

SDI Planning Report

Company: CHESAPEAKE	Date: 04/15/2012	Time: 09:26:05	Page: 1
Field: Brooke, WV	Co-ordinate(NE) Reference: Well: 3H, Grid: North		
Site: John Harwatt	Vertical (TVD) Reference: GL 1130+RKB 19 1149.0		
Well: 3H	Section (VS) Reference: Well (0.00N;0.00E;336.05Azi)		
Wellpath: OH	Plan:	Plan #2:	

Field: Brooke, 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: Well Centre
 Geomagnetic Model: IGRF2010

Site: John Harwatt

Site Position: Northing: 613867.65 ft Latitude: 40 10 48.968 N
 From: Map Easting: 1694648.34 ft Longitude: 80 35 34.073 W
 Position Uncertainty: 0.00 ft North Reference: Grid
 Ground Level: 1130.00 ft Grid Convergence: -0.70 deg

Well: 3H Slot Name:

Well Position: +N/-S 0.00 ft Northing: 613867.65 ft Latitude: 40 10 48.968 N
 +E/-W 0.00 ft Easting: 1694648.34 ft Longitude: 80 35 34.073 W
 Position Uncertainty: 0.00 ft

Wellpath: OH Drilled From: Surface

Current Datum: GL 1130+RKB 19 Height 1149.00 ft Tie-on Depth: 6162.00 ft
 Magnetic Data: 04/09/2012 Above System Datum: Mean Sea Level
 Field Strength: 52997 nT Declination: -8.73 deg
 Vertical Section: Depth From (TVD) +N/-S Mag Dip Angle: 67.69 deg
 ft ft +E/-W Direction
 deg

0.00	0.00	0.00	336.05
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Plan: Plan #2 Date Composed: 04/15/2012
 Principal: Yes Version: 1
 Tied-to: User Defined

Plan Section Information

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	TFO deg	Target
6162.00	76.57	336.63	5961.52	387.50	-165.54	0.00	0.00	0.00	0.00	
6221.00	82.17	336.63	5972.40	440.71	-188.53	9.49	9.49	0.00	0.00	
6385.16	90.70	336.28	5982.60	590.77	-253.92	5.20	5.20	-0.21	-2.34	
10039.48	90.70	336.28	5938.00	3936.22	-1723.63	0.00	0.00	0.00	0.00	PBHL P2

Section 1 : Start Build 9.49

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	TFO deg
6162.00	76.57	336.63	5961.52	387.50	-165.54	421.33	0.00	0.00	0.00	0.00
6200.00	80.18	336.63	5969.18	421.66	-180.30	458.55	9.49	9.49	0.00	0.00
6221.00	82.17	336.63	5972.40	440.71	-188.53	479.30	9.49	9.49	0.00	0.00

Section 2 : Start DLS 5.20 TFO -2.34

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	TFO deg
6300.00	86.27	336.46	5980.35	512.80	-219.81	557.87	5.20	5.20	-0.21	-2.34
6385.16	90.70	336.28	5982.60	590.77	-253.92	642.98	5.20	5.20	-0.21	-2.32

Section 3 : Start Hold

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	TFO deg
6400.00	90.70	336.28	5982.42	604.36	-259.89	657.82	0.00	0.00	0.00	0.00
6500.00	90.70	336.28	5981.20	695.90	-300.11	757.81	0.00	0.00	0.00	0.00
6600.00	90.70	336.28	5979.98	787.45	-340.33	857.80	0.00	0.00	0.00	0.00
6700.00	90.70	336.28	5978.76	879.00	-380.54	957.80	0.00	0.00	0.00	0.00
6800.00	90.70	336.28	5977.54	970.55	-420.76	1057.79	0.00	0.00	0.00	0.00

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MORGANTOWN, WV

SDI Planning Report

Company: CHESAPEAKE
Field: Brooke, WV
Site: John Harwatt
Well: 3H
Wellpath: OH

Date: 04/15/2012 Time: 09:26:05 Page: 2
Co-ordinate(N/E) Reference: Well: 3H, Grid: North
Vertical (TVD) Reference: GL 1130+RKB 19 1149.0
Section (VS) Reference: Well (0:00N,0:00E,336.05Azi)
Plan: Plan #2

Section 3 : Start Hold

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	TFO deg
6900.00	90.70	336.28	5976.32	1062.10	-460.98	1157.78	0.00	0.00	0.00	0.00
7000.00	90.70	336.28	5975.10	1153.64	-501.20	1257.77	0.00	0.00	0.00	0.00
7100.00	90.70	336.28	5973.88	1245.19	-541.42	1357.76	0.00	0.00	0.00	0.00
7200.00	90.70	336.28	5972.66	1336.74	-581.64	1457.75	0.00	0.00	0.00	0.00
7300.00	90.70	336.28	5971.44	1428.29	-621.85	1557.75	0.00	0.00	0.00	0.00
7400.00	90.70	336.28	5970.22	1519.83	-662.07	1657.74	0.00	0.00	0.00	0.00
7500.00	90.70	336.28	5968.99	1611.38	-702.29	1757.73	0.00	0.00	0.00	0.00
7600.00	90.70	336.28	5967.77	1702.93	-742.51	1857.72	0.00	0.00	0.00	0.00
7700.00	90.70	336.28	5966.55	1794.48	-782.73	1957.71	0.00	0.00	0.00	0.00
7800.00	90.70	336.28	5965.33	1886.03	-822.95	2057.71	0.00	0.00	0.00	0.00
7900.00	90.70	336.28	5964.11	1977.57	-863.16	2157.70	0.00	0.00	0.00	0.00
8000.00	90.70	336.28	5962.89	2069.12	-903.38	2257.69	0.00	0.00	0.00	0.00
8100.00	90.70	336.28	5961.67	2160.67	-943.60	2357.68	0.00	0.00	0.00	0.00
8200.00	90.70	336.28	5960.45	2252.22	-983.82	2457.67	0.00	0.00	0.00	0.00
8300.00	90.70	336.28	5959.23	2343.76	-1024.04	2557.66	0.00	0.00	0.00	0.00
8400.00	90.70	336.28	5958.01	2435.31	-1064.26	2657.66	0.00	0.00	0.00	0.00
8500.00	90.70	336.28	5956.79	2526.86	-1104.48	2757.65	0.00	0.00	0.00	0.00
8600.00	90.70	336.28	5955.57	2618.41	-1144.69	2857.64	0.00	0.00	0.00	0.00
8700.00	90.70	336.28	5954.35	2709.96	-1184.91	2957.63	0.00	0.00	0.00	0.00
8800.00	90.70	336.28	5953.13	2801.50	-1225.13	3057.62	0.00	0.00	0.00	0.00
8900.00	90.70	336.28	5951.91	2893.05	-1265.35	3157.61	0.00	0.00	0.00	0.00
9000.00	90.70	336.28	5950.69	2984.60	-1305.57	3257.61	0.00	0.00	0.00	0.00
9100.00	90.70	336.28	5949.47	3076.15	-1345.79	3357.60	0.00	0.00	0.00	0.00
9200.00	90.70	336.28	5948.25	3167.69	-1386.00	3457.59	0.00	0.00	0.00	0.00
9300.00	90.70	336.28	5947.03	3259.24	-1426.22	3557.58	0.00	0.00	0.00	0.00
9400.00	90.70	336.28	5945.80	3350.79	-1466.44	3657.57	0.00	0.00	0.00	0.00
9500.00	90.70	336.28	5944.58	3442.34	-1506.66	3757.56	0.00	0.00	0.00	0.00
9600.00	90.70	336.28	5943.36	3533.89	-1546.88	3857.56	0.00	0.00	0.00	0.00
9700.00	90.70	336.28	5942.14	3625.43	-1587.10	3957.55	0.00	0.00	0.00	0.00
9800.00	90.70	336.28	5940.92	3716.98	-1627.31	4057.54	0.00	0.00	0.00	0.00
9900.00	90.70	336.28	5939.70	3808.53	-1667.53	4157.53	0.00	0.00	0.00	0.00
10000.00	90.70	336.28	5938.48	3900.08	-1707.75	4257.52	0.00	0.00	0.00	0.00
10039.48	90.70	336.28	5938.00	3936.22	-1723.63	4297.00	0.00	0.00	0.00	0.00

Targets

Name	Description		TVD ft	+N/-S ft	+E/-W ft	Map	Map	← Latitude →			← Longitude →				
	Dip.	Dir.				Northing ft	Easting ft	Deg	Min	Sec	Deg	Min	Sec		
PBHL P2			5938.00	3936.22	-1723.63	617803.87	1692924.71	40	11	27.657	N	80	35	56.898	W

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MORGANTOWN, WV

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	7/12/2012
State:	WEST VIRGINIA
County:	BROOKE
API Number:	4700900112
Operator Name:	CHESAPEAKE APPALACHIA LLC
Well Name and Number:	JOHN HARWATT BRK 3H
Longitude:	-80.592798
Latitude:	40.180269
Long/lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	5,980
Total Water Volume (gal):	3,206,763

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Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (%) by mass	Maximum Ingredient Concentration in HF Fluid (%) by mass	Comments
Fresh Water		Carrier/Base Fluid				79.08731%	
Recycled Produced Water		Carrier/Base Fluid				8.04788%	
Ottawa Sand		Proppant	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	8.51212%	
100 Mesh Sand		Proppant	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	3.62752%	
Acid, Hydrochloric 15pct	SCHLUMBE RGER	Acid	Water	007732-18-5	85.00%	0.55790%	
L058	SCHLUMBE RGER	Iron Control Agent	Hydrogen Chloride	007647-01-0	15.00%	0.09845%	
A264	SCHLUMBE RGER	Corrosion Inhibitor	Sodium Erythorbate	006381-77-7	100.00%	0.00040%	
EC6110A	NALCO	Anti-Bacterial Agent	Methanol (Methyl Alcohol) Aliphatic acid Aliphatic alcohols, ethoxylated # 1 Propargyl Alcohol (2-Propynol) Glutaraldehyde Quaternary Ammonium Compounds Ethanol	000067-56-1 N/A N/A 000107-19-7 000111-30-8 N/A	40.00% 30.00% 30.00% 10.00% 60.00% 10.00%	0.00035% 0.00026% 0.00026% 0.00009% 0.01706% 0.00284% 0.00142%	

EC6629A	NALCO	Scale Inhibitor	No Hazardous Components	NONE			0.00000%	
B315	SCHLUMBE RGER	Friction Reducer	Petroleum Distillate Hydrotreated	064742-47-8	30.00%		0.00874%	
			Light			1.50%		0.00044%
J580	SCHLUMBE RGER	Gelling Agent	Aliphatic alcohol polyglycol ether	N/A				
			Carbohydrate polymer	N/A	100.00%		0.00255%	
J218	SCHLUMBE RGER	Breaker	Ammonium Persulfate	007727-54-0	100.00%		0.00021%	

* Total Water Volume sources may include fresh water, produced water, and/or recycled water

** Information is based on the maximum potential for concentration and thus the total may be over 100%

"Additional Ingredients Not Listed on MSDS" component information were obtained directly from the supplier. As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of this information should be directed to the supplier who provided it.

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