3.95	0.46	-0.24	-11.43	Ryan MWD
2524.00	1.90	167.40	2523.59	-11.49	-3.71	5.12	0.03	0.00	-0.93	Ryan MWD
2567.00	1.90	161.40	2566.57	-12.86	-3.32	6.34	0.46	0.00	-13.95	Ryan MWD
2609.00	1.90	162.00	2608.55	-14.18	-2.89	7.56	0.05	0.00	1.43	Ryan MWD
2652.00	1.70	162.60	2651.53	-15.47	-2.48	8.74	0.47	-0.47	1.40	Ryan MWD
2664.00	1.60	163.70	2663.52	-15.80	-2.38	9.04	0.87	-0.83	9.17	Ryan MWD
2776.00	1.49	170.04	2775.48	-18.73	-1.69	11.54	0.18	-0.10	5.66	Ryan MWD
2819.00	1.49	170.13	2818.46	-19.83	-1.49	12.43	0.01	0.00	0.21	Ryan MWD
2861.00	0.62	220.76	2860.46	-20.54	-1.55	12.88	2.85	-2.07	120.55	Ryan MWD
2904.00	1.41	312.86	2903.45	-20.36	-2.09	12.36	3.63	1.84	214.19	Ryan MWD
2947.00	2.81	315.85	2946.42	-19.24	-3.21	10.78	3.26	3.26	6.95	Ryan MWD
2989.00	3.87	325.26	2988.35	-17.34	-4.73	8.36	2.83	2.52	22.40	Ryan MWD
3032.00	4.66	324.38	3031.23	-14.73	-6.58	5.23	1.84	1.84	-2.05	Ryan MWD
3075.00	4.57	324.20	3074.09	-11.92	-8.60	1.84	0.21	-0.21	-0.42	Ryan MWD
3117.00	4.48	325.87	3115.96	-9.20	-10.50	-1.40	0.38	-0.21	3.98	Ryan MWD
3160.00	5.19	326.14	3158.81	-6.20	-12.52	-4.93	1.65	1.65	0.63	Ryan MWD
3203.00	5.36	327.81	3201.63	-2.88	-14.68	-8.77	0.53	0.40	3.88	Ryan MWD
3245.00	5.19	325.26	3243.45	0.34	-16.80	-12.52	0.69	-0.40	-6.07	Ryan MWD
3288.00	5.10	315.94	3286.28	3.31	-19.24	-16.33	1.95	-0.21	-21.67	Ryan MWD
3331.00	5.10	315.15	3329.11	6.04	-21.92	-20.15	0.16	0.00	-1.84	Ryan MWD
3416.00	4.66	311.63	3413.80	11.01	-27.16	-27.37	0.63	-0.52	-4.14	Ryan MWD
3459.00	4.83	312.60	3456.65	13.40	-29.80	-30.93	0.44	0.40	2.26	Ryan MWD
3501.00	5.01	316.56	3498.50	15.92	-32.36	-34.53	0.91	0.43	9.43	Ryan MWD
3544.00	5.19	319.37	3541.33	18.76	-34.92	-38.34	0.72	0.42	6.53	Ryan MWD
3629.00	5.10	317.44	3625.98	24.46	-39.98	-45.92	0.23	-0.11	-2.27	Ryan MWD
3672.00	5.10	316.12	3668.81	27.25	-42.60	-49.74	0.27	0.00	-3.07	Ryan MWD
3714.00	5.01	317.35	3710.65	29.94	-45.13	-53.43	0.34	-0.21	2.93	Ryan MWD
3757.00	4.83	316.03	3753.49	32.63	-47.66	-57.11	0.49	-0.42	-3.07	Ryan MWD
3800.00	4.66	316.91	3796.34	35.21	-50.11	-60.66	0.43	-0.40	2.05	Ryan MWD
3842.00	4.66	315.85	3838.20	37.68	-52.47	-64.07	0.21	0.00	-2.52	Ryan MWD
3885.00	4.92	319.11	3881.05	40.32	-54.89	-67.65	0.88	0.60	7.58	Ryan MWD
3928.00	5.01	320.34	3923.89	43.16	-57.30	-71.34	0.32	0.21	2.86	Ryan MWD
3971.00	5.10	321.48	3966.73	46.10	-59.69	-75.09	0.31	0.21	2.65	Ryan MWD
4056.00	6.06	320.07	4051.32	52.50	-64.92	-83.28	1.14	1.13	-1.66	Ryan MWD
4099.00	6.94	308.91	4094.05	55.87	-68.40	-88.13	3.57	2.05	-25.95	Ryan MWD
4141.00	7.38	301.88	4135.72	58.89	-72.66	-93.30	2.33	1.05	-16.74	Ryan MWD
4184.00	7.38	299.15	4178.36	61.69	-77.42	-98.70	0.82	0.00	-6.35	Ryan MWD
4226.00	5.98	302.93	4220.08	64.20	-81.61	-103.47	3.49	-3.33	9.00	Ryan MWD
4269.00	5.63	304.34	4262.86	66.61	-85.23	-107.76	0.88	-0.81	3.28	Ryan MWD
4312.00	4.83	313.04	4305.68	69.03	-88.30	-111.66	2.61	-1.86	20.23	Ryan MWD

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Survey Report



Company: Chesapeake Operating, Inc.	Date: 9/10/2010	Time: 09:13:54	Page: 3
Field: Marshall Co. WV	Co-ordinate(NE) Reference:	Site: McDowell B8H, Grid North	
Site: McDowell B8H	Vertical (TVD) Reference:	SITE 1371.0	
Well: McDowell B8H	Section (VS) Reference:	Well (0.00N,0.00E,133.00Azi)	
Wellpath: B8H	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	Tool/Comment
4397.00	4.48	314.71	4390.40	73.81	-93.27	-118.55	0.44	-0.41	1.96	Ryan MWD
4482.00	4.66	304.78	4475.13	78.11	-98.47	-125.29	0.95	0.21	-11.68	Ryan MWD
4525.00	4.66	301.53	4517.99	80.02	-101.39	-128.73	0.61	0.00	-7.56	Ryan MWD
4567.00	4.22	308.56	4559.86	81.88	-104.05	-131.94	1.66	-1.05	16.74	Ryan MWD
4610.00	4.13	309.17	4602.75	83.84	-106.49	-135.06	0.23	-0.21	1.42	Ryan MWD
4653.00	4.04	316.03	4645.64	85.91	-108.74	-138.12	1.15	-0.21	15.95	Ryan MWD
4695.00	4.04	319.90	4687.53	88.11	-110.72	-141.07	0.65	0.00	9.21	Ryan MWD
4738.00	4.48	323.50	4730.42	90.62	-112.70	-144.22	1.20	1.02	8.37	Ryan MWD
4781.00	4.66	326.05	4773.28	93.42	-114.67	-147.58	0.63	0.42	5.93	Ryan MWD
4823.00	5.10	327.10	4815.13	96.40	-116.64	-151.05	1.07	1.05	2.50	Ryan MWD
4866.00	5.27	327.81	4857.95	99.67	-118.73	-154.81	0.42	0.40	1.65	Ryan MWD
4908.00	5.27	328.51	4899.77	102.95	-120.76	-158.53	0.15	0.00	1.67	Ryan MWD
4951.00	5.36	326.14	4942.59	106.30	-122.92	-162.39	0.55	0.21	-5.51	Ryan MWD
4994.00	5.54	321.83	4985.39	109.60	-125.32	-166.40	1.04	0.42	-10.02	Ryan MWD
5036.00	5.71	318.84	5027.19	112.77	-127.95	-170.48	0.81	0.40	-7.12	Ryan MWD
5122.00	5.71	313.66	5112.77	118.94	-133.86	-179.02	0.60	0.00	-6.02	Ryan MWD
5164.00	5.98	314.36	5154.55	121.92	-136.93	-183.29	0.66	0.64	1.67	Ryan MWD
5463.00	7.56	312.25	5451.45	146.03	-162.63	-218.53	0.53	0.53	-0.71	Ryan MWD
5591.00	7.91	304.16	5578.29	156.64	-176.15	-235.65	0.89	0.27	-6.32	Ryan MWD
5634.00	7.81	303.20	5620.89	159.90	-181.04	-241.46	0.38	-0.23	-2.23	Ryan MWD
5676.00	6.94	301.44	5662.54	162.79	-185.60	-246.76	2.14	-2.07	-4.19	Ryan MWD
5719.00	6.77	298.98	5705.23	165.37	-190.03	-251.76	0.79	-0.40	-5.72	Ryan MWD
5761.00	5.36	298.28	5747.00	167.50	-193.92	-256.06	3.36	-3.36	-1.67	Ryan MWD
5804.00	5.01	298.10	5789.82	169.33	-197.35	-259.82	0.81	-0.81	-0.42	Ryan MWD
5847.00	4.22	311.11	5832.68	171.26	-200.20	-263.21	3.04	-1.84	30.26	Ryan MWD
5889.00	4.04	316.38	5874.57	173.35	-202.38	-266.23	1.00	-0.43	12.55	Ryan MWD
5932.00	3.87	315.50	5917.47	175.48	-204.44	-269.20	0.42	-0.40	-2.05	Ryan MWD
6017.00	3.87	314.71	6002.28	179.54	-208.49	-274.93	0.06	0.00	-0.93	Ryan MWD
6060.00	3.87	312.25	6045.18	181.54	-210.60	-277.83	0.39	0.00	-5.72	Ryan MWD
6102.00	4.13	312.25	6087.08	183.51	-212.77	-280.76	0.62	0.62	0.00	Ryan MWD
6188.00	4.31	312.60	6172.84	187.78	-217.44	-287.09	0.21	0.21	0.41	Ryan MWD
6230.00	4.48	314.27	6214.72	189.99	-219.77	-290.31	0.51	0.40	3.98	Ryan MWD
6276.00	4.92	311.63	6260.57	192.56	-222.53	-294.07	1.07	0.96	-5.74	Ryan MWD
6318.00	5.01	309.44	6302.41	194.92	-225.30	-297.70	0.50	0.21	-5.21	Ryan MWD
6358.00	5.10	306.54	6342.25	197.08	-228.07	-301.21	0.68	0.22	-7.25	Ryan MWD
6401.00	4.83	304.25	6385.09	199.24	-231.11	-304.90	0.78	-0.63	-5.33	Ryan MWD
6443.00	4.92	302.58	6426.94	201.21	-234.08	-308.42	0.40	0.21	-3.98	Ryan MWD
6486.00	4.48	296.34	6469.79	202.94	-237.14	-311.84	1.57	-1.02	-14.51	Ryan MWD
6529.00	4.39	294.76	6512.67	204.38	-240.14	-315.02	0.35	-0.21	-3.67	Ryan MWD
6571.00	3.60	292.30	6554.56	205.55	-242.82	-317.78	1.92	-1.88	-5.86	Ryan MWD
6610.00	3.80	291.20	6593.48	206.48	-245.16	-320.12	0.54	0.51	-2.82	Ryan MWD
6653.00	2.20	223.20	6636.43	206.40	-247.05	-321.45	8.39	-3.72	-158.14	Ryan MWD
6696.00	6.10	158.50	6679.33	203.67	-246.78	-319.39	12.86	9.07	-150.47	Ryan MWD
6738.00	11.70	148.70	6720.81	197.95	-243.75	-313.27	13.77	13.33	-23.33	Ryan MWD
6781.00	16.80	149.70	6762.47	188.85	-238.35	-303.11	11.87	11.86	2.33	Ryan MWD
6823.00	22.00	148.80	6802.07	176.87	-231.20	-289.72	12.40	12.38	-2.14	Ryan MWD
6866.00	26.60	146.00	6841.26	162.00	-221.64	-272.58	11.03	10.70	-6.51	Ryan MWD
6909.00	31.50	142.60	6878.84	145.08	-209.43	-252.11	12.02	11.40	-7.91	Ryan MWD
6951.00	36.20	137.20	6913.72	127.25	-194.32	-228.90	13.28	11.19	-12.86	Ryan MWD
6994.00	41.00	134.20	6947.31	108.08	-175.57	-202.12	11.98	11.16	-6.98	Ryan MWD
7036.00	47.40	132.40	6977.41	88.03	-154.26	-172.86	15.53	15.24	-4.29	Ryan MWD
7079.00	54.10	131.90	7004.60	65.71	-129.58	-139.58	15.61	15.58	-1.16	Ryan MWD
7122.00	60.20	132.90	7027.92	41.35	-102.92	-103.48	14.32	14.19	2.33	Ryan MWD

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Survey Report



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 WV GEOL. & MIN. DEPT.
 Morgantown, WV
Chesapeake

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Field: Marshall Co. WV	Co-ordinate(NE) Reference:	Site: McDowell B8H, Grid North	
Site: McDowell B8H	Vertical (TVD) Reference:	SITE: 1371.0	
Well: McDowell B8H	Section (VS) Reference:	Well: (0.00N,0.00E,133.00Azi)	
Wellpath: B8H	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	Tool/Comment
7164.00	63.40	134.50	7047.76	15.78	-76.17	-66.47	8.33	7.62	3.81	Ryan MWD
7207.00	64.50	134.50	7066.64	-11.30	-48.62	-27.85	2.56	2.56	0.00	Ryan MWD
7250.00	67.10	135.20	7084.27	-38.96	-20.82	11.34	6.23	6.05	1.63	Ryan MWD
7292.00	70.00	136.50	7099.63	-67.01	6.40	50.38	7.48	6.90	3.10	Ryan MWD
7335.00	74.70	136.60	7112.66	-96.75	34.58	91.27	10.93	10.93	0.23	Ryan MWD
7378.00	79.30	135.60	7122.33	-126.92	63.62	133.09	10.93	10.70	-2.33	Ryan MWD
7419.00	83.70	133.80	7128.39	-155.44	92.44	173.61	11.58	10.73	-4.39	Ryan MWD
7462.00	84.90	133.60	7132.66	-185.00	123.37	216.40	2.83	2.79	-0.47	Ryan MWD
7504.00	87.20	134.10	7135.56	-214.02	153.59	258.29	5.60	5.48	1.19	Ryan MWD
7547.00	89.20	134.50	7136.91	-244.04	184.34	301.25	4.74	4.65	0.93	Ryan MWD
7589.00	89.30	134.40	7137.46	-273.45	214.32	343.24	0.34	0.24	-0.24	Ryan MWD
7632.00	90.30	132.70	7137.61	-303.07	245.49	386.23	4.59	2.33	-3.95	Ryan MWD
7675.00	89.60	135.20	7137.64	-332.91	276.44	429.22	6.04	-1.63	5.81	Ryan MWD
7717.00	89.70	135.40	7137.90	-362.77	305.98	471.19	0.53	0.24	0.48	Ryan MWD
7760.00	89.90	135.60	7138.05	-393.44	336.12	514.15	0.66	0.47	0.47	Ryan MWD
7803.00	89.80	135.90	7138.16	-424.24	366.13	557.10	0.74	-0.23	0.70	Ryan MWD
7845.00	89.70	135.60	7138.35	-454.32	395.44	599.05	0.75	-0.24	-0.71	Ryan MWD
7888.00	89.80	135.90	7138.53	-485.12	425.44	642.00	0.74	0.23	0.70	Ryan MWD
7930.00	90.10	135.90	7138.57	-515.28	454.67	683.95	0.71	0.71	0.00	Ryan MWD
7973.00	90.50	135.90	7138.34	-546.16	484.59	726.89	0.93	0.93	0.00	Ryan MWD
8016.00	90.20	135.10	7138.08	-576.83	514.73	769.85	1.99	-0.70	-1.86	Ryan MWD
8058.00	90.40	135.60	7137.86	-606.71	544.25	811.81	1.28	0.48	1.19	Ryan MWD
8101.00	89.60	136.20	7137.86	-637.59	574.17	854.76	2.33	-1.86	1.40	Ryan MWD
8144.00	89.90	136.70	7138.05	-668.75	603.80	897.68	1.36	0.70	1.16	Ryan MWD
8186.00	90.30	136.70	7137.98	-699.32	632.60	939.59	0.95	0.95	0.00	Ryan MWD
8229.00	90.60	137.10	7137.64	-730.72	661.98	982.49	1.16	0.70	0.93	Ryan MWD
8272.00	89.80	138.10	7137.49	-762.47	690.97	1025.35	2.98	-1.86	2.33	Ryan MWD
8314.00	90.20	138.50	7137.49	-793.83	718.91	1067.17	1.35	0.95	0.95	Ryan MWD
8357.00	88.90	138.30	7137.83	-825.98	747.46	1109.98	3.06	-3.02	-0.47	Ryan MWD
8399.00	88.80	138.40	7138.67	-857.36	775.37	1151.78	0.34	-0.24	0.24	Ryan MWD
8442.00	89.30	138.20	7139.38	-889.46	803.97	1194.59	1.25	1.16	-0.47	Ryan MWD
8485.00	89.90	138.50	7139.68	-921.59	832.54	1237.41	1.56	1.40	0.70	Ryan MWD
8527.00	89.40	138.10	7139.94	-952.95	860.48	1279.23	1.52	-1.19	-0.95	Ryan MWD
8570.00	89.90	137.90	7140.20	-984.90	889.26	1322.06	1.25	1.16	-0.47	Ryan MWD
8612.00	89.60	137.30	7140.39	-1015.91	917.58	1363.92	1.60	-0.71	-1.43	Ryan MWD
8655.00	90.40	137.40	7140.39	-1047.54	946.71	1406.80	1.87	1.86	0.23	Ryan MWD
8698.00	90.40	137.00	7140.08	-1079.09	975.92	1449.68	0.93	0.00	-0.93	Ryan MWD
8741.00	89.80	137.00	7140.01	-1110.54	1005.25	1492.58	1.40	-1.40	0.00	Ryan MWD
8783.00	90.30	136.80	7139.97	-1141.21	1033.95	1534.48	1.28	1.19	-0.48	Ryan MWD
8826.00	90.00	136.80	7139.86	-1172.55	1063.38	1577.39	0.70	-0.70	0.00	Ryan MWD
8868.00	88.30	136.60	7140.48	-1203.11	1092.18	1619.29	4.08	-4.05	-0.48	Ryan MWD
8911.00	88.40	137.70	7141.72	-1234.62	1121.41	1662.16	2.57	0.23	2.56	Ryan MWD
8954.00	89.70	139.40	7142.43	-1266.85	1149.87	1704.95	4.98	3.02	3.95	Ryan MWD
8996.00	90.30	138.80	7142.43	-1298.59	1177.37	1746.71	2.02	1.43	-1.43	Ryan MWD
9039.00	91.30	139.40	7141.83	-1331.09	1205.52	1789.47	2.71	2.33	1.40	Ryan MWD
9082.00	92.00	139.50	7140.60	-1363.75	1233.47	1832.18	1.64	1.63	0.23	Ryan MWD
9124.00	91.50	137.20	7139.31	-1395.12	1261.36	1873.97	5.60	-1.19	-5.48	Ryan MWD
9167.00	91.60	137.00	7138.15	-1426.60	1290.62	1916.84	0.52	0.23	-0.47	Ryan MWD
9210.00	91.00	135.80	7137.17	-1457.74	1320.27	1959.76	3.12	-1.40	-2.79	Ryan MWD
9252.00	91.50	135.70	7136.26	-1487.81	1349.57	2001.70	1.21	1.19	-0.24	Ryan MWD
9295.00	90.90	133.80	7135.36	-1518.08	1380.10	2044.67	4.63	-1.40	-4.42	Ryan MWD
9338.00	91.30	134.30	7134.53	-1547.97	1411.00	2087.65	1.49	0.93	1.16	Ryan MWD
9380.00	90.90	133.70	7133.73	-1577.14	1441.20	2129.64	1.72	-0.95	-1.43	Ryan MWD

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Chesapeake SURVEY
MARSHALL CO., WV

Ryan Energy Technologies Survey Report



Company: Chesapeake Operating, Inc.	Date: 9/10/2010	Time: 09:13:54	Page: 5
Field: Marshall Co. WV	Co-ordinate(NE) Reference: Site: McDowell B8H, Grid North		
Site: McDowell B8H	Vertical (TVD) Reference: SITE 1371.0		
Well: McDowell B8H	Section (VS) Reference: Well (0.00N,0.00E,133.00Azi)		
Wellpath: B8H	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	Tool/Comment
9423.00	91.20	133.90	7132.94	-1606.90	1472.24	2172.63	0.84	0.70	0.47	Ryan MWD
9466.00	90.20	133.70	7132.41	-1636.66	1503.27	2215.62	2.37	-2.33	-0.47	Ryan MWD
9508.00	90.40	133.00	7132.19	-1665.49	1533.81	2257.62	1.73	0.48	-1.67	Ryan MWD
9551.00	90.60	134.00	7131.82	-1695.08	1565.00	2300.61	2.37	0.47	2.33	Ryan MWD
9593.00	90.90	133.30	7131.27	-1724.07	1595.39	2342.60	1.81	0.71	-1.67	Ryan MWD
9636.00	89.10	132.60	7131.27	-1753.37	1626.86	2385.60	4.49	-4.19	-1.63	Ryan MWD
9679.00	89.00	132.80	7131.98	-1782.53	1658.45	2428.60	0.52	-0.23	0.47	Ryan MWD
9721.00	89.60	133.60	7132.49	-1811.27	1689.07	2470.59	2.38	1.43	1.90	Ryan MWD
9764.00	89.90	133.90	7132.68	-1841.01	1720.13	2513.59	0.99	0.70	0.70	Ryan MWD
9807.00	89.00	133.90	7133.09	-1870.82	1751.11	2556.58	2.09	-2.09	0.00	Ryan MWD
9849.00	89.30	134.20	7133.72	-1900.02	1781.30	2598.57	1.01	0.71	0.71	Ryan MWD
9892.00	89.80	134.70	7134.06	-1930.13	1811.99	2641.55	1.64	1.16	1.16	Ryan MWD
9935.00	90.10	135.00	7134.09	-1960.46	1842.48	2684.53	0.99	0.70	0.70	Ryan MWD
9977.00	90.40	135.60	7133.91	-1990.31	1872.02	2726.50	1.60	0.71	1.43	Ryan MWD
10019.00	90.60	135.80	7133.54	-2020.37	1901.35	2768.45	0.67	0.48	0.48	Ryan MWD
10062.00	90.80	137.00	7133.02	-2051.51	1931.00	2811.37	2.83	0.47	2.79	Ryan MWD
10105.00	91.30	135.90	7132.23	-2082.67	1960.62	2854.28	2.81	1.16	-2.56	Ryan MWD
10147.00	90.50	136.50	7131.57	-2112.98	1989.69	2896.21	2.38	-1.90	1.43	Ryan MWD
10190.00	89.20	136.70	7131.68	-2144.22	2019.23	2939.13	3.06	-3.02	0.47	Ryan MWD
10232.00	89.40	137.70	7132.20	-2175.03	2047.77	2981.01	2.43	0.48	2.38	Ryan MWD
10275.00	89.20	137.10	7132.72	-2206.68	2076.87	3023.88	1.47	-0.47	-1.40	Ryan MWD
10318.00	89.40	137.40	7133.25	-2238.25	2106.05	3066.76	0.84	0.47	0.70	Ryan MWD
10360.00	89.80	137.20	7133.54	-2269.12	2134.54	3108.64	1.06	0.95	-0.48	Ryan MWD
10403.00	89.90	136.60	7133.65	-2300.52	2163.92	3151.54	1.41	0.23	-1.40	Ryan MWD
10434.00	90.20	137.00	7133.63	-2323.12	2185.14	3182.47	1.61	0.97	1.29	Ryan MWD
10492.00	90.20	137.00	7133.42	-2365.53	2224.69	3240.33	0.00	0.00	0.00	PROJECTED to TD