WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 103 - 02762 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #21H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,373,426	Easting 528,111
Landing Point of Curve	Northing 4,373,631	Easting 527,839
Bottom Hole	Northing 4,374,817	Easting 526,980

Elevation (ft) 1,293 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 6/13/2012 Date drilling commenced 12/21/2012 Date drilling ceased 7/28/2013
Date completion activities began 9/12/2013 Date completion activities ceased 7/14/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 60 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,630 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,020 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
W.S. 6/01/15

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API 47- 103 - 02762 Farm name WV Conservation Commission Well number #21H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	55'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,310' KB - 1,293' GL	New	J55	118' & 244'	Y - CTS
Coal	17.5"	13.375"	1,310' KB - 1,293' GL	New	J55	118' & 244'	Y - CTS
Intermediate 1	12.25"	9.625"	2,769'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,503'	New	P110		Y
Tubing	N/A	2.375"	7,625'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 45 bbls cement to surface, 9.625" casing string circulated 45 bbls cement to surface. 5.5" casing string TOC @ 920'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	996	15.6	1.19	1,185	Surface	8.0
Coal	Class "A"	996	15.6	1.19	1,185	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-540 Tail-420	Lead-15.0 Tail-15.5	Lead-1.27 Tail-1.19	Lead-686 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasBlock Tail-HalCem	Lead-910 Tail-1,530	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,147 Tail-1,836	920'	7.0
Tubing							

Drillers TD (ft) 12,516 MD / 7,253 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 6,428 MD/ 6,406 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐sonic

Well cored ☐ Yes ■ No ▪ Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2,4,6, 8, 10, 12, 14, 16, 18, 20, 22, 24 and 26. Intermediate casing had bow spring centralizers placed on joints #'s 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63 and 66. The production casing has rigid spiral alternating left/right centralizers placed beginning on joint #4 and then every fourth joint up to the top of curve at joint #144. From there bow spring centralizers were placed beginning on joint #151 and then every seventh joint to joint #286. A total of 36 rigid left/right centralizers were used and 18 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you climb towards the surface.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	1/19/14	12,227	12,380	72	Marcellus Shale
2	4/1/14	11,940	12,154	72	Marcellus Shale
3	4/5/14	11,714	11,891	72	Marcellus Shale
4	4/10/14	11,481	11,624	72	Marcellus Shale
5	4/11/14	11,173	11,378	72	Marcellus Shale
6	4/13/14	10,907	11,100	72	Marcellus Shale
7	4/14/14	10,632	10,808	72	Marcellus Shale
8	4/16/14	10,404	10,574	72	Marcellus Shale
9	4/19/14	10,085	10,295	72	Marcellus Shale
10	4/20/14	9,870	10,033	72	Marcellus Shale
11	4/22/14	9,661	9,820	72	Marcellus Shale
12	4/23/14	9,443	9,596	72	Marcellus Shale
13	4/24/14	9,158	9,385	72	Marcellus Shale
14	4/25/14	8,913	9,053	72	Marcellus Shale
15	4/26/14	8,671	8,826	72	Marcellus Shale
16	4/28/14	8,389	8,570	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/1/14	83.0	8,428	6,890	4,338	352,188	8,788	
2	4/5/14	80.8	8,443	6,789	4,536	412,900	8,578	
3	4/9/14	71.7	8,465	7,039	4,964	484,893	17,299	
4	4/11/14	48.6	8,625	7,358	5,269	0	2,149	
5	4/13/14	85.0	7,904	6,494	4,964	407,180	8,680	
6	4/14/14	80.7	8,294	6,335	5,146	242,286	7,756	
7	4/15/14	80.1	7,853	6,667	5,146	412,750	8,323	
8	4/17/14	77.3	8,264	7,978	5,200	327,385	13,547	
9	4/20/14	79.2	8,140	6,336	5,707	238,462	10,560	
10	4/22/14	77.1	8,056	6,354	3,683	379,537	8,401	
11	4/23/14	79.9	8,137	6,524	4,598	373,476	8,086	
12	4/24/14	85.1	7,623	6,368	4,763	376,274	7,845	
13	4/25/14	83.8	8,027	7,118	5,392	410,740	8,456	
14	4/26/14	82.6	7,737	7,318	4,416	411,320	8,532	
15	4/28/14	80.3	8,025	6,787	4,598	413,680	9,009	
16	4/30/14	82.8	7,677	7,045	4,720	410,460	8,205	

Please insert additional pages as applicable.

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	4/30/14	8,140	8,327	72	Marcellus Shale
18	5/2/14	7,938	8,070	72	Marcellus Shale
19	5/3/14	7,730	7,813	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	5/1/14	83.7	7,689	6,868	4,168	417,720	8,362	
18	5/3/14	83.9	7,602	6,256	5,371	401,040	8,283	
19	5/5/14	72.9	7,857	7,243	4,688	376,300	8,540	

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PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,296' to 7,256' TVD	7,730' to 12,380' MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 2,178 psi Bottom Hole 4,320 calculated psi DURATION OF TEST 66 hrs

OPEN FLOW Gas 4,248 mcfpd Oil ____ bpd NGL 50.5 bpd Water 453.3 bpd GAS MEASURED BY ☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION	TOP DEPTH IN FT NAME TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 14				

Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger / Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452 / 26378

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

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Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/24/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

MILL-WETZEL #21H
API 47-103-02762
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,020		FW @ 60'
Coal	1,020		*	1,024		
Sandstone & Shale	1,024		*	2,190		SW @ 1,630'
Little Lime	2,190		*	2,220		
Big Lime	2,220		*	2,365		
Big Injun	2,365		*	2,422		
Sandstone & Shale	2,422		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,055		
Gordon	3,055		*	3,105		
Undiff Devonian Shale	3,105		*	5,358		
Riley Shale	5,358		*	5,465		
Benson Siltstone	5,465		*	5,713		
Pipe Creek Shale	5,713		*	5,722		
Undiff Devonian Shale	5,722		~	6,527	6,551	
Rhinestreet	6,527	6,551		6,829	6,874	
Cashaqua	6,829	6,874		6,901	6,958	
Middlesex	6,901	6,958		7,023	7,111	
West River	7,023	7,111		7,151	7,310	
Geneseo	7,151	7,310		7,185	7,377	
Tully Limestone	7,185	7,377		7,206	7,422	
Hamilton Shale	7,206	7,422		7,269	7,600	
Marcellus	7,269	7,600		7,253	12,516	
TD				7,253	12,516	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	5/5/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02762
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #21H
Longitude:	528,111
Latitude:	4,373,426
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	7114910

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
Proppant Transport	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Accelerator, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		89.99787%	
			Crystalline silica	14808-60-7	98.20176%	9.82227%	
			Hydrochloric acid	7647-01-0	1.07283%	0.10731%	
			Carbohydrate polymer	Proprietary	0.63775%	0.06379%	
			Ammonium sulfate	7783-20-2	0.23817%	0.02382%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.07814%	0.00782%	
			Glutaraldehyde	111-30-8	0.05363%	0.00536%	
			Urea	57-13-6	0.03970%	0.00397%	
			Calcium chloride	10043-52-4	0.01842%	0.00184%	
			Diammonium peroxidisulphate	7727-54-0	0.01642%	0.00164%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00601%	0.00060%	
			Ethane-1,2-diol	107-21-1	0.00512%	0.00051%	
			Trisodium ortho phosphate	7601-54-9	0.00512%	0.00051%	
			Sodium erythorbate	6381-77-7	0.00474%	0.00047%	
			Methanol	67-56-1	0.00400%	0.00040%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00300%	0.00030%	
			Aliphatic acids	Proprietary	0.00300%	0.00030%	
			Prop-2-yn-1-ol	107-19-7	0.00100%	0.00010%	
			Polypropylene glycol	25322-69-4	0.00084%	0.00008%	

* 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%

Report ID: RPT-27148 (Generated on 5/14/2014 4:59 PM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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Project: Heather Prospect (NAD 27)
Site: Mills-Wetzel Pad 3
Well: Mills-Wetzel 21H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Mills-Wetzel 21H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	369990.08	1668999.82	39° 30' 35.662 N	80° 40' 23.456 W	MW3#21H

REFERENCE INFORMATION

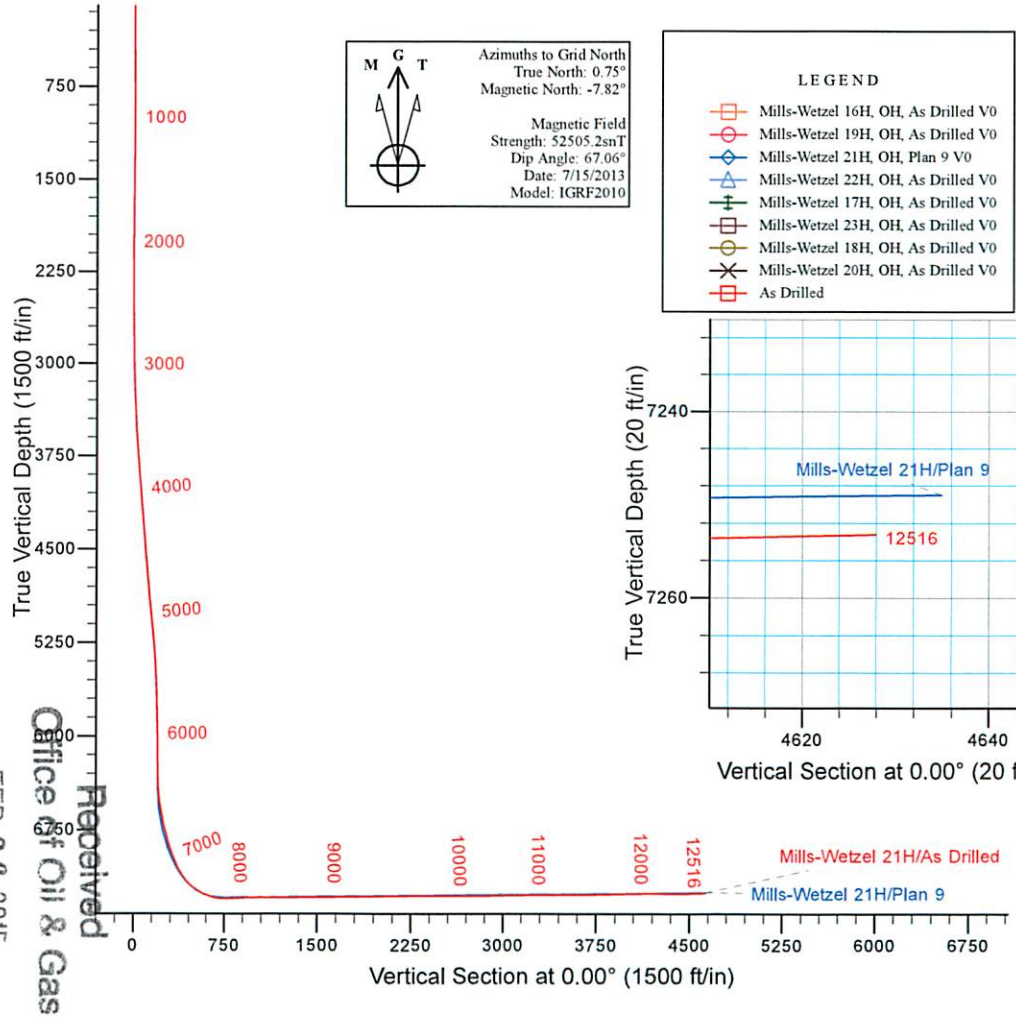
Co-ordinate (N/E) Reference: Well Mills-Wetzel 21H - Slot MW3#21H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#21H(0.00N, 0.00E)
Measured Depth Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Heather Prospect (NAD 27)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

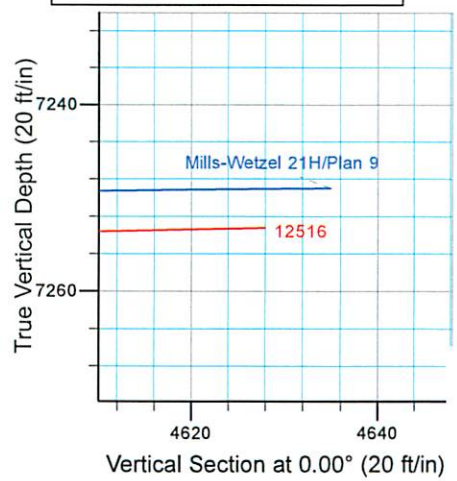
SECTION DETAILS

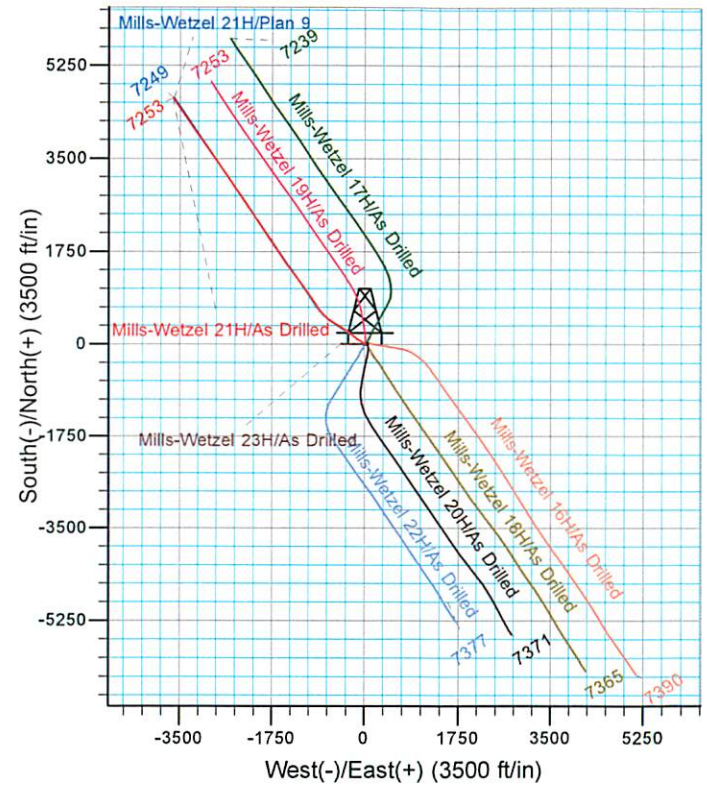
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	5921.00	2.29	306.21	5898.23	190.96	-275.31	0.00	0.00	319.89	
2	6421.00	0.00	0.00	6398.09	196.87	-283.37	0.46	180.00	329.51	
3	7298.36	55.67	303.66	7143.76	415.09	-611.13	6.35	303.66	703.15	
4	7803.16	90.50	325.45	7290.00	752.56	-941.56	8.00	34.97	1172.47	MW21H_LP3
5	12517.06	90.50	325.45	7249.00	4634.93	-3614.83	0.00	0.00	5877.89	MW21H_BHL3

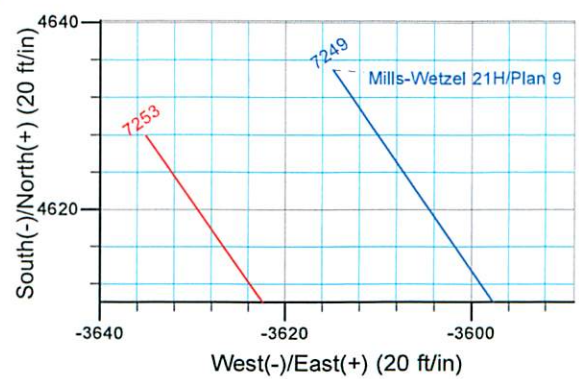


LEGEND

- Mills-Wetzel 16H, OH, As Drilled V0
- Mills-Wetzel 19H, OH, As Drilled V0
- Mills-Wetzel 21H, OH, Plan 9 V0
- Mills-Wetzel 22H, OH, As Drilled V0
- Mills-Wetzel 17H, OH, As Drilled V0
- Mills-Wetzel 23H, OH, As Drilled V0
- Mills-Wetzel 18H, OH, As Drilled V0
- Mills-Wetzel 20H, OH, As Drilled V0
- As Drilled







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Stone Energy

Heather Prospect (NAD 27)
Mills-Wetzel Pad 3
Mills-Wetzel 21H - Slot MW3#21H

OH

Design: As Drilled

Standard Survey Report

29 July, 2013

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Scientific Drilling

www.scientificdrilling.com

Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 21H - Slot MW3#21H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 21H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Heather Prospect (NAD 27), Wetzel County, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Mills-Wetzel Pad 3

Site Position:		**Northing:**	370,004.38 usft	**Latitude:**	39° 30' 35.809 N
From:	Map	**Easting:**	1,669,041.12 usft	**Longitude:**	80° 40' 22.931 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.75 °

Well Mills-Wetzel 21H - Slot MW3#21H

Well Position	**+N/-S**	0.00 ft	**Northing:**	369,990.08 usft	**Latitude:**	39° 30' 35.662 N
	+E/-W	0.00 ft	**Easting:**	1,668,999.82 usft	**Longitude:**	80° 40' 23.456 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	1,291.00 ft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	4/4/2013	-8.55	67.08	52,539
	IGRF2010	7/15/2013	-8.56	67.06	52,505

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.00	0.00	0.00	0.00

Survey Program **Date** 7/29/2013

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.00	5,883.73	Survey #3 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
5,912.00	12,516.00	Survey 4 - SDI MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (ft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Vertical Section (ft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.00	0.00	0.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00
Ground Level									
100.19	0.18	215.06	100.19	-0.11	-0.07	-0.11	0.22	0.22	0.00
First SDI Gyro Survey									
103.00	0.17	206.46	103.00	-0.11	-0.08	-0.11	1.00	-0.36	-306.05
203.00	0.11	101.20	203.00	-0.26	-0.05	-0.26	0.23	-0.06	-105.26
303.00	0.04	71.69	303.00	-0.27	0.08	-0.27	0.08	-0.07	-29.51

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 21H - Slot MW3#21H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 21H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
403.00	0.14	356.29	403.00	-0.14	0.10	-0.14	0.14	0.10	-75.40
503.00	0.14	69.40	503.00	0.03	0.21	0.03	0.17	0.00	73.11
603.00	0.12	107.15	603.00	0.04	0.42	0.04	0.09	-0.02	37.75
703.00	0.24	81.88	703.00	0.04	0.73	0.04	0.14	0.12	-25.27
803.00	0.30	90.80	802.99	0.06	1.20	0.06	0.07	0.06	8.92
903.00	0.30	113.18	902.99	-0.04	1.70	-0.04	0.12	0.00	22.38
1,003.00	0.16	118.15	1,002.99	-0.21	2.07	-0.21	0.14	-0.14	4.97
1,103.00	0.33	148.18	1,102.99	-0.52	2.34	-0.52	0.21	0.17	30.03
1,203.00	0.19	115.16	1,202.99	-0.84	2.64	-0.84	0.20	-0.14	-33.02
1,303.00	0.23	133.52	1,302.99	-1.05	2.94	-1.05	0.08	0.04	18.36
1,403.00	0.42	139.59	1,402.99	-1.47	3.32	-1.47	0.19	0.19	6.07
1,503.00	0.25	159.78	1,502.99	-1.95	3.63	-1.95	0.20	-0.17	20.19
1,603.00	0.16	181.62	1,602.99	-2.29	3.71	-2.29	0.12	-0.09	21.84
1,703.00	0.17	154.46	1,702.99	-2.57	3.77	-2.57	0.08	0.01	-27.16
1,803.00	0.46	167.81	1,802.98	-3.09	3.91	-3.09	0.30	0.29	13.35
1,903.00	0.53	214.03	1,902.98	-3.87	3.74	-3.87	0.39	0.07	46.22
2,003.00	0.32	169.41	2,002.98	-4.53	3.53	-4.53	0.38	-0.21	-44.62
2,103.00	0.58	280.02	2,102.98	-4.71	3.09	-4.71	0.75	0.26	110.61
2,203.00	0.40	85.40	2,202.97	-4.60	2.94	-4.60	0.97	-0.18	165.38
2,303.00	0.79	93.18	2,302.97	-4.61	3.97	-4.61	0.40	0.39	7.78
2,403.00	0.61	88.10	2,402.96	-4.63	5.19	-4.63	0.19	-0.18	-5.08
2,503.00	0.48	76.86	2,502.96	-4.51	6.13	-4.51	0.17	-0.13	-11.24
2,603.00	0.72	87.92	2,602.95	-4.40	7.17	-4.40	0.27	0.24	11.06
2,703.00	0.57	74.39	2,702.95	-4.24	8.27	-4.24	0.21	-0.15	-13.53
2,803.00	0.53	23.02	2,802.94	-3.68	8.93	-3.68	0.48	-0.04	-51.37
2,903.00	0.60	11.51	2,902.94	-2.74	9.22	-2.74	0.13	0.07	-11.51
3,003.00	0.51	355.74	3,002.93	-1.78	9.29	-1.78	0.18	-0.09	-15.77
3,103.00	2.66	318.30	3,102.89	0.39	7.71	0.39	2.28	2.15	-37.44
3,203.00	3.21	315.84	3,202.76	4.13	4.22	4.13	0.56	0.55	-2.46
3,303.00	4.27	308.48	3,302.54	8.46	-0.64	8.46	1.16	1.06	-7.36
3,403.00	5.25	301.73	3,402.20	13.18	-7.45	13.18	1.13	0.98	-6.75
3,503.00	5.64	297.30	3,501.75	17.84	-15.71	17.84	0.57	0.39	-4.43
3,603.00	7.23	296.91	3,601.11	22.94	-25.69	22.94	1.59	1.59	-0.39
3,703.00	7.92	296.16	3,700.24	28.83	-37.48	28.83	0.70	0.69	-0.75
3,803.00	8.54	303.07	3,799.21	35.92	-49.89	35.92	1.17	0.62	6.91
3,903.00	8.94	302.98	3,898.05	44.20	-62.63	44.20	0.40	0.40	-0.09
4,003.00	9.37	302.83	3,996.78	52.84	-75.99	52.84	0.43	0.43	-0.15
4,103.00	8.42	303.39	4,095.57	61.28	-88.94	61.28	0.95	-0.95	0.56
4,203.00	8.48	300.80	4,194.49	69.09	-101.39	69.09	0.39	0.06	-2.59
4,303.00	8.97	301.75	4,293.33	76.97	-114.35	76.97	0.51	0.49	0.95
4,403.00	8.12	303.19	4,392.22	84.94	-126.89	84.94	0.88	-0.85	1.44
4,503.00	7.92	300.45	4,491.24	92.29	-138.74	92.29	0.43	-0.20	-2.74
4,603.00	8.41	303.98	4,590.23	99.87	-150.74	99.87	0.70	0.49	3.53
4,703.00	8.72	305.63	4,689.11	108.37	-162.97	108.37	0.40	0.31	1.65

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Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 21H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,803.00	8.19	311.37	4,788.03	117.50	-174.47	117.50	1.00	-0.53	5.74
4,903.00	8.08	312.22	4,887.02	126.93	-185.02	126.93	0.16	-0.11	0.85
5,003.00	7.82	310.78	4,986.06	136.09	-195.38	136.09	0.33	-0.26	-1.44
5,103.00	8.60	310.15	5,085.04	145.36	-206.25	145.36	0.79	0.78	-0.63
5,203.00	8.82	309.35	5,183.88	155.04	-217.89	155.04	0.25	0.22	-0.80
5,303.00	8.19	308.87	5,282.78	164.37	-229.36	164.37	0.63	-0.63	-0.48
5,403.00	7.27	304.25	5,381.87	172.40	-240.14	172.40	1.11	-0.92	-4.62
5,503.00	5.30	295.31	5,481.27	177.94	-249.55	177.94	2.19	-1.97	-8.94
5,603.00	4.98	296.13	5,580.87	181.83	-257.62	181.83	0.33	-0.32	0.82
5,703.00	3.57	296.34	5,680.59	185.12	-264.31	185.12	1.41	-1.41	0.21
5,803.00	3.41	296.32	5,780.40	187.82	-269.76	187.82	0.16	-0.16	-0.02
5,883.73	3.15	300.38	5,861.00	190.01	-273.83	190.01	0.43	-0.32	5.03
First SDI MWD Survey									
5,912.00	2.03	301.97	5,889.24	190.66	-274.92	190.66	3.97	-3.96	5.62
5,973.00	1.79	303.94	5,950.21	191.77	-276.63	191.77	0.41	-0.39	3.23
6,034.00	1.68	304.59	6,011.18	192.81	-278.16	192.81	0.18	-0.18	1.07
6,095.00	1.53	307.31	6,072.16	193.81	-279.54	193.81	0.28	-0.25	4.46
6,155.00	1.28	306.91	6,132.14	194.70	-280.71	194.70	0.42	-0.42	-0.67
6,216.00	1.16	312.83	6,193.12	195.52	-281.71	195.52	0.29	-0.20	9.70
6,278.00	1.24	314.61	6,255.11	196.42	-282.65	196.42	0.14	0.13	2.87
6,338.00	1.04	307.08	6,315.10	197.21	-283.54	197.21	0.42	-0.33	-12.55
6,369.00	1.02	309.76	6,346.09	197.55	-283.98	197.55	0.17	-0.06	8.65
6,399.00	0.91	306.36	6,376.09	197.87	-284.38	197.87	0.41	-0.37	-11.33
6,429.00	1.85	316.75	6,406.08	198.36	-284.90	198.36	3.23	3.13	34.63
6,460.00	4.31	325.72	6,437.03	199.69	-285.90	199.69	8.06	7.94	28.94
6,490.00	7.14	329.78	6,466.88	202.23	-287.47	202.23	9.52	9.43	13.53
6,521.00	9.51	331.49	6,497.55	206.14	-289.67	206.14	7.69	7.65	5.52
6,551.00	11.25	328.16	6,527.06	210.81	-292.39	210.81	6.13	5.80	-11.10
6,581.00	12.95	322.03	6,556.39	215.95	-296.01	215.95	7.10	5.67	-20.43
6,611.00	15.75	317.03	6,585.46	221.58	-300.85	221.58	10.20	9.33	-16.67
6,642.00	17.45	312.24	6,615.17	227.78	-307.16	227.78	7.04	5.48	-15.45
6,672.00	18.70	307.74	6,643.69	233.75	-314.29	233.75	6.24	4.17	-15.00
6,702.00	19.92	306.06	6,672.00	239.70	-322.23	239.70	4.47	4.07	-5.60
6,732.00	21.12	305.07	6,700.09	245.81	-330.78	245.81	4.16	4.00	-3.30
6,762.00	22.19	302.04	6,727.98	251.93	-340.01	251.93	5.16	3.57	-10.10
6,793.00	23.26	300.63	6,756.57	258.15	-350.24	258.15	3.87	3.45	-4.55
6,823.00	25.01	300.99	6,783.95	264.43	-360.78	264.43	5.85	5.83	1.20
6,854.00	26.95	301.64	6,811.81	271.49	-372.37	271.49	6.33	6.26	2.10
6,884.00	28.84	302.84	6,838.33	278.98	-384.24	278.98	6.57	6.30	4.00
6,916.00	30.71	303.98	6,866.10	287.74	-397.50	287.74	6.11	5.84	3.56
6,948.00	32.27	303.80	6,893.39	297.06	-411.38	297.06	4.88	4.88	-0.56
6,979.00	33.57	303.41	6,919.41	306.38	-425.41	306.38	4.25	4.19	-1.26
7,011.00	35.56	301.90	6,945.76	316.17	-440.70	316.17	6.77	6.22	-4.72

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Well:	Mills-Wetzel 21H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,043.00	37.85	300.83	6,971.41	326.12	-457.03	326.12	7.43	7.16	-3.34
7,075.00	40.09	300.12	6,996.29	336.32	-474.38	336.32	7.14	7.00	-2.22
7,107.00	41.89	300.42	7,020.44	346.90	-492.50	346.90	5.66	5.63	0.94
7,138.00	44.72	300.76	7,043.00	357.72	-510.80	357.72	9.16	9.13	1.10
7,170.00	47.40	300.58	7,065.20	369.48	-530.62	369.48	8.38	8.38	-0.56
7,201.00	50.58	300.34	7,085.54	381.33	-550.78	381.33	10.27	10.26	-0.77
7,233.00	52.55	300.14	7,105.43	393.96	-572.44	393.96	6.18	6.16	-0.63
7,264.00	54.10	300.95	7,123.95	406.59	-593.85	406.59	5.42	5.00	2.61
7,296.00	55.14	301.93	7,142.48	420.20	-616.11	420.20	4.10	3.25	3.06
7,328.00	57.19	305.02	7,160.30	434.87	-638.27	434.87	10.26	6.41	9.66
7,359.00	59.45	306.81	7,176.58	450.34	-659.63	450.34	8.79	7.29	5.77
7,391.00	62.42	309.29	7,192.12	467.59	-681.64	467.59	11.49	9.28	7.75
7,423.00	64.46	311.09	7,206.43	486.06	-703.50	486.06	8.12	6.38	5.63
7,454.00	66.63	312.95	7,219.27	504.95	-724.46	504.95	8.88	7.00	6.00
7,486.00	67.94	314.68	7,231.62	525.38	-745.76	525.38	6.45	4.09	5.41
7,518.00	69.61	315.82	7,243.21	546.57	-766.76	546.57	6.19	5.22	3.56
7,550.00	70.76	318.14	7,254.06	568.58	-787.29	568.58	7.71	3.59	7.25
7,581.00	72.62	320.04	7,263.80	590.82	-806.56	590.82	8.36	6.00	6.13
7,613.00	73.11	321.78	7,273.22	614.55	-825.84	614.55	5.42	1.53	5.44
7,645.00	75.40	323.70	7,281.91	639.07	-844.48	639.07	9.20	7.16	6.00
7,677.00	78.08	325.33	7,289.25	664.43	-862.56	664.43	9.73	8.38	5.09
7,708.00	82.22	326.26	7,294.55	689.68	-879.73	689.68	13.68	13.35	3.00
7,770.00	90.64	326.51	7,298.41	741.17	-913.95	741.17	13.59	13.58	0.40
7,834.00	91.44	325.85	7,297.24	794.33	-949.57	794.33	1.62	1.25	-1.03
7,897.00	92.30	325.47	7,295.19	846.32	-985.09	846.32	1.49	1.37	-0.60
7,960.00	93.02	324.88	7,292.27	897.98	-1,021.02	897.98	1.48	1.14	-0.94
8,023.00	92.65	323.93	7,289.15	949.14	-1,057.65	949.14	1.62	-0.59	-1.51
8,087.00	91.11	323.35	7,287.05	1,000.65	-1,095.57	1,000.65	2.57	-2.41	-0.91
8,150.00	89.90	323.40	7,286.49	1,051.21	-1,133.15	1,051.21	1.92	-1.92	0.08
8,213.00	88.66	322.86	7,287.29	1,101.61	-1,170.95	1,101.61	2.15	-1.97	-0.86
8,277.00	88.39	323.25	7,288.93	1,152.74	-1,209.40	1,152.74	0.74	-0.42	0.61
8,340.00	89.13	323.40	7,290.30	1,203.26	-1,247.02	1,203.26	1.20	1.17	0.24
8,404.00	89.83	323.09	7,290.88	1,254.53	-1,285.32	1,254.53	1.20	1.09	-0.48
8,467.00	90.37	323.11	7,290.77	1,304.91	-1,323.14	1,304.91	0.86	0.86	0.03
8,531.00	90.60	323.02	7,290.23	1,356.06	-1,361.60	1,356.06	0.39	0.36	-0.14
8,594.00	90.64	322.94	7,289.54	1,406.36	-1,399.53	1,406.36	0.14	0.06	-0.13
8,657.00	90.84	323.68	7,288.73	1,456.88	-1,437.17	1,456.88	1.22	0.32	1.17
8,720.00	90.87	324.51	7,287.79	1,507.90	-1,474.11	1,507.90	1.32	0.05	1.32
8,784.00	90.44	323.97	7,287.06	1,559.83	-1,511.51	1,559.83	1.08	-0.67	-0.84
8,847.00	89.63	324.72	7,287.02	1,611.02	-1,548.23	1,611.02	1.75	-1.29	1.19
8,911.00	90.17	325.22	7,287.13	1,663.43	-1,584.96	1,663.43	1.15	[illegible]	0.78
8,974.00	90.13	325.29	7,286.97	1,715.19	-1,620.87	1,715.19	0.13	-0.06	0.11
9,037.00	90.23	325.90	7,286.77	1,767.17	-1,656.47	1,767.17	0.98	0.16	0.97

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Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 21H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,101.00	91.17	326.54	7,285.99	1,820.36	-1,692.05	1,820.36	1.78	1.47	1.00
9,165.00	90.91	325.99	7,284.83	1,873.58	-1,727.58	1,873.58	0.95	-0.41	-0.86
9,229.00	90.23	325.98	7,284.19	1,926.62	-1,763.38	1,926.62	1.06	-1.06	-0.02
9,292.00	90.57	326.33	7,283.75	1,978.94	-1,798.47	1,978.94	0.77	0.54	0.56
9,356.00	91.38	326.19	7,282.66	2,032.16	-1,834.01	2,032.16	1.28	1.27	-0.22
9,419.00	91.17	326.12	7,281.26	2,084.47	-1,869.09	2,084.47	0.35	-0.33	-0.11
9,483.00	90.54	325.74	7,280.30	2,137.48	-1,904.94	2,137.48	1.15	-0.98	-0.59
9,546.00	90.84	325.49	7,279.54	2,189.46	-1,940.52	2,189.46	0.62	0.48	-0.40
9,610.00	90.67	325.08	7,278.70	2,242.07	-1,976.96	2,242.07	0.69	-0.27	-0.64
9,674.00	90.17	326.38	7,278.23	2,294.95	-2,013.00	2,294.95	2.18	-0.78	2.03
9,737.00	89.87	326.68	7,278.21	2,347.51	-2,047.74	2,347.51	0.67	-0.48	0.48
9,801.00	90.54	326.22	7,277.98	2,400.84	-2,083.11	2,400.84	1.27	1.05	-0.72
9,865.00	90.47	326.29	7,277.42	2,454.06	-2,118.66	2,454.06	0.15	-0.11	0.11
9,928.00	90.03	326.61	7,277.14	2,506.56	-2,153.48	2,506.56	0.86	-0.70	0.51
9,991.00	89.77	325.87	7,277.25	2,558.94	-2,188.49	2,558.94	1.24	-0.41	-1.17
10,055.00	89.26	325.46	7,277.79	2,611.78	-2,224.59	2,611.78	1.02	-0.80	-0.64
10,118.00	90.27	325.68	7,278.05	2,663.75	-2,260.21	2,663.75	1.64	1.60	0.35
10,182.00	90.77	326.05	7,277.47	2,716.72	-2,296.12	2,716.72	0.97	0.78	0.58
10,245.00	91.17	326.34	7,276.40	2,769.06	-2,331.16	2,769.06	0.78	0.63	0.46
10,371.00	90.50	326.30	7,274.57	2,873.90	-2,401.03	2,873.90	0.53	-0.53	-0.03
10,434.00	90.27	326.14	7,274.15	2,926.26	-2,436.06	2,926.26	0.44	-0.37	-0.25
10,497.00	90.91	325.44	7,273.50	2,978.36	-2,471.48	2,978.36	1.51	1.02	-1.11
10,561.00	90.57	324.64	7,272.67	3,030.80	-2,508.14	3,030.80	1.36	-0.53	-1.25
10,624.00	90.10	324.57	7,272.30	3,082.16	-2,544.63	3,082.16	0.75	-0.75	-0.11
10,684.00	91.11	324.79	7,271.67	3,131.11	-2,579.32	3,131.11	1.72	1.68	0.37
10,747.00	90.91	324.42	7,270.56	3,182.46	-2,615.80	3,182.46	0.67	-0.32	-0.59
10,809.00	89.46	324.51	7,270.36	3,232.91	-2,651.84	3,232.91	2.34	-2.34	0.15
10,872.00	89.50	324.97	7,270.93	3,284.35	-2,688.21	3,284.35	0.73	0.06	0.73
10,936.00	90.13	324.33	7,271.14	3,336.55	-2,725.23	3,336.55	1.40	0.98	-1.00
10,999.00	90.64	323.56	7,270.71	3,387.48	-2,762.31	3,387.48	1.47	0.81	-1.22
11,063.00	90.64	324.01	7,270.00	3,439.11	-2,800.12	3,439.11	0.70	0.00	0.70
11,126.00	91.28	324.35	7,268.94	3,490.19	-2,836.99	3,490.19	1.15	1.02	0.54
11,190.00	91.38	324.74	7,267.46	3,542.31	-2,874.10	3,542.31	0.63	0.16	0.61
11,253.00	90.81	325.08	7,266.25	3,593.85	-2,910.31	3,593.85	1.05	-0.90	0.54
11,317.00	90.50	324.86	7,265.52	3,646.25	-2,947.04	3,646.25	0.59	-0.48	-0.34
11,380.00	90.54	325.32	7,264.95	3,697.91	-2,983.10	3,697.91	0.73	0.06	0.73
11,444.00	90.20	324.81	7,264.54	3,750.38	-3,019.74	3,750.38	0.96	-0.53	-0.80
11,507.00	89.73	324.79	7,264.57	3,801.86	-3,056.06	3,801.86	0.75	-0.75	-0.03
11,571.00	90.60	325.55	7,264.39	3,854.39	-3,092.61	3,854.39	1.81	1.36	1.19
11,633.00	91.51	325.45	7,263.25	3,905.48	-3,127.72	3,905.48	1.48	1.47	[illegible]
11,696.00	92.51	325.39	7,261.04	3,957.32	-3,163.46	3,957.32	1.59	1.59	0.10
11,759.00	91.01	325.60	7,259.10	4,009.21	-3,199.13	4,009.21	2.40	-2.38	0.33
11,823.00	89.16	324.46	7,259.01	4,061.65	-3,235.81	4,061.65	3.40	-2.89	-1.78
11,886.00	89.73	324.58	7,259.62	4,112.95	-3,272.37	4,112.95	0.92	0.90	0.19

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 21H - Slot MW3#21H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 21H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,950.00	90.54	325.01	7,259.47	4,165.24	-3,309.27	4,165.24	1.43	1.27	0.67
12,013.00	90.87	324.60	7,258.69	4,216.72	-3,345.57	4,216.72	0.84	0.52	-0.65
12,077.00	88.93	324.86	7,258.81	4,268.97	-3,382.53	4,268.97	3.06	-3.03	0.41
12,140.00	89.76	324.95	7,259.53	4,320.51	-3,418.75	4,320.51	1.33	1.32	0.14
12,204.00	90.57	324.82	7,259.34	4,372.87	-3,455.56	4,372.87	1.28	1.27	-0.20
12,267.00	91.24	324.69	7,258.35	4,424.31	-3,491.91	4,424.31	1.08	1.06	-0.21
12,330.00	91.01	325.11	7,257.11	4,475.84	-3,528.13	4,475.84	0.76	-0.37	0.67
12,394.00	91.51	325.06	7,255.70	4,528.31	-3,564.75	4,528.31	0.79	0.78	-0.08
12,457.00	91.04	324.64	7,254.30	4,579.81	-3,601.01	4,579.81	1.00	-0.75	-0.67
Last SDI MWD Survey									
12,516.00	91.04	324.64	7,253.23	4,627.92	-3,635.15	4,627.92	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
18.00	18.00	0.00	0.00	Ground Level
100.19	100.19	-0.11	-0.07	First SDI Gyro Survey
5,883.73	5,861.00	190.01	-273.83	First SDI MWD Survey
12,457.00	7,254.30	4,579.81	-3,601.01	Last SDI MWD Survey
12,516.00	7,253.23	4,627.92	-3,635.15	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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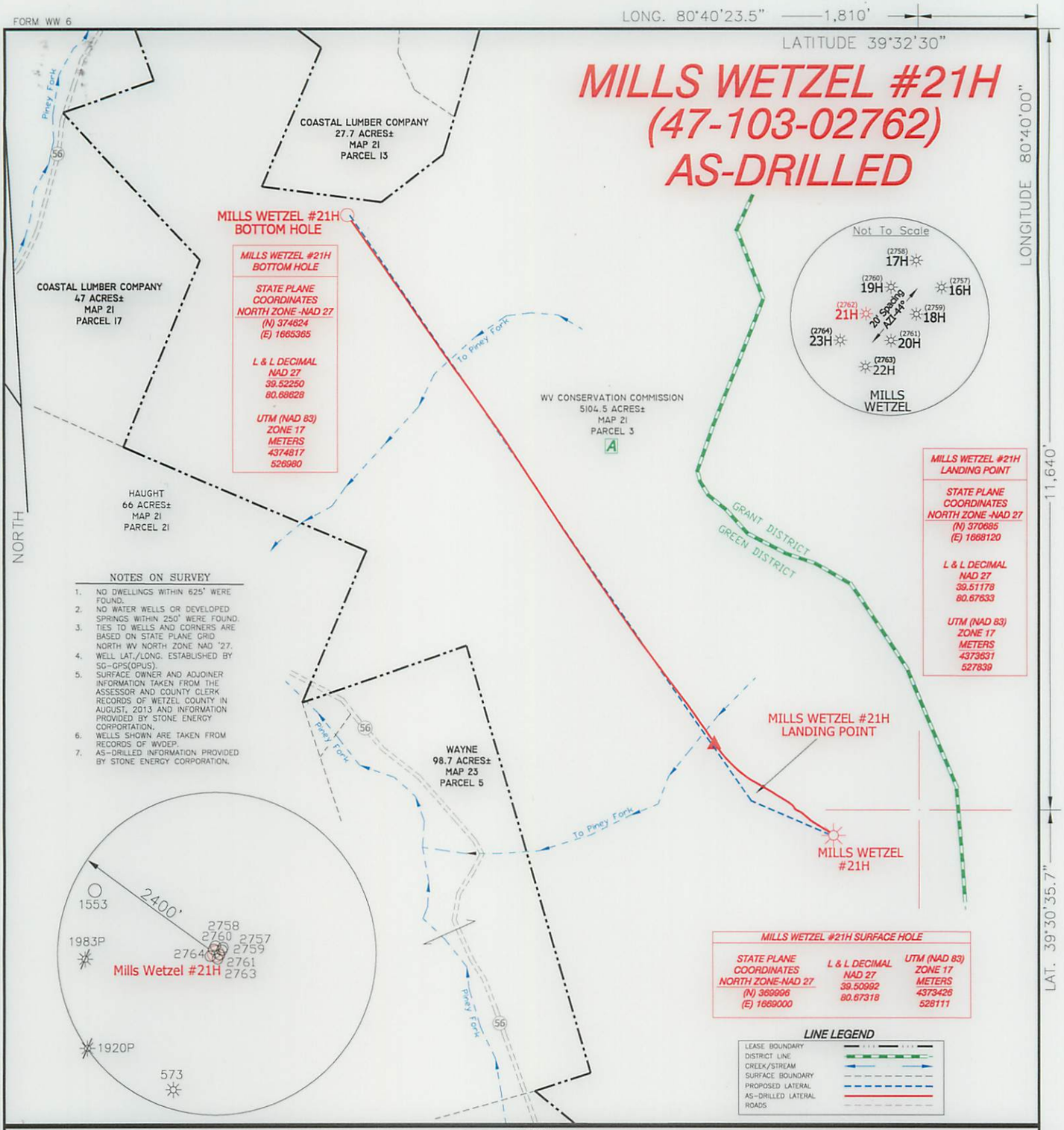
FORM WW 6

MILLS WETZEL #21H (47-103-02762) AS-DRILLED



NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORTATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE DECEMBER 17, 20 14

OPERATORS WELL NO. MILLS WETZEL #21H

API WELL NO. 47 — 103 — 02762
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W1719 (BK75-3)
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :
ELEVATION 1293' WATERSHED TRIBUTARY OF PINEY FORK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PINE GROVE 7.5'
SURFACE OWNER WEST VIRGINIA CONSERVATION COMMISSION ACREAGE 5104.5 ±
ROYALTY OWNER MILLS WETZEL LAND Inc. LEASE ACREAGE 5104.5±
PROPOSED WORK : LEASE NO. ___
DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH 7,253' TVD 12,516' MD

COUNTY NAME

PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

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Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 103 - 02763 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #22H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,373,417	Easting 528,111
Landing Point of Curve	Northing 4,372,833	Easting 527,963
Bottom Hole	Northing 4,371,822	Easting 528,664

Elevation (ft) 1,293 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 6/13/2012 Date drilling commenced 11/15/2012 Date drilling ceased 6/21/2013
Date completion activities began 9/5/2013 Date completion activities ceased 1/19/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 60 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,900 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,025 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
W.S. 6/01/15

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API 47- 103 - 02763 Farm name WV Conservation Commission Well number #22H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	55'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,288'	New	J55	131' & 217'	Y - CTS
Coal	17.5"	13.375"	1,288'	New	J55	131' & 217'	Y - CTS
Intermediate 1	12.25"	9.625"	2,773'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,441'	New	P110		Y
Tubing	N/A	2.375"	7,625'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 32 bbls cement to surface, 9.625" casing string circulated 52 bbls cement to surface. 5.5" casing string TOC @ 878'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	977	15.6	1.19	1,163	Surface	8.0
Coal	Class "A"	996	15.6	1.19	1,185	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-536 Tail-420	Lead-15.0 Tail-15.5	Lead-1.27 Tail-1.19	Lead-681 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-FlexSeal Tail-Class "A"	Lead-673 Tail-1,817	Lead-15.0 Tail-15.6	Lead-1.25 Tail-1.19	Lead-841 Tail-2,162	878'	7.0
Tubing							

Drillers TD (ft) 12,442 MD / 7,377 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft) _____
Plug back procedure _____

Kick off depth (ft) 6,249 MD/ 6,214 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐sonic

Well cored ☐ Yes ■ No ▪ Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 5,7,9, 11, 13, 15, 17, 19, 21, 23, 25, 27 and 29. Intermediate casing had bow spring centralizers placed on joints #'s 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60 and 63. The production casing has rigid spiral alternating left/right centralizers placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #145. From there bow spring centralizers were placed beginning on joint #148 and then every seventh joint to joint #247. A total of 37 rigid left/right centralizers were used and 34 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you climb towards the surface.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS _____

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED _____

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API 47- 103 - 02763 Farm name WV Conservation Commission Well number #22H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	9/11/13	12,055	12,255	72	Marcellus Shale
2	10/3/13	11,780	11,980	72	Marcellus Shale
3	10/4/13	11,511	11,713	72	Marcellus Shale
4	10/5/13	11,242	11,437	72	Marcellus Shale
5	10/6/13	10,963	11,173	72	Marcellus Shale
6	10/8/13	10,688	10,894	72	Marcellus Shale
7	10/9/13	10,407	10,618	72	Marcellus Shale
8	10/9/13	10,141	10,327	72	Marcellus Shale
9	10/10/13	9,876	10,068	72	Marcellus Shale
10	10/10/13	9,617	9,807	72	Marcellus Shale
11	10/11/13	9,355	9,547	72	Marcellus Shale
12	10/11/13	9,093	9,286	72	Marcellus Shale
13	10/12/13	8,833	9,040	72	Marcellus Shale
14	10/12/13	8,560	8,756	72	Marcellus Shale
15	10/13/13	8,360	8,494	72	Marcellus Shale
16	10/13/13	8,151	8,292	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	10/3/13	84.2	8,057	6,059	4,545	352,080	8,012	
2	10/4/13	85.3	7,808	5,929	4,441	410,960	8,314	
3	10/5/13	83.2	7,945	6,012	3,926	411,600	8,219	
4	10/6/13	85.5	7,750	6,123	4,269	408,500	8,340	
5	10/8/13	85.0	7,772	6,852	4,167	403,500	8,182	
6	10/9/13	85.2	7,766	6,980	3,993	412,620	8,269	
7	10/9/13	79.5	7,423	6,175	4,304	281,600	7,305	
8	10/10/13	80.8	7,410	5,670	4,374	406,460	8,137	
9	10/10/13	80.6	6,975	6,402	4,374	411,220	8,298	
10	10/11/13	80.6	7,267	5,520	4,409	409,140	8,171	
11	10/11/13	80.6	7,249	6,062	4,234	408,600	8,206	
12	10/12/13	80.5	7,115	6,445	4,269	409,980	8,215	
13	10/12/13	80.7	6,987	6,138	4,752	411,340	8,172	
14	10/13/13	80.4	6,970	6,444	4,157	412,320	8,495	
15	10/13/13	81.6	7,358	6,996	4,650	380,560	7,417	
16	10/14/13	80.6	7,397	6,774	4,650	375,220	7,9[illegible]	

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Please insert additional pages as applicable.

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API 47- 103 - 02763 Farm name WV Conservation Commission Well number #22H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,288' to 7,364' TVD	8,151' to 12,255' MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 1,215 psi Bottom Hole 3,473 calculated psi DURATION OF TEST 524 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3,000 mcfpd	bpd	19.3 bpd	119.7 bpd	□ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 14				

Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger / Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452 / 26378

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

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Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/24/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

MILL-WETZEL #22H
API 47-103-02763
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,025		FW @ 60'
Coal	1,025		*	1,030		
Sandstone & Shale	1,030		*	2,190		SW @ 1,900'
Little Lime	2,190		*	2,220		
Big Lime	2,220		*	2,365		
Big Injun	2,365		*	2,422		
Sandstone & Shale	2,422		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,055		
Gordon	3,055		*	3,105		
Undiff Devonian Shale	3,105		*	5,358		
Riley Shale	5,358		*	5,465		
Benson Siltstone	5,465		*	5,713		
Pipe Creek Shale	5,713		*	5,722		
Undiff Devonian Shale	5,722		~	6,214	6,249	
Rhinestreet	6,214	6,249	~	6,841	7,010	
Cashaqua	6,841	7,010	~	6,903	7,121	
Middlesex	6,903	7,121	~	7,055	7,443	
West River	7,055	7,443	~	7,177	7,709	
Geneseo	7,177	7,709	~	7,193	7,749	
Tully Limestone	7,193	7,749	~	7,216	7,847	
Hamilton Shale	7,216	7,847	~	7,279	8,107	
Marcellus	7,279	8,107	~	7,377	12,442	
TD				7,377	12,442	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	10/16/2013
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02763
Operator Name:	Stone Energy
Well Name and Number:	Mills-Wetzel #22H
Longitude:	528,111
Latitude:	4,373,417
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	5447676

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
Slickwater, H015%, WF115, SAPPHIRE VF 105	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Rheology Modifier ClearFRAC XT J589, Iron Control Agent, Clay Control Agent, Fluid Loss Additive , Propping	Water (Including Mix Water Supplied by Client)*	NA		87.66440%	
			Crystalline silica	14808-60-7	98.54497%	12.15612%	
			Hydrochloric acid	7647-01-0	0.71605%	0.08833%	
			Carbohydrate polymer	Proprietary	0.44021%	0.05430%	
			Ammonium sulfate	Proprietary	0.17339%	0.02139%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06845%	0.00844%	
			Glutaraldehyde	111-30-8	0.05184%	0.00640%	
			Diammonium peroxidisulphate	7727-54-0	0.02665%	0.00329%	
			Fatty acid amidoalkyl betaine	Proprietary	0.01667%	0.00206%	
			Calcium chloride	10043-52-4	0.01247%	0.00154%	
			Propan-2-ol	67-63-0	0.01179%	0.00145%	
			Polypropylene glycol	25322-69-4	0.00391%	0.00048%	
			Trisodium ortho phosphate	7601-54-9	0.00357%	0.00044%	
			Ethane-1,2-diol	107-21-1	0.00357%	0.00044%	
			Methanol	67-56-1	0.00330%	0.00041%	
			Sodium erythorbate	6381-77-7	0.00266%	0.00033%	
			Aliphatic acids	Proprietary	0.00247%	0.00031%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00247%	0.00031%	
			Prop-2-yn-1-ol	107-19-7	0.00082%	0.00010%	

* 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%

Report ID: RPT-19966 (Generated on 10/23/2013 3:58 PM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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Project: Heather Prospect (NAD 27)
Site: Mills-Wetzel Pad 3
Well: Mills-Wetzel 22H
Wellbore: OH
Design: As Drilled

STONE ENERGY

Scientific Drilling

WELL DETAILS: Mills-Wetzel 22H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	369961.02	1668999.66	39° 30' 35.375 N	80° 40' 23.453 W	MW3#22H

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
103.00	103.00	0.64	195.35	-0.55	-0.15	0.46	0.58	First SDI Gyro Survey
6160.16	6193.91	8.55	206.55	-385.41	-233.36	277.36	467.10	Last SDI Gyro Survey
6192.82	6227.00	9.92	206.29	-390.17	-235.72	280.97	472.41	First SDI MWD Survey
7373.54	12384.00	86.97	145.48	-5217.40	1695.08	5479.25	6144.80	Last SDI MWD Survey
7376.61	12442.00	86.97	145.48	-5265.12	1727.90	5535.52	6202.72	Projection to Bit

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PROJECT DETAILS: Heather Prospect (NAD 27)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

REFERENCE INFORMATION

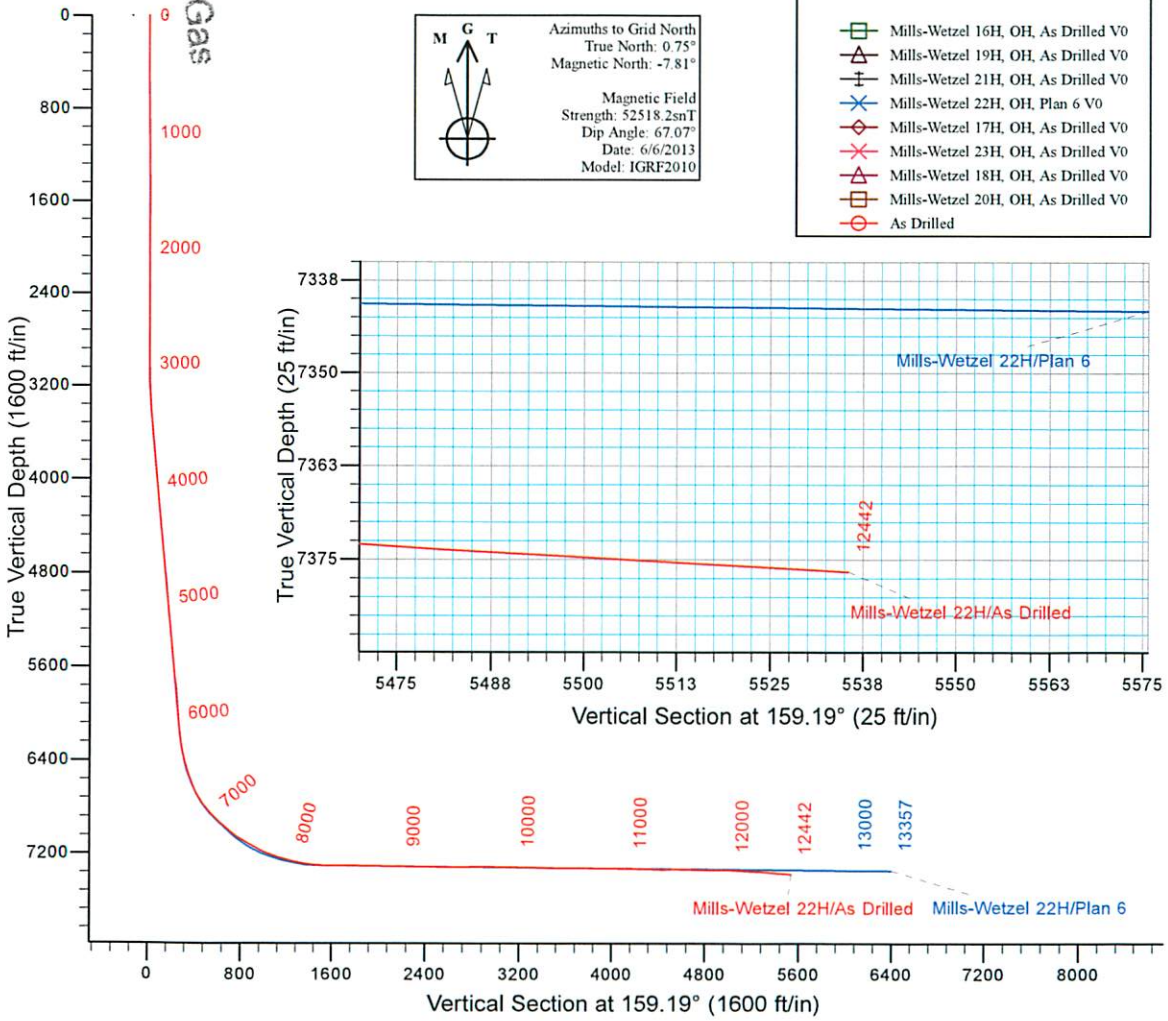
Co-ordinate (N/E) Reference: Well Mills-Wetzel 22H - Slot MW3#22H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#22H(0.00N, 0.00E)
Measured Depth Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Calculation Method: Minimum Curvature

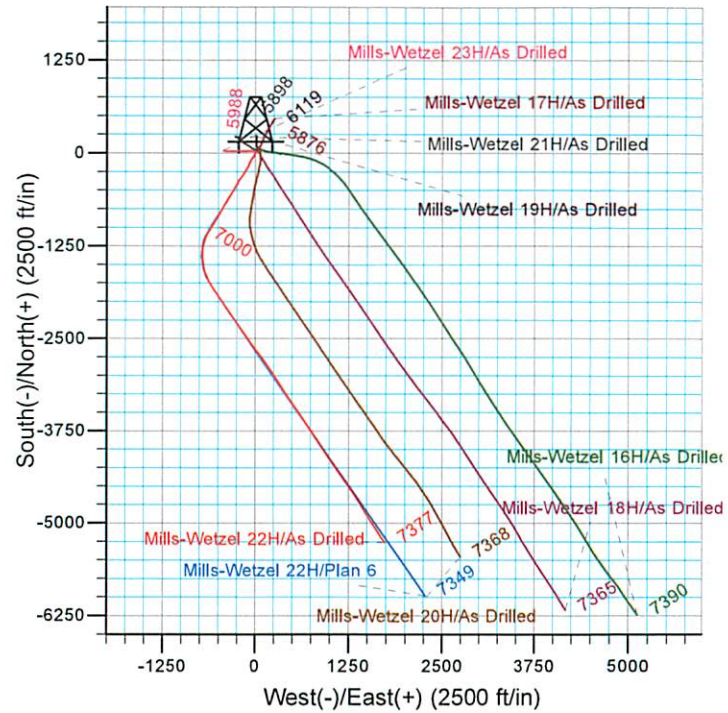
Azimuths to Grid North
True North: 0.75°
Magnetic North: -7.81°

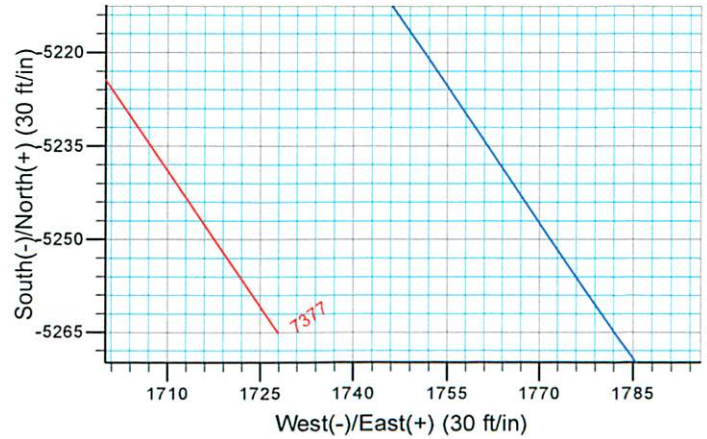
Magnetic Field
Strength: 52518.2snT
Dip Angle: 67.07°
Date: 6/6/2013
Model: IGRF2010

LEGEND

- Mills-Wetzel 16H, OH, As Drilled V0
- Mills-Wetzel 19H, OH, As Drilled V0
- Mills-Wetzel 21H, OH, As Drilled V0
- Mills-Wetzel 22H, OH, Plan 6 V0
- Mills-Wetzel 17H, OH, As Drilled V0
- Mills-Wetzel 23H, OH, As Drilled V0
- Mills-Wetzel 18H, OH, As Drilled V0
- Mills-Wetzel 20H, OH, As Drilled V0
- As Drilled







Stone Energy

Heather Prospect (NAD 27)
Mills-Wetzel Pad 3
Mills-Wetzel 22H - Slot MW3#22H

OH

Design: As Drilled

Standard Survey Report

20 June, 2013

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Scientific Drilling

www.scientificdrilling.com

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 22H - Slot MW3#22H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 22H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Heather Prospect (NAD 27), Wetzel County, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Mills-Wetzel Pad 3

Site Position:		**Northing:**	370,004.38 usft	**Latitude:**	39° 30' 35.809 N
From:	Map	**Easting:**	1,669,041.12 usft	**Longitude:**	80° 40' 22.931 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.75 °

Well Mills-Wetzel 22H - Slot MW3#22H

Well Position	**+N/-S**	0.00 ft	**Northing:**	369,961.02 usft	**Latitude:**	39° 30' 35.375 N
	+E/-W	0.00 ft	**Easting:**	1,668,999.66 usft	**Longitude:**	80° 40' 23.453 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	1,291.00 ft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	4/4/2013	-8.55	67.08	52,539
	IGRF2010	6/6/2013	-8.56	67.07	52,518

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.00	0.00	0.00	159.19

Survey Program **Date** 6/20/2013

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
103.00	6,193.92	Survey #3 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
6,227.00	12,442.00	Survey 4 - MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (ft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Vertical Section (ft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
103.00	0.64	195.35	103.00	-0.55	-0.15	0.46	0.62	0.62	0.00
First SDI Gyro Survey									
203.00	0.43	216.88	202.99	-1.39	-0.53	1.12	0.29	-0.21	-21.53
303.00	0.23	204.27	302.99	-1.88	-0.83	1.46	0.21	-0.20	-12.61
403.00	0.18	151.36	402.99	-2.20	-0.84	1.76	0.19	-0.05	-52.91
503.00	0.06	151.68	502.99	-2.38	-0.74	1.96	0.12	-0.12	0.32
603.00	0.14	112.77	602.99	-2.47	-0.60	2.10	0.10	0.08	-38.91

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 22H - Slot MW3#22H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 22H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
703.00	0.20	110.51	702.99	-2.58	-0.33	2.30	0.06	0.06	-2.26
803.00	0.35	102.01	802.99	-2.71	0.14	2.58	0.16	0.15	-8.50
903.00	0.20	107.31	902.99	-2.82	0.60	2.85	0.15	-0.15	5.30
1,003.00	0.39	124.01	1,002.98	-3.07	1.05	3.24	0.21	0.19	16.70
1,103.00	0.41	123.98	1,102.98	-3.46	1.63	3.81	0.02	0.02	-0.03
1,203.00	0.46	122.10	1,202.98	-3.87	2.27	4.42	0.05	0.05	-1.88
1,303.00	0.53	127.29	1,302.98	-4.36	2.97	5.13	0.08	0.07	5.19
1,403.00	0.40	120.79	1,402.97	-4.82	3.64	5.80	0.14	-0.13	-6.50
1,503.00	0.46	128.03	1,502.97	-5.25	4.26	6.42	0.08	0.06	7.24
1,603.00	0.13	84.81	1,602.97	-5.48	4.69	6.79	0.38	-0.33	-43.22
1,703.00	0.14	50.34	1,702.97	-5.40	4.89	6.78	0.08	0.01	-34.47
1,803.00	0.18	247.05	1,802.97	-5.38	4.84	6.75	0.32	0.04	-163.29
1,903.00	0.43	260.51	1,902.97	-5.50	4.33	6.68	0.26	0.25	13.46
2,003.00	0.72	284.30	2,002.96	-5.41	3.35	6.25	0.37	0.29	23.79
2,103.00	0.93	305.78	2,102.95	-4.78	2.08	5.21	0.37	0.21	21.48
2,203.00	0.34	355.01	2,202.94	-4.01	1.40	4.24	0.75	-0.59	49.23
2,303.00	0.26	32.35	2,302.94	-3.52	1.49	3.82	0.21	-0.08	37.34
2,403.00	0.23	44.53	2,402.94	-3.19	1.76	3.60	0.06	-0.03	12.18
2,503.00	0.13	70.70	2,502.94	-3.01	2.00	3.52	0.13	-0.10	26.17
2,603.00	0.09	17.07	2,602.94	-2.89	2.13	3.46	0.11	-0.04	-53.63
2,703.00	0.11	35.38	2,702.94	-2.74	2.21	3.35	0.04	0.02	18.31
2,803.00	0.09	28.23	2,802.94	-2.59	2.30	3.24	0.02	-0.02	-7.15
2,903.00	0.61	230.32	2,902.94	-2.86	1.93	3.36	0.69	0.52	-157.91
3,003.00	1.86	222.39	3,002.91	-4.40	0.43	4.27	1.26	1.25	-7.93
3,103.00	1.93	218.19	3,102.86	-6.93	-1.71	5.87	0.16	0.07	-4.20
3,203.00	3.30	214.11	3,202.75	-10.63	-4.36	8.39	1.38	1.37	-4.08
3,303.00	5.44	208.54	3,302.46	-17.18	-8.24	13.13	2.18	2.14	-5.57
3,403.00	5.97	205.70	3,401.96	-26.03	-12.76	19.80	0.60	0.53	-2.84
3,503.00	6.74	208.51	3,501.35	-35.87	-17.82	27.20	0.83	0.77	2.81
3,603.00	8.00	215.48	3,600.52	-46.70	-24.66	34.89	1.54	1.26	6.97
3,703.00	9.04	215.77	3,699.42	-58.74	-33.29	43.08	1.04	1.04	0.29
3,803.00	9.57	214.39	3,798.10	-71.97	-42.58	52.15	0.58	0.53	-1.38
3,903.00	9.93	212.58	3,896.66	-86.10	-51.91	62.04	0.47	0.36	-1.81
4,003.00	8.66	211.19	3,995.34	-99.80	-60.46	71.81	1.29	-1.27	-1.39
4,103.00	7.15	210.32	4,094.39	-111.62	-67.50	80.36	1.51	-1.51	-0.87
4,203.00	7.23	208.30	4,193.60	-122.53	-73.62	88.38	0.27	0.08	-2.02
4,303.00	7.45	205.36	4,292.78	-133.93	-79.38	96.99	0.44	0.22	-2.94
4,403.00	7.66	201.19	4,391.91	-146.00	-84.57	106.43	0.59	0.21	-4.17
4,503.00	7.71	195.45	4,491.02	-158.68	-88.76	116.79	0.77	0.05	-5.74
4,603.00	7.84	200.62	4,590.10	-171.53	-92.95	127.32	0.71	0.13	5.17
4,703.00	8.55	208.10	4,689.08	-184.47	-98.86	137.32	1.28	0.71	7.48
4,803.00	9.24	215.10	4,787.88	-197.60	-106.98	146.70	1.28	0.69	7.00
4,903.00	9.70	213.12	4,886.52	-211.22	-116.19	156.16	0.56	0.46	-1.98

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FEB 26 2015

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 22H - Slot MW3#22H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 22H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,003.00	10.07	210.58	4,985.03	-225.80	-125.25	166.58	0.57	0.37	-2.54
5,103.00	9.48	216.34	5,083.58	-239.96	-134.57	176.50	1.14	-0.59	5.76
5,203.00	9.70	213.50	5,182.19	-253.62	-144.10	185.88	0.52	0.22	-2.84
5,303.00	9.86	211.77	5,280.73	-267.93	-153.26	196.00	0.33	0.16	-1.73
5,403.00	9.01	214.92	5,379.38	-281.63	-162.25	205.61	0.99	-0.85	3.15
5,503.00	9.25	211.62	5,478.11	-294.89	-170.95	214.92	0.58	0.24	-3.30
5,603.00	9.42	214.74	5,576.79	-308.46	-179.83	224.45	0.53	0.17	3.12
5,703.00	9.39	214.56	5,675.45	-321.90	-189.12	233.72	0.04	-0.03	-0.18
5,803.00	9.83	212.34	5,774.04	-335.83	-198.31	243.47	0.58	0.44	-2.22
5,903.00	9.86	220.09	5,872.58	-349.60	-208.39	252.76	1.32	0.03	7.75
6,003.00	7.85	220.32	5,971.38	-361.36	-218.32	260.22	2.01	-2.01	0.23
6,103.00	8.97	210.68	6,070.31	-373.27	-226.72	268.37	1.80	1.12	-9.64
6,193.91	8.55	206.55	6,160.16	-385.41	-233.36	277.36	0.83	-0.46	-4.54
Last SDI Gyro Survey									
6,193.92	8.55	206.55	6,160.17	-385.41	-233.36	277.36	0.83	-0.44	-4.76
6,227.00	9.92	206.29	6,192.82	-390.17	-235.72	280.97	4.14	4.14	-0.79
First SDI MWD Survey									
6,259.00	11.09	206.15	6,224.28	-395.40	-238.30	284.94	3.66	3.66	-0.44
6,290.00	12.64	205.79	6,254.62	-401.13	-241.09	289.31	5.01	5.00	-1.16
6,322.00	14.08	205.64	6,285.75	-407.79	-244.30	294.40	4.50	4.50	-0.47
6,354.00	15.30	207.49	6,316.71	-415.05	-247.93	299.89	4.08	3.81	5.78
6,386.00	17.15	210.44	6,347.43	-422.86	-252.27	305.65	6.33	5.78	9.22
6,418.00	19.43	211.02	6,377.81	-431.49	-257.40	311.89	7.15	7.13	1.81
6,449.00	21.78	210.44	6,406.83	-440.87	-262.97	318.68	7.61	7.58	-1.87
6,481.00	24.39	210.23	6,436.26	-451.70	-269.31	326.55	8.16	8.16	-0.66
6,513.00	27.03	210.12	6,465.09	-463.70	-276.29	335.29	8.25	8.25	-0.34
6,544.00	28.75	211.02	6,492.49	-476.18	-283.66	344.34	5.71	5.55	2.90
6,576.00	29.30	211.32	6,520.47	-489.47	-291.70	353.90	1.78	1.72	0.94
6,608.00	30.29	211.42	6,548.24	-503.04	-299.98	363.65	3.10	3.09	0.31
6,640.00	31.97	212.26	6,575.63	-517.09	-308.71	373.69	5.42	5.25	2.63
6,669.00	34.85	212.63	6,599.84	-530.57	-317.27	383.24	9.96	9.93	1.28
6,701.00	36.72	212.75	6,625.79	-546.31	-327.38	394.37	5.85	5.84	0.38
6,733.00	37.64	212.65	6,651.29	-562.59	-337.83	405.87	2.88	2.88	-0.31
6,765.00	38.34	212.53	6,676.51	-579.18	-348.44	417.61	2.20	2.19	-0.38
6,796.00	41.08	212.33	6,700.36	-595.90	-359.06	429.46	8.85	8.84	-0.65
6,828.00	44.50	211.70	6,723.83	-614.33	-370.57	442.60	10.77	10.69	-1.97
6,860.00	47.19	211.36	6,746.12	-633.90	-382.58	456.63	8.44	8.41	-1.06
6,890.00	48.25	211.38	6,766.31	-652.85	-394.13	470.24	3.53	3.53	0.07
6,920.00	49.38	211.08	6,786.06	-672.15	-405.84	484.12	3.84	[illegible]	1.00
6,950.00	51.09	211.33	6,805.25	-691.88	-417.79	498.32	5.74	5.70	0.83
6,981.00	52.58	211.40	6,824.40	-712.69	-430.47	513.26	4.81	4.81	0.23
7,011.00	53.86	210.78	6,842.37	-733.26	-442.88	528.09	4.58	4.27	-2.07
7,041.00	55.66	210.31	6,859.68	-754.37	-455.33	543.39	6.13	6.00	-1.57
7,072.00	57.26	209.83	6,876.80	-776.73	-468.27	559.69	5.32	5.16	-1.55

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FEB 26 2015

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 22H - Slot MW3#22H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 22H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,102.00	58.14	209.87	6,892.83	-798.72	-480.90	575.77	2.94	2.93	0.13
7,133.00	58.86	210.19	6,909.03	-821.60	-494.12	592.46	2.48	2.32	1.03
7,163.00	59.72	210.35	6,924.35	-843.88	-507.13	608.66	2.90	2.87	0.53
7,224.00	60.88	210.75	6,954.57	-889.51	-534.06	641.75	1.99	1.90	0.66
7,286.00	61.39	210.70	6,984.51	-936.19	-561.80	675.52	0.83	0.82	-0.08
7,347.00	62.47	211.09	7,013.21	-982.37	-589.44	708.88	1.86	1.77	0.64
7,377.00	63.69	211.38	7,026.79	-1,005.24	-603.31	725.33	4.16	4.07	0.97
7,408.00	64.33	211.65	7,040.38	-1,029.00	-617.87	742.36	2.21	2.06	0.87
7,438.00	65.13	210.63	7,053.18	-1,052.22	-631.90	759.08	4.07	2.67	-3.40
7,468.00	65.80	208.26	7,065.64	-1,075.98	-645.31	776.53	7.53	2.23	-7.90
7,499.00	66.36	205.21	7,078.21	-1,101.29	-658.06	795.65	9.17	1.81	-9.84
7,529.00	66.54	202.40	7,090.20	-1,126.44	-669.16	815.23	8.61	0.60	-9.37
7,559.00	66.13	200.45	7,102.24	-1,152.02	-679.19	835.57	6.11	-1.37	-6.50
7,590.00	65.78	198.03	7,114.88	-1,178.75	-688.52	857.24	7.22	-1.13	-7.81
7,620.00	65.92	195.86	7,127.15	-1,204.93	-696.50	878.88	6.62	0.47	-7.23
7,651.00	65.95	193.30	7,139.79	-1,232.32	-703.63	901.95	7.54	0.10	-8.26
7,681.00	65.70	190.65	7,152.08	-1,259.09	-709.30	924.96	8.10	-0.83	-8.83
7,712.00	65.26	188.00	7,164.95	-1,286.92	-713.87	949.35	7.91	-1.42	-8.55
7,742.00	65.36	185.20	7,177.48	-1,313.99	-717.01	973.54	8.49	0.33	-9.33
7,772.00	67.02	182.05	7,189.60	-1,341.38	-718.74	998.53	11.09	5.53	-10.50
7,802.00	69.19	179.88	7,200.78	-1,369.21	-719.20	1,024.38	9.87	7.23	-7.23
7,833.00	70.80	177.27	7,211.39	-1,398.32	-718.47	1,051.85	9.46	5.19	-8.42
7,864.00	72.00	174.78	7,221.28	-1,427.63	-716.44	1,079.97	8.54	3.87	-8.03
7,894.00	73.41	172.65	7,230.20	-1,456.10	-713.30	1,107.70	8.25	4.70	-7.10
7,926.00	74.56	170.44	7,239.03	-1,486.52	-708.77	1,137.74	7.55	3.59	-6.91
7,957.00	75.03	169.01	7,247.16	-1,515.95	-703.44	1,167.15	4.70	1.52	-4.61
7,989.00	76.07	167.37	7,255.14	-1,546.28	-697.10	1,197.75	5.93	3.25	-5.13
8,021.00	77.25	165.55	7,262.53	-1,576.55	-689.80	1,228.64	6.65	3.69	-5.69
8,052.00	78.53	162.99	7,269.03	-1,605.72	-681.59	1,258.83	9.07	4.13	-8.26
8,083.00	79.25	160.45	7,275.01	-1,634.61	-672.05	1,289.21	8.37	2.32	-8.19
8,115.00	79.36	157.73	7,280.95	-1,663.98	-660.82	1,320.65	8.36	0.34	-8.50
8,147.00	79.41	155.61	7,286.84	-1,692.86	-648.37	1,352.07	6.51	0.16	-6.63
8,178.00	80.47	153.93	7,292.26	-1,720.47	-635.36	1,382.50	6.34	3.42	-5.42
8,210.00	83.67	151.27	7,296.67	-1,748.60	-620.77	1,413.98	12.95	10.00	-8.31
8,242.00	86.27	148.80	7,299.48	-1,776.21	-604.85	1,445.45	11.19	8.13	-7.72
8,274.00	86.37	147.33	7,301.53	-1,803.31	-587.96	1,476.78	4.59	0.31	-4.59
8,306.00	86.84	147.11	7,303.43	-1,830.16	-570.67	1,508.03	1.62	1.47	-0.69
8,337.00	88.25	146.29	7,304.75	-1,856.05	-553.66	1,538.27	5.26	4.55	-2.65
8,401.00	89.66	145.44	7,305.92	-1,909.01	-517.76	1,600.53	2.57	2.20	-1.33
8,464.00	90.03	145.79	7,306.09	-1,961.00	-482.18	1,661.77	0.81	0.59	0.56
8,527.00	89.50	145.11	7,306.35	-2,012.89	-446.45	1,722.97	1.37	-0.84	-1.08
8,590.00	89.33	144.91	7,306.99	-2,064.50	-410.33	1,784.04	0.42	-0.27	-0.32
8,654.00	89.09	145.29	7,307.88	-2,116.99	-373.71	1,846.11	0.70	-0.38	0.59

Received
Office of Oil & Gas
FEB 26 2015

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 22H - Slot MW3#22H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 22H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,717.00	89.16	145.55	7,308.84	-2,168.85	-337.96	1,907.29	0.43	0.11	0.41
8,781.00	88.69	145.73	7,310.04	-2,221.67	-301.85	1,969.50	0.79	-0.73	0.28
8,844.00	88.42	145.49	7,311.63	-2,273.64	-266.27	2,030.72	0.57	-0.43	-0.38
8,908.00	88.96	145.57	7,313.09	-2,326.39	-230.06	2,092.89	0.85	0.84	0.13
8,969.00	89.43	145.25	7,313.95	-2,376.61	-195.43	2,152.13	0.93	0.77	-0.52
9,033.00	89.80	145.04	7,314.38	-2,429.12	-158.86	2,214.22	0.66	0.58	-0.33
9,097.00	90.00	144.23	7,314.49	-2,481.31	-121.82	2,276.16	1.30	0.31	-1.27
9,160.00	90.00	143.95	7,314.49	-2,532.34	-84.87	2,336.99	0.44	0.00	-0.44
9,224.00	89.93	143.14	7,314.53	-2,583.82	-46.84	2,398.62	1.27	-0.11	-1.27
9,288.00	89.60	143.69	7,314.79	-2,635.21	-8.69	2,460.21	1.00	-0.52	0.86
9,351.00	89.36	144.05	7,315.36	-2,686.09	28.45	2,520.96	0.69	-0.38	0.57
9,414.00	88.89	143.40	7,316.32	-2,736.87	65.72	2,581.68	1.27	-0.75	-1.03
9,478.00	88.62	143.67	7,317.72	-2,788.33	103.75	2,643.29	0.60	-0.42	0.42
9,541.00	89.80	144.54	7,318.58	-2,839.36	140.68	2,704.11	2.33	1.87	1.38
9,603.00	90.57	145.52	7,318.38	-2,890.16	176.21	2,764.22	2.01	1.24	1.58
9,667.00	91.31	146.29	7,317.33	-2,943.15	212.09	2,826.50	1.67	1.16	1.20
9,730.00	91.92	146.86	7,315.56	-2,995.71	246.77	2,887.95	1.32	0.97	0.90
9,794.00	90.71	147.72	7,314.09	-3,049.55	281.35	2,950.56	2.32	-1.89	1.34
9,858.00	89.09	147.99	7,314.20	-3,103.73	315.40	3,013.31	2.57	-2.53	0.42
9,921.00	88.59	147.29	7,315.48	-3,156.94	349.11	3,075.02	1.37	-0.79	-1.11
9,984.00	88.42	146.73	7,317.12	-3,209.76	383.40	3,136.58	0.93	-0.27	-0.89
10,048.00	88.15	146.06	7,319.04	-3,263.04	418.81	3,198.96	1.13	-0.42	-1.05
10,111.00	88.96	146.44	7,320.62	-3,315.41	453.80	3,260.34	1.42	1.29	0.60
10,174.00	88.82	145.56	7,321.84	-3,367.63	489.02	3,321.67	1.41	-0.22	-1.40
10,238.00	89.09	144.89	7,323.01	-3,420.19	525.52	3,383.77	1.13	0.42	-1.05
10,301.00	89.16	145.86	7,323.97	-3,472.02	561.31	3,444.94	1.54	0.11	1.54
10,364.00	88.56	146.68	7,325.23	-3,524.41	596.29	3,506.33	1.61	-0.95	1.30
10,427.00	89.36	147.10	7,326.37	-3,577.17	630.69	3,567.87	1.43	1.27	0.67
10,490.00	89.76	147.11	7,326.85	-3,630.07	664.91	3,629.47	0.64	0.63	0.02
10,553.00	89.63	147.07	7,327.19	-3,682.95	699.14	3,691.07	0.22	-0.21	-0.06
10,617.00	90.50	147.35	7,327.12	-3,736.76	733.80	3,753.68	1.43	1.36	0.44
10,680.00	88.93	147.56	7,327.43	-3,789.86	767.69	3,815.36	2.51	-2.49	0.33
10,744.00	88.35	147.15	7,328.95	-3,843.74	802.20	3,877.98	1.11	-0.91	-0.64
10,807.00	89.33	146.81	7,330.23	-3,896.55	836.52	3,939.54	1.65	1.56	-0.54
10,871.00	90.13	146.85	7,330.53	-3,950.12	871.54	4,002.06	1.25	1.25	0.06
10,934.00	89.83	146.56	7,330.55	-4,002.78	906.12	4,063.57	0.66	-0.48	-0.46
10,998.00	89.53	146.55	7,330.91	-4,056.18	941.39	4,126.02	0.47	-0.47	-0.02
11,061.00	89.33	146.46	7,331.53	-4,108.71	976.16	4,187.48	0.35	-0.32	-0.14
11,093.00	87.95	145.86	7,332.29	-4,135.28	993.97	4,218.64	4.70	-4.31	[illegible]
11,124.00	88.08	145.60	7,333.37	-4,160.89	1,011.42	4,248.77	0.94	0.42	-0.84
11,156.00	88.55	145.36	7,334.31	-4,187.24	1,029.55	4,279.85	1.65	1.47	-0.75
11,187.00	89.16	145.38	7,334.93	-4,212.74	1,047.16	4,309.94	1.97	1.97	0.06
11,219.00	88.92	146.10	7,335.46	-4,239.19	1,065.17	4,341.06	2.37	-0.75	2.25
11,251.00	88.32	146.10	7,336.23	-4,265.74	1,083.01	4,372.22	1.88	-1.88	0.00

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 22H - Slot MW3#22H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 22H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,283.00	88.55	145.79	7,337.11	-4,292.24	1,100.93	4,403.36	1.21	0.72	-0.97
11,315.00	88.96	145.74	7,337.80	-4,318.69	1,118.92	4,434.48	1.29	1.28	-0.16
11,346.00	90.24	146.34	7,338.02	-4,344.40	1,136.24	4,464.66	4.56	4.13	1.94
11,378.00	91.78	146.35	7,337.45	-4,371.03	1,153.97	4,495.86	4.81	4.81	0.03
11,410.00	91.81	146.50	7,336.45	-4,397.68	1,171.66	4,527.05	0.48	0.09	0.47
11,442.00	91.14	145.83	7,335.63	-4,424.25	1,189.47	4,558.22	2.96	-2.09	-2.09
11,474.00	90.00	145.93	7,335.31	-4,450.74	1,207.42	4,589.35	3.58	-3.56	0.31
11,505.00	88.76	146.41	7,335.65	-4,476.49	1,224.68	4,619.56	4.29	-4.00	1.55
11,537.00	88.12	146.19	7,336.52	-4,503.11	1,242.43	4,650.74	2.11	-2.00	-0.69
11,569.00	88.42	146.37	7,337.48	-4,529.71	1,260.18	4,681.91	1.09	0.94	0.56
11,600.00	88.86	146.11	7,338.22	-4,555.48	1,277.40	4,712.12	1.65	1.42	-0.84
11,632.00	88.49	146.13	7,338.96	-4,582.04	1,295.24	4,743.28	1.16	-1.16	0.06
11,664.00	87.78	145.84	7,340.00	-4,608.55	1,313.13	4,774.42	2.40	-2.22	-0.91
11,696.00	87.81	145.60	7,341.23	-4,634.97	1,331.14	4,805.51	0.76	0.09	-0.75
11,728.00	88.76	146.00	7,342.19	-4,661.42	1,349.12	4,836.63	3.22	2.97	1.25
11,760.00	89.43	147.47	7,342.69	-4,688.17	1,366.67	4,867.87	5.05	2.09	4.59
11,791.00	89.70	148.31	7,342.93	-4,714.43	1,383.14	4,898.27	2.85	0.87	2.71
11,823.00	89.63	148.71	7,343.12	-4,741.72	1,399.86	4,929.71	1.27	-0.22	1.25
11,855.00	89.09	149.44	7,343.47	-4,769.17	1,416.30	4,961.21	2.84	-1.69	2.28
11,887.00	88.55	150.40	7,344.13	-4,796.85	1,432.34	4,992.79	3.44	-1.69	3.00
11,918.00	87.21	150.53	7,345.28	-4,823.80	1,447.61	5,023.41	4.34	-4.32	0.42
11,950.00	87.28	150.48	7,346.82	-4,851.62	1,463.35	5,055.01	0.27	0.22	-0.16
11,982.00	87.21	150.35	7,348.36	-4,879.42	1,479.13	5,086.59	0.46	-0.22	-0.41
12,013.00	87.41	149.79	7,349.81	-4,906.26	1,494.58	5,117.17	1.92	0.65	-1.81
12,045.00	86.91	148.33	7,351.40	-4,933.67	1,511.01	5,148.63	4.82	-1.56	-4.56
12,077.00	86.90	147.37	7,353.12	-4,960.72	1,528.01	5,179.96	3.00	-0.03	-3.00
12,109.00	87.54	147.75	7,354.68	-4,987.70	1,545.16	5,211.26	2.33	2.00	1.19
12,140.00	87.78	147.50	7,355.94	-5,013.86	1,561.74	5,241.61	1.12	0.77	-0.81
12,204.00	85.42	146.96	7,359.74	-5,067.57	1,596.32	5,304.11	3.78	-3.69	-0.84
12,267.00	84.68	146.89	7,365.17	-5,120.17	1,630.57	5,365.44	1.18	-1.17	-0.11
12,330.00	86.06	146.64	7,370.26	-5,172.69	1,664.99	5,426.76	2.23	2.19	-0.40
12,384.00	86.97	145.48	7,373.54	-5,217.40	1,695.08	5,479.25	2.73	1.69	-2.15
Last SDI MWD Survey									
12,442.00	86.97	145.48	7,376.61	-5,265.12	1,727.90	5,535.52	0.00	0.00	0.00
Projection to Bit									

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FEB 26 2015

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 22H - Slot MW3#22H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 22H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Design Annotations

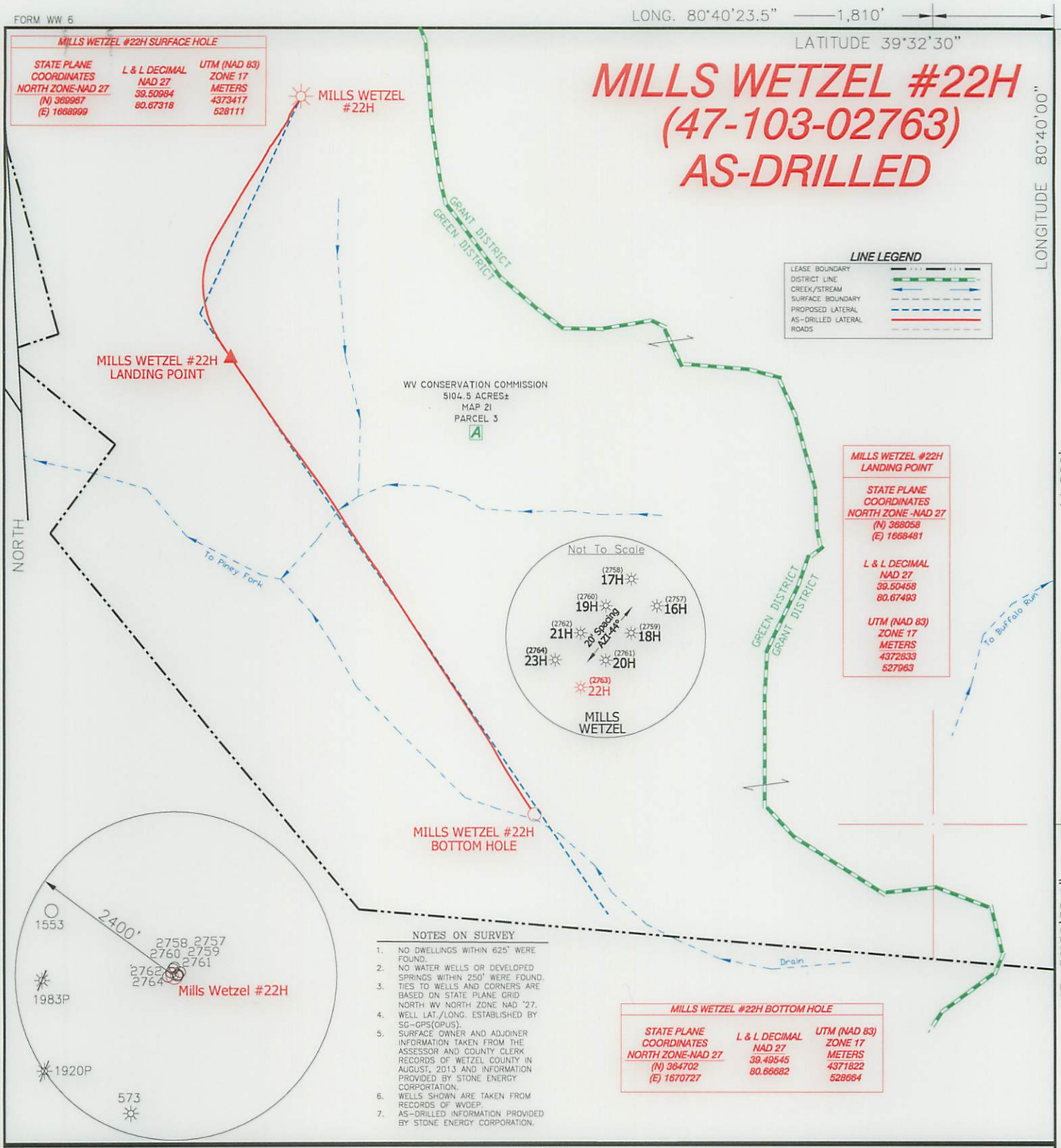
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
103.00	103.00	-0.55	-0.15	First SDI Gyro Survey
6,193.91	6,160.16	-385.41	-233.36	Last SDI Gyro Survey
6,227.00	6,192.82	-390.17	-235.72	First SDI MWD Survey
12,384.00	7,373.54	-5,217.40	1,695.08	Last SDI MWD Survey
12,442.00	7,376.61	-5,265.12	1,727.90	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
FEB 26 2015

FORM WW 6

MILLS WETZEL #22H (47-103-02763) AS-DRILLED



NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE DECEMBER 18, 20 14

OPERATORS WELL NO. MILLS WETZEL #22H

API WELL NO. 47 — 103 — 02763
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W1719 (BK75-3)
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :
ELEVATION 1293' WATERSHED TRIBUTARY OF PINEY FORK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PINE GROVE 7.5'
SURFACE OWNER WEST VIRGINIA CONSERVATION COMMISSION ACREAGE 5104.5 ±
ROYALTY OWNER MILLS WETZEL LAND Inc. LEASE ACREAGE 5104.5±
PROPOSED WORK : LEASE NO. ___
DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH 7.376' TVD 12,442' MD

COUNTY NAME

PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 103 - 02764 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #23H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,373,421	Easting 528,107
Landing Point of Curve	Northing 4,373,529	Easting 527,628
Bottom Hole	Northing 4,375,085	Easting 526,536

Elevation (ft) 1,293 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine

Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 6/13/2012 Date drilling commenced 1/2/2013 Date drilling ceased 8/11/2013
Date completion activities began 9/12/2013 Date completion activities ceased 7/14/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 60 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,291 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 910 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15
W.S. 6/01/15

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API 47- 103 - 02764 Farm name WV Conservation Commission Well number #23H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	55'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,290'	New	J55	123' & 207'	Y - CTS
Coal	17.5"	13.375"	1,290'	New	J55	123' & 207'	Y - CTS
Intermediate 1	12.25"	9.625"	2,757'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	14,279'	New	P110		Y
Tubing	N/A	2.375"	7,850'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 34 bbls cement to surface, 9.625" casing string circulated 48 bbls cement to surface. 5.5" casing string TOC @ 1,140'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	980	15.6	1.19	1,166	Surface	8.0
Coal	Class "A"	996	15.6	1.19	1,166	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-540 Tail-420	Lead-15.0 Tail-15.5	Lead-1.26 Tail-1.19	Lead-680 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-HalCem	Lead-921 Tail-1,930	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,160 Tail-2,316	1,140'	7.0
Tubing							

Drillers TD (ft) 14,299 MD / 7,217 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft) _____
Plug back procedure _____

Kick off depth (ft) 6,474 MD/ 6,434 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ■ No ▪ Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2,4,6, 8, 12, 14, 16, 18, 20, 22, 24 and 26. Intermediate casing had bow spring centralizers placed on joints #'s 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54, 57, 60, 63 and 66. The production casing has rigid spiral alternating left/right centralizers placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #145. From there bow spring centralizers were placed beginning on joint #148 and then every seventh joint to joint #247. A total of 37 rigid left/right centralizers were used and 34 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you climb towards the surface.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS _____

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED _____

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API 47- 103 - 02764 Farm name WV Conservation Commission Well number #23H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	1/18/14	13,986	14,174	72	Marcellus Shale
2	4/1/14	13,712	13,907	72	Marcellus Shale
3	4/3/14	13,441	13,633	72	Marcellus Shale
4	4/4/14	13,188	13,373	72	Marcellus Shale
5	4/5/14	12,928	13,118	72	Marcellus Shale
6	4/6/14	12,665	12,857	72	Marcellus Shale
7	4/7/14	12,401	12,592	72	Marcellus Shale
8	4/8/14	12,134	12,320	72	Marcellus Shale
9	4/9/14	11,871	12,063	72	Marcellus Shale
10	4/10/14	11,615	11,803	72	Marcellus Shale
11	4/11/14	11,356	11,548	72	Marcellus Shale
12	4/12/14	11,091	11,288	72	Marcellus Shale
13	4/14/14	10,831	11,023	72	Marcellus Shale
14	4/16/14	10,572	10,763	72	Marcellus Shale
15	4/18/14	10,313	10,503	72	Marcellus Shale
16	4/20/14	10,0048	10,243	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/1/14	78.9	8,404	6,349	4,380	368,660	10,055	
2	4/3/14	81.4	8,403	6,315	4,830	411,040	9,044	
3	4/4/14	81.7	8,129	6,118	4,614	409,780	8,315	
4	4/5/14	84.5	8,186	6,592	4,659	406,360	8,628	
5	4/6/14	80.1	8,634	7,363	4,477	381,880	8,868	
6	4/7/14	83.1	8,165	6,900	4,416	405,820	8,434	
7	4/8/14	80.2	8,057	7,047	4,659	407,060	8,728	
8	4/9/14	84.7	8,294	6,646	4,659	408,504	8,472	
9	4/10/14	77.0	8,031	6,578	5,025	411,562	8,565	
10	4/11/14	74.4	7,968	6,996	4,293	414,280	10,041	
11	4/12/14	80.0	7,625	6,442	5,146	412,375	8,629	
12	4/14/14	77.5	7,634	7,332	4,354	418,950	8,590	
13	4/16/14	77.0	8,031	6,578	5,025	411,562	8,565	
14	4/17/14	80.0	7,540	6,419	4,659	407,820	8,553	
15	4/20/14	85.1	7,903	6,712	4,782	406,889	8,438	
16	4/22/14	81.9	7,627	6,707	4,902	412,784	8,546	

Please insert additional pages as applicable.

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	4/22/14	9,784	9,975	72	Marcellus Shale
18	4/23/14	9,517	9,710	72	Marcellus Shale
19	4/25/14	9,252	9,448	72	Marcellus Shale
20	4/27/14	8,995	9,183	72	Marcellus Shale
21	4/29/14	8,733	8,923	72	Marcellus Shale
22	4/30/14	8,474	8,663	72	Marcellus Shale
23	5/2/14	8,206	8,403	72	Marcellus Shale
24	5/4/14	7,946	8,138	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	4/23/14	84.9	7,405	7,081	3,421	416,727	6,454	
18	4/25/14	85.0	7,409	6,878	4,902	408,440	8,452	
19	4/27/14	81.3	7,969	7,301	4,964	409,720	8,369	
20	4/29/14	81.9	7,552	6,541	4,782	414,500	8,703	
21	4/30/14	84.9	7,431	7,567	4,293	408,640	8,227	
22	5/2/14	83.5	7,492	6,786	4,830	410,180	8,363	
23	5/4/14	83.4	7,423	7,096	4,091	410,640	8,372	
24	5/5/14	80.7	7,307	6,542	4,964	411,080	8,323	

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Marcelllus Shale	7,278' to 7,225'	TVD	7,946' to 14,174'	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 2,183 psi Bottom Hole 4,294 calculated psi DURATION OF TEST 58 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	4,679 mcfpd	bpd	79.1 bpd	520.0 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 14				

Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger / Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452 / 26378

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/24/2015

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Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

MILL-WETZEL #23H
API 47-103-02764
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	910		FW @ 60'
Coal	910		*	913		
Sandstone & Shale	913		*	2,190		SW @ 1,291'
Little Lime	2,190		*	2,220		
Big Lime	2,220		*	2,365		
Big Injun	2,365		*	2,422		
Sandstone & Shale	2,422		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,055		
Gordon	3,055		*	3,105		
Undiff Devonian Shale	3,105		*	5,358		
Riley Shale	5,358		*	5,465		
Benson Siltstone	5,465		*	5,713		
Pipe Creek Shale	5,713		*	5,722		
Undiff Devonian Shale	5,722		~	5,995	6,029	
Rhinestreet	5,995	6,029	~	6,899	6,996	
Cashaqua	6,899	6,996	~	7,019	7,171	
Middlesex	7,019	7,171	~	7,089	7,297	
West River	7,089	7,297	~	7,148	7,458	
Geneseo	7,148	7,458	~	7,182	7,532	
Tully Limestone	7,182	7,532	~	7,205	7,607	
Hamilton Shale	7,205	7,607	~	7,263	7,847	
Marcellus	7,263	7,847	~	7,217	14,299	
TD				7,217	14,299	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	5/4/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02764
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #23H
Longitude:	528,107
Latitude:	4,373,421
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	8640858

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
Proppant Transport	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		87.75576%	
			Crystalline silica	14808-60-7	98.58668%	12.07119%	
			Hydrochloric acid	7647-01-0	0.79624%	0.09749%	
			Carbohydrate polymer	Proprietary	0.55084%	0.06745%	
			Ammonium sulfate	7783-20-2	0.21571%	0.02641%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06732%	0.00824%	
			Glutaraldehyde	111-30-8	0.04651%	0.00569%	
			Urea	57-13-6	0.03595%	0.00440%	
			Diammonium peroxidisulphate	7727-54-0	0.01251%	0.00153%	
			Calcium chloride	10043-52-4	0.01065%	0.00130%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00518%	0.00063%	
			Trisodium ortho phosphate	7601-54-9	0.00434%	0.00053%	
			Ethane-1,2-diol	107-21-1	0.00434%	0.00053%	
			Sodium erythorbate	6381-77-7	0.00347%	0.00042%	
			Methanol	67-56-1	0.00305%	0.00037%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00229%	0.00028%	
			Aliphatic acids	Proprietary	0.00229%	0.00028%	
			Prop-2-yn-1-ol	107-19-7	0.00076%	0.00009%	

* 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%

Report ID: RPT-27150 (Generated on 5/14/2014 5:04 PM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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Project: Heather Prospect (NAD 27)
Site: Mills-Wetzel Pad 3
Well: Mills-Wetzel 23H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Mills-Wetzel 23H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	369975.63	1668985.99	39° 30' 35.517 N	80° 40' 23.630 W	MW3#23H

REFERENCE INFORMATION

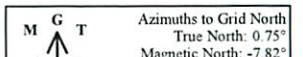
Co-ordinate (N/E) Reference: Well Mills-Wetzel 23H - Slot MW3#23H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#23H(0.00N, 0.00E)
Measured Depth Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Heather Prospect (NAD 27)

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	6021.00	10.01	275.12	5987.51	18.95	-425.18	0.00	0.00	302.86	
2	6483.00	10.01	275.12	6442.48	26.12	-505.16	0.00	0.00	362.47	
3	7361.39	63.66	272.96	7120.13	55.44	-1011.85	6.11	-2.40	728.33	
4	8076.47	90.50	325.45	7290.00	395.14	-1582.82	8.00	70.69	1365.56	MW23H_LP3
5	14287.29	90.50	325.45	7236.00	5510.38	-5105.00	0.00	0.00	7511.68	MW3#23H BHL3

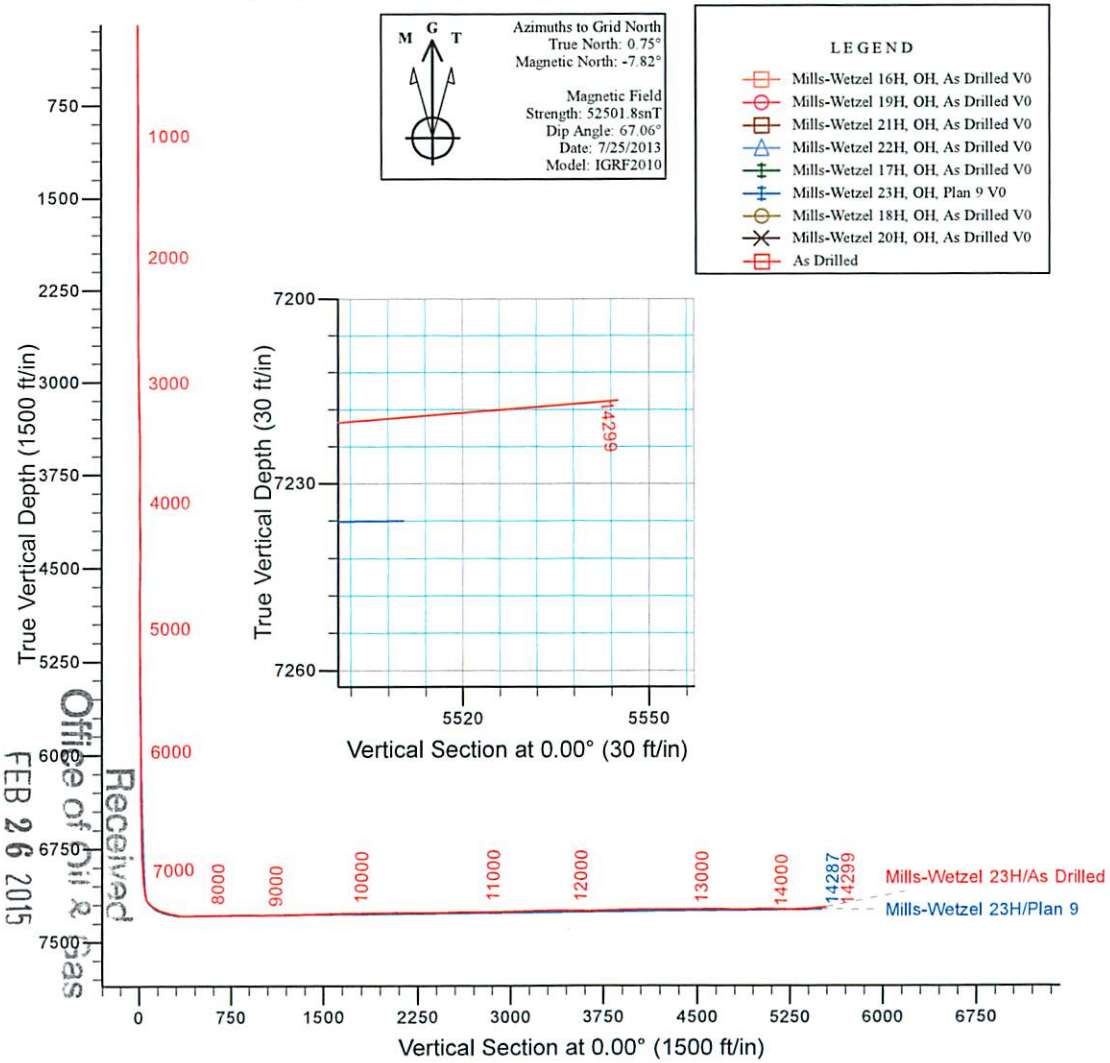


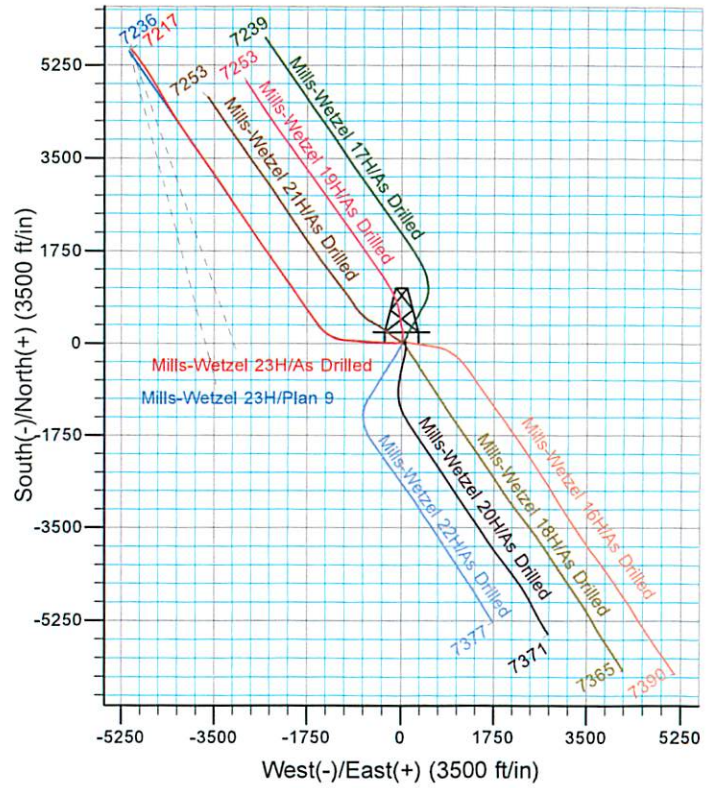
Azimuths to Grid North
True North: 0.75°
Magnetic North: -7.82°

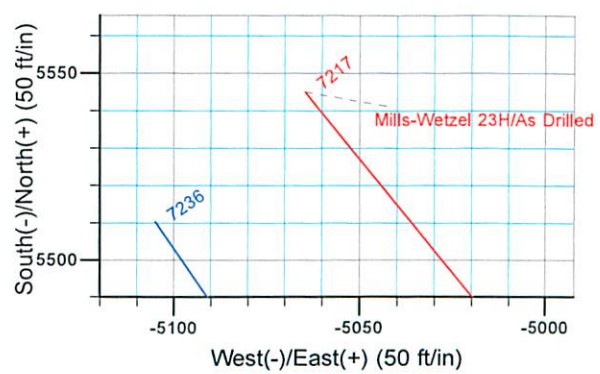
Magnetic Field
Strength: 52501.8snT
Dip Angle: 67.06°
Date: 7/25/2013
Model: IGRF2010

LEGEND

- Mills-Wetzel 16H, OH, As Drilled V0
- Mills-Wetzel 19H, OH, As Drilled V0
- Mills-Wetzel 21H, OH, As Drilled V0
- Mills-Wetzel 22H, OH, As Drilled V0
- Mills-Wetzel 17H, OH, As Drilled V0
- Mills-Wetzel 23H, OH, Plan 9 V0
- Mills-Wetzel 18H, OH, As Drilled V0
- Mills-Wetzel 20H, OH, As Drilled V0
- As Drilled







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Stone Energy

Heather Prospect (NAD 27)
Mills-Wetzel Pad 3
Mills-Wetzel 23H - Slot MW3#23H

OH

Design: As Drilled

Standard Survey Report

12 August, 2013

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Scientific Drilling

www.scientificdrilling.com

Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 23H - Slot MW3#23H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 23H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Heather Prospect (NAD 27), Wetzel County, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Mills-Wetzel Pad 3

Site Position:		**Northing:**	370,004.38 usft	**Latitude:**	39° 30' 35.809 N
From:	Map	**Easting:**	1,669,041.12 usft	**Longitude:**	80° 40' 22.931 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.75 °

Well Mills-Wetzel 23H - Slot MW3#23H

Well Position	**+N/-S**	0.00 ft	**Northing:**	369,975.63 usft	**Latitude:**	39° 30' 35.517 N
	+E/-W	0.00 ft	**Easting:**	1,668,985.99 usft	**Longitude:**	80° 40' 23.630 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	1,291.00 ft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/4/2013	-8.55	67.08	52,539
	IGRF2010	6/5/2013	-8.56	67.07	52,519
	IGRF2010	7/25/2013	-8.56	67.06	52,502

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	0.00

Survey Program Date 8/12/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
18.00	2,828.00	Survey 1 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
2,925.00	14,299.00	Survey 2 - MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18.00	0.00	360.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00
Ground Level									
103.00	0.18	97.65	103.00	-0.02	0.13	-0.02	0.21	0.21	0.00
First SDI Gyro Survey									
203.00	0.17	90.05	203.00	-0.04	0.44	-0.04	0.03	-0.01	-7.60
303.00	0.12	81.96	303.00	-0.02	0.69	-0.02	0.05	-0.05	-8.09

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Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 23H - Slot MW3#23H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 23H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
403.00	0.08	70.45	403.00	0.01	0.86	0.01	0.04	-0.04	-11.51
503.00	0.18	85.38	503.00	0.05	1.08	0.05	0.10	0.10	14.93
603.00	0.27	86.29	603.00	0.08	1.47	0.08	0.09	0.09	0.91
703.00	0.15	87.46	702.99	0.10	1.84	0.10	0.12	-0.12	1.17
803.00	0.56	84.33	802.99	0.15	2.45	0.15	0.41	0.41	-3.13
903.00	0.38	89.65	902.99	0.20	3.27	0.20	0.19	-0.18	5.32
1,003.00	0.29	91.14	1,002.99	0.20	3.86	0.20	0.09	-0.09	1.49
1,103.00	0.29	110.09	1,102.99	0.11	4.35	0.11	0.10	0.00	18.95
1,203.00	0.03	134.33	1,202.99	0.00	4.60	0.00	0.26	-0.26	24.24
1,303.00	0.25	156.29	1,302.99	-0.22	4.71	-0.22	0.22	0.22	21.96
1,403.00	0.11	111.79	1,402.98	-0.45	4.89	-0.45	0.19	-0.14	-44.50
1,503.00	0.16	96.45	1,502.98	-0.50	5.12	-0.50	0.06	0.05	-15.34
1,603.00	0.17	80.74	1,602.98	-0.49	5.40	-0.49	0.05	0.01	-15.71
1,703.00	0.18	110.65	1,702.98	-0.53	5.69	-0.53	0.09	0.01	29.91
1,803.00	0.10	149.92	1,802.98	-0.66	5.89	-0.66	0.12	-0.08	39.27
1,903.00	0.31	213.00	1,902.98	-0.96	5.78	-0.96	0.28	0.21	63.08
2,003.00	0.20	226.72	2,002.98	-1.31	5.51	-1.31	0.13	-0.11	13.72
2,103.00	0.32	282.76	2,102.98	-1.36	5.11	-1.36	0.27	0.12	56.04
2,203.00	0.43	56.35	2,202.98	-1.09	5.15	-1.09	0.69	0.11	133.59
2,303.00	0.59	90.76	2,302.98	-0.89	5.97	-0.89	0.34	0.16	34.41
2,403.00	0.77	75.92	2,402.97	-0.74	7.14	-0.74	0.25	0.18	-14.84
2,503.00	0.67	81.45	2,502.96	-0.49	8.37	-0.49	0.12	-0.10	5.53
2,603.00	0.52	65.18	2,602.96	-0.21	9.36	-0.21	0.22	-0.15	-16.27
2,703.00	0.42	64.91	2,702.95	0.14	10.11	0.14	0.10	-0.10	-0.27
2,803.00	0.35	65.95	2,802.95	0.42	10.72	0.42	0.07	-0.07	1.04
2,828.00	0.23	66.40	2,827.95	0.47	10.83	0.47	0.48	-0.48	1.80
Last SDI Gyro Survey									
2,925.00	1.31	286.27	2,924.94	0.86	9.95	0.86	1.54	1.11	-144.46
First SDI MWD Survey									
3,019.00	1.82	288.67	3,018.91	1.64	7.50	1.64	0.55	0.54	2.55
3,112.00	2.66	295.81	3,111.84	3.05	4.16	3.05	0.95	0.90	7.68
3,206.00	3.73	293.40	3,205.69	5.21	-0.61	5.21	1.15	1.14	-2.56
3,296.00	4.83	287.27	3,295.44	7.50	-6.92	7.50	1.32	1.22	-6.81
3,389.00	6.14	281.58	3,388.01	9.66	-15.53	9.66	1.52	1.41	-6.12
3,479.00	7.19	276.13	3,477.40	11.23	-25.84	11.23	1.36	1.17	-6.06
3,573.00	8.49	270.39	3,570.52	11.90	-38.63	11.90	1.61	1.38	-6.11
3,668.00	9.14	269.53	3,664.40	11.89	-53.19	11.89	0.70	0.68	-0.91
3,761.00	9.89	268.98	3,756.12	11.69	-68.56	11.69	0.81	0.81	-0.59
3,856.00	9.50	267.41	3,849.76	11.19	-84.55	11.19	0.50	-0.41	-1.65
3,949.00	10.30	266.84	3,941.38	10.38	-100.52	10.38	0.87	0.86	-0.61
4,046.00	9.86	270.80	4,036.88	10.02	-117.48	10.02	0.85	-0.45	4.08
4,136.00	8.69	275.90	4,125.71	10.83	-131.95	10.83	1.59	-1.30	5.67
4,226.00	8.95	274.67	4,214.64	12.10	-145.69	12.10	0.36	0.29	-1.37
4,321.00	9.73	274.22	4,308.38	13.29	-161.06	13.29	0.82	0.82	-0.47

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 23H - Slot MW3#23H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 23H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,412.00	8.31	270.95	4,398.25	13.96	-175.31	13.96	1.66	-1.56	-3.59
4,504.00	8.35	266.18	4,489.28	13.63	-188.62	13.63	0.75	0.04	-5.18
4,596.00	8.67	264.74	4,580.27	12.55	-202.19	12.55	0.42	0.35	-1.57
4,690.00	8.86	262.76	4,673.17	10.99	-216.43	10.99	0.38	0.20	-2.11
4,781.00	7.64	266.01	4,763.23	9.68	-229.42	9.68	1.43	-1.34	3.57
4,873.00	7.39	271.61	4,854.44	9.42	-241.43	9.42	0.84	-0.27	6.09
4,963.00	7.77	274.03	4,943.66	10.01	-253.29	10.01	0.55	0.42	2.69
5,054.00	8.57	271.27	5,033.73	10.60	-266.20	10.60	0.98	0.88	-3.03
5,150.00	9.61	271.91	5,128.52	11.02	-281.36	11.02	1.09	1.08	0.67
5,244.00	9.57	271.28	5,221.21	11.46	-297.01	11.46	0.12	-0.04	-0.67
5,336.00	9.18	269.91	5,311.98	11.62	-312.00	11.62	0.49	-0.42	-1.49
5,429.00	9.42	273.01	5,403.76	12.00	-327.02	12.00	0.60	0.26	3.33
5,523.00	9.40	272.88	5,496.50	12.79	-342.37	12.79	0.03	-0.02	-0.14
5,616.00	9.62	272.77	5,588.22	13.55	-357.71	13.55	0.24	0.24	-0.12
5,711.00	9.72	272.47	5,681.87	14.28	-373.65	14.28	0.12	0.11	-0.32
5,804.00	9.57	275.43	5,773.55	15.35	-389.19	15.35	0.56	-0.16	3.18
5,899.00	9.44	275.27	5,867.25	16.81	-404.81	16.81	0.14	-0.14	-0.17
5,965.00	9.63	276.78	5,932.34	17.96	-415.68	17.96	0.48	0.29	2.29
6,027.00	10.05	274.95	5,993.43	19.04	-426.22	19.04	0.84	0.68	-2.95
6,090.00	10.15	270.71	6,055.45	19.58	-437.25	19.58	1.19	0.16	-6.73
6,154.00	9.30	269.28	6,118.53	19.59	-448.06	19.59	1.38	-1.33	-2.23
6,217.00	8.85	267.53	6,180.74	19.32	-457.99	19.32	0.84	-0.71	-2.78
6,281.00	10.03	269.87	6,243.87	19.09	-468.48	19.09	1.94	1.84	3.66
6,344.00	9.03	269.87	6,306.00	19.07	-478.92	19.07	1.59	-1.59	0.00
6,407.00	9.45	276.16	6,368.19	19.61	-489.00	19.61	1.74	0.67	9.98
6,439.00	9.15	276.72	6,399.77	20.19	-494.14	20.19	0.98	-0.94	1.75
6,471.00	9.29	275.55	6,431.35	20.74	-499.24	20.74	0.73	0.44	-3.66
6,503.00	10.90	273.94	6,462.86	21.20	-504.83	21.20	5.11	5.03	-5.03
6,534.00	12.85	272.15	6,493.19	21.53	-511.20	21.53	6.40	6.29	-5.77
6,566.00	14.65	272.12	6,524.27	21.81	-518.80	21.81	5.63	5.63	-0.09
6,598.00	16.79	271.15	6,555.08	22.05	-527.46	22.05	6.74	6.69	-3.03
6,629.00	18.66	272.17	6,584.60	22.33	-536.90	22.33	6.11	6.03	3.29
6,661.00	20.87	272.33	6,614.72	22.76	-547.71	22.76	6.91	6.91	0.50
6,691.00	23.04	272.74	6,642.54	23.25	-558.91	23.25	7.25	7.23	1.37
6,723.00	25.40	273.01	6,671.72	23.91	-572.02	23.91	7.38	7.38	0.84
6,754.00	27.32	272.78	6,699.49	24.61	-585.77	24.61	6.20	6.19	-0.74
6,786.00	29.23	272.17	6,727.68	25.26	-600.91	25.26	6.04	5.97	-1.91
6,818.00	30.71	272.92	6,755.40	25.97	-616.88	25.97	4.77	4.63	2.34
6,850.00	32.94	273.03	6,782.58	26.85	-633.73	26.85	6.97	6.97	0.34
6,881.00	34.35	272.90	6,808.39	27.74	-650.88	27.74	4.55	4.55	-0.42
6,913.00	36.51	273.42	6,834.46	28.76	-669.41	28.76	6.82	6.75	1.63
6,944.00	38.18	273.34	6,859.11	29.87	-688.18	29.87	5.39	5.39	-0.26
6,976.00	40.84	273.13	6,883.79	31.02	-708.50	31.02	8.32	8.31	-0.66

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 23H - Slot MW3#23H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 23H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,008.00	42.79	273.58	6,907.64	32.27	-729.80	32.27	6.17	6.09	1.41
7,040.00	44.65	273.61	6,930.77	33.65	-751.87	33.65	5.81	5.81	0.09
7,071.00	45.57	273.56	6,952.65	35.03	-773.79	35.03	2.97	2.97	-0.16
7,103.00	47.31	274.45	6,974.70	36.65	-796.92	36.65	5.80	5.44	2.78
7,134.00	49.08	274.63	6,995.36	38.48	-819.95	38.48	5.73	5.71	0.58
7,166.00	51.54	275.15	7,015.80	40.58	-844.49	40.58	7.79	7.69	1.63
7,198.00	53.35	275.00	7,035.30	42.82	-869.76	42.82	5.67	5.66	-0.47
7,230.00	56.15	274.48	7,053.77	44.98	-895.80	44.98	8.85	8.75	-1.63
7,262.00	58.12	274.05	7,071.13	46.98	-922.60	46.98	6.26	6.16	-1.34
7,293.00	60.61	273.82	7,086.93	48.81	-949.21	48.81	8.06	8.03	-0.74
7,325.00	63.54	273.95	7,101.91	50.72	-977.41	50.72	9.16	9.16	0.41
7,357.00	65.36	274.41	7,115.71	52.83	-1,006.21	52.83	5.83	5.69	1.44
7,388.00	65.69	275.35	7,128.55	55.23	-1,034.32	55.23	2.96	1.06	3.03
7,420.00	66.26	277.82	7,141.58	58.58	-1,063.35	58.58	7.27	1.78	7.72
7,450.00	67.46	280.21	7,153.38	62.91	-1,090.59	62.91	8.35	4.00	7.97
7,480.00	68.95	282.78	7,164.52	68.46	-1,117.88	68.46	9.38	4.97	8.57
7,511.00	70.45	284.92	7,175.27	75.42	-1,146.11	75.42	8.08	4.84	6.90
7,541.00	71.59	286.71	7,185.03	83.15	-1,173.40	83.15	6.80	3.80	5.97
7,571.00	72.42	288.95	7,194.30	91.89	-1,200.56	91.89	7.62	2.77	7.47
7,601.00	73.07	291.18	7,203.20	101.72	-1,227.47	101.72	7.42	2.17	7.43
7,631.00	73.86	293.40	7,211.74	112.63	-1,254.08	112.63	7.57	2.63	7.40
7,662.00	74.12	296.12	7,220.29	125.11	-1,281.13	125.11	8.48	0.84	8.77
7,692.00	74.34	298.45	7,228.44	138.34	-1,306.79	138.34	7.51	0.73	7.77
7,723.00	74.96	300.89	7,236.65	153.14	-1,332.76	153.14	7.85	2.00	7.87
7,753.00	76.62	303.52	7,244.01	168.64	-1,357.36	168.64	10.14	5.53	8.77
7,782.00	77.43	306.02	7,250.53	184.75	-1,380.58	184.75	8.85	2.79	8.62
7,813.00	78.50	308.95	7,256.99	203.20	-1,404.63	203.20	9.87	3.45	9.45
7,843.00	79.34	311.46	7,262.76	222.21	-1,427.11	222.21	8.67	2.80	8.37
7,874.00	80.54	314.37	7,268.17	242.99	-1,449.46	242.99	10.02	3.87	9.39
7,904.00	81.23	316.58	7,272.93	264.11	-1,470.23	264.11	7.63	2.30	7.37
7,935.00	82.14	319.02	7,277.41	286.83	-1,490.83	286.83	8.32	2.94	7.87
7,965.00	83.16	320.37	7,281.25	309.52	-1,510.08	309.52	5.61	3.40	4.50
7,995.00	84.69	321.93	7,284.42	332.75	-1,528.79	332.75	7.26	5.10	5.20
8,026.00	86.81	323.16	7,286.72	357.29	-1,547.59	357.29	7.90	6.84	3.97
8,056.00	88.75	322.81	7,287.88	381.22	-1,565.63	381.22	6.57	6.47	-1.17
8,087.00	89.70	324.10	7,288.30	406.13	-1,584.09	406.13	5.17	3.06	4.16
8,147.00	90.37	324.37	7,288.27	454.81	-1,619.16	454.81	1.20	1.12	0.45
8,208.00	91.41	325.88	7,287.32	504.85	-1,654.03	504.85	3.01	1.70	2.48
8,268.00	92.42	325.28	7,285.31	554.31	-1,687.93	554.31	1.96	1.68	-1.00
8,328.00	90.74	325.08	7,283.66	603.55	-1,722.17	603.55	2.82	-2.80	-0.33
8,389.00	90.40	324.74	7,283.05	653.46	-1,757.24	653.46	0.79	-0.56	-0.56
8,453.00	91.01	324.77	7,282.26	705.73	-1,794.17	705.73	0.95	0.95	0.05
8,516.00	89.53	325.61	7,281.97	757.45	-1,830.13	757.45	2.70	-2.35	1.33
8,579.00	90.61	326.06	7,281.89	809.58	-1,865.51	809.58	1.86	1.71	0.71

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Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 23H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,642.00	89.83	326.19	7,281.65	861.88	-1,900.62	861.88	1.26	-1.24	0.21
8,705.00	90.40	325.88	7,281.52	914.13	-1,935.82	914.13	1.03	0.90	-0.49
8,768.00	89.16	325.73	7,281.76	966.24	-1,971.23	966.24	1.98	-1.97	-0.24
8,832.00	90.00	324.99	7,282.23	1,018.89	-2,007.60	1,018.89	1.75	1.31	-1.16
8,896.00	90.57	324.40	7,281.92	1,071.12	-2,044.59	1,071.12	1.28	0.89	-0.92
8,960.00	90.40	325.55	7,281.37	1,123.53	-2,081.32	1,123.53	1.82	-0.27	1.80
9,023.00	91.28	326.06	7,280.45	1,175.63	-2,116.72	1,175.63	1.61	1.40	0.81
9,087.00	90.27	326.26	7,279.58	1,228.78	-2,152.36	1,228.78	1.61	-1.58	0.31
9,151.00	91.04	326.32	7,278.85	1,282.02	-2,187.88	1,282.02	1.21	1.20	0.09
9,214.00	90.81	326.84	7,277.84	1,334.59	-2,222.57	1,334.59	0.90	-0.37	0.83
9,278.00	91.21	326.60	7,276.71	1,388.09	-2,257.68	1,388.09	0.73	0.63	-0.38
9,341.00	90.74	324.49	7,275.64	1,440.03	-2,293.32	1,440.03	3.43	-0.75	-3.35
9,405.00	91.58	324.79	7,274.34	1,492.21	-2,330.35	1,492.21	1.39	1.31	0.47
9,468.00	92.75	324.48	7,271.96	1,543.55	-2,366.78	1,543.55	1.92	1.86	-0.49
9,532.00	91.18	324.64	7,269.77	1,595.66	-2,403.87	1,595.66	2.47	-2.45	0.25
9,595.00	90.44	324.66	7,268.87	1,647.04	-2,440.32	1,647.04	1.18	-1.17	0.03
9,659.00	91.21	324.49	7,267.95	1,699.18	-2,477.41	1,699.18	1.23	1.20	-0.27
9,722.00	90.07	325.20	7,267.25	1,750.69	-2,513.68	1,750.69	2.13	-1.81	1.13
9,785.00	90.44	325.33	7,266.97	1,802.46	-2,549.58	1,802.46	0.62	0.59	0.21
9,848.00	91.74	325.18	7,265.77	1,854.22	-2,585.48	1,854.22	2.08	2.06	-0.24
9,911.00	89.66	324.44	7,265.00	1,905.70	-2,621.78	1,905.70	3.50	-3.30	-1.17
9,975.00	91.07	325.18	7,264.59	1,958.00	-2,658.66	1,958.00	2.49	2.20	1.16
10,038.00	91.95	325.06	7,262.93	2,009.66	-2,694.67	2,009.66	1.41	1.40	-0.19
10,101.00	91.21	325.42	7,261.20	2,061.40	-2,730.58	2,061.40	1.31	-1.17	0.57
10,165.00	87.95	326.00	7,261.67	2,114.27	-2,766.63	2,114.27	5.17	-5.09	0.91
10,228.00	88.52	325.84	7,263.61	2,166.42	-2,801.91	2,166.42	0.94	0.90	-0.25
10,292.00	89.77	325.51	7,264.56	2,219.27	-2,838.00	2,219.27	2.02	1.95	-0.52
10,355.00	90.60	324.74	7,264.36	2,270.95	-2,874.02	2,270.95	1.80	1.32	-1.22
10,419.00	91.07	324.30	7,263.42	2,323.06	-2,911.16	2,323.06	1.01	0.73	-0.69
10,482.00	89.93	325.25	7,262.87	2,374.52	-2,947.50	2,374.52	2.36	-1.81	1.51
10,546.00	91.01	325.21	7,262.35	2,427.09	-2,983.99	2,427.09	1.69	1.69	-0.06
10,609.00	91.24	325.04	7,261.11	2,478.77	-3,020.01	2,478.77	0.45	0.37	-0.27
10,673.00	89.80	325.53	7,260.53	2,531.37	-3,056.45	2,531.37	2.38	-2.25	0.77
10,736.00	90.91	325.77	7,260.14	2,583.38	-3,092.00	2,583.38	1.80	1.76	0.38
10,799.00	90.17	326.71	7,259.55	2,635.76	-3,127.01	2,635.76	1.90	-1.17	1.49
10,863.00	90.91	327.14	7,258.94	2,689.38	-3,161.93	2,689.38	1.34	1.16	0.67
10,926.00	90.81	327.81	7,258.00	2,742.50	-3,195.80	2,742.50	1.08	-0.16	1.06
10,990.00	91.28	327.59	7,256.83	2,796.58	-3,230.00	2,796.58	0.81	0.73	-0.34
11,053.00	90.24	326.99	7,256.00	2,849.59	-3,264.04	2,849.59	1.91	-1.65	-0.95
11,116.00	91.08	326.38	7,255.27	2,902.23	-3,298.64	2,902.23	1.65	1.33	-0.97
11,179.00	90.20	326.27	7,254.57	2,954.66	-3,333.57	2,954.66	1.41	-1.40	-0.17
11,242.00	91.48	325.93	7,253.64	3,006.94	-3,368.70	3,006.94	2.10	2.03	-0.54
11,305.00	93.02	325.54	7,251.17	3,058.96	-3,404.14	3,058.96	2.52	2.44	-0.62

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2 6

Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 23H - Slot MW3#23H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 23H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,368.00	92.32	325.10	7,248.24	3,110.71	-3,439.95	3,110.71	1.31	-1.11	-0.70
11,432.00	90.50	324.05	7,246.66	3,162.85	-3,477.03	3,162.85	3.28	-2.84	-1.64
11,495.00	90.07	323.39	7,246.35	3,213.63	-3,514.31	3,213.63	1.25	-0.68	-1.05
11,559.00	90.37	323.96	7,246.10	3,265.20	-3,552.22	3,265.20	1.01	0.47	0.89
11,622.00	91.88	323.90	7,244.86	3,316.11	-3,589.31	3,316.11	2.40	2.40	-0.10
11,685.00	90.54	324.07	7,243.53	3,367.05	-3,626.34	3,367.05	2.14	-2.13	0.27
11,749.00	88.69	324.60	7,243.96	3,419.05	-3,663.65	3,419.05	3.01	-2.89	0.83
11,812.00	89.60	324.62	7,244.90	3,470.40	-3,700.13	3,470.40	1.44	1.44	0.03
11,876.00	88.25	324.70	7,246.10	3,522.59	-3,737.15	3,522.59	2.11	-2.11	0.13
11,940.00	89.33	324.28	7,247.46	3,574.68	-3,774.31	3,574.68	1.81	1.69	-0.66
12,003.00	90.31	323.52	7,247.65	3,625.58	-3,811.43	3,625.58	1.97	1.56	-1.21
12,066.00	91.85	322.89	7,246.47	3,676.02	-3,849.15	3,676.02	2.64	2.44	-1.00
12,129.00	92.25	323.96	7,244.21	3,726.58	-3,886.67	3,726.58	1.81	0.63	1.70
12,193.00	92.45	325.30	7,241.59	3,778.72	-3,923.69	3,778.72	2.12	0.31	2.09
12,256.00	90.87	326.70	7,239.76	3,830.93	-3,958.90	3,830.93	3.35	-2.51	2.22
12,319.00	89.70	326.90	7,239.45	3,883.64	-3,993.39	3,883.64	1.88	-1.86	0.32
12,383.00	90.84	326.80	7,239.15	3,937.22	-4,028.39	3,937.22	1.79	1.78	-0.16
12,446.00	90.00	327.59	7,238.69	3,990.17	-4,062.52	3,990.17	1.83	-1.33	1.25
12,510.00	90.07	327.91	7,238.65	4,044.30	-4,096.67	4,044.30	0.51	0.11	0.50
12,573.00	91.41	327.65	7,237.83	4,097.59	-4,130.26	4,097.59	2.17	2.13	-0.41
12,637.00	90.37	327.16	7,236.84	4,151.51	-4,164.73	4,151.51	1.80	-1.63	-0.77
12,699.00	89.63	327.09	7,236.84	4,203.58	-4,198.38	4,203.58	1.20	-1.19	-0.11
12,761.00	90.97	326.59	7,236.52	4,255.48	-4,232.29	4,255.48	2.31	2.16	-0.81
12,822.00	90.34	326.37	7,235.82	4,306.33	-4,265.98	4,306.33	1.09	-1.03	-0.36
12,885.00	90.20	326.92	7,235.52	4,358.95	-4,300.62	4,358.95	0.90	-0.22	0.87
12,948.00	89.77	327.44	7,235.54	4,411.90	-4,334.76	4,411.90	1.07	-0.68	0.83
13,010.00	90.20	327.70	7,235.55	4,464.23	-4,368.01	4,464.23	0.81	0.69	0.42
13,073.00	91.41	328.70	7,234.67	4,517.76	-4,401.20	4,517.76	2.49	1.92	1.59
13,136.00	90.97	330.57	7,233.36	4,572.11	-4,433.04	4,572.11	3.05	-0.70	2.97
13,198.00	91.28	331.33	7,232.14	4,626.30	-4,463.14	4,626.30	1.32	0.50	1.23
13,262.00	88.89	330.51	7,232.05	4,682.22	-4,494.25	4,682.22	3.95	-3.73	-1.28
13,325.00	88.59	329.85	7,233.43	4,736.87	-4,525.57	4,736.87	1.15	-0.48	-1.05
13,388.00	89.73	329.84	7,234.36	4,791.34	-4,557.21	4,791.34	1.81	1.81	-0.02
13,451.00	90.00	330.83	7,234.51	4,846.08	-4,588.39	4,846.08	1.63	0.43	1.57
13,514.00	90.67	331.01	7,234.14	4,901.13	-4,619.01	4,901.13	1.10	1.06	0.29
13,577.00	92.35	331.74	7,232.48	4,956.41	-4,649.18	4,956.41	2.91	2.67	1.16
13,640.00	90.64	329.88	7,230.83	5,011.39	-4,679.89	5,011.39	4.01	-2.71	-2.95
13,703.00	89.83	328.30	7,230.58	5,065.44	-4,712.25	5,065.44	2.82	-1.29	-2.51
13,766.00	88.36	326.06	7,231.57	5,118.37	-4,746.39	5,118.37	4.25	-3.56	-3.56
13,830.00	88.69	325.67	7,233.22	5,171.33	-4,782.29	5,171.33	0.80	0.52	-0.61
13,893.00	89.40	324.09	7,234.27	5,222.85	-4,818.53	5,222.85	2.75	1.13	-2.51
13,956.00	90.81	324.27	7,234.15	5,273.93	-4,855.40	5,273.93	2.26	2.24	0.29
14,020.00	92.25	324.42	7,232.44	5,325.91	-4,892.69	5,325.91	2.26	2.25	0.23

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 23H - Slot MW3#23H
Project:	Heather Prospect (NAD 27)	**TVD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Site:	Mills-Wetzel Pad 3	**MD Reference:**	GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Well:	Mills-Wetzel 23H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,083.00	92.15	322.55	7,230.02	5,376.51	-4,930.15	5,376.51	2.97	-0.16	-2.97
14,146.00	93.43	321.79	7,226.96	5,426.21	-4,968.74	5,426.21	2.36	2.03	-1.21
14,209.00	94.90	321.14	7,222.38	5,475.36	-5,007.88	5,475.36	2.55	2.33	-1.03
14,232.00	93.56	320.83	7,220.69	5,493.18	-5,022.32	5,493.18	5.98	-5.83	-1.35
Last SDI MWD Survey									
14,299.00	93.56	320.83	7,216.53	5,545.02	-5,064.56	5,545.02	0.00	0.00	0.00
Projection to Bit									

Design Annotations

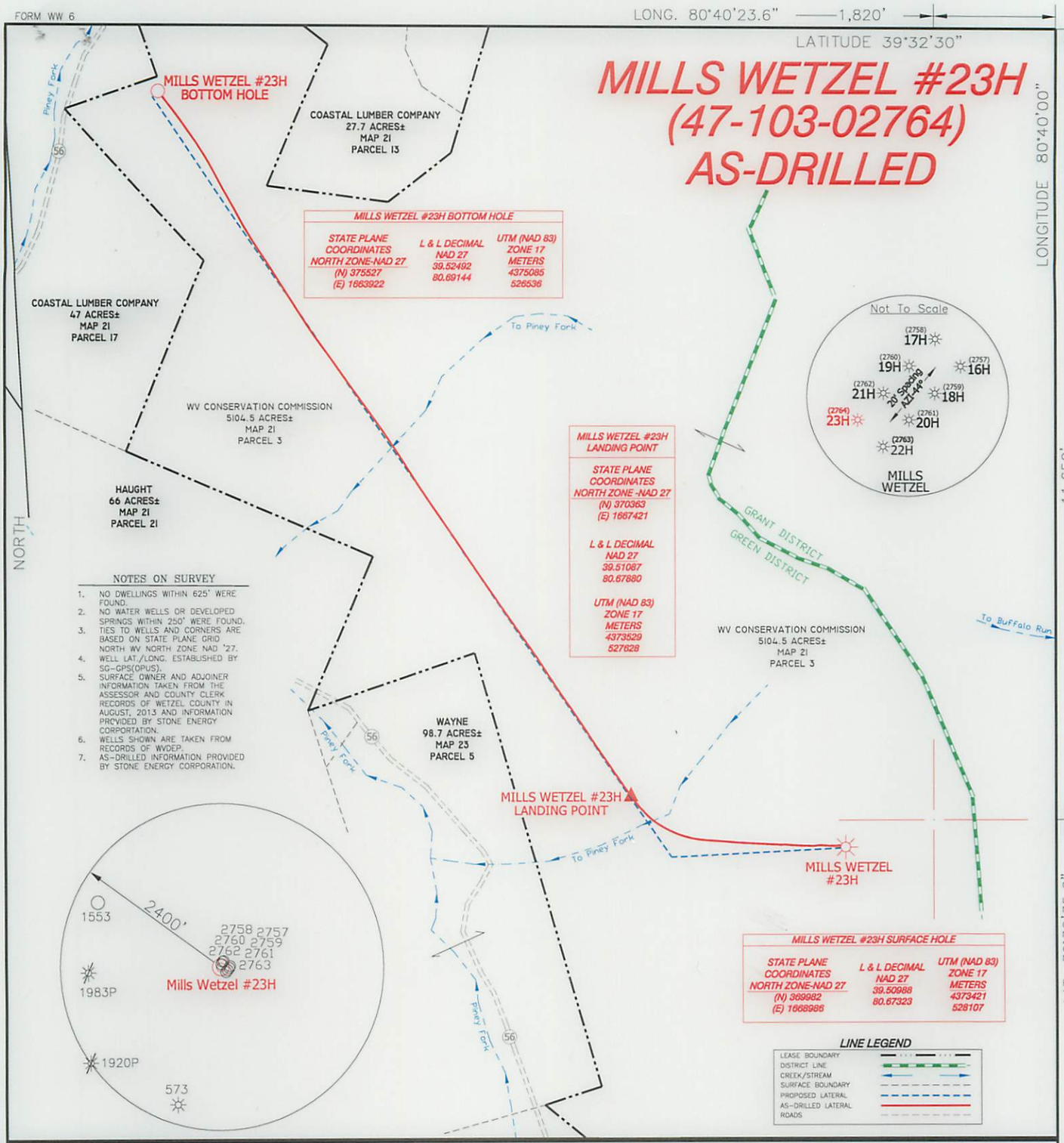
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
18.00	18.00	0.00	0.00	Ground Level
103.00	103.00	-0.02	0.13	First SDI Gyro Survey
2,828.00	2,827.95	0.47	10.83	Last SDI Gyro Survey
2,925.00	2,924.94	0.86	9.95	First SDI MWD Survey
14,232.00	7,220.69	5,493.18	-5,022.32	Last SDI MWD Survey
14,299.00	7,216.53	5,545.02	-5,064.56	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
FEB 26 2015

FORM WW 6

MILLS WETZEL #23H (47-103-02764) AS-DRILLED



MILLS WETZEL #23H BOTTOM HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 375527	39.52492	4375085
(E) 1863922	80.69144	526536

MILLS WETZEL #23H LANDING POINT
STATE PLANE COORDINATES NORTH ZONE -NAD 27
(N) 370363
(E) 1667421
L & L DECIMAL NAD 27
39.51087
80.67880
UTM (NAD 83) ZONE 17 METERS
4373529
527628

MILLS WETZEL #23H SURFACE HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 369982	39.50988	4373421
(E) 1668986	80.67323	528107

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

LINE LEGEND

- LEASE BOUNDARY
- DISTRICT LINE
- CREEK/STREAM
- SURFACE BOUNDARY
- PROPOSED LATERAL
- AS-DRILLED LATERAL
- ROADS

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DIVISION OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE DECEMBER 18, 20 14

OPERATORS WELL NO. MILLS WETZEL #23H

API WELL NO. 47 — 103 — 02764
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W1719 (BK75-3)
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :
ELEVATION 1293' WATERSHED TRIBUTARY OF PINEY FORK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PINE GROVE 7.5'
SURFACE OWNER WEST VIRGINIA CONSERVATION COMMISSION ACREAGE 5104.5 ±
ROYALTY OWNER MILLS WETZEL LAND Inc. LEASE ACREAGE 5104.5±
PROPOSED WORK : LEASE NO. ___
DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH 7,216' TVD 14,299' MD

COUNTY NAME
PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

WSM

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

RECEIVED
Office of Oil and Gas
FEB 12 2015
WV Department of
Environmental Protection

API 47 - 103 - 02794 County Wetzel District Green
Quad Porters Falls Pad Name Howell Field/Pool Name Mary
Farm name Howell, Charles and Ruth Well Number #7H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,382,932	Easting 517,661
Landing Point of Curve	Northing 4,383,393	Easting 517,609
Bottom Hole	Northing 4,384,573	Easting 516,542

Elevation (ft) 1,302 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 8/23/2013 Date drilling commenced 11/19/2013 Date drilling ceased 12/9/2013
Date completion activities began 1/30/2014 Date completion activities ceased 11/11/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 88 Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Reported Void(s) encountered (Y/N) depths N
Coal depth(s) ft 990 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by: ✓
A.L. 5/19/15
W.S. 6/01/15

WR-35
Rev. 8/23/13

API 47- 103 - 02794 Farm name Howell, Charles and Ruth Well number #7H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	80'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,310' KB 1,295' GL	New	J55	141' & 224'	Y - CTS
Coal	17.5"	13.375"	1,310' KB 1,295' GL	New	J55	141' & 224'	Y - CTS
Intermediate 1	12.25"	9.625"	2,394'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,967'	New	P110		N - TOC @ 600'
Tubing	N/A	2.375"	7,510'	New	N80		N/A
Packer type and depth set							

Comment Details Circulated 45 bbls cement to surface on the 13-3/8". Circulated 39 bbls cement to surface on the 9.625". Cement top on the 5.5" production casing is at 600'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Coal	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-600 Tail-433	Lead-15.0 Tail-15.6	Lead-1.27 Tail-1.19	Lead-762 Tail-515	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-Class "A"	Lead-900 Tail-1,750	Lead-15.3 Tail-15.6	Lead-1.25 Tail-1.19	Lead-1,125 Tail-2,083	600'	8.0
Tubing							

Drillers TD (ft) 12,994 MD / 6,946 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,943 MD/ 5,912 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28 and 30. Intermediate casing had bow spring centralizers placed on joints #'s 5, 8, 10, 12, 14, 16, 19, 21, 24, 26, 28, 30, 32, 35, 38, 43, 46, 49, 52 and 55. Production casing had left/right rigid spiral centralizers were placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #164. From there bow spring centralizers were placed beginning on joint #168 and then every fourth joint up to joint #232. A total of 42 rigid left/right centralizers were used and 17 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you increase as you come up the hole.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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WR-35
Rev. 8/23/13

API 47- 103 - 02794 Farm name Howell, Charles and Ruth Well number #7H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/17/14	12,688	12,880	72	Marcellus Shale
2	2/23/14	12,422	12,613	72	Marcellus Shale
3	2/24/14	12,151	12,343	72	Marcellus Shale
4	2/26/14	11,891	12,083	72	Marcellus Shale
5	2/28/14	11,628	11,821	72	Marcellus Shale
6	3/1/14	11,365	11,557	72	Marcellus Shale
7	3/4/14	11,101	11,290	72	Marcellus Shale
8	3/6/14	10,832	11,033	72	Marcellus Shale
9	3/7/14	10,579	10,773	72	Marcellus Shale
10	3/8/14	10,321	10,513	72	Marcellus Shale
11	3/9/14	10,065	10,253	72	Marcellus Shale
12	3/11/14	9,801	9,993	72	Marcellus Shale
13	3/12/14	9,530	9,733	72	Marcellus Shale
14	3/15/15	9,271	9,463	72	Marcellus Shale
15	3/16/14	9,010	9,203	72	Marcellus Shale
16	3/17/14	8,751	8,943	72	Marcellus Shale

Please insert additional pages as applicable.

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STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	2/23/14	82.5	8,415	7,394	6,105	358,620	357,928	
2	2/24/14	80.1	8,214	5,507	5,393	410,820	356,319	
3	2/26/14	82.4	8,084	6,248	5,490	406,080	350,967	
4	2/28/14	85.5	8,082	6,666	4,458	407,400	348,800	
5	3/1/14	85.9	7,897	6,319	4,458	411,300	350,979	
6	3/4/14	84.2	7,971	6,984	4,947	420,300	352,127	
7	3/6/14	79.5	7,953	6,840	5,320	411,220	368,654	
8	3/7/14	80.3	7,528	5,867	5,416	411,160	352,693	
9	3/8/14	80.3	7,617	6,937	5,386	414,580	351,907	
10	3/9/14	80.7	7,674	6,381	6,037	412,320	345,226	
11	3/11/14	80.4	7,734	7,096	5,923	408,500	343,358	
12	3/12/14	80.1	7,593	6,950	4,804	413,140	337,047	
13	3/15/14	79.3	7,412	7,043	5,090	406,220	386,559	
14	3/16/14	81.0	7,362	7,021	4,374	416,115	345,876	
15	3/17/14	80.4	7,406	6,932	4,441	404,415	349,230	
16	3/19/14	79.6	7,330	6,253	5,150	410,177	338,118	

Please insert additional pages as applicable.

WR-35
Rev. 8/23/13

API 47- 103 - 02794 Farm name Howell, Charles and Ruth Well number #7H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	3/19/14	8,491	8,683	72	Marcellus Shale
18	3/21/14	8,230	8,423	72	Marcellus Shale
19	3/22/14	7,946	8,153	72	Marcellus Shale
20	3/23/14	7,678	7,878	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	3/21/14	80.4	7,149	7,091	4,373	410,321	343,602	
18	3/22/14	80.4	7,199	6,813	4,259	413,686	347,817	
19	3/23/14	80.6	7,088	6,590	4,921	405,822	341,570	
20	3/24/14	79.2	6,990	6,921	4,085	407,834	345,174	

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API 47- 103 - 02794 Farm name Howell, Charles and Ruth Well number #7H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,014' to 6,951' TVD	7,678' to 12,880' MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 1,888 psi Bottom Hole 4,182 calculated psi DURATION OF TEST 48 hrs

OPEN FLOW Gas 2,783 mcfpd Oil ____ bpd NGL 174 bpd Water 600 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 16				

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Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger and Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/3/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

HOWELL #7H
API 47-103-02794
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	990		FW @ 88
Coal	990		*	993		
Sandstone & Shale	993		*	2,146		No SW Reported
Little Lime	2,146		*	2,200		
Big Lime	2,200		*	2,253		
Big Injun	2,253		*	2,296		
Sandstone & Shale	2,296		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,045		
Gordon	3,045		*	3,095		
Undiff Devonian Shale	3,095		*	6,296	6,339	
Rhinestreet	6,296	6,339	~	6,627	6,732	
Cashaqua	6,627	6,732	~	6,666	6,785	
Middlesex	6,666	6,785	~	6,817	7,008	
West River	6,817	7,008	~	6,832	7,033	
Undiff Devonian Shale	6,832	7,033	~	6,898	7,152	
Geneseo	6,898	7,152	~	6,910	7,180	
Tully Limestone	6,910	7,180	~	6,921	7,200	
Hamilton Shale	6,921	7,200	~	6,995	7,446	
Marcellus	6,995	7,446	~	6,946	12,994	
TD				6,946	12,994	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Project: Mary Prospect
Site: Howell Pad
Well: Howell 7H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Howell 7H

Ground Level: 1302.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	401762.52	1635229.08	39° 35' 45.083 N	80° 47' 40.144 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Howell 7H, Grid North
Vertical (TVD) Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Mary Prospect

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

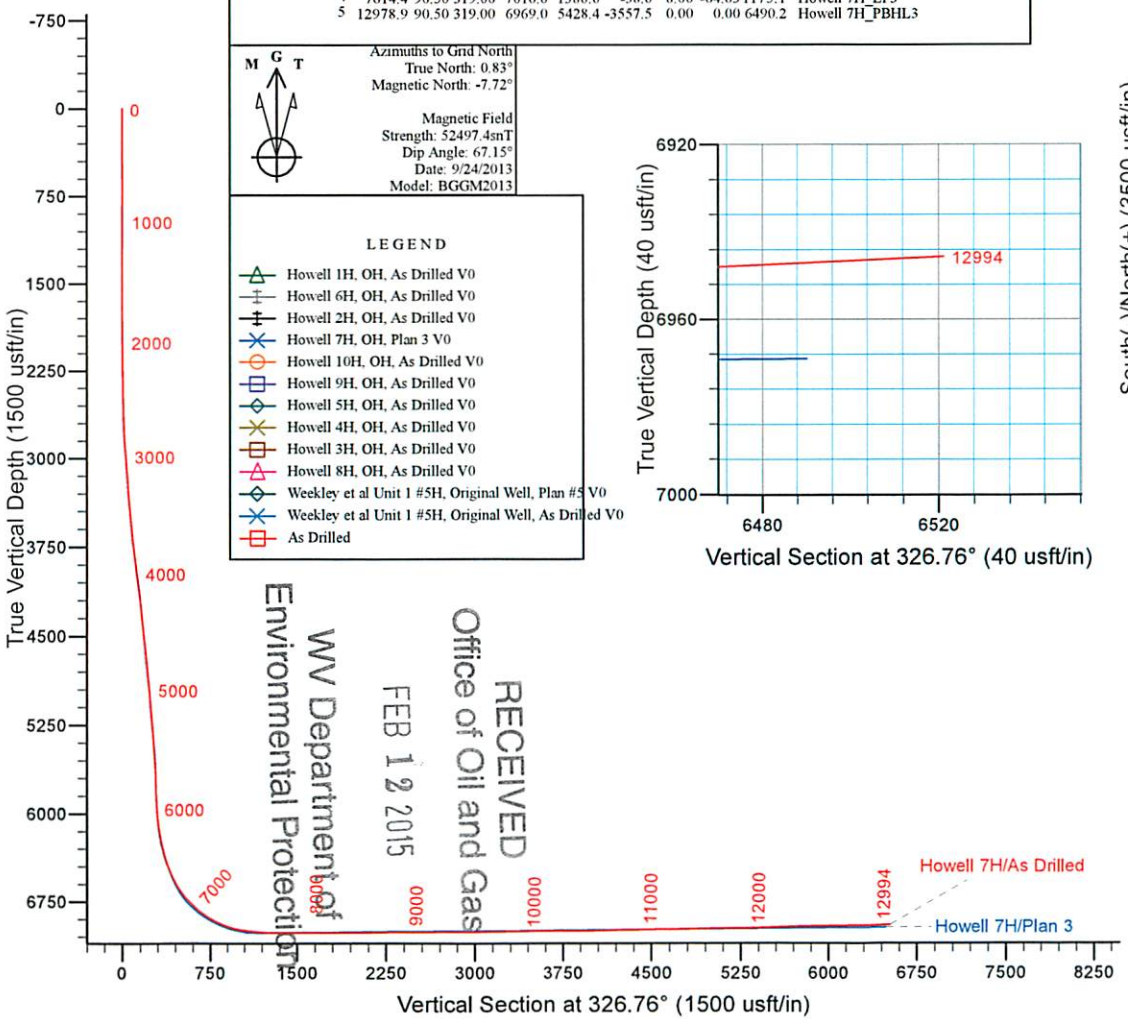
SECTION DETAILS

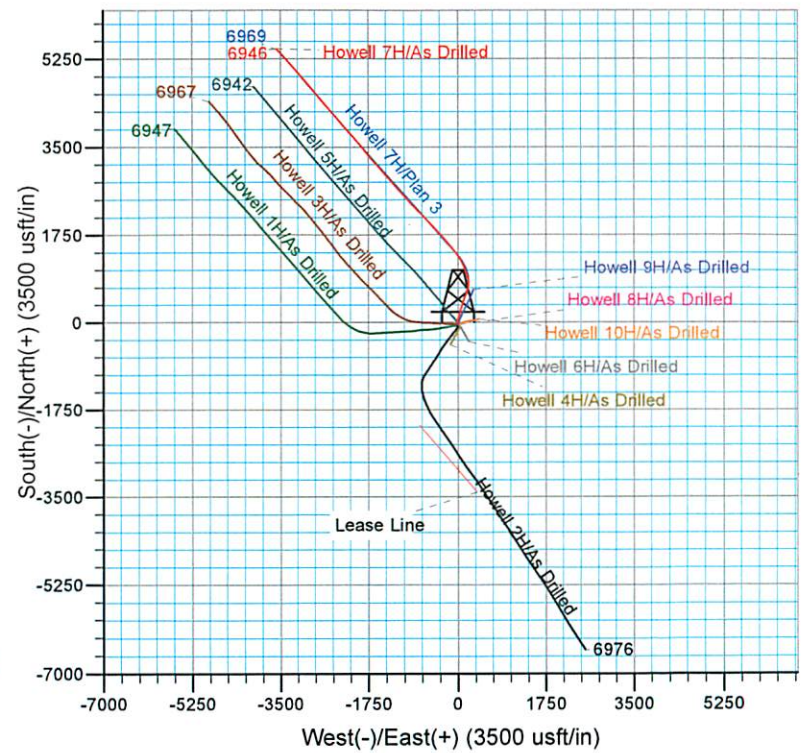
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	5853.0	3.13	22.37	5822.2	410.7	107.7	0.00	0.00	284.4	
2	5953.0	3.13	22.37	5922.1	415.7	109.8	0.00	0.00	287.5	
3	6730.3	40.17	17.56	6632.0	683.8	196.6	4.77	-5.15	464.2	
4	7614.4	90.50	319.00	7016.0	1380.0	-38.0	8.00	-64.65	1175.1	Howell 7H_LP3
5	12978.9	90.50	319.00	6969.0	5428.4	-3557.5	0.00	0.00	6490.2	Howell 7H_PBHL3

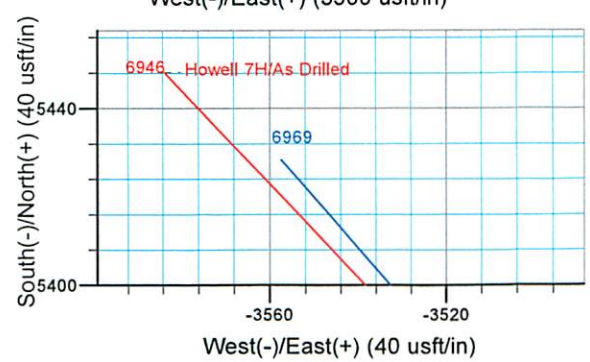
Azimuths to Grid North
True North: 0.83°
Magnetic North: -7.72°

Magnetic Field
Strength: 52497.4snT
Dip Angle: 67.15°
Date: 9/24/2013
Model: BGGM2013

LEGEND
- Howell 1H, OH, As Drilled V0
- Howell 6H, OH, As Drilled V0
- Howell 2H, OH, As Drilled V0
- Howell 7H, OH, Plan 3 V0
- Howell 10H, OH, As Drilled V0
- Howell 9H, OH, As Drilled V0
- Howell 5H, OH, As Drilled V0
- Howell 4H, OH, As Drilled V0
- Howell 3H, OH, As Drilled V0
- Howell 8H, OH, As Drilled V0
- Weekley et al Unit 1 #5H, Original Well, Plan #5 V0
- Weekley et al Unit 1 #5H, Original Well, As Drilled V0
- As Drilled







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Stone Energy

Mary Prospect
Howell Pad
Howell 7H

OH

Design: As Drilled

Standard Survey Report

08 October, 2013

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Scientific Drilling

www.scientificdrilling.com

Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 7H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 7H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Mary Prospect, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Howell Pad

Site Position:		**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
From:	Map	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.83 °

Well Howell 7H

Well Position	**+N/-S**	0.0 usft	**Northing:**	401,762.52 usft	**Latitude:**	39° 35' 45.083 N
	+E/-W	0.0 usft	**Easting:**	1,635,229.08 usft	**Longitude:**	80° 47' 40.144 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,302.0 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/27/2013	-8.49	67.17	52,599
	IGRF2010	7/29/2013	-8.50	67.14	52,558
	BGGM2013	9/24/2013	-8.55	67.15	52,497

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	326.76

Survey Program **Date** 10/8/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.0	2,303.0	Survey 1 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
2,363.0	12,994.0	Survey 2 - MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
18.0	0.00	0.00	18.0	0.0	0.0	0.0	0.00	0.00	0.00
Ground Level									
103.0	1.03	339.13	103.0	0.7	-0.3	[illegible]	1.21	1.21	0.00
First SDI Gyro Survey									
203.0	0.46	335.13	203.0	1.9	-0.8	2.0	0.57	-0.57	-4.00
303.0	0.10	294.31	303.0	2.3	-1.0	2.5	0.39	-0.36	-40.82

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 7H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 7H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
403.0	0.09	347.45	403.0	2.4	-1.1	2.6	0.09	-0.01	53.14
503.0	0.06	75.09	503.0	2.5	-1.1	2.7	0.11	-0.03	87.64
603.0	0.07	95.63	603.0	2.5	-1.0	2.6	0.03	0.01	20.54
703.0	0.15	139.85	703.0	2.4	-0.8	2.5	0.11	0.08	44.22
803.0	0.21	143.45	803.0	2.2	-0.6	2.2	0.06	0.06	3.60
903.0	0.23	172.89	903.0	1.8	-0.5	1.8	0.11	0.02	29.44
1,003.0	0.05	118.77	1,003.0	1.6	-0.4	1.6	0.20	-0.18	-54.12
1,103.0	0.20	206.82	1,103.0	1.4	-0.5	1.5	0.20	0.15	88.05
1,203.0	0.18	179.94	1,203.0	1.1	-0.5	1.2	0.09	-0.02	-26.88
1,303.0	0.03	75.12	1,303.0	1.0	-0.5	1.1	0.19	-0.15	-104.82
1,403.0	0.21	120.43	1,403.0	0.9	-0.3	0.9	0.19	0.18	45.31
1,503.0	0.23	250.19	1,503.0	0.7	-0.4	0.8	0.40	0.02	129.76
1,603.0	0.62	272.70	1,603.0	0.7	-1.1	1.2	0.42	0.39	22.51
1,703.0	0.54	269.10	1,703.0	0.7	-2.1	1.7	0.09	-0.08	-3.60
1,803.0	0.69	261.09	1,803.0	0.6	-3.2	2.2	0.17	0.15	-8.01
1,903.0	0.78	274.16	1,903.0	0.6	-4.4	2.9	0.19	0.09	13.07
2,003.0	0.69	250.94	2,002.9	0.4	-5.7	3.5	0.31	-0.09	-23.22
2,103.0	0.99	252.63	2,102.9	0.0	-7.1	3.8	0.30	0.30	1.69
2,203.0	1.01	246.37	2,202.9	-0.7	-8.7	4.2	0.11	0.02	-6.26
2,303.0	0.66	246.89	2,302.9	-1.2	-10.1	4.5	0.35	-0.35	0.52
Last SDI Gyro Survey									
2,363.0	0.67	257.94	2,362.9	-1.4	-10.7	4.7	0.21	0.02	18.42
First SDI MWD Survey									
2,426.0	0.56	237.65	2,425.9	-1.7	-11.3	4.8	0.38	-0.17	-32.21
2,516.0	0.98	340.30	2,515.9	-1.2	-12.0	5.6	1.37	0.47	114.07
2,610.0	2.06	8.36	2,609.9	1.2	-12.0	7.6	1.36	1.15	29.85
2,703.0	3.27	8.09	2,702.8	5.5	-11.4	10.8	1.30	1.30	-0.29
2,794.0	4.32	11.19	2,793.6	11.4	-10.3	15.2	1.18	1.15	3.41
2,887.0	5.59	10.73	2,886.2	19.3	-8.8	21.0	1.37	1.37	-0.49
2,980.0	6.29	16.06	2,978.7	28.7	-6.6	27.6	0.96	0.75	5.73
3,072.0	6.08	13.79	3,070.2	38.2	-4.0	34.2	0.35	-0.23	-2.47
3,166.0	6.44	20.05	3,163.6	48.0	-1.0	40.7	0.82	0.38	6.66
3,259.0	6.51	18.94	3,256.0	57.9	2.5	47.1	0.15	0.08	-1.19
3,350.0	6.43	14.76	3,346.4	67.7	5.4	53.7	0.52	-0.09	-4.59
3,443.0	7.24	18.53	3,438.8	78.3	8.6	60.8	1.00	0.87	4.05
3,534.0	8.56	19.17	3,528.9	90.2	12.7	68.5	1.45	1.45	0.70
3,625.0	9.84	18.19	3,618.7	103.9	17.3	77.4	1.42	1.41	-1.08
3,720.0	10.25	15.88	3,712.3	119.8	22.2	88.0	0.61	0.43	-2.43
3,812.0	10.64	16.39	3,802.8	135.8	26.8	98.9	0.44	0.42	0.55
3,905.0	10.47	15.24	3,894.2	152.2	31.5	110.0	0.29	-0.18	-1.24
3,997.0	10.45	13.15	3,984.6	168.4	35.6	121.3	0.41	-0.02	-2.27
4,090.0	10.54	16.08	4,076.1	184.8	39.8	132.7	0.58	0.10	3.15
4,183.0	10.58	13.26	4,167.5	201.2	44.1	144.1	0.56	0.04	-3.03
4,275.0	9.54	16.89	4,258.1	216.8	48.3	154.8	1.32	-1.13	3.95

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 7H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 7H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,368.0	9.30	15.18	4,349.9	231.4	52.5	164.8	0.40	-0.26	-1.84
4,458.0	8.82	13.17	4,438.7	245.1	56.0	174.3	0.64	-0.53	-2.23
4,552.0	8.66	16.41	4,531.6	258.9	59.6	183.9	0.55	-0.17	3.45
4,647.0	8.63	21.40	4,625.6	272.4	64.2	192.6	0.79	-0.03	5.25
4,738.0	9.03	20.06	4,715.5	285.5	69.2	200.9	0.49	0.44	-1.47
4,830.0	8.73	18.16	4,806.4	298.9	73.8	209.5	0.46	-0.33	-2.07
4,924.0	8.10	15.35	4,899.4	312.1	77.8	218.4	0.80	-0.67	-2.99
5,016.0	8.03	17.36	4,990.5	324.5	81.4	226.7	0.32	-0.08	2.18
5,110.0	7.71	16.54	5,083.6	336.8	85.2	235.0	0.36	-0.34	-0.87
5,204.0	7.77	15.15	5,176.7	348.9	88.7	243.3	0.21	0.06	-1.48
5,297.0	7.40	11.66	5,268.9	360.9	91.5	251.7	0.64	-0.40	-3.75
5,387.0	7.28	18.29	5,358.2	372.0	94.5	259.3	0.95	-0.13	7.37
5,480.0	6.63	19.94	5,450.5	382.6	98.2	266.2	0.73	-0.70	1.77
5,574.0	5.80	16.80	5,543.9	392.3	101.4	272.5	0.95	-0.88	-3.34
5,665.0	4.51	17.53	5,634.6	400.1	103.8	277.7	1.42	-1.42	0.80
5,759.0	3.28	20.99	5,728.3	406.1	105.9	281.6	1.33	-1.31	3.68
5,791.0	2.84	22.52	5,760.3	407.7	106.5	282.6	1.40	-1.37	4.78
5,854.0	3.13	22.37	5,823.2	410.7	107.7	284.5	0.46	0.46	-0.24
5,886.0	3.02	23.43	5,855.2	412.3	108.4	285.4	0.39	-0.34	3.31
5,917.0	2.64	22.58	5,886.1	413.7	109.0	286.3	1.23	-1.23	-2.74
5,949.0	3.34	19.39	5,918.1	415.3	109.6	287.3	2.25	2.19	-9.97
5,981.0	5.05	20.31	5,950.0	417.5	110.4	288.7	5.35	5.34	2.88
6,013.0	6.64	21.24	5,981.8	420.5	111.6	290.6	4.98	4.97	2.91
6,044.0	8.37	21.83	6,012.6	424.3	113.0	292.9	5.59	5.58	1.90
6,076.0	10.24	20.40	6,044.1	429.1	114.9	295.9	5.89	5.84	-4.47
6,108.0	11.54	19.69	6,075.6	434.8	117.0	299.5	4.08	4.06	-2.22
6,140.0	12.51	17.42	6,106.9	441.1	119.1	303.7	3.37	3.03	-7.09
6,171.0	14.18	15.17	6,137.0	448.0	121.1	308.3	5.64	5.39	-7.26
6,203.0	16.24	15.43	6,167.9	456.1	123.3	313.9	6.44	6.44	0.81
6,235.0	17.43	17.11	6,198.5	465.0	125.9	319.9	4.02	3.72	5.25
6,266.0	18.75	18.72	6,228.0	474.1	128.9	325.9	4.55	4.26	5.19
6,298.0	20.92	19.66	6,258.1	484.4	132.4	332.5	6.85	6.78	2.94
6,330.0	22.10	20.32	6,287.9	495.4	136.5	339.6	3.76	3.69	2.06
6,361.0	23.67	20.58	6,316.4	506.7	140.7	346.7	5.08	5.06	0.84
6,393.0	25.63	20.69	6,345.5	519.2	145.4	354.6	6.13	6.13	0.34
6,424.0	27.62	21.05	6,373.2	532.2	150.3	362.7	6.44	6.42	1.16
6,454.0	28.95	21.07	6,399.6	545.4	155.4	371.0	4.43	4.43	0.07
6,484.0	30.41	20.60	6,425.7	559.3	160.7	379.7	4.93	4.87	-1.57
6,514.0	32.05	19.63	6,451.4	573.9	166.1	389.0	5.72	5.47	-3.23
6,545.0	33.36	18.88	6,477.4	589.7	171.6	399.2	4.42	4.23	-2.42
6,575.0	34.26	18.73	6,502.4	605.5	177.0	409.5	3.01	3.00	-0.50
6,606.0	34.75	18.66	6,527.9	622.2	182.6	420.5	1.59	1.58	-0.23
6,636.0	35.71	18.66	6,552.4	638.6	188.1	431.0	3.20	3.20	0.00

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 7H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 7H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,666.0	37.27	17.52	6,576.5	655.5	193.7	442.1	5.67	5.20	-3.80
6,697.0	39.71	15.09	6,600.8	674.1	199.1	454.7	9.26	7.87	-7.84
6,727.0	42.50	12.26	6,623.4	693.2	203.7	468.1	11.18	9.30	-9.43
6,757.0	43.71	9.79	6,645.3	713.3	207.6	482.8	6.92	4.03	-8.23
6,787.0	44.25	6.63	6,666.9	733.9	210.6	498.4	7.53	1.80	-10.53
6,818.0	44.46	3.57	6,689.1	755.5	212.5	515.4	6.93	0.68	-9.87
6,849.0	45.66	359.70	6,711.0	777.5	213.1	533.4	9.65	3.87	-12.48
6,879.0	46.93	357.16	6,731.7	799.1	212.5	551.9	7.44	4.23	-8.47
6,910.0	47.90	354.24	6,752.7	821.9	210.8	571.9	7.61	3.13	-9.42
6,940.0	48.58	351.12	6,772.7	844.1	208.0	592.0	8.08	2.27	-10.40
6,970.0	48.89	347.91	6,792.4	866.2	203.9	612.8	8.11	1.03	-10.70
7,000.0	50.13	344.69	6,811.9	888.4	198.5	634.3	9.15	4.13	-10.73
7,031.0	52.29	342.93	6,831.3	911.6	191.7	657.4	8.25	6.97	-5.68
7,061.0	54.35	341.62	6,849.3	934.5	184.4	680.6	7.71	6.87	-4.37
7,091.0	56.93	340.58	6,866.2	957.9	176.4	704.5	9.06	8.60	-3.47
7,122.0	59.37	340.08	6,882.6	982.7	167.5	730.1	7.99	7.87	-1.61
7,151.0	60.22	339.87	6,897.1	1,006.3	158.9	754.5	3.00	2.93	-0.72
7,181.0	61.30	339.77	6,911.8	1,030.9	149.9	780.0	3.61	3.60	-0.33
7,212.0	63.66	339.07	6,926.1	1,056.6	140.2	806.9	7.87	7.61	-2.26
7,242.0	67.00	338.71	6,938.6	1,082.0	130.4	833.5	11.19	11.13	-1.20
7,272.0	69.83	338.64	6,949.7	1,108.0	120.3	860.8	9.44	9.43	-0.23
7,302.0	72.18	337.93	6,959.4	1,134.4	109.8	888.6	8.15	7.83	-2.37
7,333.0	74.13	336.79	6,968.4	1,161.7	98.4	917.8	7.21	6.29	-3.68
7,363.0	76.26	334.79	6,976.1	1,188.2	86.5	946.4	9.59	7.10	-6.67
7,394.0	77.86	332.61	6,983.0	1,215.3	73.1	976.4	8.58	5.16	-7.03
7,424.0	79.74	330.14	6,988.9	1,241.1	59.0	1,005.7	10.22	6.27	-8.23
7,454.0	81.41	328.51	6,993.8	1,266.5	43.9	1,035.3	7.73	5.57	-5.43
7,486.0	83.28	326.75	6,998.0	1,293.3	26.9	1,067.0	7.99	5.84	-5.50
7,518.0	84.07	325.17	7,001.6	1,319.7	9.1	1,098.8	5.49	2.47	-4.94
7,549.0	84.75	324.29	7,004.6	1,344.9	-8.7	1,129.6	3.58	2.19	-2.84
7,581.0	85.29	323.48	7,007.4	1,370.6	-27.5	1,161.5	3.03	1.69	-2.53
7,612.0	85.70	322.58	7,009.8	1,395.3	-46.1	1,192.3	3.18	1.32	-2.90
7,644.0	86.24	321.64	7,012.0	1,420.5	-65.7	1,224.1	3.38	1.69	-2.94
7,675.0	87.52	320.67	7,013.7	1,444.6	-85.1	1,254.9	5.18	4.13	-3.13
7,707.0	88.12	320.44	7,014.9	1,469.3	-105.4	1,286.7	2.01	1.88	-0.72
7,770.0	89.09	320.59	7,016.5	1,517.9	-145.5	1,349.3	1.56	1.54	0.24
7,833.0	90.20	320.20	7,016.9	1,566.4	-185.6	1,411.9	1.87	1.76	-0.62
7,896.0	90.87	319.12	7,016.3	1,614.5	-226.4	1,474.4	2.02	1.06	-1.71
7,959.0	90.17	317.65	7,015.7	1,661.6	-268.3	1,536.8	2.58	-1.11	-2.33
8,022.0	89.83	318.16	7,015.7	1,708.3	-310.5	1,599.0	0.97	-0.54	0.81
8,086.0	89.90	318.56	7,015.9	1,756.1	-353.0	1,662.3	0.63	0.11	0.63
8,149.0	90.03	318.81	7,015.9	1,803.5	-394.6	1,724.7	[illegible]	0.21	0.40
8,212.0	89.60	318.95	7,016.1	1,850.9	-436.0	1,787.1	0.72	-0.68	0.22
8,276.0	90.54	318.65	7,016.0	1,899.1	-478.2	1,850.5	1.54	1.47	-0.47

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Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 7H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,340.0	90.23	317.82	7,015.6	1,946.8	-520.8	1,913.8	1.38	-0.48	-1.30
8,402.0	89.97	317.86	7,015.5	1,992.8	-562.4	1,975.0	0.42	-0.42	0.06
8,465.0	91.14	317.29	7,014.9	2,039.3	-604.9	2,037.2	2.07	1.86	-0.90
8,529.0	90.87	316.00	7,013.8	2,085.8	-648.9	2,100.2	2.06	-0.42	-2.02
8,593.0	90.40	316.43	7,013.0	2,132.0	-693.1	2,163.1	1.00	-0.73	0.67
8,656.0	91.51	316.47	7,012.0	2,177.6	-736.5	2,225.1	1.76	1.76	0.06
8,719.0	91.68	316.57	7,010.2	2,223.3	-779.9	2,287.1	0.31	0.27	0.16
8,783.0	89.63	317.20	7,009.5	2,270.1	-823.6	2,350.1	3.35	-3.20	0.98
8,846.0	89.36	317.92	7,010.1	2,316.5	-866.1	2,412.3	1.22	-0.43	1.14
8,910.0	90.67	317.64	7,010.1	2,363.9	-909.1	2,475.5	2.09	2.05	-0.44
8,974.0	90.64	317.34	7,009.3	2,411.1	-952.4	2,538.7	0.47	-0.05	-0.47
9,037.0	89.83	318.07	7,009.1	2,457.7	-994.8	2,600.9	1.73	-1.29	1.16
9,100.0	90.97	318.34	7,008.6	2,504.7	-1,036.8	2,663.2	1.86	1.81	0.43
9,163.0	91.07	318.50	7,007.5	2,551.8	-1,078.6	2,725.5	0.30	0.16	0.25
9,226.0	90.17	319.74	7,006.8	2,599.4	-1,119.8	2,787.9	2.43	-1.43	1.97
9,290.0	90.74	318.88	7,006.3	2,648.0	-1,161.5	2,851.4	1.61	0.89	-1.34
9,353.0	90.40	318.91	7,005.7	2,695.4	-1,202.9	2,913.8	0.54	-0.54	0.05
9,417.0	90.37	319.12	7,005.3	2,743.7	-1,244.9	2,977.2	0.33	-0.05	0.33
9,481.0	89.03	319.66	7,005.6	2,792.3	-1,286.6	3,040.7	2.26	-2.09	0.84
9,544.0	90.17	320.00	7,006.0	2,840.5	-1,327.2	3,103.2	1.89	1.81	0.54
9,607.0	91.58	319.80	7,005.1	2,888.6	-1,367.8	3,165.8	2.26	2.24	-0.32
9,671.0	91.71	319.96	7,003.2	2,937.6	-1,409.0	3,229.3	0.32	0.20	0.25
9,734.0	90.27	319.70	7,002.1	2,985.7	-1,449.6	3,291.8	2.32	-2.29	-0.41
9,797.0	90.17	319.15	7,001.9	3,033.5	-1,490.6	3,354.3	0.89	-0.16	-0.87
9,861.0	90.27	318.75	7,001.7	3,081.8	-1,532.6	3,417.7	0.64	0.16	-0.63
9,924.0	89.16	318.63	7,002.0	3,129.1	-1,574.2	3,480.1	1.77	-1.76	-0.19
9,987.0	90.07	318.11	7,002.4	3,176.2	-1,616.1	3,542.4	1.66	1.44	-0.83
10,051.0	90.67	319.10	7,002.0	3,224.2	-1,658.4	3,605.7	1.81	0.94	1.55
10,114.0	90.57	320.38	7,001.3	3,272.3	-1,699.1	3,668.3	2.04	-0.16	2.03
10,178.0	91.04	321.48	7,000.4	3,322.0	-1,739.4	3,731.9	1.87	0.73	1.72
10,242.0	89.97	322.51	6,999.8	3,372.4	-1,778.8	3,795.7	2.32	-1.67	1.61
10,305.0	89.97	322.24	6,999.9	3,422.3	-1,817.3	3,858.5	0.43	0.00	-0.43
10,369.0	90.81	321.65	6,999.4	3,472.7	-1,856.7	3,922.3	1.60	1.31	-0.92
10,433.0	90.54	319.18	6,998.7	3,522.0	-1,897.5	3,985.9	3.88	-0.42	-3.86
10,496.0	90.71	318.96	6,998.0	3,569.6	-1,938.8	4,048.3	0.44	0.27	-0.35
10,560.0	92.22	318.78	6,996.4	3,617.8	-1,980.9	4,111.7	2.38	2.36	-0.28
10,623.0	92.75	318.20	6,993.6	3,664.9	-2,022.6	4,174.0	1.25	0.84	-0.92
10,687.0	91.85	318.01	6,991.1	3,712.5	-2,065.3	4,237.2	1.44	-1.41	-0.30
10,750.0	91.78	318.32	6,989.1	3,759.4	-2,107.3	4,299.4	0.50	-0.11	0.49
10,814.0	90.03	318.81	6,988.0	3,807.4	-2,149.6	4,362.8	2.84	-2.73	0.77
10,877.0	91.14	319.06	6,987.4	3,854.9	-2,191.0	4,425.2	1.81	1.76	0.40
10,940.0	91.38	319.14	6,986.0	3,902.5	-2,232.3	4,487.6	0.40	0.38	0.13
11,004.0	90.54	319.17	6,984.9	3,950.9	-2,274.1	4,551.0	1.31	-1.31	0.05

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 7H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 7H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,067.0	90.47	318.41	6,984.4	3,998.3	-2,315.6	4,613.4	1.21	-0.11	-1.21
11,131.0	90.23	318.39	6,984.0	4,046.2	-2,358.1	4,676.7	0.38	-0.38	-0.03
11,195.0	90.64	318.87	6,983.5	4,094.2	-2,400.4	4,740.1	0.99	0.64	0.75
11,259.0	91.31	319.47	6,982.4	4,142.6	-2,442.2	4,803.5	1.41	1.05	0.94
11,322.0	91.27	319.59	6,981.0	4,190.5	-2,483.1	4,866.0	0.20	-0.06	0.19
11,386.0	91.07	319.79	6,979.7	4,239.3	-2,524.5	4,929.5	0.44	-0.31	0.31
11,449.0	91.44	320.38	6,978.3	4,287.6	-2,564.9	4,992.1	1.11	0.59	0.94
11,513.0	91.18	320.32	6,976.9	4,336.9	-2,605.7	5,055.6	0.42	-0.41	-0.09
11,576.0	91.81	320.17	6,975.2	4,385.3	-2,646.0	5,118.2	1.03	1.00	-0.24
11,629.0	90.47	319.61	6,974.2	4,425.8	-2,680.2	5,170.8	2.74	-2.53	-1.06
11,703.0	88.93	320.05	6,974.5	4,482.4	-2,727.9	5,244.3	2.16	-2.08	0.59
11,766.0	90.10	320.06	6,975.1	4,530.7	-2,768.3	5,306.8	1.86	1.86	0.02
11,830.0	91.71	319.81	6,974.1	4,579.7	-2,809.5	5,370.4	2.55	2.52	-0.39
11,892.0	92.01	319.48	6,972.1	4,626.9	-2,849.7	5,431.9	0.72	0.48	-0.53
11,956.0	90.77	319.51	6,970.5	4,675.5	-2,891.2	5,495.3	1.94	-1.94	0.05
12,019.0	92.01	319.71	6,969.0	4,723.5	-2,932.0	5,557.8	1.99	1.97	0.32
12,083.0	92.59	319.30	6,966.4	4,772.1	-2,973.5	5,621.3	1.11	0.91	-0.64
12,146.0	91.17	318.81	6,964.3	4,819.7	-3,014.8	5,683.7	2.38	-2.25	-0.78
12,209.0	91.34	318.21	6,963.0	4,866.9	-3,056.5	5,746.0	0.99	0.27	-0.95
12,273.0	91.68	317.52	6,961.3	4,914.3	-3,099.5	5,809.2	1.20	0.53	-1.08
12,336.0	91.04	316.80	6,959.8	4,960.5	-3,142.3	5,871.3	1.53	-1.02	-1.14
12,397.0	91.74	317.25	6,958.3	5,005.1	-3,183.8	5,931.4	1.36	1.15	0.74
12,460.0	90.97	318.69	6,956.8	5,051.9	-3,226.0	5,993.6	2.59	-1.22	2.29
12,524.0	90.94	318.75	6,955.7	5,100.0	-3,268.2	6,057.0	0.10	-0.05	0.09
12,588.0	90.10	318.43	6,955.2	5,148.0	-3,310.6	6,120.4	1.40	-1.31	-0.50
12,651.0	91.31	318.19	6,954.4	5,195.0	-3,352.5	6,182.7	1.96	1.92	-0.38
12,714.0	91.61	317.49	6,952.8	5,241.7	-3,394.7	6,244.9	1.21	0.48	-1.11
12,778.0	90.13	318.12	6,951.8	5,289.1	-3,437.7	6,308.1	2.51	-2.31	0.98
12,841.0	91.07	318.00	6,951.1	5,336.0	-3,479.8	6,370.4	1.50	1.49	-0.19
12,905.0	91.97	317.36	6,949.5	5,383.3	-3,522.9	6,433.5	1.73	1.41	-1.00
12,937.0	92.55	316.73	6,948.2	5,406.7	-3,544.7	6,465.1	2.67	1.81	-1.97
Last SDI MWD Survey									
12,994.0	92.55	316.73	6,945.7	5,448.1	-3,583.7	6,521.1	0.00	0.00	0.00
Projection to Bit									

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 7H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 7H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
18.0	18.0	0.0	0.0	Ground Level
103.0	103.0	0.7	-0.3	First SDI Gyro Survey
2,303.0	2,302.9	-1.2	-10.1	Last SDI Gyro Survey
2,363.0	2,362.9	-1.4	-10.7	First SDI MWD Survey
12,937.0	6,948.2	5,406.7	-3,544.7	Last SDI MWD Survey
12,994.0	6,945.7	5,448.1	-3,583.7	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/24/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	
Operator Name:	Stone Energy
Well Name and Number:	Howell 7H
Longitude:	
Latitude:	
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	7013953

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
H015%, Slickwater, WF115	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Buffer, Accelerator, Fluid Loss Additive , Propping	Water (Including Mix Water Supplied by Client)*	NA		87.58849%	
			Crystalline silica	14808-60-7	98.35667%	12.20755%	
			Hydrochloric acid	7647-01-0	0.80183%	0.09952%	
			Carbohydrate polymer	Proprietary	0.49383%	0.06129%	
			Ammonium sulfate	Proprietary	0.18000%	0.02234%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06763%	0.00839%	
			Calcium chloride	10043-52-4	0.06642%	0.00824%	
			Glutaraldehyde	111-30-8	0.05491%	0.00682%	
			Diammonium peroxidisulphate	7727-54-0	0.02272%	0.00282%	
			Sodium carbonate	497-19-8	0.01326%	0.00165%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00520%	0.00065%	
			Ethane-1,2-diol	107-21-1	0.00365%	0.00045%	
			Trisodium ortho phosphate	7601-54-9	0.00365%	0.00045%	
			Methanol	67-56-1	0.00333%	0.00041%	
			Sodium erythorbate	6381-77-7	0.00272%	0.00034%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00250%	0.00031%	
			Aliphatic acids	Proprietary	0.00250%	0.00031%	
			Prop-2-yn-1-ol	107-19-7	0.00083%	0.00010%	
			Polypropylene glycol	25322-69-4	0.00037%	0.00005%	

* 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%

Report ID: RPT-25895 (Generated on 3/31/2014 10:58 AM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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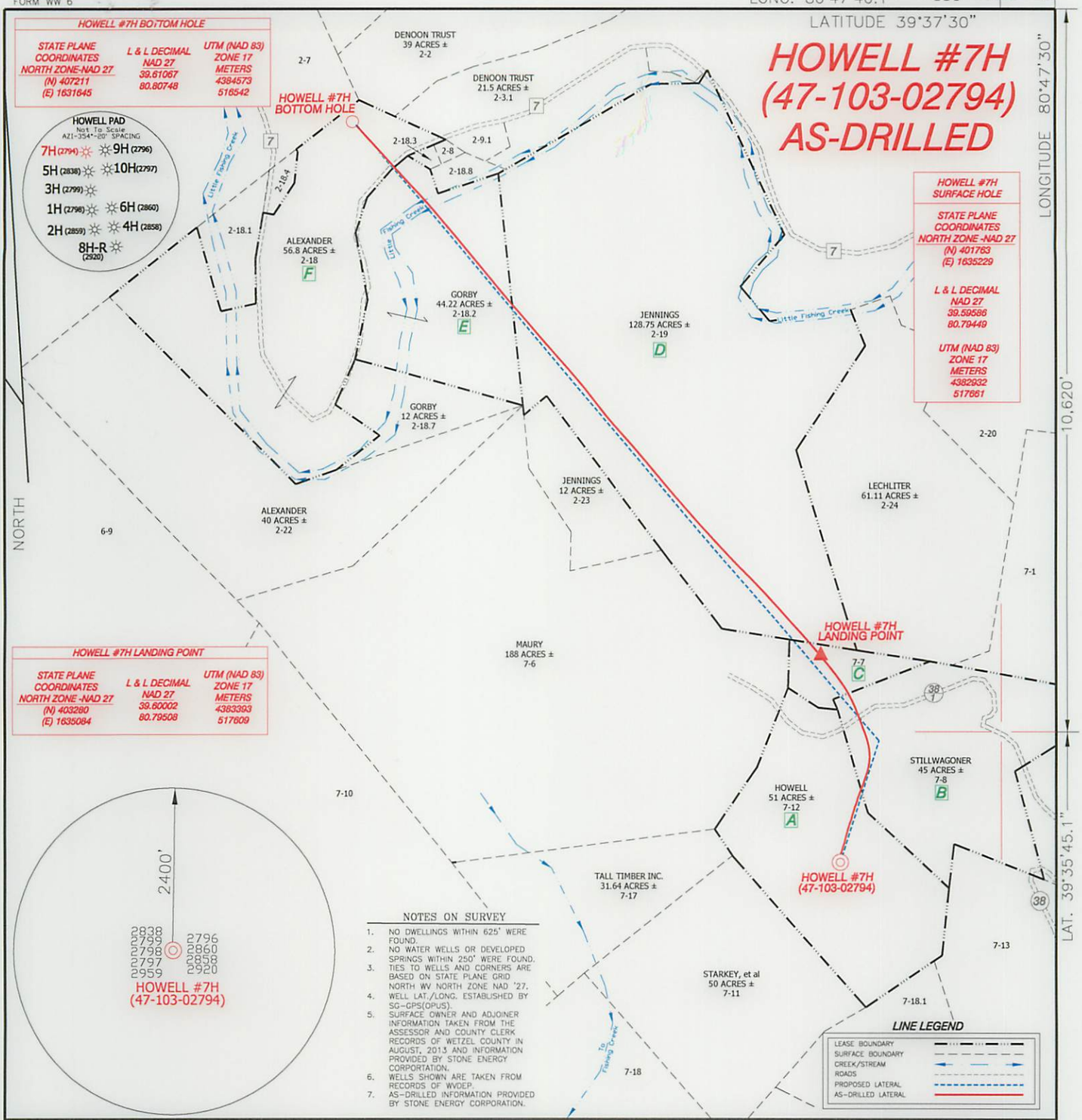

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE OCTOBER 22, 20 14

OPERATORS WELL NO. HOWELL #7H

API WELL NO. 47 — 103 — 02794
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2208 (BK 64-54)

SCALE 1" = 1000'

PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ____ GAS X LIQUID INJECTION ____ WASTE DISPOSAL ____ IF "GAS" PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X

LOCATION :

ELEVATION 1304' WATERSHED FISHING CREEK

DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'

SURFACE OWNER CHARLES & RUTH HOWELL ACREAGE 51±

ROYALTY OWNER CHARLES & RUTH HOWELL, et al LEASE ACREAGE 332.37±

PROPOSED WORK : LEASE NO. ____

DRILL ____ CONVERT ____ DRILL DEEPER ____ REDRILL ____ FRACTURE OR STIMULATE ____ PLUG OFF OLD FORMATION ____ PERFORATE NEW FORMATION ____ PLUG AND ABANDON ____ CLEAN OUT AND REPLUG ____ OTHER ____

PHYSICAL CHANGE IN WELL (SPECIFY) ____ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TVD 6,946' MD 12,994'

COUNTY NAME

PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR

ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 103 - 02796 County Wetzel District Green
Quad Porters Falls Pad Name Howell Field/Pool Name Mary
Farm name Howell, Charles and Ruth Well Number #9H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,382,932	Easting 517,667
Landing Point of Curve	Northing 4,383,563	Easting 517,737
Bottom Hole	Northing 4,384,714	Easting 516,721

Elevation (ft) 1,302 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 9/26/2012 Date drilling commenced 2/27/2013 Date drilling ceased 12/9/2013
Date completion activities began 2/5/2014 Date completion activities ceased 8/8/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 90 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,302 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,084 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15 ✓
W.S. 6/01/15

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API 47- 103 - 02796 Farm name Howell, Charles and Ruth Well number #9H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	80'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,308' KB 1,293' GL	New	J55	100'	Y - CTS
Coal	17.5"	13.375"	1,308' KB 1,293' GL	New	J55	100'	Y - CTS
Intermediate 1	12.25"	9.625"	2,478'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	13,079'	New	P110		N - TOC @ 1,300'
Tubing	N/A	2.375"	7,763'	New	N80		N/A
Packer type and depth set							

Comment Details Circulated 43 bbls cement to surface on the 13.375". Circulated 60 bbls cement to surface on the 9.625". Cement top on the 5.5" production casing is at 1,300'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Coal	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-428 Tail-420	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.19	Lead-539 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-HalCem	Lead-910 Tail-1,760	Lead-15.3 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,147 Tail-2,112	1,300'	8.0
Tubing							

Drillers TD (ft) 13,080 MD / 6,942 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 6,108 MD/ 6,021 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2, 5, 8, 11, 14, 17, 20, 23, 26 and 29. Intermediate casing had bow spring centralizers placed on joints #'s 2, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56 and 59. Production casing had left/right rigid spiral centralizers were placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #244. From there bow spring centralizers were placed beginning on joint #256 and then every eighth joint up to joint #296. A total of 61 rigid left/right centralizers were used and 7 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you increase as you come up the hole.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 103 - 02796 Farm name Howell, Charles and Ruth Well number #9H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/16/14	12,791	12,961	72	Marcellus Shale
2	2/21/14	12,520	12,713	72	Marcellus Shale
3	2/22/14	12,252	12,441	72	Marcellus Shale
4	2/23/14	11,980	12,178	72	Marcellus Shale
5	2/26/14	11,708	11,900	72	Marcellus Shale
6	3/1/14	11,436	11,633	72	Marcellus Shale
7	3/5/14	11,176	11,373	72	Marcellus Shale
8	3/6/14	10,924	11,113	72	Marcellus Shale
9	3/7/14	10,661	10,853	72	Marcellus Shale
10	3/8/14	10,401	10,593	72	Marcellus Shale
11	3/10/14	10,150	10,331	72	Marcellus Shale
12	3/11/14	9,897	10,083	72	Marcellus Shale
13	3/13/14	9,641	9,833	72	Marcellus Shale
14	3/16/14	9,379	9,573	72	Marcellus Shale
15	3/17/14	9,131	9,313	72	Marcellus Shale
16	3/18/14	8,869	9,060	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	2/21/14	82.0	8,203	6,638	4,775	355,400	333,626	
2	2/22/14	83.2	8,272	6,441	5,464	404,829	351,205	
3	2/23/14	83.4	7,889	6,808	5,522	410,380	351,145	
4	2/26/14	83.0	7,932	6,754	5,405	415,400	351,436	
5	3/1/14	85.7	7,750	6,797	4,603	389,040	344,382	
6	3/5/14	84.0	7,910	6,948	4,954	379,460	342,623	
7	3/6/14	80.4	7,505	6,030	4,976	415,540	349,635	
8	3/7/14	80.5	7,428	6,185	4,458	415,240	342,680	
9	3/8/14	80.5	7,508	6,610	5,291	414,480	341,031	
10	3/10/14	80.0	7,493	6,994	5,865	408,040	346,546	
11	3/11/14	80.2	7,602	7,276	4,918	418,740	354,025	
12	3/13/14	78.7	7,553	6,979	4,506	407,880	345,569	
13	3/15/14	79.9	7,351	6,359	4,231	411,620	348,558	
14	3/17/14	80.8	7,091	5,980	4,345	405,690	340,597	
15	3/18/14	80.4	7,211	6,461	4,373	410,100	344,553	
16	3/19/14	79.3	7,356	7,138	5,148	411,518	339,552	

Please insert additional pages as applicable.

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	3/19/14	8,584	8,791	72	Marcellus Shale
18	3/21/14	8,325	8,519	72	Marcellus Shale
19	3/22/14	8,066	8,258	72	Marcellus Shale
20	3/23/14	7,865	8,000	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	3/21/14	80.6	7,014	6,628	4,201	413,547	342,884	
18	3/22/14	80.6	7,235	6,698	4,164	401,454	341,387	
19	3/23/14	80.7	6,926	6,325	4,831	409,822	343,538	
20	3/25/14	81.4	7,534	6,492	4,574	376,504	313,506	

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,006' to 6,950' TVD	7,865' to 12,961' MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 1,942 psi Bottom Hole 4,247 calculated psi DURATION OF TEST 48 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	1,649 mcfpd	bpd	110 bpd	451 bpd	□ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 15				

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Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger/Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/3/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

HOWELL #9H
API 47-103-02796
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,084		FW @ 90
Coal	1,084		*	1,087		
Sandstone & Shale	1,087		*	2,146		SW @ 1,302
Little Lime	2,146		*	2,200		
Big Lime	2,200		*	2,253		
Big Injun	2,253		*	2,296		
Sandstone & Shale	2,296		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,045		
Gordon	3,045		*	3,095		
Undiff Devonian Shale	3,095		*	6,298	6,404	
Rhinestreet	6,298	6,404	~	6,623	6,818	
Cashaqua	6,623	6,818	~	6,819	7,155	
Middlesex	6,819	7,155	~	6,832	7,183	
West River	6,832	7,183	~	6,895	7,335	
Geneseo	6,895	7,335	~	6,912	7,389	
Tully Limestone	6,912	7,389	~	6,943	7,507	
Hamilton Shale	6,943	7,507	~	6,993	7,742	
Marcellus	6,993	7,742	~	6,942	13,080	
TD				6,942	13,080	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Project: Mary Prospect
Site: Howell Pad
Well: Howell 9H
Wellbore: OH
Design: As Drilled

STONE ENERGY

Scientific Drilling

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WELL DETAILS: Howell 9H

Ground Level: 1302.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	401764.78	1635249.12	39° 35' 45.108 N	80° 47' 39.888 W

REFERENCE INFORMATION

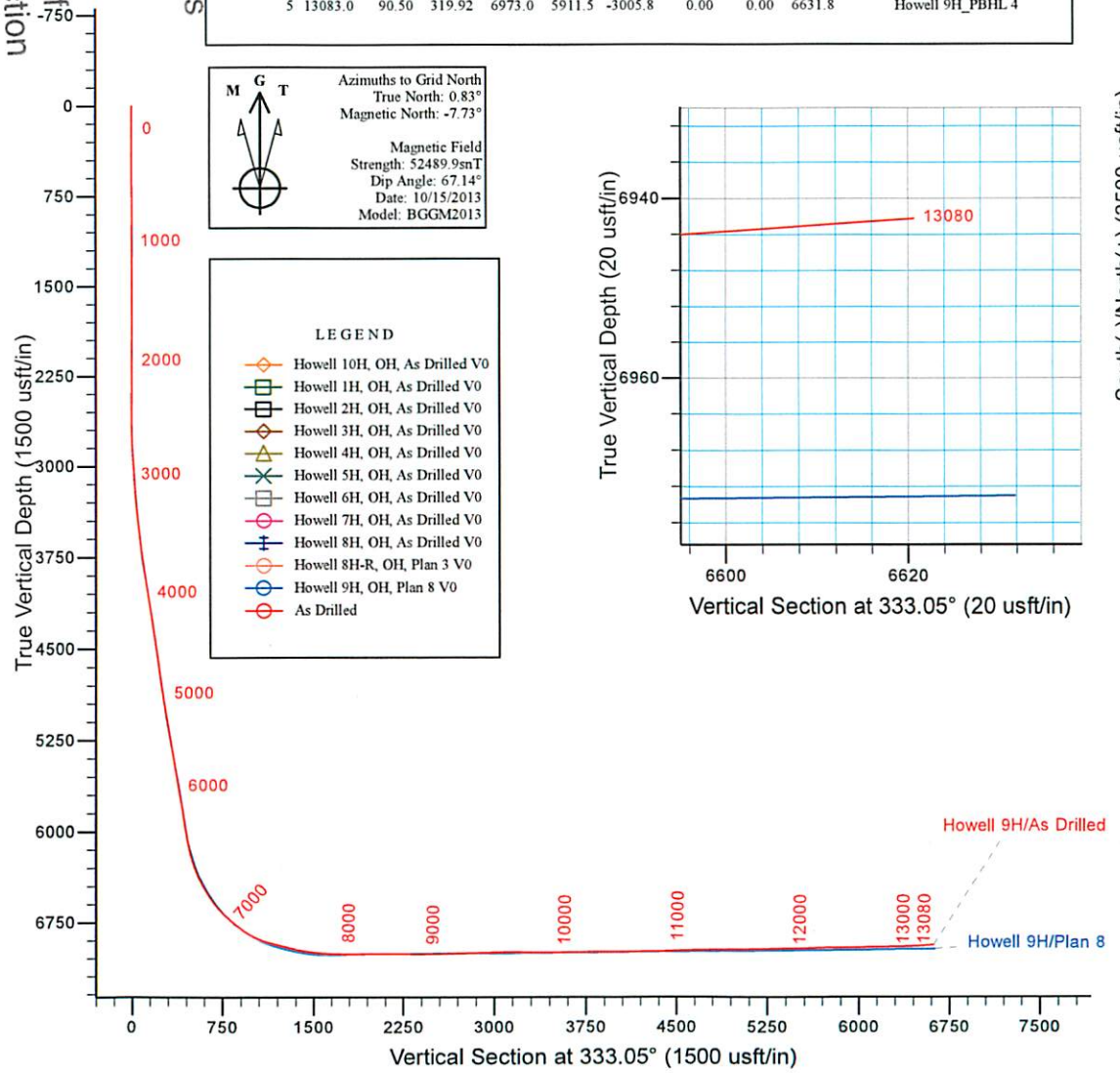
Co-ordinate (N/E) Reference: Well Howell 9H, Grid North
Vertical (TVD) Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Calculation Method: Minimum Curvature

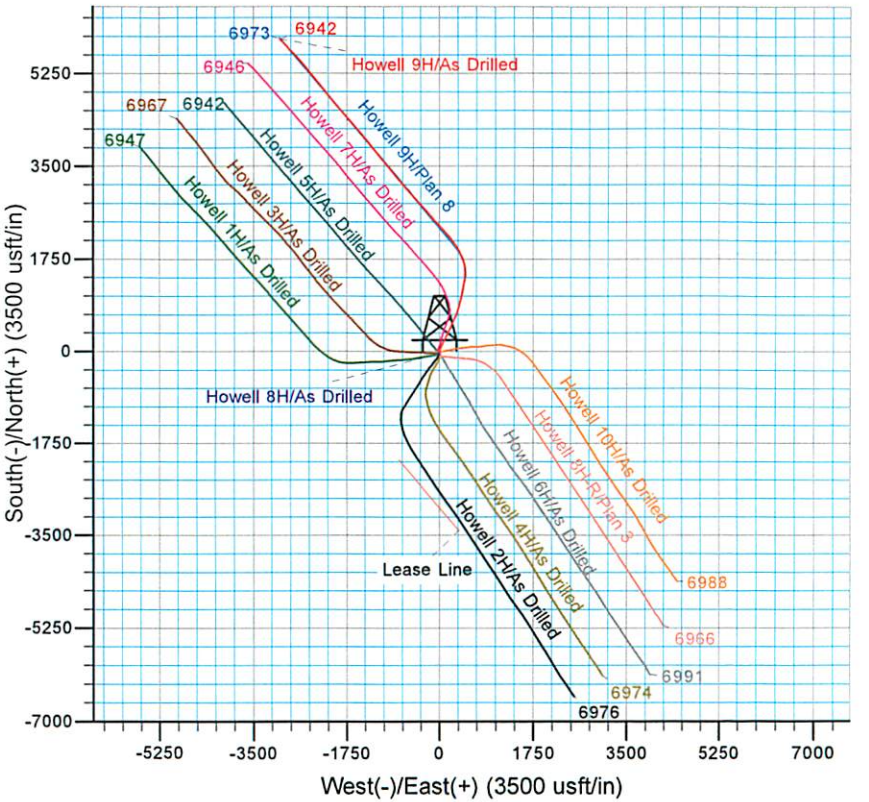
PROJECT DETAILS: Mary Prospect

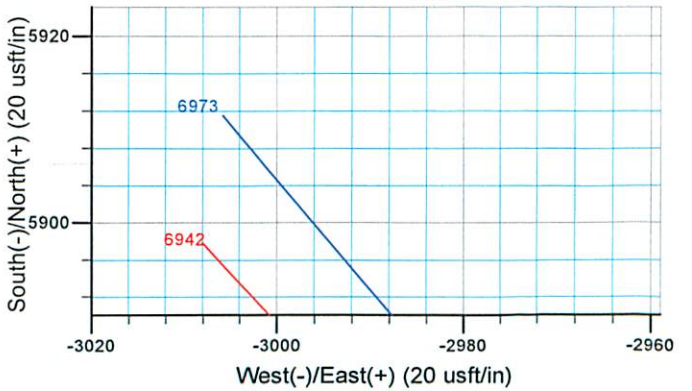
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	5750.3	15.20	25.14	5675.0	578.3	263.8	0.00	0.00	395.9	
2	6108.0	15.20	25.14	6020.1	663.2	303.7	0.00	0.00	453.5	
3	7252.3	65.53	11.03	6865.5	1356.3	478.6	4.44	-16.63	992.0	
4	7944.9	90.50	319.92	7018.0	1980.0	302.0	8.00	-70.99	1628.1	Howell 9H_LP 5
5	13083.0	90.50	319.92	6973.0	5911.5	-3005.8	0.00	0.00	6631.8	Howell 9H_PBHL 4







Stone Energy

Mary Prospect
Howell Pad
Howell 9H

OH

Design: As Drilled

Standard Survey Report

16 November, 2013

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www.scientificdrilling.com

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 9H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 9H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Mary Prospect, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Howell Pad

Site Position:		**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
From:	Map	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.83 °

Well Howell 9H

Well Position	**+N/-S**	0.0 usft	**Northing:**	401,764.78 usft	**Latitude:**	39° 35' 45.108 N
	+E/-W	0.0 usft	**Easting:**	1,635,249.12 usft	**Longitude:**	80° 47' 39.888 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,302.0 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	12/20/2012	-8.48	67.19	52,632
	IGRF2010	7/29/2013	-8.50	67.14	52,558
	BGGM2013	10/15/2013	-8.55	67.14	52,490

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	333.05

Survey Program **Date** 11/16/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
100.0	5,750.3	Survey 1 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
5,782.0	13,080.0	Survey 2 - MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.36	333.14	100.0	0.3	-0.1	0.3	0.36	0.36	0.00
First SDI Gyro Survey									
200.0	0.21	318.81	200.0	0.7	-0.4	0.8	0.16	-0.15	-14.33
300.0	0.22	324.23	300.0	1.0	-0.6	1.2	0.02	0.01	5.42
400.0	0.18	323.49	400.0	1.3	-0.8	1.5	0.04	-0.04	-0.74
500.0	0.11	344.85	500.0	1.5	-1.0	1.8	0.09	-0.07	21.36

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 9H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 9H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
600.0	0.06	343.34	600.0	1.6	-1.0	1.9	0.05	-0.05	-1.51
700.0	0.03	59.81	700.0	1.7	-1.0	2.0	0.06	-0.03	76.47
800.0	0.09	193.59	800.0	1.6	-1.0	1.9	0.11	0.06	133.78
900.0	0.06	242.63	900.0	1.5	-1.1	1.8	0.07	-0.03	49.04
1,000.0	0.10	165.02	1,000.0	1.4	-1.1	1.8	0.11	0.04	-77.61
1,100.0	0.14	203.46	1,100.0	1.2	-1.1	1.6	0.09	0.04	38.44
1,200.0	0.23	197.99	1,200.0	0.9	-1.2	1.4	0.09	0.09	-5.47
1,300.0	0.18	187.48	1,300.0	0.6	-1.3	1.1	0.06	-0.05	-10.51
1,400.0	0.10	207.63	1,400.0	0.3	-1.4	0.9	0.09	-0.08	20.15
1,500.0	0.18	264.05	1,500.0	0.3	-1.6	0.9	0.15	0.08	56.42
1,600.0	0.32	257.93	1,600.0	0.2	-2.0	1.1	0.14	0.14	-6.12
1,700.0	0.36	220.38	1,700.0	-0.1	-2.5	1.0	0.22	0.04	-37.55
1,800.0	0.33	194.05	1,800.0	-0.6	-2.7	0.7	0.16	-0.03	-26.33
1,900.0	0.42	129.06	1,900.0	-1.1	-2.5	0.1	0.41	0.09	-64.99
2,000.0	0.38	123.13	2,000.0	-1.6	-2.0	-0.5	0.06	-0.04	-5.93
2,100.0	0.44	138.99	2,100.0	-2.0	-1.4	-1.2	0.13	0.06	15.86
2,200.0	0.42	153.93	2,200.0	-2.6	-1.0	-1.9	0.11	-0.02	14.94
2,300.0	0.42	134.22	2,300.0	-3.2	-0.6	-2.6	0.14	0.00	-19.71
2,400.0	0.39	134.32	2,400.0	-3.7	-0.1	-3.3	0.03	-0.03	0.10
2,500.0	0.29	124.88	2,500.0	-4.1	0.4	-3.8	0.11	-0.10	-9.44
2,600.0	0.67	68.45	2,600.0	-4.0	1.1	-4.1	0.56	0.38	-56.43
2,700.0	1.93	25.19	2,699.9	-2.3	2.4	-3.1	1.51	1.26	-43.26
2,800.0	3.39	19.18	2,799.8	2.0	4.1	0.0	1.48	1.46	-6.01
2,900.0	4.71	16.24	2,899.6	8.8	6.2	5.0	1.34	1.32	-2.94
3,000.0	5.25	15.25	2,999.2	17.1	8.5	11.4	0.55	0.54	-0.99
3,100.0	5.43	12.64	3,098.8	26.1	10.8	18.4	0.30	0.18	-2.61
3,200.0	6.04	15.53	3,198.3	35.8	13.2	25.9	0.67	0.61	2.89
3,300.0	7.24	19.60	3,297.6	46.8	16.7	34.2	1.29	1.20	4.07
3,400.0	8.61	21.57	3,396.6	59.7	21.6	43.4	1.40	1.37	1.97
3,500.0	9.80	24.92	3,495.3	74.4	27.9	53.7	1.30	1.19	3.35
3,600.0	11.21	27.36	3,593.7	90.8	36.0	64.6	1.48	1.41	2.44
3,700.0	12.65	26.37	3,691.5	109.2	45.3	76.8	1.45	1.44	-0.99
3,800.0	13.72	24.42	3,788.9	129.8	55.1	90.7	1.16	1.07	-1.95
3,900.0	14.56	24.64	3,885.8	152.0	65.2	106.0	0.84	0.84	0.22
4,000.0	15.18	24.30	3,982.5	175.4	75.9	122.0	0.63	0.62	-0.34
4,100.0	15.23	23.81	4,079.0	199.3	86.6	138.5	0.14	0.05	-0.49
4,200.0	14.94	22.92	4,175.5	223.2	96.9	155.1	0.37	-0.29	-0.89
4,300.0	14.26	25.01	4,272.3	246.3	107.1	171.0	0.86	-0.68	2.09
4,400.0	13.71	25.02	4,369.3	268.2	117.3	185.9	0.55	-0.55	0.01
4,500.0	13.13	22.59	4,466.6	289.4	126.7	200.5	0.81	-0.58	-2.43
4,600.0	12.41	22.11	4,564.1	309.8	135.1	214.9	0.73	-0.72	-0.48
4,700.0	12.47	23.93	4,661.8	329.7	143.5	228.8	0.40	0.06	1.82
4,800.0	13.70	27.39	4,759.2	350.0	153.4	242.5	1.46	1.23	3.46
4,900.0	15.02	28.81	4,856.1	371.9	165.1	256.7	1.37	1.32	1.42

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 9H
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Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 9H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,000.0	15.03	29.44	4,952.7	394.6	177.7	271.2	0.16	0.01	0.63
5,100.0	15.98	28.55	5,049.0	417.9	190.6	286.1	0.98	0.95	-0.89
5,200.0	16.41	26.94	5,145.0	442.6	203.6	302.3	0.62	0.43	-1.61
5,300.0	16.01	24.98	5,241.1	467.7	215.8	319.1	0.68	-0.40	-1.96
5,400.0	15.71	22.57	5,337.3	492.7	226.8	336.4	0.72	-0.30	-2.41
5,500.0	15.50	21.38	5,433.6	517.7	236.9	354.1	0.38	-0.21	-1.19
5,600.0	15.31	24.26	5,530.0	542.1	247.2	371.2	0.79	-0.19	2.88
5,700.0	15.42	24.85	5,626.4	566.2	258.2	387.7	0.19	0.11	0.59
5,750.3	15.20	25.14	5,674.9	578.3	263.8	395.9	0.46	-0.44	0.58
Last SDI Gyro Survey									
5,782.0	15.41	23.28	5,705.5	585.9	267.3	401.1	1.68	0.66	-5.87
First SDI MWD Survey									
5,802.0	15.38	24.62	5,724.8	590.8	269.4	404.5	1.79	-0.15	6.70
5,864.0	14.83	23.97	5,784.6	605.5	276.1	414.6	0.93	-0.89	-1.05
5,928.0	14.37	23.65	5,846.6	620.2	282.6	424.8	0.73	-0.72	-0.50
5,991.0	15.04	25.61	5,907.5	634.8	289.2	434.7	1.32	1.06	3.11
6,054.0	13.76	25.23	5,968.5	648.9	296.0	444.3	2.04	-2.03	-0.60
6,086.0	13.25	25.08	5,999.6	655.7	299.2	448.9	1.60	-1.59	-0.47
6,118.0	13.99	24.88	6,030.7	662.5	302.3	453.5	2.32	2.31	-0.63
6,150.0	15.81	24.30	6,061.7	670.0	305.8	458.7	5.71	5.69	-1.81
6,181.0	17.21	23.72	6,091.4	678.1	309.3	464.2	4.55	4.52	-1.87
6,213.0	18.70	22.32	6,121.8	687.1	313.2	470.6	4.85	4.66	-4.38
6,246.0	20.01	21.28	6,153.0	697.3	317.3	477.8	4.10	3.97	-3.15
6,277.0	21.12	22.47	6,182.0	707.4	321.3	484.9	3.83	3.58	3.84
6,309.0	22.83	20.97	6,211.7	718.5	325.7	492.8	5.62	5.34	-4.69
6,341.0	24.29	20.81	6,241.0	730.5	330.3	501.4	4.57	4.56	-0.50
6,373.0	25.91	20.63	6,270.0	743.2	335.1	510.6	5.07	5.06	-0.56
6,405.0	27.01	19.38	6,298.6	756.6	340.0	520.3	3.85	3.44	-3.91
6,437.0	28.62	17.52	6,326.9	770.7	344.7	530.8	5.72	5.03	-5.81
6,468.0	31.15	16.23	6,353.8	785.5	349.2	541.9	8.42	8.16	-4.16
6,500.0	33.07	15.72	6,380.9	801.9	353.8	554.4	6.06	6.00	-1.59
6,532.0	34.52	16.08	6,407.5	819.0	358.7	567.4	4.57	4.53	1.13
6,564.0	35.58	16.11	6,433.7	836.6	363.8	580.9	3.31	3.31	0.09
6,594.0	36.90	15.40	6,457.9	853.7	368.6	593.9	4.62	4.40	-2.37
6,624.0	38.93	15.44	6,481.5	871.5	373.5	607.5	6.77	6.77	0.13
6,654.0	40.38	15.08	6,504.6	889.9	378.6	621.7	4.89	4.83	-1.20
6,683.0	41.42	15.22	6,526.6	908.3	383.5	635.8	3.60	3.59	0.48
6,714.0	42.00	14.64	6,549.7	928.2	388.8	651.1	2.25	1.87	-1.87
6,745.0	43.30	14.50	6,572.5	948.5	394.1	666.9	4.20	4.19	-0.45
6,775.0	44.73	13.88	6,594.1	968.7	399.2	682.6	4.98	4.77	-2.07
6,804.0	47.32	13.91	6,614.2	989.0	404.3	698.4	8.93	8.93	0.10
6,835.0	48.64	13.35	6,635.0	1,011.4	409.7	715.8	4.46	4.26	-1.81
6,865.0	49.66	13.42	6,654.6	1,033.5	414.9	732.2	3.40	3.40	0.23

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 9H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 9H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,896.0	50.78	12.71	6,674.4	1,056.7	420.3	751.4	4.02	3.61	-2.29
6,926.0	52.62	11.74	6,693.0	1,079.7	425.3	769.6	6.64	6.13	-3.23
6,957.0	54.09	10.82	6,711.5	1,104.1	430.2	789.2	5.31	4.74	-2.97
6,987.0	54.55	10.28	6,729.0	1,128.0	434.6	808.5	2.12	1.53	-1.80
7,017.0	55.08	10.26	6,746.3	1,152.1	439.0	828.0	1.77	1.77	-0.07
7,048.0	56.61	10.47	6,763.7	1,177.4	443.6	848.4	4.97	4.94	0.68
7,078.0	57.84	11.24	6,780.0	1,202.2	448.4	868.4	4.63	4.10	2.57
7,108.0	59.29	11.33	6,795.6	1,227.3	453.4	888.5	4.84	4.83	0.30
7,138.0	60.37	11.64	6,810.7	1,252.7	458.5	908.8	3.71	3.60	1.03
7,168.0	61.65	11.53	6,825.2	1,278.4	463.8	929.3	4.28	4.27	-0.37
7,198.0	62.88	10.43	6,839.2	1,304.4	468.9	950.3	5.23	4.10	-3.67
7,229.0	64.27	8.93	6,853.0	1,331.8	473.5	972.5	6.24	4.48	-4.84
7,259.0	65.81	6.94	6,865.6	1,358.7	477.3	994.9	7.91	5.13	-6.63
7,290.0	66.87	5.95	6,878.1	1,387.0	480.5	1,018.6	4.50	3.42	-3.19
7,320.0	68.54	4.26	6,889.5	1,414.6	482.9	1,042.1	7.63	5.57	-5.63
7,350.0	70.92	2.77	6,899.9	1,442.7	484.7	1,066.3	9.20	7.93	-4.97
7,381.0	72.51	1.80	6,909.6	1,472.1	485.8	1,092.0	5.93	5.13	-3.13
7,411.0	73.76	359.99	6,918.3	1,500.8	486.3	1,117.4	7.12	4.17	-6.03
7,441.0	74.29	358.32	6,926.5	1,529.6	485.8	1,143.3	5.64	1.77	-5.57
7,471.0	75.56	355.11	6,934.3	1,558.6	484.2	1,169.8	11.17	4.23	-10.70
7,502.0	76.04	352.52	6,941.9	1,588.4	480.9	1,197.9	8.25	1.55	-8.35
7,533.0	76.49	350.47	6,949.3	1,618.2	476.5	1,226.5	6.59	1.45	-6.61
7,563.0	77.05	348.81	6,956.2	1,646.9	471.2	1,254.5	5.70	1.87	-5.53
7,593.0	76.65	345.67	6,963.0	1,675.4	464.8	1,282.8	10.28	-1.33	-10.47
7,625.0	76.16	342.86	6,970.5	1,705.4	456.4	1,313.3	8.67	-1.53	-8.78
7,657.0	76.60	339.58	6,978.1	1,734.8	446.3	1,344.1	10.06	1.38	-10.25
7,689.0	78.79	337.24	6,984.9	1,763.9	434.8	1,375.2	9.89	6.84	-7.31
7,721.0	81.69	334.67	6,990.3	1,792.7	422.0	1,406.7	12.03	9.06	-8.03
7,752.0	83.11	333.50	6,994.4	1,820.3	408.6	1,437.4	5.91	4.58	-3.77
7,784.0	83.42	333.19	6,998.2	1,848.7	394.3	1,469.2	1.37	0.97	-0.97
7,816.0	83.74	332.50	7,001.7	1,877.0	379.8	1,501.0	2.36	1.00	-2.16
7,848.0	84.56	330.22	7,005.0	1,904.9	364.5	1,532.8	7.54	2.56	-7.13
7,880.0	85.56	328.64	7,007.8	1,932.4	348.3	1,564.6	5.83	3.13	-4.94
7,911.0	85.90	328.28	7,010.1	1,958.7	332.1	1,595.4	1.60	1.10	-1.16
7,943.0	86.24	328.36	7,012.3	1,985.9	315.4	1,627.3	1.09	1.06	0.25
7,975.0	86.64	328.28	7,014.2	2,013.1	298.6	1,659.1	1.27	1.25	-0.25
8,038.0	88.96	323.94	7,016.7	2,065.3	263.5	1,721.6	7.81	3.68	-6.89
8,102.0	90.13	320.49	7,017.2	2,115.9	224.3	1,784.4	5.69	1.83	-5.39
8,166.0	90.50	318.89	7,016.8	2,164.7	182.9	1,846.7	2.57	0.58	-2.50
8,229.0	90.23	318.82	7,016.4	2,212.1	141.5	1,907.8	0.44	-0.43	-0.11
8,292.0	89.76	319.40	7,016.4	2,259.7	100.2	1,968.9	1.18	-0.75	0.92
8,355.0	90.57	319.18	7,016.2	2,307.5	59.1	2,030.1	1.33	1.29	-0.35
8,419.0	90.44	318.37	7,015.7	2,355.6	17.0	2,092.1	1.28	-0.20	-1.27
8,483.0	90.37	318.47	7,015.2	2,403.5	-25.5	2,154.0	0.18	-0.11	0.16

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 9H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 9H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,546.0	90.20	317.55	7,014.9	2,450.3	-67.7	2,214.9	1.49	-0.27	-1.46
8,610.0	89.97	317.71	7,014.8	2,497.6	-110.8	2,276.6	0.44	-0.36	0.25
8,673.0	89.19	317.13	7,015.3	2,544.0	-153.4	2,337.2	1.54	-1.24	-0.92
8,737.0	90.17	318.61	7,015.6	2,591.5	-196.4	2,399.0	2.77	1.53	2.31
8,801.0	91.14	319.83	7,014.9	2,639.9	-238.1	2,461.1	2.44	1.52	1.91
8,864.0	90.70	319.38	7,013.9	2,687.9	-279.0	2,522.4	1.00	-0.70	-0.71
8,928.0	91.54	317.89	7,012.6	2,735.9	-321.3	2,584.4	2.67	1.31	-2.33
8,990.0	91.11	317.05	7,011.2	2,781.6	-363.2	2,644.1	1.52	-0.69	-1.35
9,054.0	91.21	317.66	7,009.9	2,828.7	-406.5	2,705.7	0.97	0.16	0.95
9,116.0	92.15	317.29	7,008.1	2,874.3	-448.4	2,765.4	1.63	1.52	-0.60
9,179.0	91.58	317.09	7,006.0	2,920.5	-491.2	2,826.0	0.96	-0.90	-0.32
9,243.0	91.64	316.99	7,004.2	2,967.3	-534.8	2,887.4	0.18	0.09	-0.16
9,307.0	91.61	317.87	7,002.4	3,014.5	-578.1	2,949.1	1.38	-0.05	1.38
9,371.0	90.91	318.65	7,001.0	3,062.2	-620.7	3,010.9	1.64	-1.09	1.22
9,435.0	90.77	320.23	7,000.1	3,110.8	-662.3	3,073.1	2.48	-0.22	2.47
9,498.0	90.74	319.75	6,999.3	3,159.1	-702.8	3,134.5	0.76	-0.05	-0.76
9,562.0	89.19	320.21	6,999.3	3,208.1	-743.9	3,196.8	2.53	-2.42	0.72
9,626.0	88.83	320.48	7,000.4	3,257.3	-784.8	3,259.2	0.70	-0.56	0.42
9,688.0	89.53	320.26	7,001.3	3,305.1	-824.3	3,319.7	1.18	1.13	-0.35
9,751.0	90.50	319.50	7,001.3	3,353.3	-864.9	3,381.1	1.96	1.54	-1.21
9,815.0	91.21	319.70	7,000.3	3,402.0	-906.4	3,443.3	1.15	1.11	0.31
9,879.0	91.17	319.37	6,999.0	3,450.7	-947.9	3,505.5	0.52	-0.06	-0.52
9,942.0	90.80	318.85	6,997.9	3,498.3	-989.1	3,566.7	1.01	-0.59	-0.83
10,006.0	90.40	319.73	6,997.2	3,546.8	-1,030.9	3,628.8	1.51	-0.63	1.38
10,070.0	89.66	320.24	6,997.2	3,595.8	-1,072.0	3,691.2	1.40	-1.16	0.80
10,132.0	90.44	320.75	6,997.1	3,643.7	-1,111.5	3,751.7	1.50	1.26	0.82
10,196.0	90.13	320.53	6,996.8	3,693.1	-1,152.0	3,814.2	0.59	-0.48	-0.34
10,260.0	89.76	321.10	6,996.9	3,742.7	-1,192.5	3,876.7	1.06	-0.58	0.89
10,323.0	90.74	321.65	6,996.6	3,792.0	-1,231.8	3,938.4	1.78	1.56	0.87
10,387.0	90.74	321.18	6,995.8	3,842.0	-1,271.7	4,001.1	0.73	0.00	-0.73
10,451.0	90.54	322.05	6,995.1	3,892.2	-1,311.5	4,063.8	1.39	-0.31	1.36
10,514.0	91.31	322.12	6,994.1	3,941.8	-1,350.2	4,125.7	1.23	1.22	0.11
10,578.0	91.31	321.87	6,992.6	3,992.3	-1,389.6	4,188.5	0.39	0.00	-0.39
10,641.0	90.34	319.93	6,991.7	4,041.1	-1,429.3	4,250.0	3.44	-1.54	-3.08
10,705.0	89.97	320.08	6,991.5	4,090.2	-1,470.4	4,312.4	0.62	-0.58	0.23
10,769.0	90.77	319.42	6,991.1	4,139.0	-1,511.8	4,374.7	1.62	1.25	-1.03
10,832.0	91.54	320.24	6,989.8	4,187.2	-1,552.4	4,436.0	1.79	1.22	1.30
10,895.0	91.81	319.92	6,988.0	4,235.4	-1,592.8	4,497.4	0.66	0.43	-0.51
10,959.0	91.68	319.13	6,986.0	4,284.1	-1,634.3	4,559.6	1.25	-0.20	-1.23
11,023.0	91.61	318.60	6,984.2	4,332.3	-1,676.4	4,621.6	0.83	-0.11	-0.83
11,087.0	91.21	318.36	6,982.6	4,380.2	-1,718.8	4,683.5	0.73	-0.63	-0.38
11,150.0	90.64	318.39	6,981.6	4,427.3	-1,760.7	4,744.4	0.91	-0.90	0.05
11,214.0	90.60	318.17	6,980.9	4,475.0	-1,803.3	4,806.3	0.35	-0.06	-0.34

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 9H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 9H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,278.0	90.27	318.64	6,980.4	4,522.9	-1,845.7	4,868.2	0.90	-0.52	0.73
11,342.0	90.77	319.34	6,979.9	4,571.2	-1,887.7	4,930.3	1.34	0.78	1.09
11,405.0	90.67	320.40	6,979.1	4,619.4	-1,928.3	4,991.7	1.69	-0.16	1.68
11,469.0	91.61	319.40	6,977.8	4,668.3	-1,969.6	5,054.0	2.14	1.47	-1.56
11,533.0	91.54	320.60	6,976.0	4,717.3	-2,010.7	5,116.3	1.88	-0.11	1.88
11,596.0	90.80	321.55	6,974.7	4,766.3	-2,050.3	5,177.9	1.91	-1.17	1.51
11,660.0	90.37	322.09	6,974.1	4,816.6	-2,089.8	5,240.7	1.08	-0.67	0.84
11,723.0	91.78	322.73	6,972.9	4,866.5	-2,128.2	5,302.6	2.46	2.24	1.02
11,787.0	92.05	322.06	6,970.8	4,917.2	-2,167.3	5,365.4	1.13	0.42	-1.05
11,850.0	91.17	322.17	6,969.0	4,966.9	-2,205.9	5,427.3	1.41	-1.40	0.17
11,914.0	90.87	321.38	6,967.9	5,017.2	-2,245.5	5,490.0	1.32	-0.47	-1.23
11,977.0	90.10	321.43	6,967.3	5,066.4	-2,284.8	5,551.7	1.22	-1.22	0.08
12,041.0	91.07	321.20	6,966.7	5,116.4	-2,324.8	5,614.4	1.56	1.52	-0.36
12,105.0	91.17	321.16	6,965.4	5,166.2	-2,364.9	5,677.0	0.17	0.16	-0.06
12,168.0	90.37	320.63	6,964.6	5,215.1	-2,404.7	5,738.6	1.52	-1.27	-0.84
12,232.0	90.97	321.41	6,963.8	5,264.9	-2,444.9	5,801.2	1.54	0.94	1.22
12,295.0	91.78	320.78	6,962.3	5,313.9	-2,484.5	5,862.8	1.63	1.29	-1.00
12,359.0	91.85	320.75	6,960.3	5,363.4	-2,524.9	5,925.3	0.12	0.11	-0.05
12,423.0	90.17	319.42	6,959.2	5,412.5	-2,566.0	5,987.6	3.35	-2.63	-2.08
12,487.0	89.13	318.92	6,959.6	5,460.9	-2,607.8	6,049.8	1.80	-1.63	-0.78
12,550.0	89.77	319.07	6,960.2	5,508.5	-2,649.2	6,110.9	1.04	1.02	0.24
12,614.0	90.13	318.77	6,960.2	5,556.7	-2,691.2	6,173.0	0.73	0.56	-0.47
12,676.0	91.31	317.97	6,959.4	5,603.0	-2,732.4	6,232.9	2.30	1.90	-1.29
12,740.0	91.88	317.02	6,957.7	5,650.2	-2,775.6	6,294.6	1.73	0.89	-1.48
12,803.0	91.27	316.38	6,955.9	5,696.0	-2,818.8	6,355.0	1.40	-0.97	-1.02
12,865.0	92.01	316.39	6,954.1	5,740.9	-2,861.6	6,414.4	1.19	1.19	0.02
12,928.0	92.85	316.69	6,951.5	5,786.6	-2,904.9	6,474.7	1.42	1.33	0.48
12,991.0	93.43	317.07	6,948.0	5,832.5	-2,947.9	6,535.1	1.10	0.92	0.60
13,023.0	93.79	317.42	6,946.0	5,856.0	-2,969.6	6,565.9	1.57	1.13	1.09
Last SDI MWD Survey									
13,080.0	93.79	317.42	6,942.2	5,897.8	-3,008.0	6,620.6	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
100.0	100.0	0.3	-0.1	First SDI Gyro Survey
5,750.3	5,674.9	578.3	263.8	Last SDI Gyro Survey
5,782.0	5,705.5	585.9	267.3	First SDI MWD Survey
13,023.0	6,946.0	5,856.0	-2,969.6	Last SDI MWD Survey
13,080.0	6,942.2	5,897.8	-3,008.0	Projection to Bit

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/24/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	
Operator Name:	Stone Energy
Well Name and Number:	Howell 9H
Longitude:	
Latitude:	
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	6868476

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
H015%, Slickwater, WF115	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Accelerator, Fluid Loss Additive , Propping	Water (Including Mix Water Supplied by Client)*	NA		87.55245%	
			Crystalline silica	14808-60-7	98.28706%	12.23433%	
			Hydrochloric acid	7647-01-0	0.81222%	0.10110%	
			Carbohydrate polymer	Proprietary	0.49477%	0.06159%	
			Ammonium sulfate	Proprietary	0.18685%	0.02326%	
			Calcium chloride	10043-52-4	0.13392%	0.01667%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06005%	0.00748%	
			Glutaraldehyde	111-30-8	0.05293%	0.00659%	
			Diammonium peroxidisulphate	7727-54-0	0.02263%	0.00282%	
			Amine derivative	Proprietary	0.01689%	0.00210%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00462%	0.00058%	
			Ethane-1,2-diol	107-21-1	0.00370%	0.00046%	
			Trisodium ortho phosphate	7601-54-9	0.00370%	0.00046%	
			Methanol	67-56-1	0.00335%	0.00042%	
			Sodium erythorbate	6381-77-7	0.00285%	0.00035%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00251%	0.00031%	
			Aliphatic acids	Proprietary	0.00251%	0.00031%	
			Prop-2-yn-1-ol	107-19-7	0.00084%	0.00010%	
			Polypropylene glycol	25322-69-4	0.00028%	0.00004%	

* 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%

Report ID: RPT-25897 (Generated on 3/31/2014 11:00 AM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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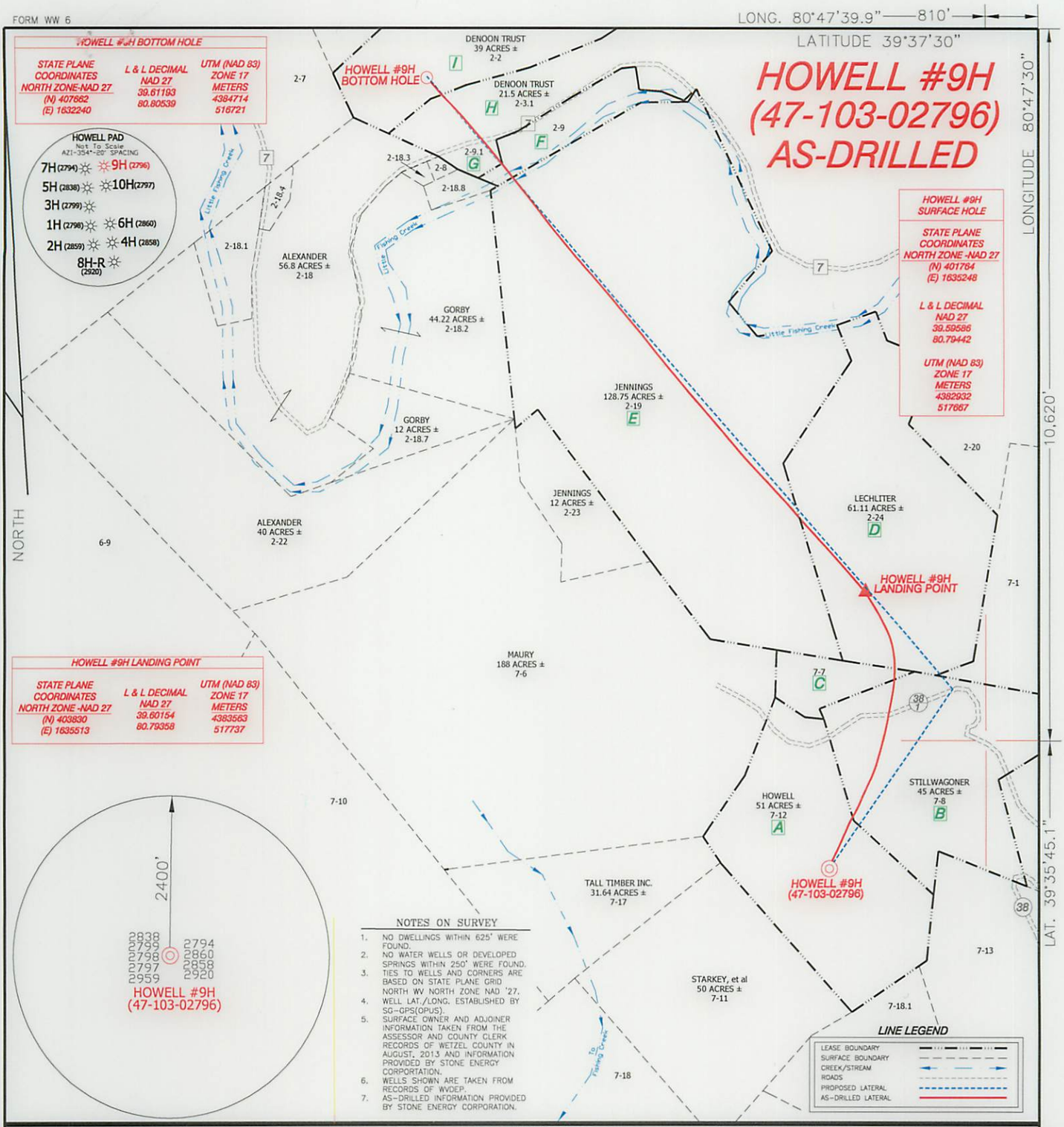

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE OCTOBER 22, 20 14

OPERATORS WELL NO. HOWELL #9H

API WELL NO. 47 — 103 — 02796
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2208 (BK 64-54)
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :
ELEVATION 1304' WATERSHED FISHING CREEK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'
SURFACE OWNER CHARLES & RUTH HOWELL ACREAGE 51±
ROYALTY OWNER CHARLES & RUTH HOWELL, et al LEASE ACREAGE 360.84±
PROPOSED WORK : LEASE NO. ___
DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD 6,942' MD 13,080'

COUNTY NAME
PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

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API 47 - 103 - 02797 County Wetzel District Green
Quad Porters Falls Pad Name Howell Field/Pool Name Enlow Mary
Farm name Howell, Charles and Ruth Well Number #10H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,382,926 Easting 517,668
Landing Point of Curve Northing 4,382,837 Easting 518,224
Bottom Hole Northing 4,381,538 Easting 519,107

Elevation (ft) 1,302 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 9/26/2012 Date drilling commenced 2/18/2013 Date drilling ceased 11/7/2013
Date completion activities began 1/31/2014 Date completion activities ceased 8/6/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 55 Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Reported Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,065 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/19/15 ✓
W.S. 6/01/15

WR-35
Rev. 8/23/13

API 47- 103 - 02797 Farm name Howell, Charles and Ruth Well number #10H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	40'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,306' KB 1,291' GL	New	J55	167' & 294'	Y - CTS
Coal	17.5"	13.375"	1,306' KB 1,291' GL	New	J55	167' & 294'	Y - CTS
Intermediate 1	12.25"	9.625"	2,469'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	13,179'	New	P110		N - TOC @ 198'
Tubing	N/A	2.375"	7,693'	New	N80		N/A
Packer type and depth set							

Comment Details Circulated 32 bbls cement to surface on the 13.375". Circulated 35 bbls cement to surface on the 9.625". Cement top on the 5.5" production casing is at 198'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	1,037	15.6	1.19	1,234	Surface	8.0
Coal	Class "A"	1,037	15.6	1.19	1,234	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-430 Tail-420	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.19	Lead-542 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-HalCem	Lead-860 Tail-1,840	Lead-15.3 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,084 Tail-2,208	198'	8.0
Tubing							

Drillers TD (ft) 13,186 MD / 6,983 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,891 MD/ 5,864 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and 24. Intermediate casing had bow spring centralizers placed on joints #'s 3, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53 and 56. Production casing had left/right rigid spiral centralizers were placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #168. From there bow spring centralizers were placed beginning on joint #176 and then every fifth joint up to joint #290. A total of 45 rigid left/right centralizers were used and 25 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you increase as you come up the hole.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 103 - 02797 Farm name Howell, Charles and Ruth Well number #10H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/15/14	12,894	13,059	72	Marcellus Shale
2	4/1/14	12,618	12,823	72	Marcellus Shale
3	4/3/14	12,340	12,535	72	Marcellus Shale
4	4/4/14	12,080	12,275	72	Marcellus Shale
5	4/5/14	11,809	12,004	72	Marcellus Shale
6	4/7/14	11,555	11,740	72	Marcellus Shale
7	4/8/14	11,296	11,483	72	Marcellus Shale
8	4/10/14	11,031	11,223	72	Marcellus Shale
9	4/12/14	10,750	10,947	72	Marcellus Shale
10	4/13/14	10,500	10,623	72	Marcellus Shale
11	4/14/14	10,231	10,423	72	Marcellus Shale
12	4/16/14	9,968	10,163	72	Marcellus Shale
13	4/18/14	9,700	9,891	72	Marcellus Shale
14	4/19/14	9,417	9,615	72	Marcellus Shale
15	4/22/14	9,156	9,351	72	Marcellus Shale
16	4/23/14	8,890	9,078	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/1/14	83.8	7,491	6,239	4,689	365,380		
2	4/3/14	84.8	7,379	6,252	4,718	409,000		
3	4/4/14	85.0	7,222	6,079	4,831	410,620		
4	4/5/14	85.1	7,496	5,770	4,805	411,520		
5	4/7/14	84.9	7,364	5,435	4,861	411,800		
6	4/8/14	83.5	7,376	5,848	4,832	410,960		
7	4/10/14	85.6	7,139	5,487	5,032	410,474		
8	4/12/14	80.5	6,962	7,385	5,061	414,559		
9	4/13/14	80.6	6,244	5,576	5,492	411,777		
10	4/14/14	79.1	6,292	6,013	5,177	411,084		
11	4/16/14	80.7	6,309	5,943	5,061	413,382		
12	4/18/14	80.8	6,611	5,163	4,831	408,760		
13	4/19/14	80.4	6,415	5,778	5,061	411,980		
14	4/22/14	80.4	6,278	6,096	5,005	416,240		
15	4/23/14	80.3	6,363	6,597	5,032	413,820		
16	4/24/14	79.1	6,844	6,256	4,517	413,880		

Please insert additional pages as applicable.

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API 47- 103 - 02797 Farm name Howell, Charles and Ruth Well number #10H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	4/24/14	8,633	8,823	72	Marcellus Shale
18	4/26/14	8,373	8,561	72	Marcellus Shale
19	4/27/14	8,112	8,303	72	Marcellus Shale
20	4/28/14	7,853	8,043	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	4/26/14	80.0	6,909	6,134	5,006	413,620		
18	4/27/14	80.1	6,682	6,028	4,604	412,340		
19	4/28/14	79.9	6,361	6,066	4,750	410,360		
20	4/29/14	80.1	6,481	6,286	4,650	410,940		

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PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,020' to 6,985' TVD	7,865' to 13,059' MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 2,330 psi Bottom Hole 4,619 calculated psi DURATION OF TEST 48 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3,079 mcfpd	bpd	240 bpd	408 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 15				

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Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger/Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/3/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

HOWELL #10H
API 47-103-02797
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,065		FW @ 55
Coal	1,065		*	1,068		
Sandstone & Shale	1,068		*	2,146		No Sw Reported
Little Lime	2,146		*	2,200		
Big Lime	2,200		*	2,253		
Big Injun	2,253		*	2,296		
Sandstone & Shale	2,296		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,045		
Gordon	3,045		*	3,095		
Undiff Devonian Shale	3,095		*	6,296	6,357	
Rhinestreet	6,296	6,357	~	6,626	6,848	
Cashaqua	6,626	6,848	~	6,825	7,236	
Middlesex	6,825	7,236	~	6,836	7,260	
West River	6,836	7,260	~	6,903	7,426	
Geneseo	6,903	7,426	~	6,918	7,468	
Tully Limestone	6,918	7,468	~	6,951	7,559	
Hamilton Shale	6,951	7,559	~	7,002	7,746	
Marcellus	7,002	7,746	~	6,983	13,186	
TD				6,983	13,186	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Project: Mary Prospect
Site: Howell Pad
Well: Howell 10H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Howell 10H

Ground Level: 1302.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	401744.71	1635251.37	39° 35' 44.910 N	80° 47' 39.856 W

REFERENCE INFORMATION

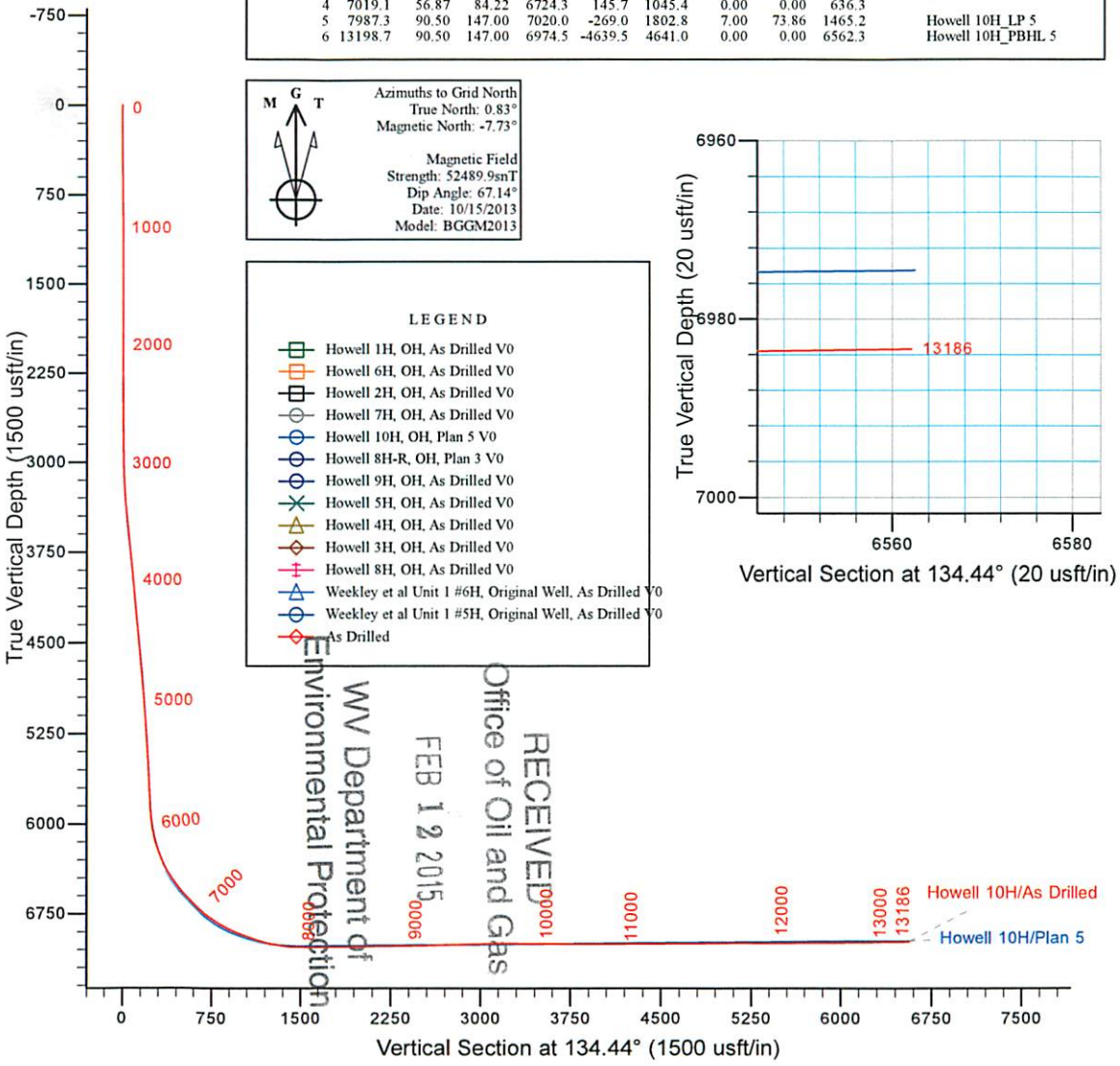
Co-ordinate (N/E) Reference: Well Howell 10H, Grid North
Vertical (TVD) Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Calculation Method: Minimum Curvature

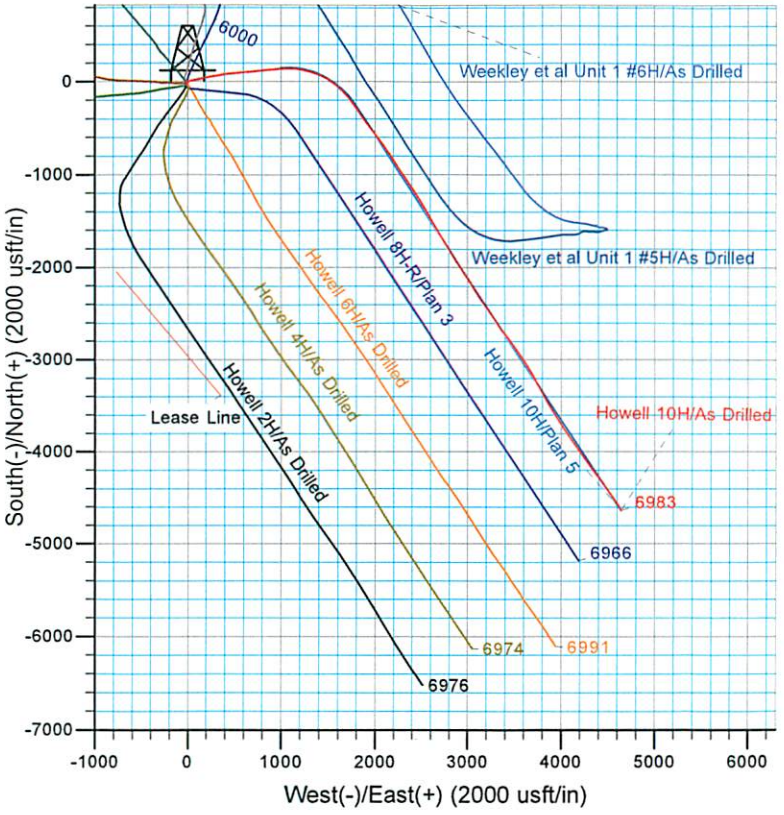
PROJECT DETAILS: Mary Prospect

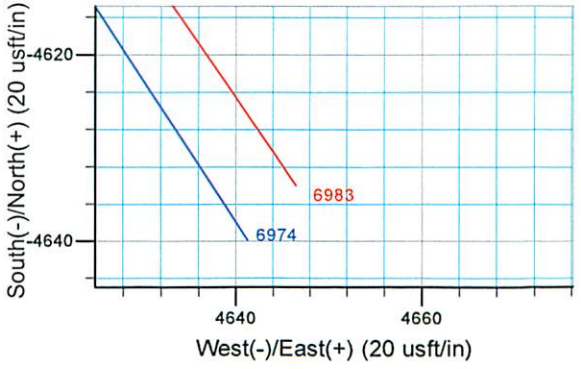
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	5787.0	4.32	82.52	5756.8	78.7	396.4	0.00	0.00	224.7	
2	5887.0	4.32	82.52	5856.5	79.7	403.9	0.00	0.00	229.3	
3	6762.9	56.87	84.22	6584.3	124.1	831.9	6.00	1.80	500.6	
4	7019.1	56.87	84.22	6724.3	145.7	1045.4	0.00	0.00	636.3	
5	7987.3	90.50	147.00	7020.0	-269.0	1802.8	7.00	73.86	1465.2	Howell 10H_LP 5
6	13198.7	90.50	147.00	6974.5	-4639.5	4641.0	0.00	0.00	6562.3	Howell 10H_PBHL 5







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Stone Energy

Mary Prospect
Howell Pad
Howell 10H

OH

Design: As Drilled

Standard Survey Report

25 November, 2013

Scientific Drilling

www.scientificdrilling.com

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STONE ENERGY

Survey Report

Scientific Drilling

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 10H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 10H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Mary Prospect, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Howell Pad

Site Position:		**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
From:	Map	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.83 °

Well Howell 10H

Well Position	**+N/-S**	0.0 usft	**Northing:**	401,744.71 usft	**Latitude:**	39° 35' 44.910 N
	+E/-W	0.0 usft	**Easting:**	1,635,251.37 usft	**Longitude:**	80° 47' 39.856 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,302.0 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	12/20/2012	-8.48	67.19	52,632
	IGRF2010	7/29/2013	-8.50	67.14	52,558
	BGGM2013	10/4/2013	-8.55	67.15	52,494
	BGGM2013	10/15/2013	-8.55	67.14	52,490

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	134.44

Survey Program **Date** 11/25/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
103.0	5,787.0	Survey 3 - Top Hole (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
2,503.0	13,186.0	Survey 2 - SDI MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
103.0	1.21	234.85	103.0	-0.6	-0.9	-0.2	1.17	1.17	0.00
First SDI Gyro Survey									
203.0	0.89	235.36	203.0	-1.7	-2.4	-0.5	0.32	-0.32	0.51
303.0	0.45	220.16	303.0	-2.4	-3.3	-0.7	0.47	-0.44	-15.20
403.0	0.29	195.82	403.0	-3.0	-3.6	-0.5	0.22	-0.16	-24.34

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 10H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 10H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
503.0	0.21	209.92	503.0	-3.4	-3.8	-0.3	0.10	-0.08	14.10
603.0	0.40	166.47	603.0	-3.9	-3.8	0.0	0.29	0.19	-43.45
703.0	0.21	144.31	703.0	-4.3	-3.6	0.5	0.22	-0.19	-22.16
803.0	0.14	136.92	803.0	-4.6	-3.4	0.8	0.07	-0.07	-7.39
903.0	0.13	205.13	903.0	-4.8	-3.4	0.9	0.15	-0.01	68.21
1,003.0	0.20	181.72	1,003.0	-5.1	-3.4	1.1	0.10	0.07	-23.41
1,103.0	0.27	180.86	1,103.0	-5.5	-3.4	1.4	0.07	0.07	-0.86
1,203.0	0.19	141.38	1,203.0	-5.8	-3.3	1.7	0.17	-0.08	-39.48
1,303.0	0.13	189.65	1,303.0	-6.1	-3.2	1.9	0.14	-0.06	48.27
1,403.0	0.07	297.90	1,403.0	-6.2	-3.3	1.9	0.17	-0.06	108.25
1,503.0	0.16	207.09	1,503.0	-6.3	-3.4	1.9	0.18	0.09	-90.81
1,603.0	0.08	268.49	1,603.0	-6.4	-3.6	1.9	0.14	-0.08	61.40
1,703.0	0.47	240.79	1,703.0	-6.6	-4.0	1.8	0.40	0.39	-27.70
1,803.0	0.45	223.77	1,803.0	-7.1	-4.6	1.6	0.14	-0.02	-17.02
1,903.0	0.35	216.91	1,903.0	-7.6	-5.1	1.7	0.11	-0.10	-6.86
2,003.0	0.34	224.30	2,003.0	-8.0	-5.5	1.7	0.05	-0.01	7.39
2,103.0	0.44	228.35	2,102.9	-8.5	-6.0	1.7	0.10	0.10	4.05
2,203.0	0.46	210.90	2,202.9	-9.1	-6.5	1.8	0.14	0.02	-17.45
2,303.0	0.32	158.04	2,302.9	-9.7	-6.6	2.1	0.37	-0.14	-52.86
2,403.0	0.09	100.36	2,402.9	-10.0	-6.4	2.4	0.28	-0.23	-57.68
2,503.0	0.39	44.61	2,502.9	-9.8	-6.1	2.5	0.35	0.30	-55.75
First SDI MWD Survey									
2,603.0	1.80	73.45	2,602.9	-9.1	-4.3	3.3	1.47	1.41	28.84
2,703.0	1.93	75.65	2,702.9	-8.2	-1.2	4.9	0.15	0.13	2.20
2,803.0	2.29	68.67	2,802.8	-7.1	2.3	6.6	0.44	0.36	-6.98
2,903.0	3.77	69.52	2,902.7	-5.2	7.3	8.8	1.48	1.48	0.85
3,003.0	4.83	64.20	3,002.4	-2.2	14.1	11.6	1.13	1.06	-5.32
3,103.0	5.35	63.99	3,102.0	1.7	22.1	14.6	0.52	0.52	-0.21
3,203.0	6.25	64.21	3,201.5	6.1	31.2	18.0	0.90	0.90	0.22
3,303.0	7.67	74.38	3,300.7	10.2	42.5	23.2	1.87	1.42	10.17
3,403.0	8.89	75.58	3,399.7	14.0	56.4	30.5	1.23	1.22	1.20
3,503.0	10.06	78.11	3,498.3	17.7	72.5	39.4	1.24	1.17	2.53
3,603.0	10.53	82.97	3,596.7	20.6	90.1	49.9	0.99	0.47	4.86
3,703.0	10.79	80.82	3,695.0	23.2	108.4	61.1	0.48	0.26	-2.15
3,803.0	11.01	77.89	3,793.2	26.7	127.0	71.9	0.60	0.22	-2.93
3,903.0	11.03	75.67	3,891.3	31.1	145.6	82.2	0.42	0.02	-2.22
4,003.0	10.14	75.54	3,989.6	35.7	163.4	91.7	0.89	-0.89	-0.13
4,103.0	10.09	78.92	4,088.1	39.5	180.5	101.2	0.60	-0.05	3.38
4,203.0	9.80	75.09	4,186.6	43.4	197.3	110.5	0.72	-0.29	-3.83
4,303.0	9.81	79.90	4,285.1	47.1	213.9	119.8	0.82	0.01	4.81
4,403.0	9.55	82.82	4,383.7	49.6	230.5	129.8	0.56	-0.26	2.92
4,503.0	9.62	79.65	4,482.3	52.2	247.0	139.8	0.53	0.07	-3.17
4,603.0	9.21	77.42	4,581.0	55.4	263.0	149.0	0.55	-0.41	-2.23
4,703.0	9.03	80.42	4,679.7	58.5	278.6	158.0	0.51	-0.18	3.00

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 10H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 10H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,803.0	8.24	81.12	4,778.6	60.9	293.4	166.8	0.80	-0.79	0.70
4,903.0	8.04	78.86	4,877.5	63.3	307.3	175.1	0.38	-0.20	-2.26
5,003.0	7.46	81.57	4,976.6	65.6	320.6	183.0	0.69	-0.58	2.71
5,103.0	6.41	78.37	5,075.9	67.7	332.5	190.0	1.12	-1.05	-3.20
5,203.0	6.06	77.50	5,175.3	70.0	343.1	196.0	0.36	-0.35	-0.87
5,303.0	5.91	81.51	5,274.8	71.9	353.4	202.0	0.44	-0.15	4.01
5,403.0	5.64	81.24	5,374.3	73.4	363.3	208.0	0.27	-0.27	-0.27
5,503.0	5.53	81.71	5,473.8	74.8	372.9	213.9	0.12	-0.11	0.47
5,603.0	4.76	79.18	5,573.4	76.3	381.8	219.2	0.80	-0.77	-2.53
5,703.0	4.82	79.83	5,673.0	77.8	390.0	224.0	0.08	0.06	0.65
5,733.0	4.32	82.52	5,702.9	78.2	392.4	225.4	1.81	-1.67	8.97
5,793.0	4.04	86.80	5,762.8	78.6	396.7	228.2	0.70	-0.47	7.13
5,824.0	4.15	88.58	5,793.7	78.7	398.9	229.7	0.54	0.35	5.74
5,856.0	4.29	87.30	5,825.6	78.8	401.3	231.3	0.53	0.44	-4.00
5,888.0	4.65	81.43	5,857.5	79.0	403.7	232.9	1.82	1.13	-18.34
5,920.0	6.21	77.83	5,889.4	79.6	406.7	234.7	4.99	4.88	-11.25
5,952.0	7.89	77.31	5,921.1	80.4	410.6	236.8	5.25	5.25	-1.63
5,984.0	9.55	78.84	5,952.7	81.4	415.3	239.5	5.24	5.19	4.78
6,015.0	11.46	78.79	5,983.2	82.5	420.9	242.7	6.16	6.16	-0.16
6,047.0	13.35	78.98	6,014.5	83.9	427.6	246.6	5.91	5.91	0.59
6,079.0	15.14	79.86	6,045.5	85.3	435.3	251.1	5.63	5.59	2.75
6,111.0	17.59	82.52	6,076.2	86.7	444.2	256.5	8.00	7.66	8.31
6,142.0	20.13	84.57	6,105.5	87.8	454.2	262.8	8.47	8.19	6.61
6,174.0	22.85	85.27	6,135.3	88.8	465.9	270.4	8.54	8.50	2.19
6,206.0	24.62	85.74	6,164.6	89.8	478.7	278.9	5.56	5.53	1.47
6,238.0	26.48	85.53	6,193.5	90.9	492.5	288.0	5.82	5.81	-0.66
6,270.0	28.14	85.67	6,221.9	92.0	507.1	297.7	5.19	5.19	0.44
6,301.0	30.27	85.05	6,249.0	93.2	522.2	307.6	6.94	6.87	-2.00
6,333.0	32.30	84.84	6,276.3	94.7	538.7	318.3	6.35	6.34	-0.66
6,365.0	34.20	85.07	6,303.1	96.2	556.2	329.7	5.95	5.94	0.72
6,397.0	35.59	84.86	6,329.3	97.8	574.5	341.6	4.36	4.34	-0.66
6,429.0	37.89	85.22	6,354.9	99.5	593.5	354.1	7.22	7.19	1.13
6,461.0	40.28	85.78	6,379.8	101.1	613.6	367.3	7.55	7.47	1.75
6,493.0	42.86	86.47	6,403.7	102.5	634.8	381.5	8.19	8.06	2.16
6,524.0	44.05	86.71	6,426.2	103.8	656.1	395.8	3.88	3.84	0.77
6,556.0	45.72	86.82	6,448.9	105.0	678.6	411.0	5.22	5.22	0.34
6,585.0	47.05	86.25	6,468.9	106.3	699.6	425.1	4.80	4.59	-1.97
6,617.0	48.90	85.92	6,490.3	107.9	723.3	440.8	5.83	5.78	-1.03
6,649.0	50.40	85.30	6,511.0	109.8	747.6	456.9	4.91	4.69	-1.94
6,680.0	52.22	84.80	6,530.4	111.9	771.7	472.6	6.00	5.87	-1.61
6,712.0	53.45	84.58	6,549.7	114.3	797.1	489.1	3.88	3.84	-0.69
6,744.0	54.73	84.02	6,568.5	116.8	822.9	505.7	4.24	4.00	-1.75
6,807.0	56.81	83.97	6,604.0	122.3	874.7	538.9	3.30	3.30	-0.08

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Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 10H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,871.0	57.42	84.31	6,638.7	127.8	928.2	573.2	1.05	0.95	0.53
6,931.0	57.92	84.18	6,670.8	132.8	978.6	605.7	0.85	0.83	-0.22
6,962.0	58.30	84.02	6,687.2	135.6	1,004.8	622.5	1.30	1.23	-0.52
6,992.0	58.69	83.93	6,702.8	138.2	1,030.2	638.8	1.32	1.30	-0.30
7,022.0	59.21	84.34	6,718.3	140.9	1,055.8	655.2	2.09	1.73	1.37
7,052.0	59.72	87.59	6,733.6	142.7	1,081.6	672.3	9.48	1.70	10.83
7,083.0	60.01	91.12	6,749.1	143.0	1,108.4	691.2	9.89	0.94	11.39
7,113.0	60.19	94.11	6,764.1	141.8	1,134.4	710.6	8.66	0.60	9.97
7,142.0	59.77	96.47	6,778.6	139.5	1,159.4	730.1	7.19	-1.45	8.14
7,173.0	59.99	99.26	6,794.2	135.8	1,185.9	751.6	7.82	0.71	9.00
7,203.0	60.46	101.56	6,809.1	131.1	1,211.5	773.2	6.84	1.57	7.67
7,234.0	61.43	103.34	6,824.1	125.3	1,238.0	796.2	5.91	3.13	5.74
7,264.0	62.75	105.07	6,838.2	118.8	1,263.7	819.1	6.73	4.40	5.77
7,294.0	64.38	106.81	6,851.5	111.4	1,289.5	842.7	7.52	5.43	5.80
7,325.0	65.62	108.37	6,864.6	102.9	1,316.3	867.7	6.07	4.00	5.03
7,355.0	66.89	109.09	6,876.7	94.1	1,342.3	892.5	4.77	4.23	2.40
7,385.0	68.04	110.68	6,888.2	84.6	1,368.3	917.7	6.22	3.83	5.30
7,415.0	68.89	112.45	6,899.2	74.4	1,394.3	943.4	6.18	2.83	5.90
7,446.0	68.95	114.06	6,910.4	63.0	1,420.9	970.4	4.85	0.19	5.19
7,476.0	68.61	116.61	6,921.2	51.0	1,446.1	996.8	8.00	-1.13	8.50
7,506.0	68.46	119.00	6,932.2	38.0	1,470.8	1,023.5	7.43	-0.50	7.97
7,537.0	69.24	122.00	6,943.4	23.3	1,495.7	1,051.6	9.37	2.52	9.68
7,567.0	70.59	124.30	6,953.7	7.9	1,519.3	1,079.2	8.49	4.50	7.67
7,597.0	72.31	125.97	6,963.2	-8.5	1,542.6	1,107.3	7.79	5.73	5.57
7,628.0	73.42	128.30	6,972.4	-26.4	1,566.2	1,136.7	8.03	3.58	7.52
7,658.0	74.05	129.92	6,980.8	-44.5	1,588.5	1,165.3	5.59	2.10	5.40
7,689.0	75.55	132.13	6,988.9	-64.2	1,611.1	1,195.2	8.41	4.84	7.13
7,719.0	76.73	133.94	6,996.1	-84.0	1,632.4	1,224.3	7.06	3.93	6.03
7,749.0	78.42	136.34	7,002.5	-104.8	1,653.1	1,253.6	9.63	5.63	8.00
7,779.0	79.89	137.76	7,008.2	-126.4	1,673.1	1,283.0	6.75	4.90	4.73
7,810.0	81.36	139.42	7,013.2	-149.3	1,693.4	1,313.5	7.10	4.74	5.35
7,840.0	82.69	140.92	7,017.4	-172.1	1,712.4	1,343.1	6.65	4.43	5.00
7,870.0	83.77	142.96	7,020.9	-195.6	1,730.8	1,372.6	7.65	3.60	6.80
7,901.0	84.92	143.86	7,024.0	-220.3	1,749.1	1,403.1	4.70	3.71	2.90
7,932.0	87.04	145.09	7,026.2	-245.5	1,767.1	1,433.6	7.90	6.84	3.97
7,964.0	88.29	145.98	7,027.5	-271.9	1,785.2	1,464.9	4.79	3.91	2.78
8,028.0	89.43	146.16	7,028.7	-325.0	1,820.9	1,527.6	1.80	1.78	0.28
8,092.0	90.10	145.13	7,029.0	-377.8	1,857.0	1,590.4	1.92	1.05	-1.61
8,154.0	90.54	144.03	7,028.6	-428.3	1,893.0	1,651.4	1.91	0.71	-1.77
8,218.0	90.67	142.53	7,028.0	-479.6	1,931.2	1,714.6	2.35	0.20	-2.34
8,281.0	90.13	143.00	7,027.5	-529.8	1,969.3	1,777.0	1.14	-0.86	0.75
8,345.0	90.60	143.07	7,027.1	-580.9	2,007.8	1,840.3	0.74	0.73	0.11
8,409.0	91.11	142.47	7,026.2	-631.9	2,046.5	1,903.6	1.23	0.80	-0.94
8,473.0	91.67	143.67	7,024.7	-683.0	2,085.0	1,966.8	2.03	0.78	1.88

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Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 10H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,537.0	91.61	144.84	7,022.9	-734.9	2,122.4	2,029.9	1.83	0.00	1.83
8,599.0	91.01	145.37	7,021.4	-785.8	2,157.8	2,090.8	1.29	-0.97	0.85
8,660.0	90.77	147.03	7,020.5	-836.4	2,191.7	2,150.5	2.75	-0.39	2.72
8,722.0	90.67	147.35	7,019.7	-888.6	2,225.3	2,211.0	0.54	-0.16	0.52
8,786.0	91.34	147.07	7,018.6	-942.3	2,260.0	2,273.4	1.13	1.05	-0.44
8,849.0	90.54	146.23	7,017.6	-995.0	2,294.6	2,334.9	1.84	-1.27	-1.33
8,913.0	90.64	145.95	7,016.9	-1,048.1	2,330.3	2,397.6	0.46	0.16	-0.44
8,977.0	91.01	145.46	7,016.0	-1,100.9	2,366.4	2,460.4	0.96	0.58	-0.77
9,040.0	90.30	146.02	7,015.3	-1,153.0	2,401.8	2,522.1	1.44	-1.13	0.89
9,103.0	90.91	147.80	7,014.6	-1,205.8	2,436.2	2,583.7	2.99	0.97	2.83
9,167.0	91.88	148.53	7,013.0	-1,260.1	2,470.0	2,645.8	1.90	1.52	1.14
9,231.0	91.48	149.74	7,011.2	-1,315.1	2,502.8	2,707.7	1.99	-0.63	1.89
9,294.0	91.38	150.11	7,009.6	-1,369.6	2,534.4	2,768.4	0.61	-0.16	0.59
9,358.0	92.05	149.83	7,007.7	-1,424.9	2,566.4	2,830.0	1.13	1.05	-0.44
9,422.0	91.58	149.07	7,005.6	-1,480.0	2,598.9	2,891.8	1.40	-0.73	-1.19
9,485.0	92.49	148.97	7,003.4	-1,534.0	2,631.3	2,952.7	1.45	1.44	-0.16
9,549.0	92.92	149.62	7,000.4	-1,589.0	2,663.9	3,014.5	1.22	0.67	1.02
9,612.0	91.31	149.65	6,998.1	-1,643.3	2,695.8	3,075.3	2.56	-2.56	0.05
9,676.0	89.80	148.92	6,997.4	-1,698.3	2,728.5	3,137.1	2.62	-2.36	-1.14
9,740.0	89.26	148.65	6,998.0	-1,753.0	2,761.6	3,199.1	0.94	-0.84	-0.42
9,803.0	89.83	148.90	6,998.5	-1,806.9	2,794.3	3,260.2	0.99	0.90	0.40
9,866.0	88.45	148.70	6,999.4	-1,860.8	2,826.9	3,321.2	2.21	-2.19	-0.32
9,930.0	89.46	148.15	7,000.6	-1,915.3	2,860.4	3,383.3	1.80	1.58	-0.86
9,993.0	89.60	146.40	7,001.1	-1,968.3	2,894.5	3,444.7	2.79	0.22	-2.78
10,057.0	89.56	146.14	7,001.6	-2,021.5	2,930.0	3,507.4	0.41	-0.06	-0.41
10,121.0	90.20	146.09	7,001.7	-2,074.7	2,965.7	3,570.0	1.00	1.00	-0.08
10,185.0	89.93	146.99	7,001.6	-2,128.0	3,001.0	3,632.6	1.47	-0.42	1.41
10,248.0	90.87	147.65	7,001.2	-2,181.1	3,035.0	3,694.0	1.82	1.49	1.05
10,311.0	89.46	148.19	7,001.0	-2,234.5	3,068.4	3,755.3	2.40	-2.24	0.86
10,375.0	89.19	147.84	7,001.8	-2,288.7	3,102.3	3,817.5	0.69	-0.42	-0.55
10,438.0	90.07	148.06	7,002.2	-2,342.1	3,135.8	3,878.7	1.44	1.40	0.35
10,502.0	89.26	146.37	7,002.5	-2,395.9	3,170.4	3,941.2	2.93	-1.27	-2.64
10,566.0	88.66	144.60	7,003.7	-2,448.7	3,206.7	4,004.0	2.92	-0.94	-2.77
10,629.0	90.27	145.56	7,004.3	-2,500.3	3,242.7	4,065.9	2.98	2.56	1.52
10,693.0	91.75	146.42	7,003.2	-2,553.3	3,278.5	4,128.6	2.67	2.31	1.34
10,756.0	92.45	146.47	7,000.8	-2,605.8	3,313.3	4,190.1	1.11	1.11	0.08
10,820.0	90.74	145.80	6,999.1	-2,658.9	3,349.0	4,252.8	2.87	-2.67	-1.05
10,883.0	89.90	144.45	6,998.7	-2,710.6	3,385.0	4,314.7	2.52	-1.33	-2.14
10,946.0	90.13	143.59	6,998.7	-2,761.6	3,422.0	4,376.8	1.41	0.37	-1.37
11,010.0	89.80	143.81	6,998.7	-2,813.2	3,459.9	4,440.0	0.62	-0.52	0.34
11,073.0	90.54	144.29	6,998.5	-2,864.2	3,496.9	4,502.1	1.40	1.17	0.76
11,137.0	90.40	144.93	6,998.0	-2,916.3	3,534.0	4,565.1	1.02	-0.22	1.00
11,201.0	89.97	145.73	6,997.8	-2,969.0	3,570.4	4,627.9	1.42	-0.67	1.25

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,264.0	90.60	147.91	6,997.5	-3,021.7	3,604.8	4,689.5	3.60	1.00	3.46
11,328.0	90.17	148.99	6,997.1	-3,076.2	3,638.3	4,751.6	1.82	-0.67	1.69
11,391.0	91.08	149.88	6,996.4	-3,130.5	3,670.4	4,812.4	2.02	1.44	1.41
11,455.0	89.40	150.31	6,996.1	-3,186.0	3,702.3	4,874.0	2.71	-2.63	0.67
11,518.0	89.16	150.45	6,996.9	-3,240.7	3,733.4	4,934.6	0.44	-0.38	0.22
11,582.0	90.61	151.66	6,997.0	-3,296.7	3,764.4	4,995.9	2.95	2.27	1.89
11,645.0	90.10	152.03	6,996.6	-3,352.3	3,794.1	5,056.0	1.00	-0.81	0.59
11,706.0	91.44	152.36	6,995.8	-3,406.2	3,822.5	5,114.1	2.26	2.20	0.54
11,770.0	91.18	150.63	6,994.4	-3,462.4	3,853.1	5,175.3	2.73	-0.41	-2.70
11,833.0	90.44	150.01	6,993.5	-3,517.2	3,884.3	5,235.9	1.53	-1.17	-0.98
11,897.0	89.23	149.50	6,993.7	-3,572.5	3,916.5	5,297.6	2.05	-1.89	-0.80
11,961.0	88.96	148.16	6,994.7	-3,627.2	3,949.6	5,359.6	2.14	-0.42	-2.09
12,024.0	90.03	148.88	6,995.2	-3,680.9	3,982.5	5,420.7	2.05	1.70	1.14
12,088.0	90.07	148.38	6,995.2	-3,735.6	4,015.8	5,482.8	0.78	0.06	-0.78
12,151.0	90.13	148.06	6,995.1	-3,789.1	4,049.0	5,543.9	0.52	0.10	-0.51
12,215.0	89.97	145.43	6,995.0	-3,842.7	4,084.1	5,606.5	4.12	-0.25	-4.11
12,279.0	90.77	144.35	6,994.6	-3,895.0	4,120.9	5,669.4	2.10	1.25	-1.69
12,342.0	91.95	144.53	6,993.1	-3,946.2	4,157.5	5,731.4	1.89	1.87	0.29
12,405.0	91.18	143.76	6,991.4	-3,997.3	4,194.4	5,793.5	1.73	-1.22	-1.22
12,469.0	90.37	143.93	6,990.5	-4,049.0	4,232.2	5,856.6	1.29	-1.27	0.27
12,533.0	88.75	144.22	6,991.0	-4,100.8	4,269.7	5,919.7	2.57	-2.53	0.45
12,596.0	89.80	144.38	6,991.8	-4,151.9	4,306.5	5,981.8	1.69	1.67	0.25
12,659.0	90.87	143.91	6,991.4	-4,203.0	4,343.4	6,043.9	1.86	1.70	-0.75
12,723.0	90.44	144.24	6,990.7	-4,254.8	4,380.9	6,107.0	0.85	-0.67	0.52
12,787.0	91.34	144.03	6,989.7	-4,306.7	4,418.4	6,170.1	1.44	1.41	-0.33
12,850.0	90.91	144.60	6,988.5	-4,357.8	4,455.2	6,232.1	1.13	-0.68	0.90
12,914.0	91.98	144.86	6,986.9	-4,410.1	4,492.1	6,295.1	1.72	1.67	0.41
12,977.0	90.87	145.50	6,985.3	-4,461.8	4,528.1	6,356.9	2.03	-1.76	1.02
13,041.0	89.97	145.69	6,984.8	-4,514.6	4,564.2	6,419.7	1.44	-1.41	0.30
13,105.0	90.74	145.40	6,984.4	-4,567.4	4,600.5	6,482.6	1.29	1.20	-0.45
Last SDI MWD Survey									
13,186.0	90.74	145.40	6,983.4	-4,634.0	4,646.4	6,562.0	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
103.0	103.0	-0.6	-0.9	First SDI Gyro Survey
2,503.0	2,502.9	-9.8	-6.1	First SDI MWD Survey
13,105.0	6,984.4	-4,567.4	4,600.5	Last SDI MWD Survey
13,186.0	6,983.4	-4,634.0	4,646.4	Projection to Bit

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	4/30/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	
Operator Name:	Stone Energy
Well Name and Number:	Howell 10H
Longitude:	
Latitude:	
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	7094750

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
H015, Slickwater, WF115	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Friction Reducer, Scale Inhibitor, Surfactant , Acid, Breaker, Gelling Agent, Iron Control Agent, Clay Control Agent, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		87.70005%	
			Crystalline silica	14808-60-7	98.54335%	12.12079%	
			Hydrochloric acid	7647-01-0	0.81205%	0.09988%	
			Carbohydrate polymer	Proprietary	0.46480%	0.05717%	
			Ammonium sulfate	Proprietary	0.11536%	0.01419%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06935%	0.00853%	
			Distillates (petroleum), hydrotreated light	64742-47-8	0.06883%	0.00847%	
			Glutaraldehyde	111-30-8	0.05103%	0.00628%	
			Diammonium peroxidisulphate	7727-54-0	0.02239%	0.00275%	
			Ammonium chloride	12125-02-9	0.02237%	0.00275%	
			Urea	57-13-6	0.01709%	0.00210%	
			Calcium chloride	10043-52-4	0.01165%	0.00143%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00533%	0.00066%	
			Trisodium ortho phosphate	7601-54-9	0.00401%	0.00049%	
			Ethane-1,2-diol	107-21-1	0.00401%	0.00049%	
			Methanol	67-56-1	0.00314%	0.00039%	
			Sodium erythorbate	6381-77-7	0.00303%	0.00037%	
			Aliphatic acids	Proprietary	0.00235%	0.00029%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00235%	0.00029%	
			Prop-2-yn-1-ol	107-19-7	0.00078%	0.00010%	

* 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%

Report ID: RPT-27089 (Generated on 5/13/2014 3:50 PM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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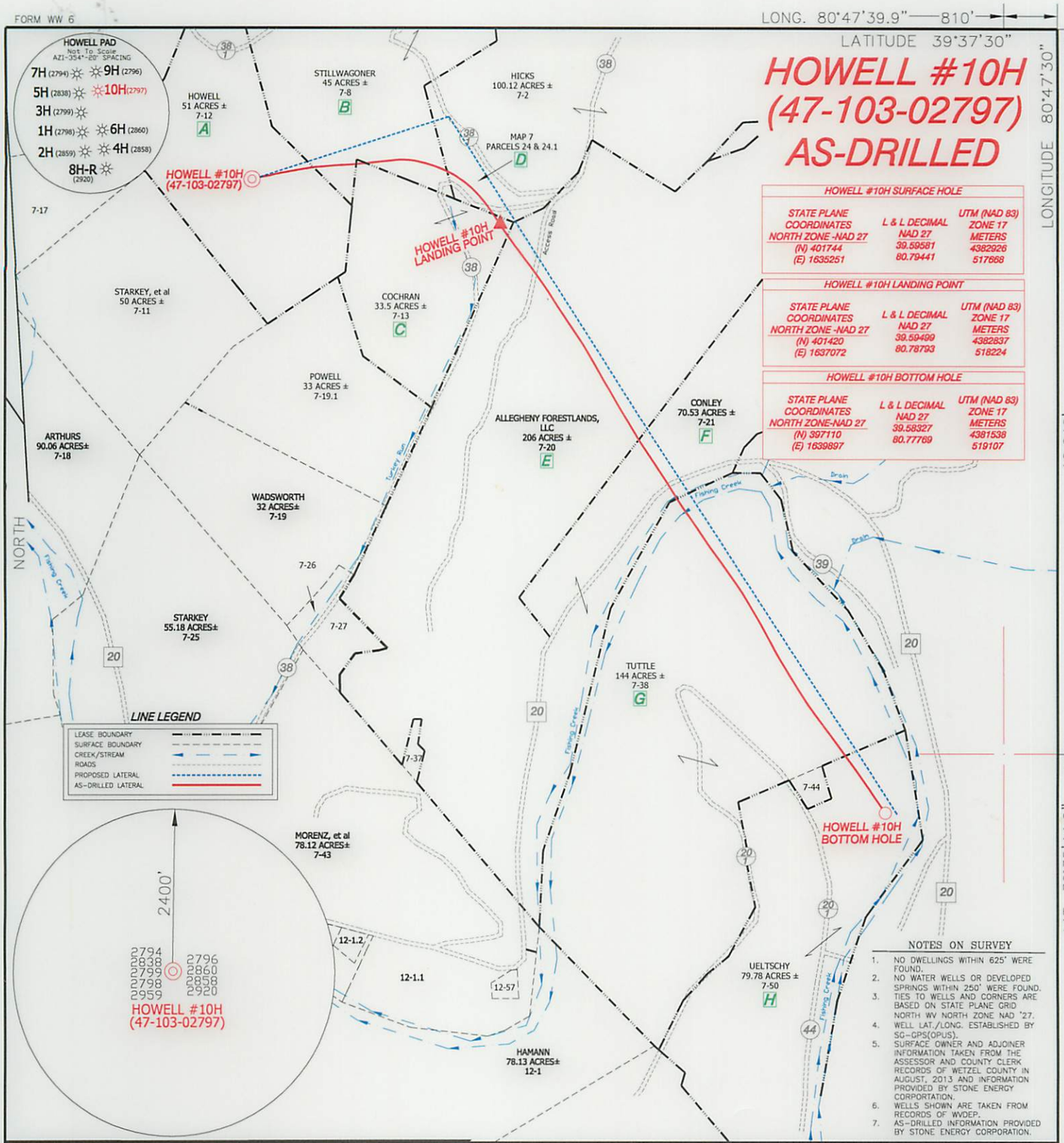
FORM WW 6

LONG. 80°47'39.9" — 810'

LATITUDE 39°37'30"

HOWELL #10H (47-103-02797) AS-DRILLED



HOWELL #10H SURFACE HOLE		
STATE PLANE COORDINATES NORTH ZONE -NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 401744	39.59581	4382926
(E) 1635251	80.79441	517668

HOWELL #10H LANDING POINT		
STATE PLANE COORDINATES NORTH ZONE -NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 401420	39.59499	4382837
(E) 1637072	80.78793	518224

HOWELL #10H BOTTOM HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 397110	39.58327	4381538
(E) 1639897	80.77769	519107

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE OCTOBER 15, 20 14

OPERATORS WELL NO. HOWELL #10H

API WELL NO. 47 — 103 — 02797
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2208 (BK 64-54)

SCALE 1" = 1000'

PROVEN SOURCE OF ELEVATION SG-GPS(OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :

ELEVATION 1304' WATERSHED FISHING CREEK

DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'

SURFACE OWNER CHARLES & RUTH HOWELL ACREAGE 51±

ROYALTY OWNER CHARLES & RUTH HOWELL, et al LEASE ACREAGE 636.30±

PROPOSED WORK : LEASE NO. ___

DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___

PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TVD 6,983' MD 13,186'

COUNTY NAME

PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR

ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

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Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

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API 47 - 103 - 02798 County Wetzel District Green
Quad Porters Falls Pad Name Howell Field/Pool Name Mary
Farm name Howell, Charles and Ruth Well Number #1H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,382,913	Easting 517,663
Landing Point of Curve	Northing 4,382,967	Easting 516,935
Bottom Hole	Northing 4,384,079	Easting 515,937

Elevation (ft) 1,300 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 9/26/2012 Date drilling commenced 1/16/2013 Date drilling ceased 9/8/2013
Date completion activities began 1/20/2014 Date completion activities ceased 7/27/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 94 Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Reported Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,070 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/19/15 ✓
W.S. 04/01/15

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API 47- 103 - 02798 Farm name Howell, Charles and Ruth Well number #1H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	65'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,291'	New	J55	126' & 252'	Y - CTS
Coal	17.5"	13.375"	1,291'	New	J55	126' & 252'	Y - CTS
Intermediate 1	12.25"	9.625"	2,444'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	13,038'	New	P110		N - TOC @ 984'
Tubing	N/A	2.375"	7,902'	New	N80		N/A
Packer type and depth set							

Comment Details Circulated 35 bbls cement to surface on the 13-3/8". Circulated 45 bbls cement to surface on the 9.625". Cement top on the 5.5" production is at 984'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	1,015	15.6	1.19	1,208	Surface	8.0
Coal	Class "A"	1,015	15.6	1.19	1,208	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-427 Tail-420	Lead-15.0 Tail-15.5	Lead-1.26 Tail-1.19	Lead-538 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-HalCem	Lead-851 Tail-1,801	Lead-15.3 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,072 Tail-2,161'	984'	8.0
Tubing							

Drillers TD (ft) 13,045 MD / 6,947 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,803 MD/TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, and 24. Intermediate casing had bow spring centralizers placed on joints #'s 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51, 54 and 57. Production casing had left/right rigid spiral centralizers placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #209. From there bow spring centralizers were placed beginning on joint #200 and then every eighth joint to the calculated top of cement at joint #299. A total of 48 rigid left/right centralizers were used and 11 bow spring centralizers were used. The joint numbers begin at the TD of each individual casing string and increase as you increase as you come up the hole.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 103 - 02798 Farm name Howell, Charles and Ruth Well number #1H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/7/14	12,783	12,946	72	Marcellus Shale
2	2/21/14	12,564	12,709	72	Marcellus Shale
3	2/23/14	12,335	12,493	72	Marcellus Shale
4	2/24/14	12,146	12,288	72	Marcellus Shale
5	2/25/14	11,935	12,075	72	Marcellus Shale
6	2/26/14	11,727	11,686	72	Marcellus Shale
7	2/27/14	11,501	11,657	72	Marcellus Shale
8	2/8/14	11,290	11,428	72	Marcellus Shale
9	3/1/14	11,077	11,221	72	Marcellus Shale
10	3/2/14	10,870	11,003	72	Marcellus Shale
11	3/4/14	10,665	10,804	72	Marcellus Shale
12	3/6/14	10,455	10,591	72	Marcellus Shale
13	3/9/14	10,244	10,387	72	Marcellus Shale
14	3/11/14	10,033	10,178	72	Marcellus Shale
15	3/12/14	9,815	9,963	72	Marcellus Shale
16	3/13/14	9,600	9,748	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	2/21/14	79.9	8,002	6,044	4,716	350,373	380,940	
2	2/23/14	81.1	8,014	6,201	4,746	375,000	329,907	
3	2/24/14	79.1	8,159	6,462	4,660	371,656	363,499	
4	2/25/14	82.4	7,674	5,740	4,977	376,580	321,760	
5	2/26/14	82.7	7,779	5,590	5,045	375,360	318,947	
6	2/27/14	84.8	7,511	5,724	4,831	370,300	321,158	
7	2/28/14	85.5	7,634	5,918	4,889	369,320	323,933	
8	3/1/14	85.1	7,479	5,300	3,886	370,320	317,789	
9	3/2/14	80.0	7,305	5,659	5,032	376,580	371,789	
10	3/4/14	80.3	7,282	5,892	4,603	380,440	320,275	
11	3/6/14	80.5	7,488	6,460	5,693	372,640	310,761	
12	3/9/14	80.1	7,003	5,233	5,489	372,580	322,855	
13	3/10/14	80.4	7,109	5,634	5,177	373,740	314,866	
14	3/12/14	80.3	7,280	6,037	5,376	374,540	324,242	
15	3/13/14	78.8	7,074	6,639	4,861	375,760	317,444	
16	3/14/14	80.0	7,209	5,577	4,633	370,720	319,638	

Please insert additional pages as applicable.

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	3/15/14	9,388	9,526	72	Marcellus Shale
18	3/16/14	9,176	9,321	72	Marcellus Shale
19	3/18/14	8,977	9,108	72	Marcellus Shale
20	3/19/14	8,761	8,908	72	Marcellus Shale
21	3/20/14	8,552	8,693	72	Marcellus Shale
22	3/21/14	8,346	8,483	72	Marcellus Shale
23	3/22/14	8,144	8,278	72	Marcellus Shale
24	3/24/14	7,975	8,080	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	3/16/14	79.1	7,593	6,026	5,234	375,026	316,980	
18	3/18/14	82.2	7,290	6,012	5,291	376,877	316,330	
19	3/19/14	80.7	6,993	5,802	4,832	366,394	314,956	
20	3/20/14	79.3	6,800	6,297	4,603	375,060	312,580	
21	3/21/14	79.8	7,506	6,261	4,431	343,745	396,586	
22	3/22/14	79.4	6,731	6,258	4,000	379,089	321,156	
23	3/24/14	80.5	6,848	6,147	3,770	376,320	318,132	
24	3/25/14	79.3	7,263	6,303	4,808	200,500	264,667	

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS			
Marcelllus Shale	6,999' to 6,947'	TVD	8,139' to 13,045'	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 2,800 psi Bottom Hole 4,868 calculated psi DURATION OF TEST 15 hrs

OPEN FLOW Gas 4,478 mcfpd Oil ____ bpd NGL 21.6 bpd Water ____ bpd GAS MEASURED BY ☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 17				

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Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/3/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

HOWELL #1H
API 47-103-02798
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,070		FW @ 94'
Coal	1,070		*	1,073		
Sandstone & Shale	1,073		*	1,951		No Sw Reported
Little Lime	1,951		*	2,056		
Big Lime	2,056		*	2,250		
Big Injun	2,250		*	2,293		
Sandstone & Shale	2,293		*	2,825		
Berea Sandstone	2,825		*	2,855		
Shale	2,855		*	3,017		
Gordon	3,017		*	3,067		
Undiff Devonian Shale	3,067		*	5,548		
Lower Alexander Shale	5,548		~	5,555		
Undiff Devonian Shale	5,555		~	5,700	5,833	
Rhinestreet	5,700	5,833	~	5,814	5,930	
Undiff Devonian Shale	5,814	5,930	~	6,601	6,941	
Cashaqua	6,601	6,941	~	6,651	7,024	
Middlesex	6,651	7,024	~	6,813	7,332	
West River	6,813	7,332	~	6,890	7,544	
Geneseo	6,890	7,544	~	6,906	7,598	
Tully Limestone	6,906	7,598	~	6,938	7,714	
Hamilton Shale	6,938	7,714	~	6,982	7,908	
Marcellus	6,982	7,908	~	6,947	13,045	
TD				6,947	13,045	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Project: Mary Prospect
Site: Howell Pad
Well: Howell 1H
Wellbore: OH
Design: As Drilled

STONE ENERGY

Scientific Drilling

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WELL DETAILS: Howell 1H

Ground Level: 1302.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	401702.68	1635235.83	39° 35' 44.492 N	80° 47' 40.046 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Howell 1H, Grid North
Vertical (TVD) Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Mary Prospect

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	5706.0	20.96	264.84	5606.2	-97.2	-701.9	0.00	0.00	519.7	
2	5803.0	20.96	264.84	5696.8	-100.4	-736.5	0.00	0.00	546.2	
3	7243.9	60.00	267.05	6771.8	-157.9	-1652.0	2.71	3.03	1263.6	
4	8073.3	90.50	319.00	6995.0	164.6	-2342.8	7.00	68.16	2014.6	Howell 1H_LP3
5	13045.8	90.50	319.00	6952.0	3917.2	-5605.0	0.00	0.00	6838.1	Howell 1H_PBHL3

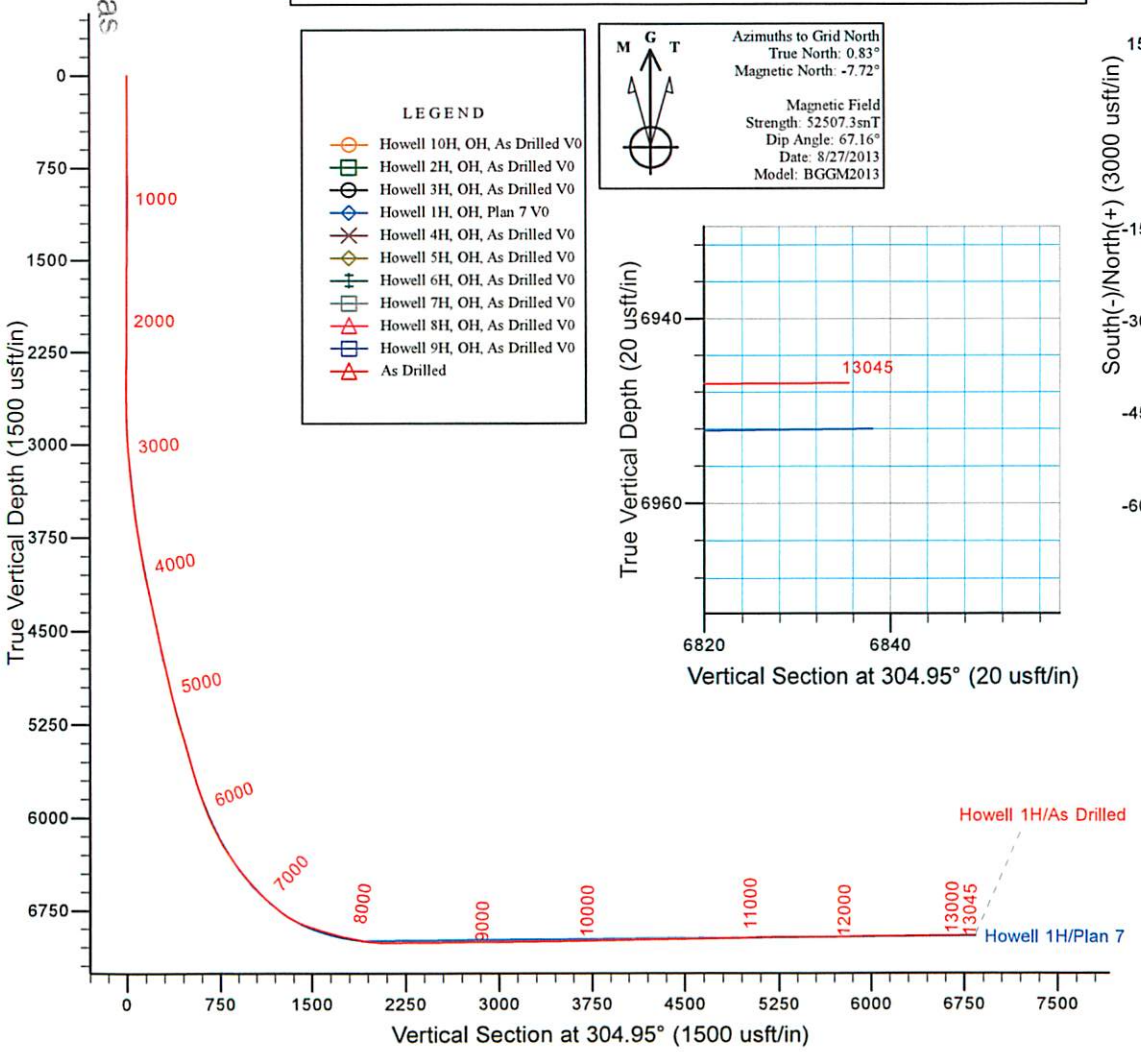
LEGEND

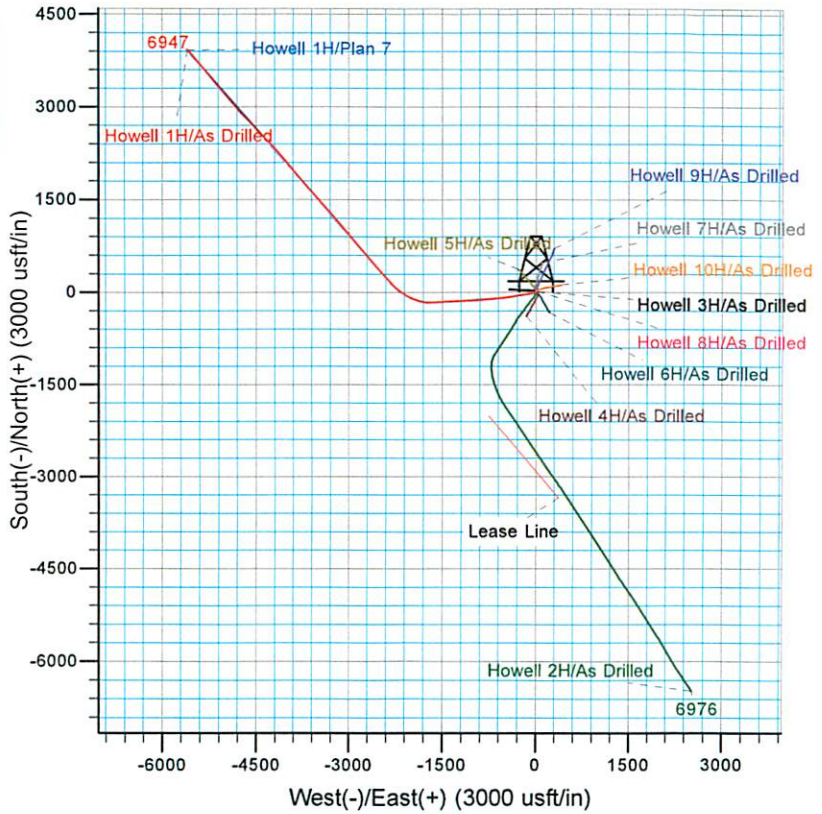
- Howell 10H, OH, As Drilled V0
- Howell 2H, OH, As Drilled V0
- Howell 3H, OH, As Drilled V0
- Howell 1H, OH, Plan 7 V0
- Howell 4H, OH, As Drilled V0
- Howell 5H, OH, As Drilled V0
- Howell 6H, OH, As Drilled V0
- Howell 7H, OH, As Drilled V0
- Howell 8H, OH, As Drilled V0
- Howell 9H, OH, As Drilled V0
- As Drilled

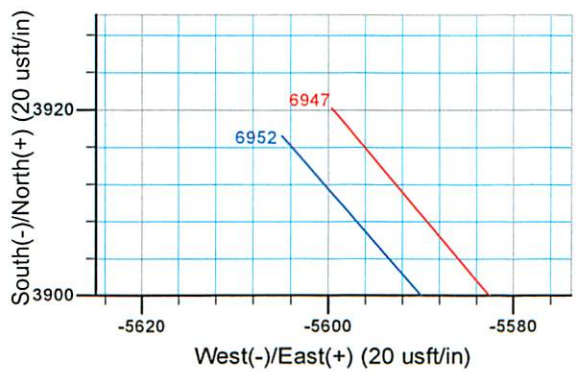
M G T

Azimuths to Grid North
True North: 0.83°
Magnetic North: -7.72°

Magnetic Field
Strength: 52507.3snT
Dip Angle: 67.16°
Date: 8/27/2013
Model: BGGM2013







Stone Energy

Mary Prospect
Howell Pad
Howell 1H

OH

Design: As Drilled

Standard Survey Report

06 September, 2013

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Scientific Drilling

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 1H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Mary Prospect, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Howell Pad

Site Position:		**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
From:	Map	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.83 °

Well Howell 1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
	+E/-W	0.0 usft	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,302.0 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	12/20/2012	-8.48	67.19	52,632
	IGRF2010	7/29/2013	-8.50	67.14	52,558
	BGGM2013	8/27/2013	-8.55	67.16	52,507

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	304.95

Survey Program **Date** 9/6/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
103.0	5,706.0	Survey 1 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
5,716.0	13,045.0	Survey 2 - SDI MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
103.0	0.56	309.96	103.0	0.3	-0.4	0.5	0.54	0.54	0.00
First SDI Gyro Survey									
203.0	0.26	310.44	203.0	0.8	-0.9	1.2	0.30	-0.30	0.48
303.0	0.23	34.68	303.0	1.1	-1.0	1.4	0.33	-0.03	84.24
403.0	0.19	60.29	403.0	1.3	-0.7	1.4	0.10	-0.04	25.61
503.0	0.13	63.08	503.0	1.5	-0.5	1.4	0.06	-0.06	2.79

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 1H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
603.0	0.12	80.31	603.0	1.5	-0.3	1.1	0.04	-0.01	17.23
703.0	0.08	209.01	703.0	1.5	-0.2	1.0	0.18	-0.04	128.70
803.0	0.08	100.54	803.0	1.4	-0.2	1.0	0.13	0.00	-108.47
903.0	0.12	72.87	903.0	1.4	0.0	0.8	0.06	0.04	-27.67
1,003.0	0.04	351.11	1,003.0	1.5	0.1	0.8	0.12	-0.08	-81.76
1,103.0	0.07	288.65	1,103.0	1.6	0.0	0.9	0.06	0.03	-62.46
1,203.0	0.06	29.90	1,203.0	1.6	0.0	0.9	0.10	-0.01	101.25
1,303.0	0.10	123.57	1,303.0	1.6	0.1	0.9	0.12	0.04	93.67
1,403.0	0.26	112.76	1,403.0	1.5	0.4	0.6	0.16	0.16	-10.81
1,503.0	0.28	113.45	1,503.0	1.3	0.8	0.1	0.02	0.02	0.69
1,603.0	0.24	117.04	1,603.0	1.1	1.2	-0.4	0.04	-0.04	3.59
1,703.0	0.12	172.36	1,703.0	0.9	1.4	-0.6	0.20	-0.12	55.32
1,803.0	0.19	148.35	1,803.0	0.7	1.5	-0.9	0.09	0.07	-24.01
1,903.0	0.21	140.78	1,903.0	0.4	1.7	-1.2	0.03	0.02	-7.57
2,003.0	0.25	153.76	2,003.0	0.1	1.9	-1.6	0.07	0.04	12.98
2,103.0	0.22	152.87	2,103.0	-0.3	2.1	-1.9	0.03	-0.03	-0.89
2,203.0	0.27	174.01	2,203.0	-0.7	2.2	-2.2	0.10	0.05	21.14
2,303.0	0.54	158.63	2,303.0	-1.4	2.4	-2.8	0.29	0.27	-15.38
2,403.0	0.57	166.06	2,403.0	-2.3	2.7	-3.6	0.08	0.03	7.43
2,503.0	0.50	148.65	2,503.0	-3.2	3.1	-4.3	0.18	-0.07	-17.41
2,603.0	0.44	210.29	2,603.0	-3.9	3.1	-4.8	0.48	-0.06	61.64
2,703.0	1.20	261.72	2,703.0	-4.4	1.9	-4.0	0.99	0.76	51.43
2,803.0	2.41	275.14	2,802.9	-4.3	-1.3	-1.4	1.27	1.21	13.42
2,903.0	3.68	277.52	2,902.8	-3.7	-6.5	3.2	1.28	1.27	2.38
3,003.0	4.96	270.79	3,002.5	-3.2	-14.0	9.7	1.37	1.28	-6.73
3,103.0	6.14	265.54	3,102.0	-3.6	-23.7	17.4	1.28	1.18	-5.25
3,203.0	7.78	263.13	3,201.3	-4.8	-35.8	26.5	1.67	1.64	-2.41
3,303.0	7.84	260.40	3,300.3	-6.8	-49.2	36.5	0.38	0.06	-2.73
3,403.0	8.16	258.42	3,399.4	-9.3	-62.9	46.2	0.42	0.32	-1.98
3,503.0	9.24	259.46	3,498.2	-12.2	-77.7	56.7	1.09	1.08	1.04
3,603.0	11.12	260.71	3,596.6	-15.2	-95.1	69.2	1.89	1.88	1.25
3,703.0	12.00	261.13	3,694.6	-18.4	-114.9	83.7	0.88	0.88	0.42
3,803.0	12.92	260.78	3,792.2	-21.8	-136.2	99.2	0.92	0.92	-0.35
3,903.0	14.15	260.94	3,889.5	-25.5	-159.3	116.0	1.23	1.23	0.16
4,003.0	15.32	261.36	3,986.2	-29.4	-184.5	134.3	1.17	1.17	0.42
4,103.0	16.12	261.84	4,082.4	-33.4	-211.3	154.0	0.81	0.80	0.48
4,203.0	15.95	261.40	4,178.5	-37.4	-238.6	174.1	0.21	-0.17	-0.44
4,303.0	15.33	261.63	4,274.8	-41.4	-265.3	193.7	0.62	-0.62	0.23
4,403.0	15.71	260.85	4,371.2	-45.5	-291.7	213.1	0.43	0.38	-0.78
4,503.0	16.65	259.86	4,467.2	-50.1	-319.2	232.9	0.98	0.94	-0.99
4,603.0	16.45	259.40	4,563.1	-55.3	-347.2	252.9	0.24	-0.20	-0.46
4,703.0	17.39	259.90	4,658.8	-60.5	-375.8	273.4	0.95	0.94	0.50
4,803.0	19.30	261.04	4,753.7	-65.7	-406.9	295.9	1.94	1.91	1.14
4,903.0	18.44	258.54	4,848.3	-71.4	-438.7	318.7	1.18	-0.86	-2.50

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 1H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,003.0	17.07	258.10	4,943.5	-77.6	-468.6	339.6	1.38	-1.37	-0.44
5,103.0	18.46	260.69	5,038.8	-83.2	-498.5	361.0	1.60	1.39	2.59
5,203.0	19.69	265.34	5,133.3	-87.1	-531.0	385.3	1.95	1.23	4.65
5,303.0	19.58	268.47	5,227.5	-88.9	-564.5	411.8	1.06	-0.11	3.13
5,403.0	19.56	267.90	5,321.7	-90.0	-598.0	438.6	0.19	-0.02	-0.57
5,503.0	19.58	266.33	5,415.9	-91.6	-631.4	465.1	0.53	0.02	-1.57
5,603.0	20.41	265.51	5,509.9	-94.1	-665.5	491.6	0.88	0.83	-0.82
5,670.4	20.96	264.84	5,573.0	-96.1	-689.3	509.9	0.89	0.82	-0.99
Last SDI Gyro Survey									
5,706.0	20.96	264.84	5,606.2	-97.2	-701.9	519.7	0.00	0.00	0.00
5,716.0	20.19	263.51	5,615.5	-97.6	-705.4	522.3	9.01	-7.70	-13.30
5,717.0	20.19	263.51	5,616.5	-97.6	-705.8	522.6	0.19	-0.19	0.03
First SDI MWD Survey									
5,779.0	20.07	263.53	5,674.7	-100.0	-727.0	538.6	0.19	-0.19	0.03
5,843.0	22.63	263.91	5,734.3	-102.6	-750.1	556.1	4.01	4.00	0.59
5,907.0	25.27	264.16	5,792.8	-105.3	-776.0	575.7	4.13	4.13	0.39
5,969.0	25.97	264.85	5,848.7	-107.8	-802.7	596.1	1.23	1.13	1.11
6,032.0	25.52	264.97	5,905.4	-110.3	-829.9	617.1	0.72	-0.71	0.19
6,095.0	27.26	265.63	5,961.9	-112.6	-857.8	638.6	2.80	2.76	1.05
6,158.0	28.83	265.46	6,017.5	-114.9	-887.4	661.5	2.50	2.49	-0.27
6,221.0	30.81	264.60	6,072.1	-117.6	-918.6	685.6	3.22	3.14	-1.37
6,285.0	33.94	265.04	6,126.2	-120.7	-952.7	711.8	4.90	4.89	0.69
6,348.0	37.03	266.70	6,177.5	-123.3	-989.2	740.1	5.14	4.90	2.63
6,412.0	38.54	266.95	6,228.0	-125.5	-1,028.3	771.0	2.37	2.36	0.39
6,476.0	39.81	266.99	6,277.7	-127.6	-1,068.7	802.9	1.98	1.98	0.06
6,538.0	41.62	266.90	6,324.6	-129.7	-1,109.1	834.7	2.92	2.92	-0.15
6,601.0	43.78	267.06	6,370.9	-132.0	-1,151.7	868.4	3.43	3.43	0.25
6,665.0	46.01	267.07	6,416.3	-134.3	-1,196.8	904.1	3.48	3.48	0.02
6,728.0	46.39	266.85	6,459.9	-136.7	-1,242.2	939.9	0.65	0.60	-0.35
6,791.0	46.89	267.41	6,503.1	-139.0	-1,288.0	976.1	1.02	0.79	0.89
6,855.0	49.23	267.15	6,545.9	-141.3	-1,335.5	1,013.8	3.67	3.66	-0.41
6,914.0	50.49	266.80	6,583.9	-143.7	-1,380.6	1,049.3	2.18	2.14	-0.59
6,975.0	52.85	266.81	6,621.8	-146.3	-1,428.3	1,086.9	3.87	3.87	0.02
7,035.0	54.97	266.98	6,657.1	-148.9	-1,476.8	1,125.1	3.54	3.53	0.28
7,096.0	55.93	266.84	6,691.7	-151.7	-1,526.9	1,164.7	1.59	1.57	-0.23
7,157.0	57.70	266.50	6,725.1	-154.6	-1,577.9	1,204.8	2.94	2.90	-0.56
7,217.0	59.22	266.24	6,756.5	-157.9	-1,628.9	1,244.7	2.56	2.53	-0.43
7,248.0	59.70	266.82	6,772.2	-159.5	-1,655.6	1,265.7	2.23	1.55	1.87
7,278.0	60.64	268.48	6,787.2	-160.5	-1,681.6	1,286.4	5.73	3.13	5.53
7,308.0	62.24	270.87	6,801.5	-160.7	-1,707.9	1,307.9	8.80	5.33	7.97
7,339.0	64.15	272.83	6,815.5	-159.8	-1,735.6	1,331.0	8.35	6.16	6.32
7,369.0	65.58	276.14	6,828.2	-157.7	-1,762.6	1,354.5	11.07	4.77	11.03
7,400.0	67.04	278.31	6,840.7	-154.1	-1,790.8	1,379.6	7.95	4.71	7.00

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 1H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,430.0	68.77	281.38	6,852.0	-149.3	-1,818.2	1,404.7	11.10	5.77	10.23
7,460.0	70.28	283.53	6,862.5	-143.3	-1,845.6	1,430.7	8.39	5.03	7.17
7,490.0	71.19	284.98	6,872.4	-136.3	-1,873.1	1,457.2	5.48	3.03	4.83
7,520.0	71.67	286.98	6,881.9	-128.5	-1,900.4	1,484.1	6.52	1.60	6.67
7,551.0	71.93	287.51	6,891.6	-119.7	-1,928.5	1,512.1	1.83	0.84	1.71
7,581.0	72.37	291.29	6,900.8	-110.3	-1,955.5	1,539.7	12.08	1.47	12.60
7,612.0	72.63	293.31	6,910.1	-99.0	-1,982.8	1,568.5	6.27	0.84	6.52
7,642.0	73.51	295.59	6,918.9	-87.2	-2,008.9	1,596.7	7.84	2.93	7.60
7,673.0	74.39	297.70	6,927.4	-73.8	-2,035.6	1,626.2	7.13	2.84	6.81
7,703.0	74.92	299.37	6,935.4	-60.0	-2,061.0	1,654.9	5.65	1.77	5.57
7,734.0	75.36	301.57	6,943.3	-44.8	-2,086.8	1,684.8	7.00	1.42	7.10
7,764.0	76.06	303.42	6,950.7	-29.2	-2,111.3	1,713.9	6.42	2.33	6.17
7,795.0	76.68	305.00	6,958.0	-12.2	-2,136.2	1,744.0	5.34	2.00	5.10
7,825.0	77.21	306.32	6,964.8	4.8	-2,160.0	1,773.2	4.64	1.77	4.40
7,855.0	78.00	307.46	6,971.2	22.4	-2,183.4	1,802.5	4.55	2.63	3.80
7,885.0	78.61	308.95	6,977.3	40.6	-2,206.5	1,831.8	5.27	2.03	4.97
7,917.0	79.14	310.01	6,983.5	60.5	-2,230.7	1,863.1	3.65	1.66	3.31
7,949.0	79.58	311.33	6,989.4	81.0	-2,254.6	1,894.4	4.28	1.38	4.13
7,980.0	80.90	313.17	6,994.7	101.6	-2,277.2	1,924.7	7.24	4.26	5.94
8,012.0	82.75	315.28	6,999.2	123.7	-2,299.9	1,956.0	8.72	5.78	6.59
8,044.0	83.89	316.42	7,002.9	146.5	-2,322.0	1,987.2	5.02	3.56	3.56
8,076.0	85.03	317.65	7,006.0	169.8	-2,343.7	2,018.3	5.23	3.56	3.84
8,139.0	89.60	318.36	7,009.0	216.5	-2,385.8	2,079.6	7.34	7.25	1.13
8,202.0	90.66	318.09	7,008.8	263.5	-2,427.8	2,140.9	1.74	1.68	-0.43
8,266.0	90.22	318.88	7,008.3	311.4	-2,470.2	2,203.1	1.41	-0.69	1.23
8,329.0	90.92	318.53	7,007.7	358.8	-2,511.8	2,264.3	1.24	1.11	-0.56
8,393.0	90.40	319.24	7,007.0	407.0	-2,553.9	2,326.4	1.38	-0.81	1.11
8,457.0	91.10	319.59	7,006.1	455.6	-2,595.5	2,388.4	1.22	1.09	0.55
8,520.0	89.87	319.24	7,005.6	503.4	-2,636.5	2,449.4	2.03	-1.95	-0.56
8,583.0	90.75	319.24	7,005.3	551.1	-2,677.6	2,510.4	1.40	1.40	0.00
8,647.0	90.22	318.88	7,004.7	599.5	-2,719.5	2,572.5	1.00	-0.83	-0.56
8,710.0	90.92	318.97	7,004.1	647.0	-2,760.9	2,633.6	1.12	1.11	0.14
8,774.0	90.22	319.24	7,003.5	695.3	-2,802.8	2,695.7	1.17	-1.09	0.42
8,837.0	91.10	319.24	7,002.7	743.1	-2,844.0	2,756.7	1.40	1.40	0.00
8,900.0	89.96	319.41	7,002.2	790.8	-2,885.0	2,817.8	1.83	-1.81	0.27
8,964.0	90.75	318.97	7,001.8	839.3	-2,926.8	2,879.8	1.41	1.23	-0.69
9,027.0	90.04	319.15	7,001.3	886.9	-2,968.1	2,940.9	1.16	-1.13	0.29
9,091.0	90.75	318.62	7,000.9	935.1	-3,010.2	3,003.0	1.38	1.11	-0.83
9,154.0	90.04	318.80	7,000.4	982.4	-3,051.8	3,064.2	1.16	-1.13	0.29
9,218.0	91.01	318.80	6,999.9	1,030.6	-3,093.9	3,126.3	1.52	1.52	0.00
9,281.0	90.57	319.50	6,999.6	1,078.2	-3,135.1	3,187.4	1.31	-0.70	1.11
9,344.0	91.63	319.76	6,997.8	1,126.2	-3,175.9	3,248.3	1.73	1.68	0.41
9,408.0	90.57	320.14	6,996.0	1,175.2	-3,217.1	3,310.1	1.74	-1.66	0.55
9,470.0	91.28	319.24	6,995.6	1,222.4	-3,257.2	3,370.1	1.81	1.15	-1.40

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Well:	Howell 1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,534.0	89.96	318.53	6,994.9	1,270.6	-3,299.3	3,432.2	2.34	-2.06	-1.11
9,597.0	90.92	318.62	6,994.4	1,317.9	-3,341.0	3,493.4	1.53	1.52	0.14
9,661.0	89.43	318.62	6,994.2	1,365.9	-3,383.3	3,555.6	2.33	-2.33	0.00
9,724.0	90.31	318.71	6,994.3	1,413.2	-3,424.9	3,616.8	1.40	1.40	0.14
9,788.0	91.36	318.36	6,993.4	1,461.2	-3,467.3	3,679.0	1.73	1.64	-0.55
9,851.0	92.15	318.27	6,991.5	1,508.2	-3,509.2	3,740.3	1.26	1.25	-0.14
9,915.0	90.48	318.36	6,990.0	1,556.0	-3,551.7	3,802.5	2.61	-2.61	0.14
9,979.0	91.19	317.83	6,989.1	1,603.6	-3,594.5	3,864.9	1.38	1.11	-0.83
10,042.0	92.59	318.18	6,987.0	1,650.4	-3,636.6	3,926.2	2.29	2.22	0.56
10,105.0	91.28	318.80	6,984.9	1,697.5	-3,678.3	3,987.4	2.30	-2.08	0.98
10,169.0	90.84	318.71	6,983.7	1,745.7	-3,720.5	4,049.5	0.70	-0.69	-0.14
10,232.0	91.54	318.36	6,982.4	1,792.9	-3,762.2	4,110.8	1.24	1.11	-0.56
10,296.0	90.57	319.76	6,981.2	1,841.2	-3,804.1	4,172.8	2.66	-1.52	2.19
10,359.0	90.31	321.08	6,980.7	1,889.7	-3,844.3	4,233.5	2.14	-0.41	2.10
10,422.0	91.01	320.64	6,980.0	1,938.6	-3,884.0	4,294.1	1.31	1.11	-0.70
10,485.0	89.60	320.20	6,979.6	1,987.2	-3,924.2	4,354.8	2.34	-2.24	-0.70
10,549.0	90.66	320.03	6,979.5	2,036.3	-3,965.2	4,416.6	1.68	1.66	-0.27
10,612.0	91.89	320.47	6,978.1	2,084.7	-4,005.5	4,477.4	2.07	1.95	0.70
10,676.0	90.57	320.20	6,976.7	2,133.9	-4,046.3	4,539.0	2.11	-2.06	-0.42
10,740.0	91.45	319.59	6,975.6	2,182.9	-4,087.5	4,600.9	1.67	1.38	-0.95
10,803.0	92.07	319.15	6,973.7	2,230.7	-4,128.6	4,661.9	1.21	0.98	-0.70
10,867.0	90.57	318.27	6,972.2	2,278.7	-4,170.8	4,724.0	2.72	-2.34	-1.38
10,931.0	91.36	318.18	6,971.1	2,326.5	-4,213.4	4,786.3	1.24	1.23	-0.14
10,995.0	89.87	318.01	6,970.4	2,374.1	-4,256.1	4,848.6	2.34	-2.33	-0.27
11,058.0	91.10	317.92	6,969.9	2,420.9	-4,298.3	4,910.0	1.96	1.95	-0.14
11,121.0	91.10	316.25	6,968.7	2,467.0	-4,341.2	4,971.5	2.65	0.00	-2.65
11,184.0	92.42	316.16	6,966.7	2,512.5	-4,384.8	5,033.3	2.10	2.10	-0.14
11,247.0	93.21	315.63	6,963.6	2,557.7	-4,428.6	5,095.1	1.51	1.25	-0.84
11,311.0	90.84	316.69	6,961.4	2,603.8	-4,472.9	5,157.8	4.06	-3.70	1.66
11,374.0	89.25	317.21	6,961.3	2,649.8	-4,515.9	5,219.4	2.66	-2.52	0.83
11,438.0	89.96	317.13	6,961.8	2,696.8	-4,559.4	5,282.0	1.12	1.11	-0.13
11,501.0	91.01	316.60	6,961.2	2,742.7	-4,602.5	5,343.6	1.87	1.67	-0.84
11,565.0	91.28	315.81	6,960.0	2,788.9	-4,646.8	5,406.4	1.30	0.42	-1.23
11,628.0	89.52	315.37	6,959.5	2,833.9	-4,690.8	5,468.3	2.88	-2.79	-0.70
11,690.0	90.04	316.69	6,959.8	2,878.5	-4,733.9	5,529.1	2.29	0.84	2.13
11,753.0	90.92	316.16	6,959.2	2,924.2	-4,777.3	5,590.9	1.63	1.40	-0.84
11,817.0	89.87	317.74	6,958.8	2,970.9	-4,821.0	5,653.5	2.96	-1.64	2.47
11,880.0	89.78	320.29	6,959.0	3,018.5	-4,862.3	5,714.6	4.05	-0.14	4.05
11,943.0	90.75	319.85	6,958.7	3,066.8	-4,902.7	5,775.4	1.69	1.54	-0.70
12,006.0	91.45	319.68	6,957.5	3,114.9	-4,943.4	5,836.3	1.14	1.11	-0.27
12,069.0	89.87	320.99	6,956.8	3,163.4	-4,983.6	5,897.0	3.26	-2.51	2.08
12,132.0	90.66	320.64	6,956.5	3,212.2	-5,023.4	5,957.6	1.37	1.25	-0.56
12,196.0	91.28	320.39	6,955.4	3,261.6	-5,064.1	6,019.3	1.05	0.97	-0.41

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 1H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 1H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,260.0	90.31	321.96	6,954.5	3,311.4	-5,104.3	6,080.7	2.90	-1.52	2.47
12,323.0	90.92	321.52	6,953.8	3,360.9	-5,143.3	6,141.0	1.19	0.97	-0.70
12,386.0	89.78	321.87	6,953.4	3,410.3	-5,182.3	6,201.3	1.89	-1.81	0.56
12,450.0	90.48	321.52	6,953.3	3,460.6	-5,222.0	6,262.6	1.22	1.09	-0.55
12,511.0	90.92	320.82	6,952.5	3,508.1	-5,260.2	6,321.2	1.36	0.72	-1.15
12,574.0	89.87	320.99	6,952.1	3,557.0	-5,300.0	6,381.8	1.69	-1.67	0.27
12,637.0	90.57	320.64	6,951.9	3,605.8	-5,339.8	6,442.4	1.24	1.11	-0.56
12,701.0	91.19	320.29	6,950.9	3,655.2	-5,380.5	6,504.0	1.11	0.97	-0.55
12,764.0	90.04	321.08	6,950.2	3,703.9	-5,420.4	6,564.7	2.21	-1.83	1.25
12,826.0	91.01	320.91	6,949.6	3,752.1	-5,459.4	6,624.2	1.59	1.56	-0.27
12,890.0	91.63	320.29	6,948.2	3,801.5	-5,500.0	6,685.9	1.37	0.97	-0.97
12,953.0	89.96	320.03	6,947.3	3,849.9	-5,540.4	6,746.6	2.68	-2.65	-0.41
12,978.0	90.22	319.85	6,947.3	3,869.0	-5,556.5	6,770.8	1.26	1.04	-0.72
Last SDI MWD Survey									
13,045.0	90.22	319.85	6,947.0	3,920.2	-5,599.7	6,835.5	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
103.0	103.0	0.3	-0.4	First SDI Gyro Survey
5,670.4	5,573.0	-96.1	-689.3	Last SDI Gyro Survey
5,717.0	5,616.5	-97.6	-705.8	First SDI MWD Survey
12,978.0	6,947.3	3,869.0	-5,556.5	Last SDI MWD Survey
13,045.0	6,947.0	3,920.2	-5,599.7	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/25/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	
Operator Name:	Stone Energy
Well Name and Number:	Howell 1H
Longitude:	
Latitude:	
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	7840635

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
H015%, Slickwater, WF115	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Accelerator, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		87.97339%	
			Crystalline silica	14808-60-7	98.17931%	11.80764%	
			Hydrochloric acid	7647-01-0	0.88713%	0.10669%	
			Carbohydrate polymer	Proprietary	0.51716%	0.06220%	
			Ammonium sulfate	Proprietary	0.19666%	0.02365%	
			Calcium chloride	10043-52-4	0.12482%	0.01501%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06500%	0.00782%	
			Glutaraldehyde	111-30-8	0.05643%	0.00679%	
			Diammonium peroxidisulphate	7727-54-0	0.02443%	0.00294%	
			Amine derivative	Proprietary	0.00778%	0.00094%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00500%	0.00060%	
			Ethane-1,2-diol	107-21-1	0.00424%	0.00051%	
			Trisodium ortho phosphate	7601-54-9	0.00424%	0.00051%	
			Methanol	67-56-1	0.00375%	0.00045%	
			Sodium erythorbate	6381-77-7	0.00307%	0.00037%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00281%	0.00034%	
			Aliphatic acids	Proprietary	0.00281%	0.00034%	
			Prop-2-yn-1-ol	107-19-7	0.00094%	0.00011%	
			Polypropylene glycol	25322-69-4	0.00020%	0.00002%	

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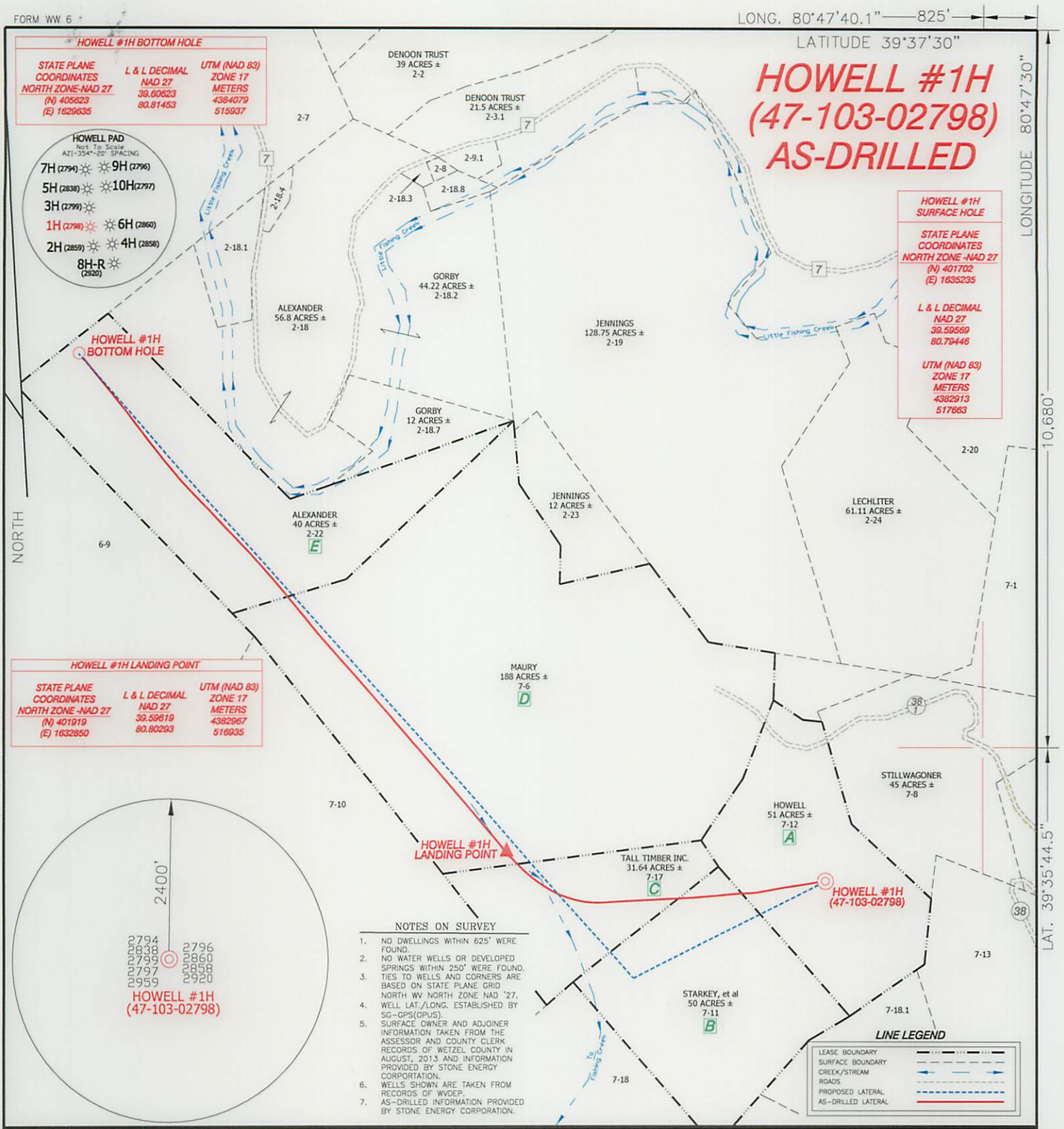
* Total Water Volume sources may include fresh water, produced water, and/or recycled water

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

Report ID: RPT-25887 (Generated on 3/31/2014 10:52 AM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

FORM WW-6



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE OCTOBER 20, 20 14

OPERATORS WELL NO. HOWELL #1H

API WELL NO. 47 — 103 — 02798
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2208 (BK 64-54)
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :
ELEVATION 1304' WATERSHED FISHING CREEK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'
SURFACE OWNER CHARLES & RUTH HOWELL ACREAGE 51±
ROYALTY OWNER CHARLES & RUTH HOWELL, et al LEASE ACREAGE 360.64±
PROPOSED WORK : LEASE NO. ___
DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD 6,947' MD 13,045'

COUNTY NAME
PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

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State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

API 47 - 103 - 02799 County Wetzel District Green
Quad Porters Falls Pad Name Howell Field/Pool Name Mary
Farm name Howell, Charles and Ruth Well Number #3H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,382,919	Easting 517,663
Landing Point of Curve	Northing 4,383,011	Easting 517,251
Bottom Hole	Northing 4,388,242	Easting 516,137

Elevation (ft) 1,300 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine

Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 9/26/2012 Date drilling commenced 1/28/2013 Date drilling ceased 9/20/2013
Date completion activities began 1/30/2014 Date completion activities ceased 3/25/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 100 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,301 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,068 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/19/15 ✓
W.S. 6/01/15

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API 47- 103 - 02799 Farm name Howell, Charles and Ruth Well number #3H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	79'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,302' KB 1,287' GL	New	J55	132' & 263'	Y - CTS
Coal	17.5"	13.375"	1,302' KB 1,287' GL	New	J55	132' & 263'	Y - CTS
Intermediate 1	12.25"	9.625"	2,449'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	13,029'	New	P110		N - TOC @ 672'
Tubing	N/A	2.375"	7,902'	New	N80		N/A
Packer type and depth set							

Comment Details Circulated 46 bbls cement to surface on the 13-3/8". Circulated 42 bbls cement to surface on the 9.625". Cement top on the 5.5" production casing is at 984'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Coal	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-456 Tail-420	Lead-15.0 Tail-15.5	Lead-1.27 Tail-1.19	Lead-579 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-HalCem	Lead-880 Tail-1,760	Lead-15.3 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,108 Tail-2,112	672'	8.0
Tubing							

Drillers TD (ft) 13,032 MD / 6,967 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,973 MD/ 5,939 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22 and 24. Intermediate casing had bow spring centralizers placed on joints #'s 3, 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53 and 56. One straight blade rigid centralizer was placed on joint #59. Production casing had left/right rigid spiral centralizers were placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #164. From there bow spring centralizers were placed beginning on joint #170 and then every tenth joint with a left/right rigid spiral centralizers placed in between to joint #290. A total of 49 rigid left/right centralizers were used and 13 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you increase as you come up the hole.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/8/14	12,738	12,930	72	Marcellus Shale
2	2/21/14	12,470	12,662	72	Marcellus Shale
3	2/22/14	12,200	12,389	72	Marcellus Shale
4	2/24/14	11,934	12,123	72	Marcellus Shale
5	2/25/14	11,672	11,863	72	Marcellus Shale
6	2/28/14	11,407	11,600	72	Marcellus Shale
7	3/2/14	11,144	11,333	72	Marcellus Shale
8	3/4/14	10,874	11,073	72	Marcellus Shale
9	3/5/14	10,611	10,803	72	Marcellus Shale
10	3/8/14	10,344	10,543	72	Marcellus Shale
11	3/9/14	10,081	10,267	72	Marcellus Shale
12	3/11/14	9,821	10,005	72	Marcellus Shale
13	3/12/14	9,556	9,748	72	Marcellus Shale
14	3/13/14	9,304	9,493	72	Marcellus Shale
15	3/15/14	9,051	9,243	72	Marcellus Shale
16	3/16/14	8,791	8,983	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	2/21/14	85.0	7,842	6,105	4,545	368,840	350,570	
2	2/22/14	80.6	7,826	6,339	4,432	406,493	349,854	
3	2/24/14	82.1	7,901	6,312	5,090	404,740	348,506	
4	2/25/14	82.9	7,458	5,492	4,517	414,180	350,639	
5	2/27/14	81.0	7,787	5,585	4,659	409,480	412,590	
6	3/2/14	85.3	7,849	6,688	5,119	410,160	348,977	
7	3/4/14	82.7	7,855	5,783	5,061	404,840	344,699	
8	3/5/14	80.6	7,450	5,921	4,889	415,600	349,138	
9	3/8/14	80.5	7,654	5,713	5,376	413,700	350,565	
10	3/9/14	80.7	7,476	6,115	5,865	406,480	352,126	
11	3/10/14	80.4	7,211	5,881	5,894	406,400	346,290	
12	3/12/14	80.4	7,493	6,056	5,405	415,700	353,661	
13	3/13/14	79.5	7,176	6,044	5,636	407,200	346,116	
14	3/15/14	79.6	7,103	6,193	5,177	409,354	342,292	
15	3/16/14	79.3	7,162	5,939	5,178	410,137	338,232	
16	3/17/14	80.7	7,086	6,209	5,435	407,602	340,857	

Please insert additional pages as applicable.

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PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	3/17/14	8,520	8,723	72	Marcellus Shale
18	3/18/14	8,261	8,456	72	Marcellus Shale
19	3/21/14	8,001	8,186	72	Marcellus Shale
20	3/23/14	7,741	7,933	72	Marcellus Shale
21	3/24/14	7,538	7,673	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	3/18/14	80.1	6,888	6,006	5,178	406,890	339,125	
18	3/21/14	80.0	6,662	6,261	4,821	404,051	338,031	
19	3/23/14	80.6	6,935	6,736	3,799	408,246	336,794	
20	3/24/14	80.7	7,032	6,145	4,143	407,565	336,298	
21	3/25/14	81.7	6,904	6,574	4,373	376,969	318,961	

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PRODUCING FORMATION(S)	DEPTHS			
Marcelllus Shale	7,011' to 6,966'	TVD	7,538' to 12,930'	MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 2,500 psi Bottom Hole 4,868 calculated psi DURATION OF TEST 96 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3,162 mcfpd	bpd	191 bpd	bpd	□ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 17				

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Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger / Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/3/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

HOWELL #3H
API 47-103-02799
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,068		FW @ 100'
Coal	1,068		*	851		
Sandstone & Shale	851		*	2,146		SW @ 1,301'
Little Lime	2,146		*	2,200		
Big Lime	2,200		*	2,253		
Big Injun	2,253		*	2,296		
Sandstone & Shale	2,296		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,045		
Gordon	3,045		*	3,095		
Undiff Devonian Shale	3,095		*	6,275	6,481	
Rhinestreet	6,275	6,481	~	6,371	6,595	
Cashaqua	6,371	6,595	~	6,446	6,685	
Undiff Devonian Shale	6,446	6,685	~	6,485	6,732	
Middlesex	6,485	6,732	~	6,555	6,815	
West River	6,555	6,815	~	6,881	7,275	
Geneseo	6,881	7,275	~	6,899	7,310	
Tully Limestone	6,899	7,310	~	6,930	7,375	
Hamilton Shale	6,930	7,375	~	6,975	7,503	
Marcellus	6,975	7,503	~	6,978	13,391	
TD				6,978	13,391	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Project: Mary Prospect
Site: Howell Pad
Well: Howell 3H
Wellbore: OH
Design: As Drilled

Scientific Drilling

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WELL DETAILS: Howell 3H

Ground Level: 1302.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	401722.75	1635233.58	39° 35' 44.690 N	80° 47' 40.079 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Howell 3H, Grid North
Vertical (TVD) Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Mary Prospect

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

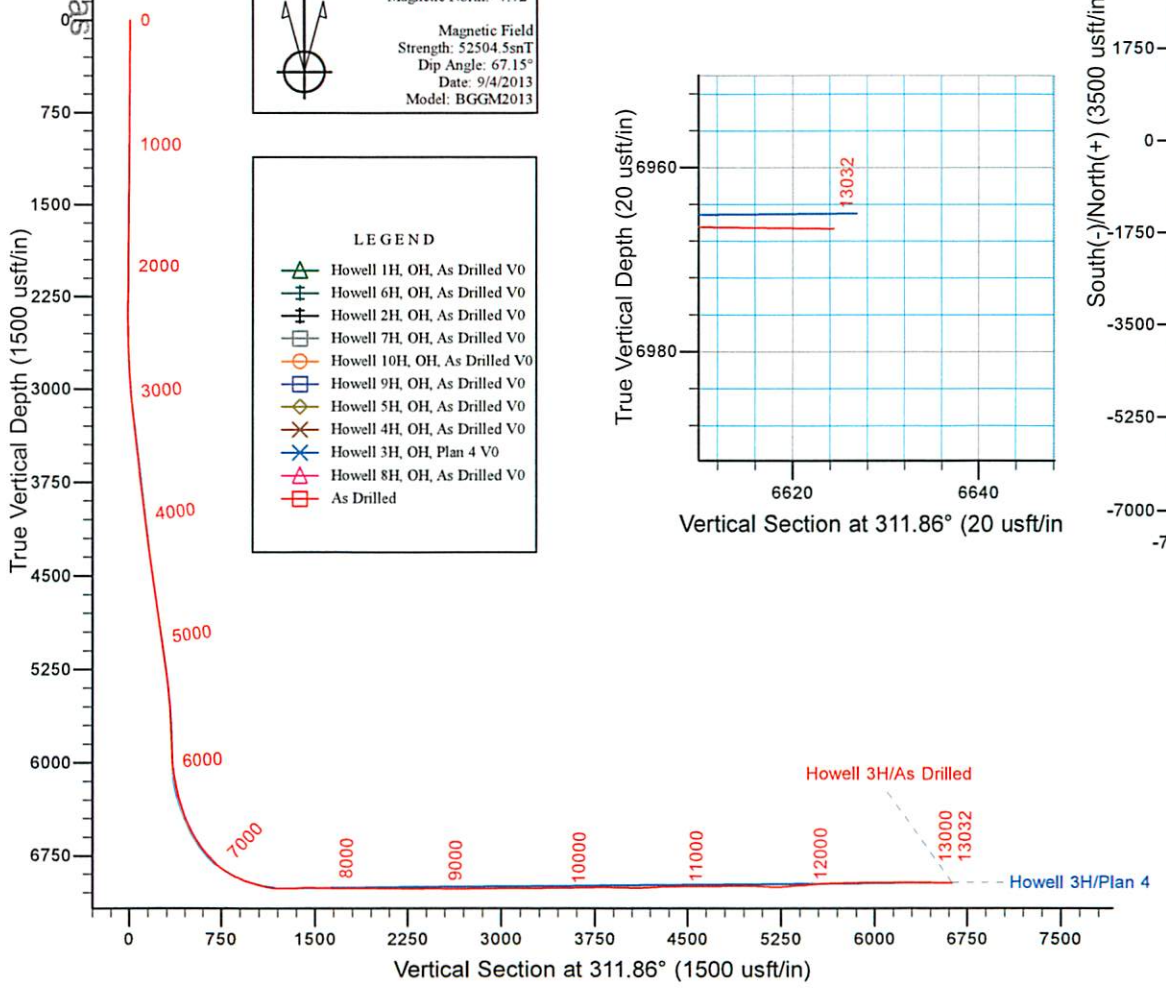
SECTION DETAILS

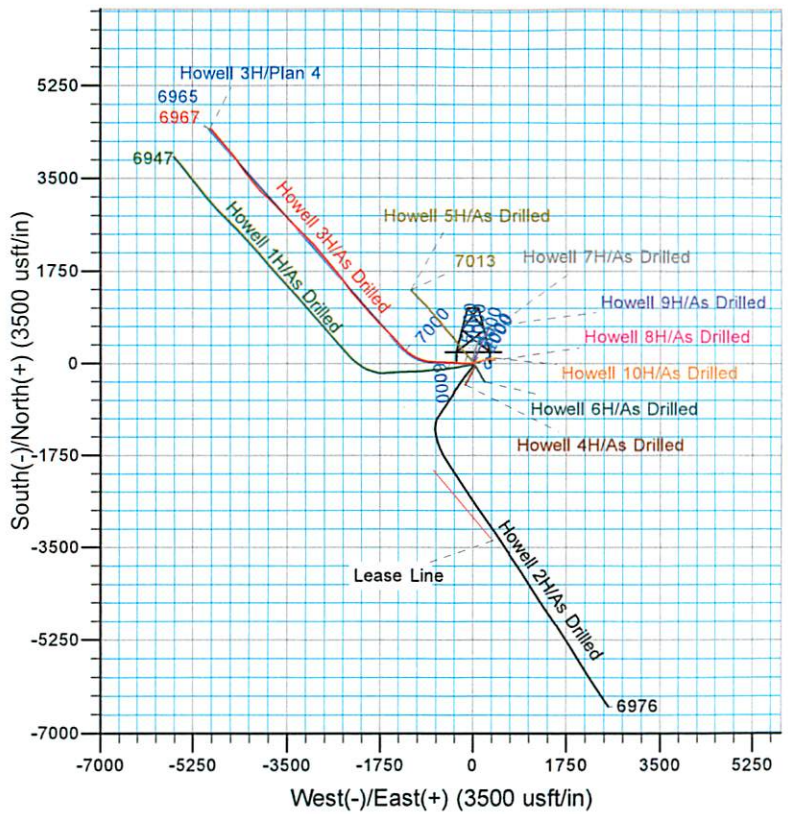
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	5890.0	2.52	257.54	5856.0	25.3	-433.3	0.00	0.00	339.6	
2	5987.0	2.52	257.54	5952.9	24.3	-437.5	0.00	0.00	342.1	
3	6886.7	48.63	271.62	6743.0	29.9	-814.9	5.13	14.66	626.9	
4	7635.3	90.50	319.00	7012.0	350.0	-1395.0	7.99	58.32	1272.5	Howell 3H_LP4
5	13031.7	90.50	319.00	6965.0	4422.5	-4935.3	0.00	0.00	6626.9	Howell 3H_PBHL3

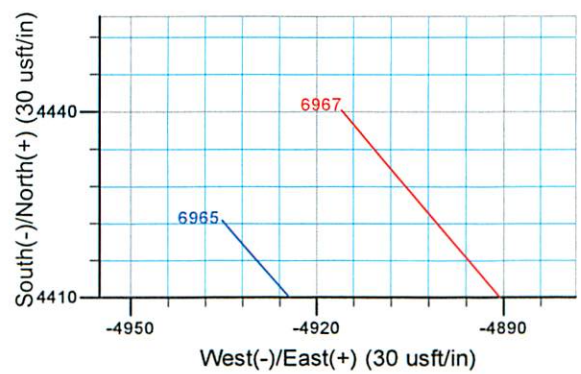
Azimuths to Grid North
True North: 0.83°
Magnetic North: -7.72°

Magnetic Field
Strength: 52504.5snT
Dip Angle: 67.15°
Date: 9/4/2013
Model: BGGM2013

LEGEND
- Howell 1H, OH, As Drilled V0
- Howell 6H, OH, As Drilled V0
- Howell 2H, OH, As Drilled V0
- Howell 7H, OH, As Drilled V0
- Howell 10H, OH, As Drilled V0
- Howell 9H, OH, As Drilled V0
- Howell 5H, OH, As Drilled V0
- Howell 4H, OH, As Drilled V0
- Howell 3H, OH, Plan 4 V0
- Howell 8H, OH, As Drilled V0
- As Drilled







Stone Energy

Mary Prospect
Howell Pad
Howell 3H

OH

Design: As Drilled

Standard Survey Report

01 October, 2013

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Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 3H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Mary Prospect, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Howell Pad

Site Position:		**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
From:	Map	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.83 °

Well Howell 3H

Well Position	**+N/-S**	0.0 usft	**Northing:**	401,722.75 usft	**Latitude:**	39° 35' 44.690 N
	+E/-W	0.0 usft	**Easting:**	1,635,233.58 usft	**Longitude:**	80° 47' 40.079 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,302.0 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	12/20/2012	-8.48	67.19	52,632
	IGRF2010	7/29/2013	-8.50	67.14	52,558
	BGGM2013	9/4/2013	-8.55	67.15	52,504

Design As Drilled

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	311.86

Survey Program **Date** 9/19/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.0	2,403.0	Survey 1 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
2,503.0	13,032.0	Survey 2 - MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
18.0	0.00	0.00	18.0	0.0	0.0	0.0	0.00	0.00	0.00
Ground Level									
103.0	0.39	121.85	103.0	-0.2	0.2	-0.3	0.46	0.46	0.00
First SDI Gyro Survey									
203.0	0.47	104.60	203.0	-0.4	0.9	-1.0	0.15	0.08	-17.25
303.0	0.27	127.49	303.0	-0.7	1.5	-1.6	0.24	-0.20	22.89

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 3H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
403.0	0.19	128.49	403.0	-0.9	1.8	-2.0	0.08	-0.08	1.00
503.0	0.40	116.72	503.0	-1.2	2.3	-2.5	0.22	0.21	-11.77
603.0	0.33	117.06	603.0	-1.5	2.8	-3.1	0.07	-0.07	0.34
703.0	0.33	141.84	703.0	-1.8	3.3	-3.7	0.14	0.00	24.78
803.0	0.18	136.15	803.0	-2.2	3.6	-4.1	0.15	-0.15	-5.69
903.0	0.50	126.21	903.0	-2.5	4.0	-4.7	0.32	0.32	-9.94
1,003.0	0.30	118.30	1,003.0	-2.9	4.6	-5.4	0.21	-0.20	-7.91
1,103.0	0.29	106.05	1,103.0	-3.1	5.1	-5.9	0.06	-0.01	-12.25
1,203.0	0.26	112.80	1,203.0	-3.3	5.5	-6.3	0.04	-0.03	6.75
1,303.0	0.54	111.36	1,303.0	-3.5	6.2	-7.0	0.28	0.28	-1.44
1,403.0	0.78	99.19	1,403.0	-3.8	7.3	-8.0	0.28	0.24	-12.17
1,503.0	0.80	102.92	1,503.0	-4.1	8.6	-9.2	0.06	0.02	3.73
1,603.0	0.69	95.46	1,603.0	-4.3	9.9	-10.3	0.15	-0.11	-7.46
1,703.0	0.31	96.31	1,702.9	-4.4	10.8	-11.0	0.38	-0.38	0.85
1,803.0	0.29	86.29	1,802.9	-4.4	11.3	-11.4	0.06	-0.02	-10.02
1,903.0	0.26	81.95	1,902.9	-4.3	11.8	-11.7	0.04	-0.03	-4.34
2,003.0	0.09	94.90	2,002.9	-4.3	12.1	-11.9	0.17	-0.17	12.95
2,103.0	0.10	240.85	2,102.9	-4.4	12.1	-11.9	0.18	0.01	145.95
2,203.0	0.12	209.85	2,202.9	-4.5	12.0	-11.9	0.06	0.02	-31.00
2,303.0	0.37	101.95	2,302.9	-4.7	12.2	-12.2	0.42	0.25	-107.90
2,403.0	0.50	111.83	2,402.9	-4.9	13.0	-12.9	0.15	0.13	9.88
Last SDI Gyro Survey									
2,503.0	0.34	89.86	2,502.9	-5.1	13.7	-13.5	0.22	-0.16	-21.97
First SDI MWD Survey									
2,603.0	0.89	281.71	2,602.9	-4.9	13.2	-13.1	1.22	0.55	-168.15
2,703.0	3.02	288.87	2,702.9	-3.9	9.9	-10.0	2.14	2.13	7.16
2,803.0	3.80	289.93	2,802.7	-1.9	4.3	-4.5	0.78	0.78	1.06
2,903.0	3.93	286.02	2,902.5	0.2	-2.1	1.7	0.29	0.13	-3.91
3,003.0	5.23	284.94	3,002.1	2.3	-9.8	8.8	1.30	1.30	-1.08
3,103.0	7.33	274.30	3,101.5	3.9	-20.5	17.9	2.39	2.10	-10.64
3,203.0	7.88	275.80	3,200.7	5.1	-33.7	28.5	0.58	0.55	1.50
3,303.0	8.26	267.50	3,299.7	5.5	-47.7	39.2	1.22	0.38	-8.30
3,403.0	9.18	270.83	3,398.5	5.3	-62.9	50.4	1.05	0.92	3.33
3,503.0	9.62	265.81	3,497.2	4.8	-79.2	62.2	0.93	0.44	-5.02
3,603.0	9.14	266.02	3,595.8	3.6	-95.4	73.5	0.48	-0.48	0.21
3,703.0	8.88	270.26	3,694.6	3.1	-111.1	84.8	0.71	-0.26	4.24
3,803.0	8.70	271.75	3,793.4	3.4	-126.4	96.4	0.29	-0.18	1.49
3,903.0	8.93	275.98	3,892.3	4.4	-141.6	108.4	0.69	0.23	4.23
4,003.0	9.07	272.62	3,991.0	5.6	-157.2	120.8	0.54	0.14	-3.36
4,103.0	9.07	277.17	4,089.8	6.9	-172.9	133.4	0.72	0.00	4.55
4,203.0	9.37	273.61	4,188.5	8.4	-188.9	146.3	0.64	0.30	-3.56
4,303.0	9.44	271.48	4,287.1	9.2	-205.2	158.9	0.36	0.07	-2.13
4,403.0	9.34	268.34	4,385.8	9.1	-221.5	171.1	0.52	-0.10	-3.14
4,503.0	9.63	[illegible]	[illegible]	[illegible]	-238.0	182.8	0.45	0.29	-2.11

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 3H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,603.0	10.10	268.61	4,583.0	7.6	-255.1	195.0	0.62	0.47	2.38
4,703.0	9.93	279.78	4,681.4	8.8	-272.3	208.7	1.95	-0.17	11.17
4,803.0	10.32	282.07	4,779.9	12.2	-289.6	223.8	0.56	0.39	2.29
4,903.0	9.86	278.68	4,878.3	15.3	-306.8	238.7	0.75	-0.46	-3.39
5,003.0	9.81	274.99	4,976.9	17.4	-323.8	252.7	0.63	-0.05	-3.69
5,103.0	10.29	273.36	5,075.3	18.6	-341.2	266.5	0.56	0.48	-1.63
5,203.0	10.80	272.54	5,173.6	19.6	-359.4	280.8	0.53	0.51	-0.82
5,303.0	9.57	273.15	5,272.1	20.5	-377.1	294.5	1.23	-1.23	0.61
5,403.0	8.04	275.83	5,370.9	21.6	-392.4	306.6	1.58	-1.53	2.68
5,503.0	6.49	276.91	5,470.1	23.0	-404.9	316.9	1.56	-1.55	1.08
5,603.0	4.96	272.21	5,569.6	23.9	-414.9	324.9	1.60	-1.53	-4.70
5,703.0	3.91	274.01	5,669.3	24.3	-422.6	330.9	1.06	-1.05	1.80
5,803.0	2.66	272.77	5,769.1	24.6	-428.3	335.4	1.25	-1.25	-1.24
5,878.0	2.52	257.54	5,844.0	24.3	-431.7	337.7	0.93	-0.19	-20.31
5,906.0	2.57	264.47	5,872.0	24.2	-432.9	338.5	1.11	0.18	24.75
5,938.0	2.45	262.64	5,904.0	24.0	-434.3	339.4	0.45	-0.38	-5.72
5,969.0	3.20	263.71	5,934.9	23.8	-435.8	340.4	2.43	2.42	3.45
6,001.0	5.21	267.97	5,966.9	23.7	-438.1	342.1	6.35	6.28	13.31
6,033.0	7.18	269.33	5,998.7	23.6	-441.6	344.6	6.17	6.16	4.25
6,064.0	8.83	270.17	6,029.4	23.6	-445.9	347.8	5.34	5.32	2.71
6,096.0	10.30	271.25	6,060.9	23.6	-451.2	351.8	4.63	4.59	3.38
6,128.0	10.99	272.25	6,092.4	23.8	-457.1	356.3	2.23	2.16	3.13
6,160.0	11.43	271.81	6,123.8	24.0	-463.3	361.1	1.40	1.38	-1.38
6,192.0	13.04	272.65	6,155.0	24.3	-470.1	366.3	5.06	5.03	2.63
6,224.0	14.81	272.96	6,186.1	24.7	-477.8	372.3	5.54	5.53	0.97
6,255.0	16.38	272.64	6,215.9	25.1	-486.1	378.8	5.07	5.06	-1.03
6,287.0	17.72	273.08	6,246.5	25.6	-495.5	386.1	4.21	4.19	1.38
6,319.0	18.84	273.76	6,276.9	26.2	-505.5	393.9	3.56	3.50	2.13
6,351.0	20.42	273.22	6,307.1	26.8	-516.3	402.4	4.97	4.94	-1.69
6,382.0	22.29	272.58	6,335.9	27.4	-527.5	411.1	6.08	6.03	-2.06
6,414.0	24.16	271.46	6,365.3	27.8	-540.1	420.8	6.00	5.84	-3.50
6,446.0	25.57	270.69	6,394.4	28.1	-553.6	431.0	4.52	4.41	-2.41
6,477.0	27.29	271.09	6,422.1	28.3	-567.4	441.4	5.58	5.55	1.29
6,507.0	28.63	271.07	6,448.6	28.6	-581.4	452.1	4.47	4.47	-0.07
6,537.0	30.18	271.46	6,474.8	28.9	-596.2	463.3	5.21	5.17	1.30
6,567.0	31.44	271.42	6,500.5	29.3	-611.5	475.0	4.20	4.20	-0.13
6,598.0	33.57	271.79	6,526.7	29.7	-628.2	487.7	6.90	6.87	1.19
6,628.0	35.29	272.65	6,551.4	30.4	-645.1	500.7	5.96	5.73	2.87
6,659.0	37.17	272.77	6,576.4	31.3	-663.4	514.9	6.07	6.06	0.39
6,689.0	38.19	273.30	6,600.2	32.2	-681.7	529.2	3.57	3.40	1.77
6,720.0	39.56	273.81	6,624.3	33.4	-701.2	544.5	4.54	4.42	1.65
6,750.0	41.86	274.58	6,647.0	34.9	-720.7	560.0	7.85	7.67	2.57
6,780.0	43.78	275.35	6,669.0	36.6	-741.0	576.3	6.63	6.40	2.57

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 3H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,810.0	44.93	275.66	6,690.5	38.7	-761.9	593.2	3.90	3.83	1.03
6,841.0	46.63	275.94	6,712.1	40.9	-784.0	611.1	5.52	5.48	0.90
6,871.0	47.09	275.37	6,732.6	43.1	-805.7	628.8	2.07	1.53	-1.90
6,901.0	47.46	275.23	6,753.0	45.1	-827.7	646.5	1.28	1.23	-0.47
6,931.0	48.46	276.15	6,773.1	47.3	-849.9	664.5	4.04	3.33	3.07
6,961.0	49.19	278.54	6,792.8	50.2	-872.3	683.1	6.47	2.43	7.97
6,991.0	50.25	281.66	6,812.2	54.2	-894.8	702.6	8.68	3.53	10.40
7,021.0	51.79	284.10	6,831.1	59.4	-917.5	723.0	8.14	5.13	8.13
7,052.0	54.59	286.49	6,849.7	66.0	-941.4	745.2	10.94	9.03	7.71
7,082.0	57.87	288.50	6,866.3	73.5	-965.2	767.9	12.27	10.93	6.70
7,112.0	60.16	290.76	6,881.8	82.1	-989.4	791.7	10.00	7.63	7.53
7,143.0	62.12	292.13	6,896.7	92.0	-1,014.7	817.1	7.41	6.32	4.42
7,173.0	63.64	293.24	6,910.4	102.3	-1,039.3	842.3	6.04	5.07	3.70
7,204.0	65.24	294.47	6,923.8	113.7	-1,064.9	868.9	6.28	5.16	3.97
7,234.0	67.10	295.97	6,935.9	125.4	-1,089.7	895.2	7.70	6.20	5.00
7,264.0	68.89	298.11	6,947.2	138.0	-1,114.5	922.1	8.91	5.97	7.13
7,294.0	70.88	300.48	6,957.5	151.8	-1,139.1	949.6	9.95	6.63	7.90
7,324.0	72.70	303.27	6,966.8	166.8	-1,163.3	977.7	10.72	6.07	9.30
7,355.0	73.93	304.97	6,975.7	183.5	-1,187.8	1,007.1	6.58	3.97	5.48
7,386.0	75.27	306.34	6,984.0	200.9	-1,212.1	1,036.8	6.07	4.32	4.42
7,416.0	76.14	307.68	6,991.4	218.4	-1,235.3	1,065.8	5.21	2.90	4.47
7,446.0	77.84	309.61	6,998.1	236.7	-1,258.2	1,094.9	8.45	5.67	6.43
7,476.0	79.47	311.80	7,004.0	255.8	-1,280.5	1,124.4	8.99	5.43	7.30
7,507.0	82.73	313.65	7,008.8	276.6	-1,303.0	1,155.0	12.06	10.52	5.97
7,570.0	90.34	317.45	7,012.6	321.5	-1,346.9	1,217.7	13.49	12.08	6.03
7,633.0	91.78	318.64	7,011.5	368.3	-1,389.1	1,280.3	2.96	2.29	1.89
7,697.0	93.09	318.13	7,008.8	416.1	-1,431.5	1,343.8	2.20	2.05	-0.80
7,761.0	90.91	316.68	7,006.5	463.2	-1,474.8	1,407.5	4.09	-3.41	-2.27
7,824.0	88.79	315.94	7,006.7	508.8	-1,518.3	1,470.3	3.56	-3.37	-1.17
7,888.0	89.23	316.00	7,007.8	554.8	-1,562.8	1,534.1	0.69	0.69	0.09
7,951.0	89.60	316.10	7,008.4	600.1	-1,606.5	1,596.9	0.61	0.59	0.16
8,015.0	87.85	315.97	7,009.9	646.2	-1,650.9	1,660.7	2.74	-2.73	-0.20
8,078.0	88.42	316.07	7,011.9	691.5	-1,694.7	1,723.5	0.92	0.90	0.16
8,142.0	89.06	316.11	7,013.3	737.6	-1,739.0	1,787.4	1.00	1.00	0.06
8,204.0	89.93	315.92	7,013.9	782.2	-1,782.1	1,849.2	1.44	1.40	-0.31
8,268.0	90.57	316.13	7,013.6	828.2	-1,826.5	1,913.0	1.05	1.00	0.33
8,331.0	89.09	316.82	7,013.8	873.9	-1,869.9	1,975.8	2.59	-2.35	1.10
8,394.0	89.80	316.82	7,014.4	919.9	-1,913.0	2,038.6	1.13	1.13	0.00
8,458.0	90.71	317.02	7,014.1	966.6	-1,956.7	2,102.3	1.46	1.42	0.31
8,521.0	88.96	318.30	7,014.3	1,013.2	-1,999.2	2,165.0	3.44	-2.78	2.03
8,585.0	89.70	317.64	7,015.0	1,060.7	-2,042.0	2,228.6	1.55	1.16	-1.03
8,648.0	90.30	317.71	7,015.0	1,107.3	-2,084.4	2,291.3	0.96	0.95	0.11
8,711.0	90.23	319.75	7,014.7	1,154.6	-2,126.0	2,353.8	3.24	-0.11	3.24
8,774.0	90.60	319.28	7,014.3	1,202.5	-2,166.9	2,416.3	0.95	0.59	-0.75

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 3H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,837.0	88.36	319.54	7,014.9	1,250.4	-2,207.9	2,478.7	3.58	-3.56	0.41
8,901.0	88.66	318.50	7,016.5	1,298.7	-2,249.8	2,542.2	1.69	0.47	-1.63
8,964.0	90.57	320.45	7,016.9	1,346.6	-2,290.8	2,604.6	4.33	3.03	3.10
9,028.0	92.08	324.54	7,015.5	1,397.3	-2,329.7	2,667.5	6.81	2.36	6.39
9,091.0	90.40	323.81	7,014.1	1,448.4	-2,366.6	2,729.1	2.91	-2.67	-1.16
9,155.0	90.13	323.39	7,013.8	1,499.9	-2,404.5	2,791.7	0.78	-0.42	-0.66
9,218.0	90.54	322.75	7,013.4	1,550.2	-2,442.4	2,853.5	1.21	0.65	-1.02
9,281.0	90.87	321.85	7,012.7	1,600.1	-2,480.9	2,915.5	1.52	0.52	-1.43
9,349.0	91.21	321.90	7,011.4	1,653.6	-2,522.9	2,982.4	0.51	0.50	0.07
9,413.0	89.90	322.46	7,010.8	1,704.1	-2,562.1	3,045.4	2.23	-2.05	0.88
9,477.0	89.73	322.35	7,011.0	1,754.8	-2,601.2	3,108.3	0.32	-0.27	-0.17
9,540.0	90.47	322.88	7,010.9	1,804.9	-2,639.4	3,170.2	1.44	1.17	0.84
9,604.0	90.84	322.98	7,010.2	1,856.0	-2,678.0	3,233.0	0.60	0.58	0.16
9,666.0	91.18	322.00	7,009.1	1,905.1	-2,715.7	3,293.9	1.67	0.55	-1.58
9,730.0	91.18	320.52	7,007.8	1,955.0	-2,755.8	3,357.0	2.31	0.00	-2.31
9,793.0	89.76	318.63	7,007.2	2,003.0	-2,796.6	3,419.5	3.75	-2.25	-3.00
9,857.0	89.36	318.75	7,007.7	2,051.1	-2,838.9	3,483.0	0.65	-0.63	0.19
9,920.0	91.14	320.81	7,007.5	2,099.2	-2,879.6	3,545.4	4.32	2.83	3.27
9,984.0	90.91	321.27	7,006.3	2,148.9	-2,919.8	3,608.6	0.80	-0.36	0.72
10,047.0	91.81	322.55	7,004.8	2,198.5	-2,958.6	3,670.6	2.48	1.43	2.03
10,111.0	91.34	318.58	7,003.1	2,247.9	-2,999.3	3,733.8	6.24	-0.73	-6.20
10,174.0	88.32	315.23	7,003.2	2,293.9	-3,042.3	3,796.6	7.16	-4.79	-5.32
10,238.0	88.25	313.75	7,005.2	2,338.7	-3,087.9	3,860.5	2.31	-0.11	-2.31
10,301.0	88.28	313.71	7,007.1	2,382.2	-3,133.4	3,923.4	0.08	0.05	-0.06
10,365.0	89.43	315.41	7,008.4	2,427.1	-3,179.0	3,987.3	3.21	1.80	2.66
10,396.0	89.46	314.78	7,008.7	2,449.1	-3,200.9	4,018.3	2.03	0.10	-2.03
10,428.0	90.74	315.22	7,008.6	2,471.7	-3,223.5	4,050.2	4.23	4.00	1.38
10,459.0	91.68	315.85	7,007.9	2,493.8	-3,245.3	4,081.1	3.65	3.03	2.03
10,491.0	92.29	315.79	7,006.8	2,516.8	-3,267.5	4,113.0	1.92	1.91	-0.19
10,522.0	92.32	315.42	7,005.6	2,538.9	-3,289.2	4,144.0	1.20	0.10	-1.19
10,554.0	92.59	315.11	7,004.2	2,561.6	-3,311.7	4,175.9	1.28	0.84	-0.97
10,586.0	92.38	314.71	7,002.8	2,584.2	-3,334.4	4,207.8	1.41	-0.66	-1.25
10,618.0	92.08	315.09	7,001.6	2,606.7	-3,357.0	4,239.7	1.51	-0.94	1.19
10,650.0	92.56	315.54	7,000.3	2,629.5	-3,379.5	4,271.6	2.06	1.50	1.41
10,681.0	92.93	316.25	6,998.8	2,651.7	-3,401.0	4,302.5	2.58	1.19	2.29
10,713.0	91.07	316.42	6,997.7	2,674.8	-3,423.1	4,334.4	5.84	-5.81	0.53
10,745.0	90.07	314.62	6,997.4	2,697.7	-3,445.5	4,366.3	6.43	-3.13	-5.63
10,776.0	90.00	313.97	6,997.3	2,719.3	-3,467.7	4,397.3	2.11	-0.23	-2.10
10,808.0	90.30	314.30	6,997.3	2,741.6	-3,490.7	4,429.3	1.39	0.94	1.03
10,840.0	90.50	315.34	6,997.0	2,764.2	-3,513.4	4,461.2	3.31	0.63	3.25
10,872.0	90.74	316.51	6,996.7	2,787.2	-3,535.6	4,493.2	3.73	0.75	3.66
10,903.0	90.67	317.84	6,996.3	2,809.9	-3,556.7	4,524.0	4.30	-0.23	4.29
10,935.0	90.50	319.71	6,996.0	2,834.0	-3,577.8	4,555.8	5.87	-0.53	5.84

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 3H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,966.0	90.44	320.94	6,995.7	2,857.8	-3,597.6	4,586.4	3.97	-0.19	3.97
10,998.0	90.94	321.14	6,995.3	2,882.7	-3,617.7	4,618.0	1.68	1.56	0.63
11,061.0	90.10	317.30	6,994.8	2,930.4	-3,658.9	4,680.5	6.24	-1.33	-6.10
11,093.0	89.90	315.95	6,994.8	2,953.6	-3,680.8	4,712.4	4.26	-0.63	-4.22
11,125.0	90.67	316.17	6,994.6	2,976.7	-3,703.0	4,744.3	2.50	2.41	0.69
11,156.0	91.04	317.84	6,994.2	2,999.4	-3,724.2	4,775.2	5.52	1.19	5.39
11,188.0	90.77	316.98	6,993.6	3,022.9	-3,745.8	4,807.0	2.82	-0.84	-2.69
11,220.0	90.17	314.60	6,993.4	3,045.8	-3,768.1	4,838.9	7.67	-1.88	-7.44
11,252.0	90.44	314.53	6,993.2	3,068.3	-3,790.9	4,870.9	0.87	0.84	-0.22
11,283.0	90.97	313.78	6,992.8	3,089.9	-3,813.2	4,901.9	2.96	1.71	-2.42
11,315.0	90.03	311.67	6,992.6	3,111.6	-3,836.7	4,933.9	7.22	-2.94	-6.59
11,347.0	89.73	310.43	6,992.6	3,132.6	-3,860.8	4,965.9	3.99	-0.94	-3.88
11,379.0	88.92	309.86	6,993.0	3,153.3	-3,885.3	4,997.9	3.10	-2.53	-1.78
11,411.0	87.68	310.74	6,993.9	3,173.9	-3,909.7	5,029.8	4.75	-3.88	2.75
11,442.0	86.61	311.52	6,995.5	3,194.3	-3,933.0	5,060.8	4.27	-3.45	2.52
11,474.0	86.80	314.02	6,997.3	3,216.0	-3,956.4	5,092.7	7.82	0.59	7.81
11,505.0	86.67	315.74	6,999.1	3,237.8	-3,978.4	5,123.6	5.56	-0.42	5.55
11,537.0	88.32	318.05	7,000.5	3,261.2	-4,000.2	5,155.5	8.87	5.16	7.22
11,569.0	90.71	320.53	7,000.8	3,285.4	-4,021.1	5,187.2	10.76	7.47	7.75
11,633.0	92.56	321.70	6,998.9	3,335.2	-4,061.2	5,250.3	3.42	2.89	1.83
11,696.0	93.84	321.33	6,995.4	3,384.5	-4,100.4	5,312.3	2.11	2.03	-0.59
11,760.0	94.23	321.38	6,990.9	3,434.3	-4,140.2	5,375.3	0.61	0.61	0.08
11,791.0	95.44	321.44	6,988.3	3,458.5	-4,159.5	5,405.8	3.91	3.90	0.19
11,823.0	96.12	322.05	6,985.1	3,483.5	-4,179.2	5,437.1	2.85	2.13	1.91
11,855.0	95.85	322.91	6,981.7	3,508.7	-4,198.6	5,468.4	2.80	-0.84	2.69
11,887.0	94.84	323.55	6,978.8	3,534.2	-4,217.7	5,499.7	3.73	-3.16	2.00
11,918.0	94.67	324.14	6,976.2	3,559.2	-4,235.9	5,529.9	1.97	-0.55	1.90
11,950.0	93.39	324.62	6,973.9	3,585.1	-4,254.5	5,561.0	4.27	-4.00	1.50
11,981.0	92.78	324.76	6,972.3	3,610.4	-4,272.4	5,591.2	2.02	-1.97	0.45
12,013.0	91.14	324.45	6,971.2	3,636.4	-4,290.9	5,622.4	5.22	-5.13	-0.97
12,076.0	91.31	324.68	6,969.8	3,687.8	-4,327.4	5,683.9	0.45	0.27	0.37
12,140.0	90.57	325.60	6,968.8	3,740.3	-4,364.0	5,746.1	1.84	-1.16	1.44
12,203.0	91.38	326.05	6,967.7	3,792.4	-4,399.4	5,807.3	1.47	1.29	0.71
12,266.0	92.18	324.28	6,965.8	3,844.1	-4,435.4	5,868.5	3.08	1.27	-2.81
12,330.0	91.11	322.34	6,963.9	3,895.4	-4,473.6	5,931.2	3.46	-1.67	-3.03
12,393.0	89.73	322.47	6,963.5	3,945.3	-4,512.0	5,993.2	2.20	-2.19	0.21
12,456.0	90.03	322.08	6,963.6	3,995.1	-4,550.6	6,055.1	0.78	0.48	-0.62
12,520.0	89.30	320.66	6,964.0	4,045.1	-4,590.5	6,118.3	2.49	-1.14	-2.22
12,583.0	90.10	320.86	6,964.3	4,093.9	-4,630.4	6,180.5	1.31	1.27	0.32
12,646.0	90.74	321.32	6,963.8	4,142.9	-4,669.9	6,242.7	1.25	1.02	0.73
12,709.0	89.97	320.99	6,963.4	4,192.0	-4,709.4	6,304.8	1.33	-1.22	-0.52
12,772.0	90.37	320.62	6,963.3	4,240.8	-4,749.3	6,367.1	0.86	0.63	-0.59
12,836.0	88.66	320.18	6,963.8	4,290.1	-4,790.0	6,430.4	2.71	-2.63	-0.69

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 3H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 3H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,897.0	88.99	319.94	6,965.0	4,336.9	-4,829.2	6,490.7	0.63	0.49	-0.39
12,961.0	89.43	319.97	6,965.9	4,385.9	-4,870.4	6,554.1	0.69	0.69	0.05
Last SDI MWD Survey									
13,032.0	89.43	319.97	6,966.6	4,440.2	-4,916.0	6,624.4	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,403.0	2,402.9	-4.9	13.0	Last SDI Gyro Survey
2,503.0	2,502.9	-5.1	13.7	First SDI MWD Survey
12,961.0	6,965.9	4,385.9	-4,870.4	Last SDI MWD Survey
13,032.0	6,966.6	4,440.2	-4,916.0	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/25/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	
Operator Name:	Stone Energy
Well Name and Number:	Howell 3H
Longitude:	
Latitude:	
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	7294321

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
H015%, Slickwater, WF115	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Accelerator, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		87.56094%	
			Crystalline silica	14808-60-7	98.42635%	12.24331%	
			Hydrochloric acid	7647-01-0	0.80554%	0.10020%	
			Carbohydrate polymer	Proprietary	0.46906%	0.05835%	
			Ammonium sulfate	Proprietary	0.17742%	0.02207%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06020%	0.00749%	
			Glutaraldehyde	111-30-8	0.05131%	0.00638%	
			Calcium chloride	10043-52-4	0.03491%	0.00434%	
			Diammonium peroxidisulphate	7727-54-0	0.02230%	0.00277%	
			Amine derivative	Proprietary	0.01624%	0.00202%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00463%	0.00058%	
			Ethane-1,2-diol	107-21-1	0.00387%	0.00048%	
			Trisodium ortho phosphate	7601-54-9	0.00387%	0.00048%	
			Methanol	67-56-1	0.00341%	0.00042%	
			Sodium erythorbate	6381-77-7	0.00280%	0.00035%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00256%	0.00032%	
			Aliphatic acids	Proprietary	0.00256%	0.00032%	
			Prop-2-yn-1-ol	107-19-7	0.00085%	0.00011%	
			Polypropylene glycol	25322-69-4	0.00015%	0.00002%	

* 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%

Report ID: RPT-25889 (Generated on 3/31/2014 10:55 AM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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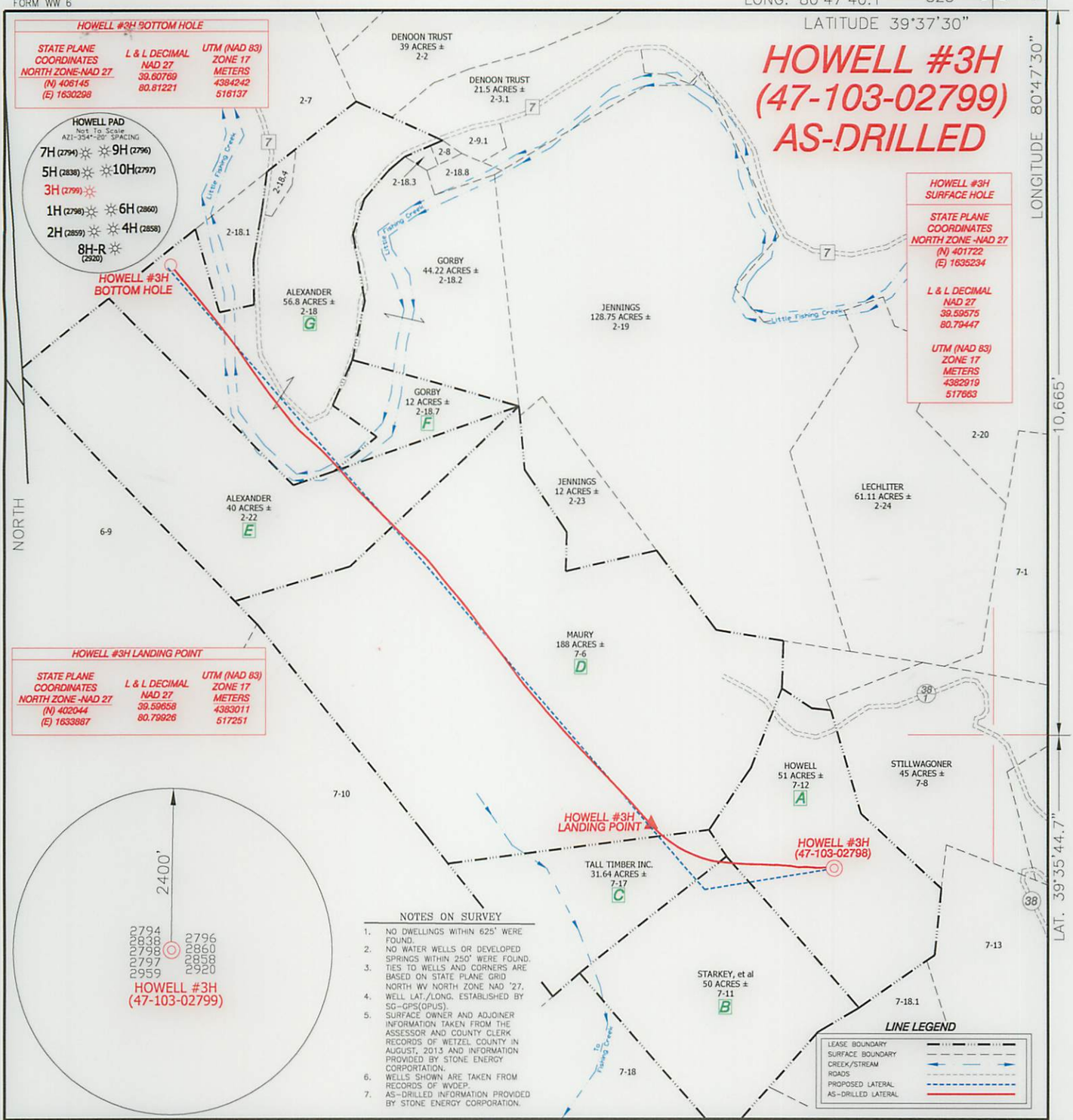
FORM WW 6



I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE OCTOBER 21, 20 14

OPERATORS WELL NO. HOWELL #3H

API WELL NO. 47 — 103 — 02799
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2208 (BK 64-54)
SCALE 1" = 1000'
PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___ IF "GAS" PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X

LOCATION :
ELEVATION 1304' WATERSHED FISHING CREEK
DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'
SURFACE OWNER CHARLES & RUTH HOWELL ACREAGE 51±
ROYALTY OWNER CHARLES & RUTH HOWELL, et al LEASE ACREAGE 429.44±
PROPOSED WORK : LEASE NO. ___
DRILL ___ CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE ___ PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___ OTHER ___
PHYSICAL CHANGE IN WELL (SPECIFY) ___ TARGET FORMATION MARCELLUS
ESTIMATED DEPTH TVD 6,967' MD 13,032'

COUNTY NAME
PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR
ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

WR-35
Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

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API 47 - 103 - 02838 County Wetzel District Green
Quad Porters Falls Pad Name Howell Field/Pool Name Mary
Farm name Howell, Charles and Ruth Well Number #5H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,383,197	Easting 517,662
Landing Point of Curve	Northing 4,382,502	Easting 517,431
Bottom Hole	Northing 4,384,341	Easting 516,412

Elevation (ft) 1,302 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 10/31/2012 Date drilling commenced 2/8/2013 Date drilling ceased 9/29/2013
Date completion activities began 1/30/2014 Date completion activities ceased 8/6/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft 296 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1302 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 950 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:
A.L. 5/19/15 ✓
W.S. 6/1/15

WR-35
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API 47- 103 - 02838 Farm name Howell, Charles and Ruth Well number #5H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	97'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,287' KB 1,272' GL	New	J55	120' & 200'	Y - CTS
Coal	17.5"	13.375"	1,287' KB 1,272' GL	New	J55	120' & 200'	Y - CTS
Intermediate 1	12.25"	9.625"	2,485'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,477'	New	P110		N - TOC @ 960'
Tubing	N/A	2.375"	7,303'	New	N80		N/A
Packer type and depth set							

Comment Details Circulated 32 bbls cement to surface on the 13-3/8". Circulated 46 bbls cement to surface on the 9.625". Cement top on the 5.5" production casing is at 960'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Coal	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-430 Tail-420	Lead-15.0 Tail-15.5	Lead-1.27 Tail-1.19	Lead-546 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-Class "A"	Lead-910 Tail-1,590	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.2	Lead-1,147 Tail-1,908	960'	8.0
Tubing							

Drillers TD (ft) 12,486 MD / 6,942 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

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Kick off depth (ft) 6,146 MD/ 6,115 TVD

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Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐ sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 2, 4, 6, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, and 31. Intermediate casing had bow spring centralizers placed on joints #'s 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51 and 54. One straight blade rigid centralizer was placed on joint #57. Production casing had left/right rigid spiral centralizers were placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #192. From there bow spring centralizers were placed beginning on joint #200 and then every tenth joint up to joint #278. A total of 49 rigid left/right centralizers were used and 9 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you increase as you come up the hole.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

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WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

WV Department of
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WR-35
Rev. 8/23/13

API 47- 103 - 02838 Farm name Howell, Charles and Ruth Well number #5H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/9/14	12,101	12,230	72	Marcellus Shale
2	2/22/14	11,831	12,023	72	Marcellus Shale
3	2/25/14	11,553	11,751	72	Marcellus Shale
4	2/27/14	11,292	11,483	72	Marcellus Shale
5	3/2/14	11,030	11,216	72	Marcellus Shale
6	3/6/14	10,771	10,962	72	Marcellus Shale
7	3/7/14	10,511	10,702	72	Marcellus Shale
8	3/8/14	10,251	10,443	72	Marcellus Shale
9	3/9/14	9,988	10,183	72	Marcellus Shale
10	3/11/14	9,722	9,923	72	Marcellus Shale
11	3/12/14	9,463	9,650	72	Marcellus Shale
12	3/13/14	9,201	9,393	72	Marcellus Shale
13	3/14/14	8,941	9,133	72	Marcellus Shale
14	3/15/14	8,684	8,873	72	Marcellus Shale
15	3/17/14	8,421	8,613	72	Marcellus Shale
16	3/18/14	8,161	8,351	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	2/22/14	81.4	7,888	6,595	5,350	360,005	344,881	
2	2/25/14	80.9	7,881	6,318	4,977	369,620	352,586	
3	2/27/14	85.2	8,032	6,450	4,575	405,640	345,320	
4	3/2/14	83.5	8,025	7,271	5,148	394,160	339,171	
5	3/5/14	84.5	8,196	7,297	4,775	345,880	426,337	
6	3/7/14	85.4	7,970	7,086	5,492	404,380	341,929	
7	3/8/14	80.3	7,561	6,205	5,177	405,380	343,751	
8	3/9/14	80.6	7,680	6,530	5,320	410,480	342,607	
9	3/10/14	78.8	7,725	6,325	5,807	411,900	358,670	
10	3/12/14	80.3	7,990	6,790	5,550	413,540	341,857	
11	3/13/14	77.9	7,949	6,374	5,006	410,770	344,465	
12	3/14/14	78.4	7,526	6,354	4,920	407,820	342,441	
13	3/15/14	78.3	7,439	6,903	4,890	410,780	338,454	
14	3/17/14	80.6	7,354	6,500	4,690	408,677	342,161	
15	3/18/14	80.4	6,907	6,015	4,805	401,622	338,148	
16	3/19/14	80.5	7,142	6,630	5,551	411,845	336,695	

Please insert additional pages as applicable.

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WR-35
Rev. 8/23/13

API 47- 103 - 02838 Farm name Howell, Charles and Ruth Well number #5H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	3/19/14	7,882	8,078	72	Marcellus Shale
18	3/22/14	7,623	7,813	72	Marcellus Shale
19	3/23/14	7,365	7,553	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	3/22/14	80.3	6,941	6,197	4,058	411,946	342,284	
18	3/23/14	80.2	6,765	5,866	3,406	408,364	336,812	
19	3/24/14	79.8	7,071	5,950	3,878	408,024	338,092	

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WR-35
Rev. 8/23/13

API 47- 103 - 02838 Farm name Howell, Charles and Ruth Well number #5H

PRODUCING FORMATION(S)	DEPTHS			
Marcelllus Shale	7,005' to 6,953'	TVD	7,365' to 12,230'	MD

Please insert additional pages as applicable.

GAS TEST ☐ Build up ☐ Drawdown ■ Open Flow OIL TEST ■ Flow ☐ Pump

SHUT-IN PRESSURE Surface 1,691 psi Bottom Hole 3,961 calculated psi DURATION OF TEST 45 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	2,072 mcfpd	bpd	129 bpd	504 bpd	☐ Estimated ■ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 16				

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Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger / Halliburton
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/3/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

HOWELL #5H
API 47-103-02838
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	950		FW @ 296
Coal	950		*	953		
Sandstone & Shale	953		*	2,146		SW @ 1,302
Little Lime	2,146		*	2,200		
Big Lime	2,200		*	2,253		
Big Injun	2,253		*	2,296		
Sandstone & Shale	2,296		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,045		
Gordon	3,045		*	3,095		
Undiff Devonian Shale	3,095		*	5,942	5,973	
Rhinestreet	5,942	5,973	~	6,654	6,705	
Cashaqua	6,654	6,705	~	6,776	6,860	
Middlesex	6,776	6,860	~	6,811	6,909	
West River	6,811	6,909	~	6,891	7,038	
Geneseo	6,891	7,038	~	6,908	7,071	
Tully Limestone	6,908	7,071	~	6,939	7,132	
Hamilton Shale	6,939	7,132	~	6,985	7,250	
Marcellus	6,985	7,250	~	6,942	12,486	
TD				6,942	12,486	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Project: Mary Prospect
Site: Howell Pad
Well: Howell 5H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Howell 5H

Ground Level: 1302.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
39.8	-4.5	401742.45	1635231.33	39° 35' 44.885 N	80° 47' 40.111 W

REFERENCE INFORMATION

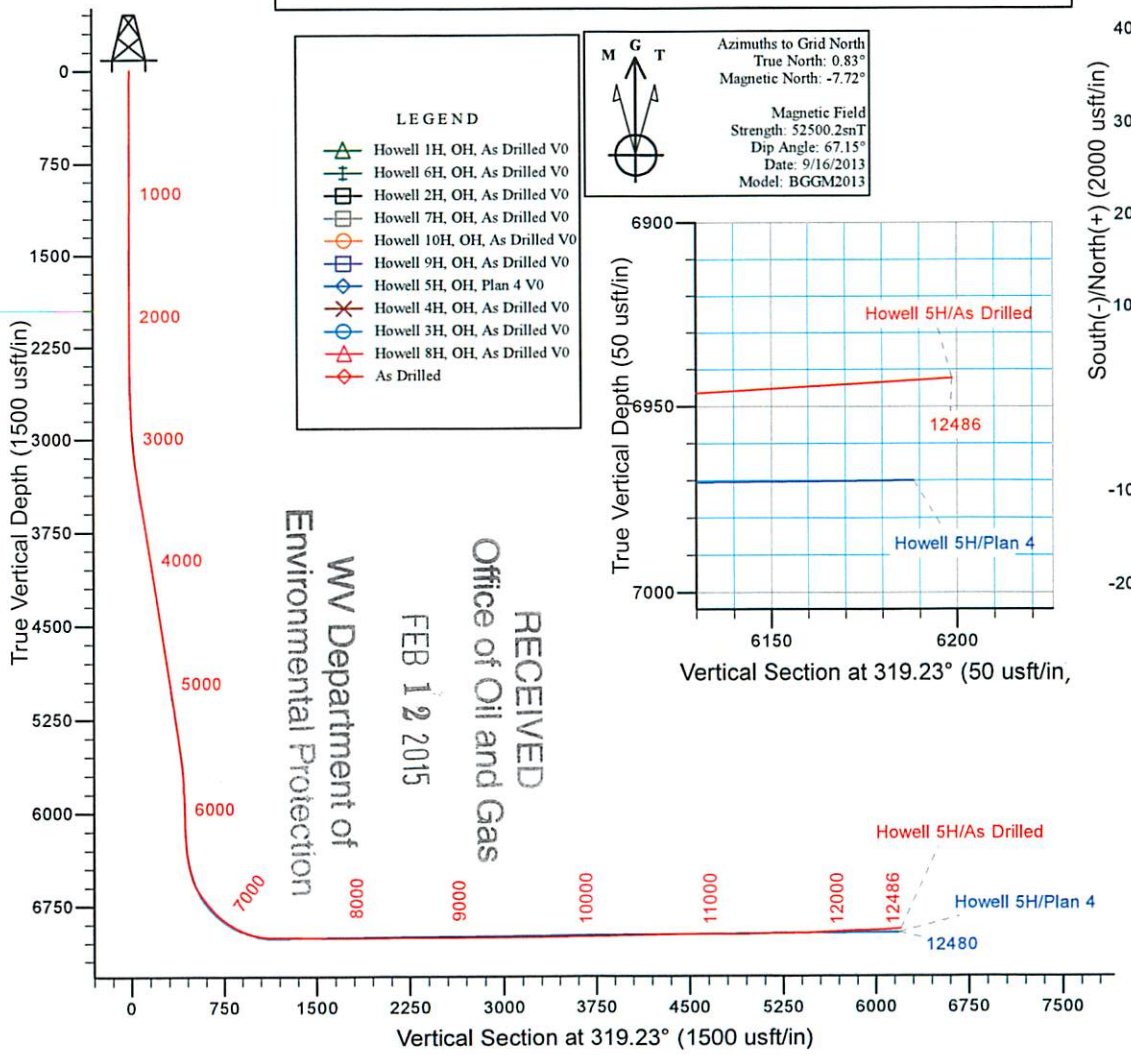
Co-ordinate (N/E) Reference: Site Howell Pad, Grid North
Vertical (TVD) Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Section (VS) Reference: Slot - (39.8N, -4.5E)
Measured Depth Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Mary Prospect

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	6049.0	1.28	349.61	6017.7	365.9	-278.5	0.00	0.00	425.9	
2	6146.0	1.28	349.61	6114.7	368.0	-278.9	0.00	0.00	427.8	
3	6465.5	10.86	325.07	6432.1	396.3	-296.8	3.04	-27.64	460.9	
4	7461.9	90.50	319.00	7014.0	939.8	-753.5	8.00	-6.17	1170.7	Howell 5H_LP4
5	12479.0	90.50	319.00	6970.0	4726.0	-4045.1	0.00	0.00	6187.6	Howell 5H_PBHL3

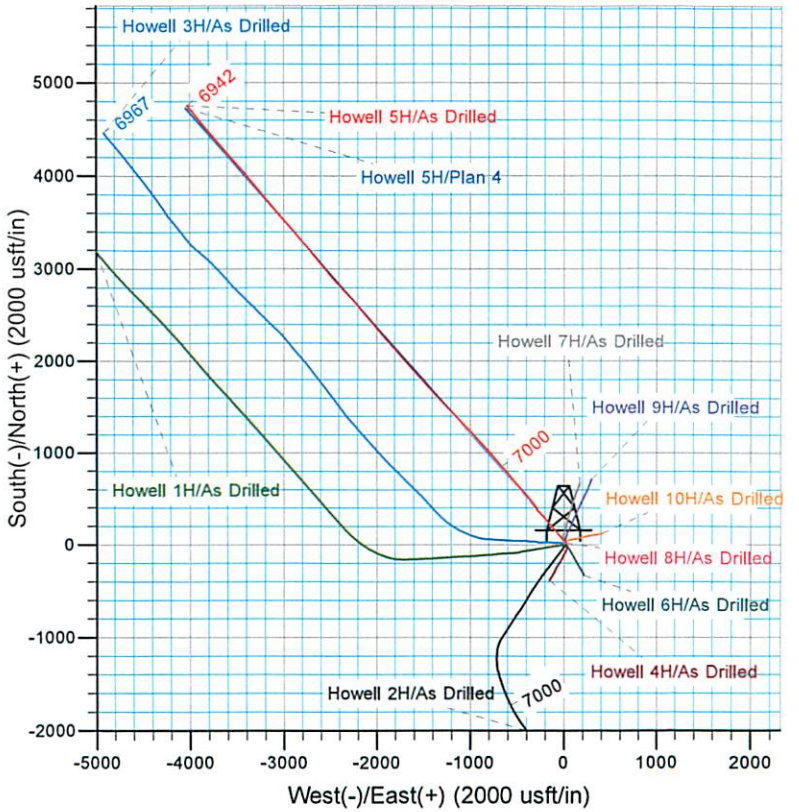


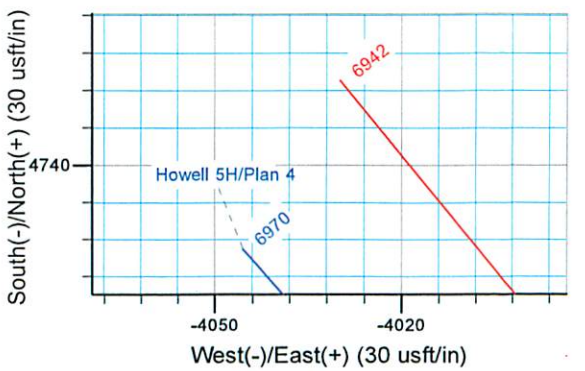
LEGEND

- Howell 1H, OH, As Drilled V0
- Howell 6H, OH, As Drilled V0
- Howell 2H, OH, As Drilled V0
- Howell 7H, OH, As Drilled V0
- Howell 10H, OH, As Drilled V0
- Howell 9H, OH, As Drilled V0
- Howell 5H, OH, Plan 4 V0
- Howell 4H, OH, As Drilled V0
- Howell 3H, OH, As Drilled V0
- Howell 8H, OH, As Drilled V0
- As Drilled

Azimuths to Grid North
True North: 0.83°
Magnetic North: -7.72°

Magnetic Field
Strength: 52500.2snT
Dip Angle: 67.15°
Date: 9/16/2013
Model: BGGM2013





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Stone Energy

Mary Prospect
Howell Pad
Howell 5H

OH

Design: As Drilled

Standard Survey Report

24 October, 2013

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Scientific Drilling

www.scientificdrilling.com

Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 5H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Mary Prospect, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Howell Pad

Site Position:		**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
From:	Map	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.83 °

Well Howell 5H

Well Position	**+N/-S**	0.0 usft	**Northing:**	401,742.45 usft	**Latitude:**	39° 35' 44.885 N
	+E/-W	0.0 usft	**Easting:**	1,635,231.33 usft	**Longitude:**	80° 47' 40.111 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,302.0 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	12/20/2012	-8.48	67.19	52,632
	IGRF2010	7/29/2013	-8.50	67.14	52,558
	BGGM2013	9/16/2013	-8.55	67.15	52,500

Design As Drilled

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	319.23

Survey Program **Date** 10/3/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.0	2,403.0	Survey 3 - SDI Gyro Top Hole (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
2,503.0	12,486.0	Survey 2 - SDI MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
18.0	0.00	360.00	18.0	0.0	0.0	0.0	0.00	0.00	0.00
Ground Level									
103.0	0.39	129.52	103.0	-0.2	0.2	-0.3	0.46	0.46	0.00
First SDI Gyro Survey									
203.0	0.31	114.87	203.0	-0.5	0.7	-0.9	0.12	-0.08	-14.65
303.0	0.17	106.70	303.0	-0.7	1.1	-1.2	0.14	-0.14	-8.17

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 5H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
403.0	0.38	110.04	403.0	-0.8	1.6	-1.7	0.21	0.21	3.34
503.0	0.40	112.63	503.0	-1.1	2.2	-2.3	0.03	0.02	2.59
603.0	0.31	113.15	603.0	-1.3	2.8	-2.8	0.09	-0.09	0.52
703.0	0.43	122.64	703.0	-1.6	3.3	-3.4	0.13	0.12	9.49
803.0	0.40	126.99	803.0	-2.0	3.9	-4.1	0.04	-0.03	4.35
903.0	0.34	144.59	903.0	-2.5	4.4	-4.7	0.13	-0.06	17.60
1,003.0	0.32	155.48	1,003.0	-3.0	4.7	-5.3	0.07	-0.02	10.89
1,103.0	0.35	142.37	1,103.0	-3.5	5.0	-5.9	0.08	0.03	-13.11
1,203.0	0.38	141.98	1,203.0	-4.0	5.4	-6.5	0.03	0.03	-0.39
1,303.0	0.36	139.75	1,303.0	-4.5	5.8	-7.2	0.02	-0.02	-2.23
1,403.0	0.30	140.81	1,403.0	-4.9	6.1	-7.7	0.06	-0.06	1.06
1,503.0	0.35	140.55	1,503.0	-5.4	6.5	-8.3	0.05	0.05	-0.26
1,603.0	0.41	157.42	1,603.0	-5.9	6.8	-9.0	0.13	0.06	16.87
1,703.0	0.33	195.74	1,703.0	-6.5	6.9	-9.5	0.25	-0.08	38.32
1,803.0	0.35	204.93	1,803.0	-7.1	6.7	-9.7	0.06	0.02	9.19
1,903.0	0.32	206.23	1,903.0	-7.6	6.4	-10.0	0.03	-0.03	1.30
2,003.0	0.32	209.19	2,003.0	-8.1	6.2	-10.2	0.02	0.00	2.96
2,103.0	0.21	250.48	2,103.0	-8.4	5.9	-10.2	0.21	-0.11	41.29
2,203.0	0.25	263.93	2,203.0	-8.5	5.5	-10.0	0.07	0.04	13.45
2,303.0	0.26	261.57	2,303.0	-8.6	5.0	-9.8	0.01	0.01	-2.36
2,403.0	0.03	312.67	2,403.0	-8.6	4.8	-9.6	0.24	-0.23	51.10
2,503.0	0.15	313.74	2,503.0	-8.5	4.7	-9.5	0.12	0.12	1.07
First SDI MWD Survey									
2,603.0	1.01	329.07	2,602.9	-7.6	4.1	-8.5	0.87	0.86	15.33
2,703.0	1.94	330.02	2,702.9	-5.4	2.8	-5.9	0.93	0.93	0.95
2,803.0	2.60	324.57	2,802.8	-2.1	0.7	-2.0	0.69	0.66	-5.45
2,903.0	3.34	322.67	2,902.7	2.1	-2.4	3.1	0.75	0.74	-1.90
3,003.0	4.76	323.23	3,002.4	7.7	-6.7	10.2	1.42	1.42	0.56
3,103.0	6.33	324.13	3,102.0	15.5	-12.4	19.8	1.57	1.57	0.90
3,203.0	7.09	324.73	3,201.3	25.0	-19.2	31.5	0.76	0.76	0.60
3,303.0	8.28	321.89	3,300.4	35.7	-27.2	44.8	1.25	1.19	-2.84
3,403.0	9.08	321.83	3,399.2	47.6	-36.5	59.9	0.80	0.80	-0.06
3,503.0	9.48	322.59	3,497.9	60.3	-46.4	76.0	0.42	0.40	0.76
3,603.0	9.58	319.93	3,596.6	73.2	-56.7	92.5	0.45	0.10	-2.66
3,703.0	8.67	321.23	3,695.3	85.5	-66.8	108.4	0.93	-0.91	1.30
3,803.0	8.66	320.35	3,794.1	97.2	-76.3	123.4	0.13	-0.01	-0.88
3,903.0	8.56	320.66	3,893.0	108.7	-85.9	138.4	0.11	-0.10	0.31
4,003.0	8.96	320.67	3,991.9	120.5	-95.5	153.6	0.40	0.40	0.01
4,103.0	8.97	317.52	4,090.6	132.3	-105.7	169.2	0.49	0.01	-3.15
4,203.0	9.12	316.98	4,189.4	143.8	-116.4	184.9	0.17	0.15	-0.54
4,303.0	9.18	323.19	4,288.1	156.0	-126.6	200.8	0.99	0.06	6.21
4,403.0	9.17	323.44	4,386.8	168.8	-136.1	216.7	0.04	-0.01	0.25
4,503.0	9.31	321.29	4,485.5	181.5	-145.9	232.7	0.37	0.14	-2.15
4,603.0	9.08	316.87	4,584.3	193.6	-156.4	248.7	0.74	-0.23	-4.42

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 5H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,703.0	9.08	314.60	4,683.0	204.9	-167.4	264.4	0.36	0.00	-2.27
4,803.0	8.89	315.48	4,781.8	215.9	-178.4	280.0	0.23	-0.19	0.88
4,903.0	8.63	323.02	4,880.6	227.4	-188.3	295.2	1.18	-0.26	7.54
5,003.0	8.54	324.01	4,979.5	239.4	-197.2	310.1	0.17	-0.09	0.99
5,103.0	9.13	322.20	5,078.3	251.7	-206.4	325.4	0.65	0.59	-1.81
5,203.0	8.80	322.24	5,177.1	264.0	-216.0	341.0	0.33	-0.33	0.04
5,303.0	8.75	320.23	5,275.9	275.9	-225.5	356.2	0.31	-0.05	-2.01
5,403.0	8.75	316.14	5,374.8	287.2	-235.7	371.4	0.62	0.00	-4.09
5,503.0	8.71	315.73	5,473.6	298.1	-246.2	386.6	0.07	-0.04	-0.41
5,603.0	6.75	312.01	5,572.7	307.5	-255.9	400.0	2.02	-1.96	-3.72
5,703.0	5.02	312.48	5,672.1	314.4	-263.5	410.1	1.73	-1.73	0.47
5,803.0	3.28	312.30	5,771.9	319.3	-268.8	417.3	1.74	-1.74	-0.18
5,903.0	2.27	316.03	5,871.8	322.6	-272.3	422.2	1.03	-1.01	3.73
5,996.0	1.28	349.61	5,964.7	325.0	-273.8	424.9	1.50	-1.06	36.11
6,025.0	0.47	319.35	5,993.7	325.4	-273.9	425.3	3.12	-2.79	-104.31
6,086.0	0.47	312.62	6,054.7	325.7	-274.3	425.8	0.09	0.00	-11.03
6,146.0	1.50	322.99	6,114.7	326.5	-274.9	426.8	1.74	1.72	17.28
6,207.0	4.02	325.40	6,175.6	328.9	-276.6	429.7	4.13	4.13	3.95
6,267.0	5.22	326.63	6,235.4	332.9	-279.3	434.5	2.01	2.00	2.05
6,328.0	5.57	321.25	6,296.2	337.6	-282.7	440.2	1.01	0.57	-8.82
6,388.0	7.61	324.61	6,355.8	343.1	-286.8	447.1	3.46	3.40	5.60
6,419.0	9.22	328.92	6,386.4	346.9	-289.3	451.6	5.57	5.19	13.90
6,449.0	10.64	331.18	6,416.0	351.4	-291.9	456.7	4.91	4.73	7.53
6,480.0	12.97	330.62	6,446.3	356.9	-294.9	462.9	7.53	7.52	-1.81
6,510.0	15.80	329.78	6,475.4	363.4	-298.6	470.2	9.46	9.43	-2.80
6,541.0	18.08	327.59	6,505.0	371.1	-303.3	479.1	7.64	7.35	-7.06
6,571.0	20.17	327.16	6,533.4	379.3	-308.6	488.8	6.98	6.97	-1.43
6,601.0	21.88	326.21	6,561.4	388.3	-314.6	499.5	5.81	5.70	-3.17
6,632.0	24.40	325.13	6,589.9	398.4	-321.4	511.6	8.24	8.13	-3.48
6,662.0	27.70	324.21	6,616.8	409.1	-329.1	524.7	11.08	11.00	-3.07
6,692.0	31.95	323.64	6,642.9	421.2	-337.8	539.6	14.20	14.17	-1.90
6,724.0	36.06	323.12	6,669.4	435.5	-348.5	557.4	12.88	12.84	-1.63
6,756.0	38.26	321.51	6,694.9	450.8	-360.3	576.7	7.52	6.88	-5.03
6,787.0	38.46	320.72	6,719.2	465.8	-372.4	596.0	1.71	0.65	-2.55
6,819.0	39.49	319.58	6,744.1	481.3	-385.3	616.1	3.92	3.22	-3.56
6,851.0	40.87	320.44	6,768.5	497.1	-398.6	636.7	4.65	4.31	2.69
6,883.0	43.48	319.94	6,792.2	513.6	-412.3	658.2	8.22	8.16	-1.56
6,914.0	46.43	319.70	6,814.2	530.3	-426.5	680.1	9.53	9.52	-0.77
6,946.0	50.22	319.36	6,835.4	548.5	-442.0	704.0	11.87	11.84	-1.06
6,978.0	52.83	319.23	6,855.3	567.5	-458.3	729.1	8.16	8.16	-0.41
7,010.0	54.46	318.49	6,874.3	586.9	-475.3	754.8	5.42	5.09	-2.31
7,042.0	55.84	318.47	6,892.6	606.5	-492.7	781.1	4.31	4.31	-0.06
7,074.0	57.65	318.94	6,910.1	626.7	-510.3	807.9	5.79	5.66	1.47

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 5H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7,105.0	60.48	319.99	6,926.1	646.9	-527.6	834.4	9.58	9.13	3.39
7,136.0	63.48	320.42	6,940.6	667.9	-545.1	861.8	9.75	9.68	1.39
7,168.0	66.56	321.21	6,954.2	690.4	-563.5	890.8	9.88	9.63	2.47
7,200.0	69.21	320.67	6,966.2	713.4	-582.1	920.4	8.43	8.28	-1.69
7,232.0	72.38	320.43	6,976.7	736.7	-601.3	950.6	9.93	9.91	-0.75
7,264.0	74.00	320.07	6,986.0	760.3	-620.9	981.3	5.18	5.06	-1.13
7,295.0	77.20	320.41	6,993.7	783.3	-640.1	1,011.3	10.38	10.32	1.10
7,327.0	79.95	320.09	7,000.0	807.5	-660.2	1,042.6	8.65	8.59	-1.00
7,359.0	83.37	319.93	7,004.7	831.7	-680.5	1,074.3	10.70	10.69	-0.50
7,391.0	87.21	320.60	7,007.3	856.2	-700.9	1,106.2	12.18	12.00	2.09
7,422.0	89.09	320.35	7,008.3	880.1	-720.6	1,137.1	6.12	6.06	-0.81
7,454.0	89.73	319.94	7,008.6	904.7	-741.1	1,169.1	2.38	2.00	-1.28
7,517.0	90.30	320.03	7,008.6	952.9	-781.6	1,232.1	0.92	0.90	0.14
7,581.0	90.13	318.94	7,008.4	1,001.6	-823.2	1,296.1	1.72	-0.27	-1.70
7,644.0	88.42	317.56	7,009.2	1,048.6	-865.2	1,359.1	3.49	-2.71	-2.19
7,707.0	88.46	317.43	7,010.9	1,095.0	-907.7	1,422.1	0.22	0.06	-0.21
7,770.0	89.39	317.20	7,012.1	1,141.3	-950.4	1,485.0	1.52	1.48	-0.37
7,834.0	90.37	317.70	7,012.2	1,188.5	-993.7	1,549.0	1.72	1.53	0.78
7,897.0	90.57	317.25	7,011.7	1,234.9	-1,036.3	1,611.9	0.78	0.32	-0.71
7,960.0	89.49	316.30	7,011.6	1,280.8	-1,079.4	1,674.9	2.28	-1.71	-1.51
8,023.0	89.13	316.66	7,012.4	1,326.5	-1,122.8	1,737.8	0.81	-0.57	0.57
8,087.0	90.20	316.51	7,012.8	1,373.0	-1,166.8	1,801.7	1.69	1.67	-0.23
8,150.0	90.17	316.49	7,012.6	1,418.7	-1,210.1	1,864.7	0.06	-0.05	-0.03
8,214.0	89.80	317.06	7,012.6	1,465.3	-1,254.0	1,928.6	1.06	-0.58	0.89
8,277.0	90.74	317.20	7,012.3	1,511.5	-1,296.8	1,991.6	1.51	1.49	0.22
8,341.0	91.38	317.59	7,011.1	1,558.6	-1,340.2	2,055.5	1.17	1.00	0.61
8,404.0	90.87	318.01	7,009.9	1,605.2	-1,382.5	2,118.5	1.05	-0.81	0.67
8,468.0	90.34	318.23	7,009.2	1,652.9	-1,425.2	2,182.5	0.90	-0.83	0.34
8,531.0	89.70	317.90	7,009.2	1,699.8	-1,467.3	2,245.5	1.14	-1.02	-0.52
8,594.0	89.87	318.21	7,009.4	1,746.6	-1,509.4	2,308.4	0.56	0.27	0.49
8,657.0	89.19	319.15	7,009.9	1,793.9	-1,551.0	2,371.4	1.84	-1.08	1.49
8,721.0	89.50	319.60	7,010.7	1,842.5	-1,592.7	2,435.4	0.85	0.48	0.70
8,784.0	89.76	319.34	7,011.1	1,890.4	-1,633.6	2,498.4	0.58	0.41	-0.41
8,848.0	91.28	319.75	7,010.5	1,939.1	-1,675.1	2,562.4	2.46	2.38	0.64
8,911.0	90.84	319.45	7,009.3	1,987.0	-1,715.9	2,625.4	0.85	-0.70	-0.48
8,974.0	90.17	319.05	7,008.8	2,034.8	-1,757.1	2,688.4	1.24	-1.06	-0.63
9,038.0	90.77	319.34	7,008.2	2,083.2	-1,798.9	2,752.4	1.04	0.94	0.45
9,099.0	91.01	318.92	7,007.3	2,129.3	-1,838.8	2,813.4	0.79	0.39	-0.69
9,163.0	89.33	319.51	7,007.1	2,177.8	-1,880.6	2,877.4	2.78	-2.63	0.92
9,226.0	89.33	319.74	7,007.8	2,225.8	-1,921.4	2,940.4	0.37	0.00	0.37
9,290.0	90.40	319.35	7,008.0	2,274.5	-1,962.9	3,004.4	1.78	1.67	-0.61
9,353.0	90.47	319.41	7,007.5	2,322.3	-2,004.0	3,067.4	0.15	0.11	0.10
9,417.0	89.73	320.41	7,007.4	2,371.3	-2,045.2	3,131.4	1.94	-1.16	1.56
9,480.0	89.26	321.04	7,008.0	2,420.0	-2,085.0	3,194.4	1.25	-0.75	1.00

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 5H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,543.0	90.24	320.06	7,008.2	2,468.7	-2,125.1	3,257.3	2.20	1.56	-1.56
9,607.0	91.48	319.53	7,007.3	2,517.5	-2,166.4	3,321.3	2.11	1.94	-0.83
9,670.0	91.72	319.06	7,005.5	2,565.3	-2,207.5	3,384.3	0.84	0.38	-0.75
9,734.0	90.03	318.88	7,004.5	2,613.6	-2,249.5	3,448.3	2.66	-2.64	-0.28
9,797.0	90.47	317.63	7,004.3	2,660.6	-2,291.4	3,511.3	2.10	0.70	-1.98
9,861.0	90.87	317.60	7,003.5	2,707.8	-2,334.5	3,575.3	0.63	0.63	-0.05
9,925.0	90.37	317.85	7,002.8	2,755.2	-2,377.6	3,639.2	0.87	-0.78	0.39
9,988.0	92.09	318.31	7,001.5	2,802.0	-2,419.7	3,702.2	2.83	2.73	0.73
10,052.0	92.02	319.89	6,999.2	2,850.4	-2,461.5	3,766.2	2.47	-0.11	2.47
10,115.0	91.44	320.22	6,997.3	2,898.7	-2,502.0	3,829.1	1.06	-0.92	0.52
10,179.0	91.51	319.71	6,995.6	2,947.6	-2,543.1	3,893.1	0.80	0.11	-0.80
10,242.0	90.81	320.89	6,994.3	2,996.1	-2,583.4	3,956.1	2.18	-1.11	1.87
10,306.0	91.45	320.65	6,993.1	3,045.7	-2,623.8	4,020.0	1.07	1.00	-0.38
10,370.0	91.31	320.54	6,991.5	3,095.1	-2,664.4	4,084.0	0.28	-0.22	-0.17
10,433.0	91.85	320.08	6,989.8	3,143.6	-2,704.7	4,147.0	1.13	0.86	-0.73
10,497.0	90.64	319.98	6,988.4	3,192.6	-2,745.8	4,210.9	1.90	-1.89	-0.16
10,559.0	90.30	319.22	6,987.9	3,239.8	-2,786.0	4,272.9	1.34	-0.55	-1.23
10,623.0	91.11	318.93	6,987.1	3,288.2	-2,827.9	4,336.9	1.34	1.27	-0.45
10,686.0	91.28	318.98	6,985.8	3,335.7	-2,869.2	4,399.9	0.28	0.27	0.08
10,750.0	89.50	319.37	6,985.4	3,384.1	-2,911.1	4,463.9	2.85	-2.78	0.61
10,813.0	89.19	319.77	6,986.1	3,432.1	-2,951.9	4,526.9	0.80	-0.49	0.63
10,876.0	90.44	319.73	6,986.3	3,480.1	-2,992.6	4,589.9	1.99	1.98	-0.06
10,939.0	91.18	319.99	6,985.4	3,528.3	-3,033.2	4,652.9	1.24	1.17	0.41
11,003.0	90.81	319.85	6,984.3	3,577.3	-3,074.4	4,716.9	0.62	-0.58	-0.22
11,067.0	89.50	319.87	6,984.1	3,626.2	-3,115.7	4,780.9	2.05	-2.05	0.03
11,130.0	90.13	319.61	6,984.3	3,674.3	-3,156.4	4,843.9	1.08	1.00	-0.41
11,193.0	91.08	318.99	6,983.7	3,722.0	-3,197.5	4,906.9	1.80	1.51	-0.98
11,256.0	91.45	319.71	6,982.3	3,769.8	-3,238.5	4,969.8	1.28	0.59	1.14
11,320.0	89.60	319.93	6,981.7	3,818.7	-3,279.8	5,033.8	2.91	-2.89	0.34
11,383.0	89.16	320.04	6,982.4	3,866.9	-3,320.3	5,096.8	0.72	-0.70	0.17
11,447.0	91.48	321.82	6,982.0	3,916.6	-3,360.6	5,160.8	4.57	3.63	2.78
11,510.0	92.09	321.34	6,980.0	3,966.0	-3,399.8	5,223.7	1.23	0.97	-0.76
11,573.0	90.61	320.27	6,978.6	4,014.8	-3,439.6	5,286.7	2.90	-2.35	-1.70
11,636.0	90.30	318.57	6,978.1	4,062.6	-3,480.6	5,349.7	2.74	-0.49	-2.70
11,700.0	92.18	318.63	6,976.7	4,110.6	-3,522.9	5,413.6	2.94	2.94	0.09
11,763.0	93.37	319.53	6,973.6	4,158.2	-3,564.1	5,476.6	2.37	1.89	1.43
11,826.0	92.15	320.03	6,970.6	4,206.2	-3,604.7	5,539.5	2.09	-1.94	0.79
11,889.0	91.11	319.85	6,968.8	4,254.4	-3,645.2	5,602.4	1.68	-1.65	-0.29
11,953.0	91.04	319.53	6,967.6	4,303.2	-3,686.6	5,666.4	0.51	-0.11	-0.50
12,017.0	93.30	320.63	6,965.2	4,352.2	-3,727.7	5,730.4	3.93	3.53	1.72
12,080.0	95.29	320.92	6,960.5	4,400.9	-3,767.4	5,793.2	3.19	3.16	0.46
12,143.0	92.09	320.07	6,956.4	4,449.4	-3,807.4	5,856.0	5.25	-5.08	-1.35
12,206.0	91.91	320.34	6,954.4	4,497.8	-3,847.7	5,919.0	0.87	-0.76	0.43

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 5H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 5H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,333.0	92.08	320.53	6,950.3	4,595.6	-3,928.5	6,045.9	0.40	0.37	0.15
12,397.0	92.82	320.63	6,947.5	4,645.0	-3,969.1	6,109.8	1.17	1.16	0.16
12,428.0	93.46	320.74	6,945.8	4,669.0	-3,988.8	6,140.7	2.09	2.06	0.35
Last SDI MWD Survey									
12,486.0	93.46	320.74	6,942.3	4,713.8	-4,025.4	6,198.6	0.00	0.00	0.00
Projection to Bit									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
18.0	18.0	0.0	0.0	Ground Level
103.0	103.0	-0.2	0.2	First SDI Gyro Survey
2,503.0	2,503.0	-8.5	4.7	First SDI MWD Survey
12,428.0	6,945.8	4,669.0	-3,988.8	Last SDI MWD Survey
12,486.0	6,942.3	4,713.8	-4,025.4	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	3/25/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	
Operator Name:	Stone Energy
Well Name and Number:	Howell 5H
Longitude:	
Latitude:	
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	6596661

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
H015%, Slickwater, WF115	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Accelerator, Fluid Loss Additive , Propping	Water (Including Mix Water Supplied by Client)*	NA		87.68013%	
			Crystalline silica	14808-60-7	98.24383%	12.10352%	
			Hydrochloric acid	7647-01-0	0.81677%	0.10063%	
			Carbohydrate polymer	Proprietary	0.51532%	0.06349%	
			Ammonium sulfate	Proprietary	0.17964%	0.02213%	
			Calcium chloride	10043-52-4	0.16057%	0.01978%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06593%	0.00812%	
			Glutaraldehyde	111-30-8	0.05374%	0.00662%	
			Diammonium peroxidisulphate	7727-54-0	0.02365%	0.00291%	
			Amine derivative	Proprietary	0.00845%	0.00104%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00507%	0.00062%	
			Ethane-1,2-diol	107-21-1	0.00381%	0.00047%	
			Trisodium ortho phosphate	7601-54-9	0.00381%	0.00047%	
			Methanol	67-56-1	0.00349%	0.00043%	
			Sodium erythorbate	6381-77-7	0.00284%	0.00035%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00262%	0.00032%	
			Aliphatic acids	Proprietary	0.00262%	0.00032%	
			Prop-2-yn-1-ol	107-19-7	0.00087%	0.00011%	
			Polypropylene glycol	25322-69-4	0.00052%	0.00006%	

* 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%

Report ID: RPT-25891 (Generated on 3/31/2014 10:56 AM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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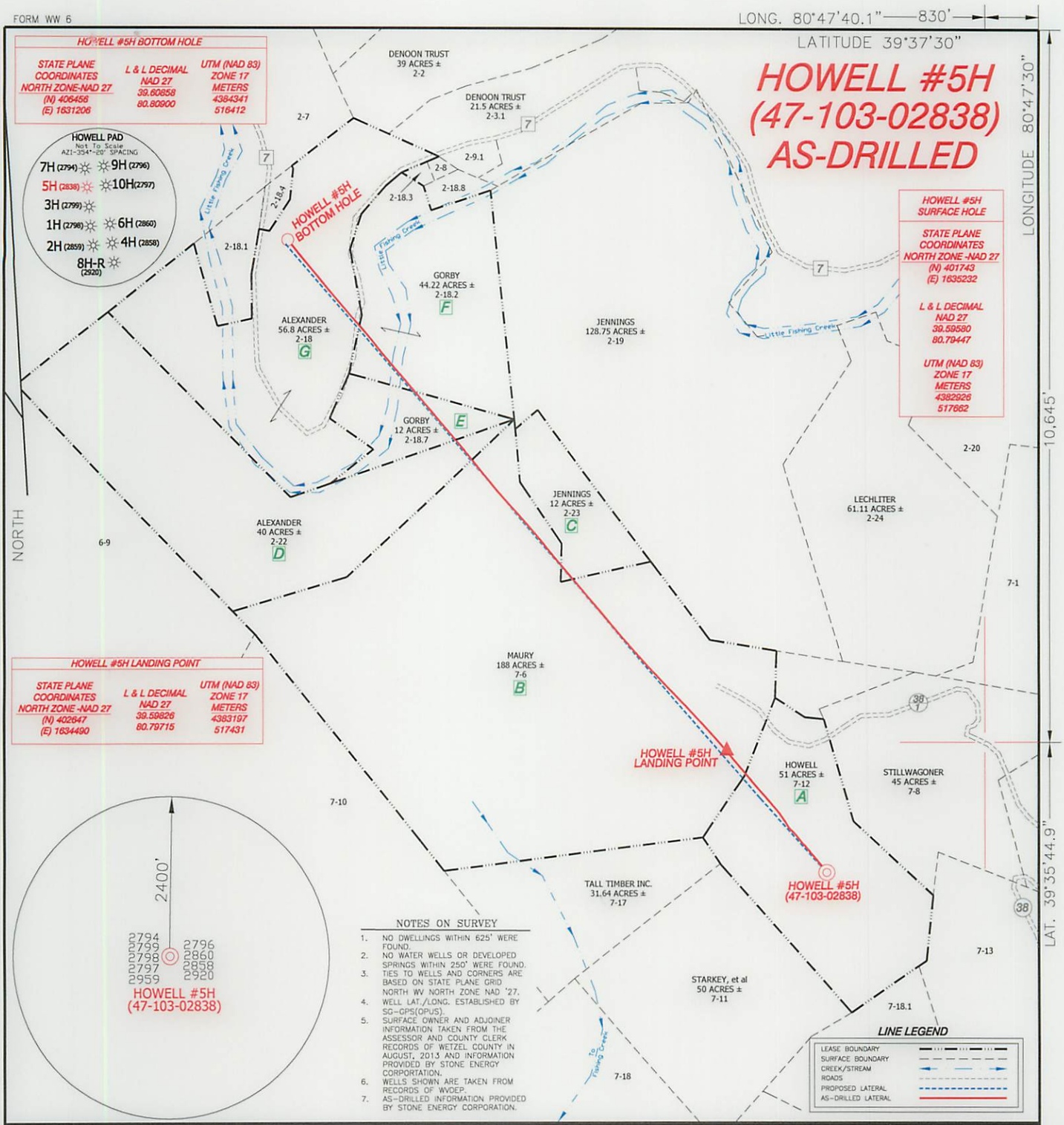
FORM WW 6



NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE OCTOBER 22, 20 14

OPERATORS WELL NO. HOWELL #5H

API WELL NO. 47 — 103 — 02838
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2208 (BK 64-54)

SCALE 1" = 1000'

PROVEN SOURCE OF ELEVATION SG-GPS (OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ____ GAS X LIQUID INJECTION ____ WASTE DISPOSAL ____ IF "GAS" PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X

LOCATION :

ELEVATION 1304' WATERSHED FISHING CREEK

DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'

SURFACE OWNER CHARLES & RUTH HOWELL ACREAGE 51±

ROYALTY OWNER CHARLES & RUTH HOWELL, et al LEASE ACREAGE 404.02±

PROPOSED WORK : LEASE NO. ____

DRILL ____ CONVERT ____ DRILL DEEPER ____ REDRILL ____ FRACTURE OR STIMULATE ____ PLUG OFF OLD FORMATION ____ PERFORATE NEW FORMATION ____ PLUG AND ABANDON ____ CLEAN OUT AND REPLUG ____ OTHER ____

PHYSICAL CHANGE IN WELL (SPECIFY) ____ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TVD 6,942' MD 12,486'

COUNTY NAME

PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR

ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508

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Rev. 8/23/13

State of West Virginia
Department of Environmental Protection - Office of Oil and Gas
Well Operator's Report of Well Work

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API 47 - 103 - 02858 County Wetzel District Green
Quad Porters Falls Pad Name Howell Field/Pool Name Main
Farm name Howell, Charles and Ruth Well Number #4H
Operator (as registered with the OOG) Stone Energy Corporation
Address 1300 Fort Pierpont Dr. - Suite 201 City Morgantown State WV Zip 26508

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey

Top hole	Northing 4,382,908	Easting 517,670
Landing Point of Curve	Northing 4,382,502	Easting 517,658
Bottom Hole	Northing 4,381,074	Easting 518,629

Elevation (ft) 1,302 GL Type of Well □New ■ Existing Type of Report □Interim ■Final

Permit Type □ Deviated □ Horizontal ■ Horizontal 6A □ Vertical Depth Type □ Deep ■ Shallow

Type of Operation □ Convert □ Deepen ■ Drill □ Plug Back □ Redrilling □ Rework ■ Stimulate

Well Type □ Brine Disposal □ CBM ■ Gas □ Oil □ Secondary Recovery □ Solution Mining □ Storage □ Other _____

Type of Completion □ Single ■ Multiple Fluids Produced ■ Brine ■Gas ■ NGL □ Oil □ Other _____
Drilled with □ Cable ■ Rotary

Drilling Media Surface hole ■ Air □ Mud ■Fresh Water Intermediate hole ■ Air □ Mud ■ Fresh Water □ Brine
Production hole ■ Air ■ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
Saturated salt mud which includes Caustic Soda, Barite, Lime, New-Drill, Perma-Lose HT, Xan-Plex D, X-Cide 102, Soda Ash, and Sodium Chloride

Date permit issued 3/27/2013 Date drilling commenced 2/8/2013 Date drilling ceased 10/20/2013
Date completion activities began 1/31/2014 Date completion activities ceased 7/31/2014
Verbal plugging (Y/N) N Date permission granted _____ Granted by _____

Please note: Operator is required to submit a plugging application within 5 days of verbal permission to plug

Freshwater depth(s) ft None Reported Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Reported Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,060 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/19/15 ✓
W.S. 6/01/15

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API 47- 103 - 02858 Farm name Howell, Charles and Ruth Well number #4H

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	97'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,312' KB 1,297' GL	New	J55	169' & 254'	Y - CTS
Coal	17.5"	13.375"	1,312' KB 1,297' GL	New	J55	169' & 254'	Y - CTS
Intermediate 1	12.25"	9.625"	2,485'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	13,238'	New	P110		N - TOC @ 410'
Tubing	N/A	2.375"	7,303'	New	N80		N/A
Packer type and depth set							

Comment Details Circulated 40 bbls cement to surface on the 13-3/8". Circulated 46 bbls cement to surface on the 9.625". Cement top on the 5.5" production casing is at 410'.

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor	Type 1	34	15.6	1.18	40	Surface	24.0
Surface	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Coal	Class "A"	990	15.6	1.19	1,178	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-420 Tail-420	Lead-15.0 Tail-15.6	Lead-1.27 Tail-1.19	Lead-533 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-Class "A"	Lead-703 Tail-2,062	Lead-15.0 Tail-15.6	Lead-1.25 Tail-1.19	Lead-879 Tail-2,454	410'	8.0
Tubing							

Drillers TD (ft) 13,240 MD / 6,975 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,979 MD/ 5,954 TVD

Check all wireline logs run ☐ caliper ☐ density ■ deviated/directional ☐ induction
☐ neutron ☐ resistivity ■ gamma ray ☐ temperature ☐sonic

Well cored ☐ Yes ■ No Conventional Sidewall Were cuttings collected ■ Yes ☐ No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING Surface/Coal casing had bow spring centralizers placed on joints #'s 3, 5, 7, 9, 11, 13, 15, 18, 20, 22, and 24. Intermediate casing had bow spring centralizers placed on joints #'s 5, 8, 10, 12, 14, 16, 19, 21, 24, 26, 28, 30, 32, 35, 38, 43, 46, 49 and 52. One straight blade rigid centralizer was placed on joint #55. Production casing had left/right rigid spiral centralizers were placed beginning on joint #1 and then every fourth joint up to the top of curve at joint #240. From there bow spring centralizers were placed beginning on joint #248 and then every eighth joint up to joint #304. A total of 61 rigid left/right centralizers were used and 8 bow spring centralizers were used. The joint numbers begin at TD of each individual casing string and increase as you increase as you come up the hole.

WAS WELL COMPLETED AS SHOT HOLE ☐ Yes ■ No DETAILS

WAS WELL COMPLETED OPEN HOLE? ☐ Yes ■ No DETAILS

WERE TRACERS USED ☐ Yes ■ No TYPE OF TRACER(S) USED

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API 47- 103 - 02858 Farm name Howell, Charles and Ruth Well number #4H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	2/11/14	12,942	13,132	72	Marcellus Shale
2	3/28/14	12,720	12,863	72	Marcellus Shale
3	3/29/14	12,505	12,653	72	Marcellus Shale
4	3/30/14	12,298	12,433	72	Marcellus Shale
5	3/31/14	12,080	12,233	72	Marcellus Shale
6	4/1/14	11,878	12,018	72	Marcellus Shale
7	4/2/14	11,665	11,808	72	Marcellus Shale
8	4/3/14	11,457	11,597	72	Marcellus Shale
9	4/5/14	11,245	11,388	72	Marcellus Shale
10	4/6/14	11,038	11,182	72	Marcellus Shale
11	4/7/14	10,832	10,968	72	Marcellus Shale
12	4/9/14	10,620	10,758	72	Marcellus Shale
13	4/10/14	10,409	10,548	72	Marcellus Shale
14	4/11/14	10,202	10,343	72	Marcellus Shale
15	4/12/14	9,994	10,133	72	Marcellus Shale
16	4/13/14	9,775	9,926	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	3/28/14	85.4	7,650	9,106	4,603	348,945	330,065	
2	3/29/14	85.4	7,730	6,785	5,119	370,960	318,915	
3	3/30/14	85.6	7,676	6,923	5,148	372,279	313,831	
4	3/31/14	84.8	7,548	5,910	5,120	380,920	326,718	
5	4/1/14	85.8	7,609	6,976	4,718	383,141	316,822	
6	4/2/14	85.1	7,697	6,524	4,173	382,980	317,682	
7	4/3/14	82.9	7,305	5,565	4,344	374,420	316,135	
8	4/5/14	81.4	7,353	6,311	5,723	389,300	632,415	
9	4/6/14	83.2	7,453	5,607	5,091	379,220	314,468	
10	4/7/14	80.3	7,127	6,630	4,718	380,500	319,100	
11	4/9/14	80.4	7,022	6,225	4,947	377,180	314,135	
12	4/10/14	80.7	7,136	7,212	5,148	366,559	310,618	
13	4/11/14	80.7	6,950	5,839	4,487	392,538	317,810	
14	4/12/14	80.4	7,012	5,718	4,286	380,605	315,101	
15	4/13/14	79.2	6,381	6,047	4,575	376,239	311,802	
16	4/16/14	80.3	6,455	6,874	4,603	382,349	315,640	

Please insert additional pages as applicable.

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API 47- 103 - 02858 Farm name Howell, Charles and Ruth Well number #4H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	4/15/14	9,570	9,708	72	Marcellus Shale
18	4/16/14	9,347	9,503	72	Marcellus Shale
19	4/17/14	9,131	9,278	72	Marcellus Shale
20	4/20/14	8,917	9,063	72	Marcellus Shale
21	4/21/14	8,705	8,848	72	Marcellus Shale
22	4/22/14	8,495	8,635	72	Marcellus Shale
23	4/23/14	8,290	8,428	72	Marcellus Shale
24	4/24/14	8,080	8,229	72	Marcellus Shale
25	4/25/14	7,865	8,016	72	Marcellus Shale
26	4/27/14	7,660	7,803	72	Marcellus Shale
27	4/29/14	7,535	7,581	72	Marcellus Shale

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
17	4/16/14	80.7	6,343	6,818	4,947	377,484	315,211	
18	4/17/14	80.0	6,645	5,829	4,860	374,404	311,981	
19	4/20/14	80.2	6,552	5,239	4,831	374,100	325,848	
20	4/21/14	80.1	6,284	5,245	5,262	373,500	309,957	
21	4/22/14	80.6	5,965	5,335	5,061	376,580	310,980	
22	4/23/14	80.5	6,009	5,640	5,204	377,460	315,468	
23	4/24/14	78.9	6,535	4,818	5,062	375,960	315,572	
24	4/25/14	79.4	6,219	6,214	4,950	378,220	312,756	
25	4/27/14	79.4	6,390	6,600	4,918	371,140	311,004	
26	4/29/14	80.2	6,296	6,896	5,464	376,080	309,760	
27	4/30/14	79.9	6,651	6,902	4,775	373,860	309,514	

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API 47- 103 - 02858 Farm name Howell, Charles and Ruth Well number #4H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	6,999' to 6,976' TVD	7,535' to 13,132' MD

Please insert additional pages as applicable.

GAS TEST □ Build up □ Drawdown ■ Open Flow OIL TEST ■ Flow □ Pump

SHUT-IN PRESSURE Surface 2,050 psi Bottom Hole 4,118 calculated psi DURATION OF TEST 92 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3,936 mcfpd	bpd	274 bpd	bpd	□ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
	0		0		
See Attached Sheet	Page 6 of 17				

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Please insert additional pages as applicable.

Drilling Contractor Nomac Drilling (top-hole) & Saxon Drilling (horizontal)
Address 171 Locust Ave. Ext. / 9303 New Trails Drive City Mount Morris / The Woodlands State PA / TX Zip 15349 / 77381

Logging Company Scientific Drilling and Schlumberger
Address 116 Vista Dr. / 1178 US HWY 33 East City Charleroi / Weston State PA / WV Zip 15022 / 26452

Cementing Company Schlumberger
Address 1178 US HWY 33 East City Weston / Jane Lew State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston State WV Zip 26452
Please insert additional pages as applicable.

Completed by W. Lee Hornsby Telephone 304-225-1600
Signature W. Lee Hornsby Title Drilling Engineer Date 2/3/2015

Submittal of Hydraulic Fracturing Chemical Disclosure Information Attach copy of FRACFOCUS Registry

HOWELL #4H
API 47-103-02858
Stone Energy Corporation
Horizontal

	Top (ft TVD)	Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,060		No Fw Reported
Coal	1,060		*	1,064		
Sandstone & Shale	1,064		*	2,146		No SW Reported
Little Lime	2,146		*	2,200		
Big Lime	2,200		*	2,253		
Big Injun	2,253		*	2,296		
Sandstone & Shale	2,296		*	2,851		
Berea Sandstone	2,851		*	2,881		
Shale	2,881		*	3,045		
Gordon	3,045		*	3,095		
Undiff Devonian Shale	3,095		*	6,192	6,225	
Rhinestreet	6,192	6,225	~	6,624	6,723	
Cashaqua	6,624	6,723	~	6,793	6,954	
Middlesex	6,793	6,954	~	6,825	7,003	
West River	6,825	7,003	~	6,883	7,106	
Geneseo	6,883	7,106	~	6,901	7,142	
Tully Limestone	6,901	7,142	~	6,931	7,214	
Hamilton Shale	6,931	7,214	~	6,976	7,351	
Marcellus	6,976	7,351	~	6,975	13,240	
TD				6,975	13,240	

* From Pilot Hole Log and Driller's Log
~ From MWD Gamma Log

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Project: Mary Prospect
Site: Howell Pad
Well: Howell 4H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Howell 4H

Ground Level: 1302.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	401685.24	1635258.13	39° 35' 44.323 N	80° 47' 39.758 W

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Howell 4H, Grid North
Vertical (TVD) Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Section (VS) Reference: Slot - (0.0N, 0.0E)
Measured Depth Reference: GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Calculation Method: Minimum Curvature

PROJECT DETAILS: Mary Prospect

Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	5883.0	3.67	206.85	5855.5	-367.3	-177.4	0.00	0.00	249.2	
2	5980.0	3.67	206.85	5952.3	-372.8	-180.2	0.00	0.00	252.9	
3	6471.5	33.09	195.94	6413.7	-519.1	-225.2	6.00	-12.11	363.6	
4	6679.0	33.09	195.94	6587.5	-628.0	-256.3	0.00	0.00	447.1	
5	7547.0	90.50	147.00	6999.0	-1304.7	-60.4	8.00	-53.64	1140.0	Howell 4H_LP4
6	13228.6	90.50	147.00	6949.0	-6069.6	3033.9	0.00	0.00	6785.6	Howell 4H_PBHL3

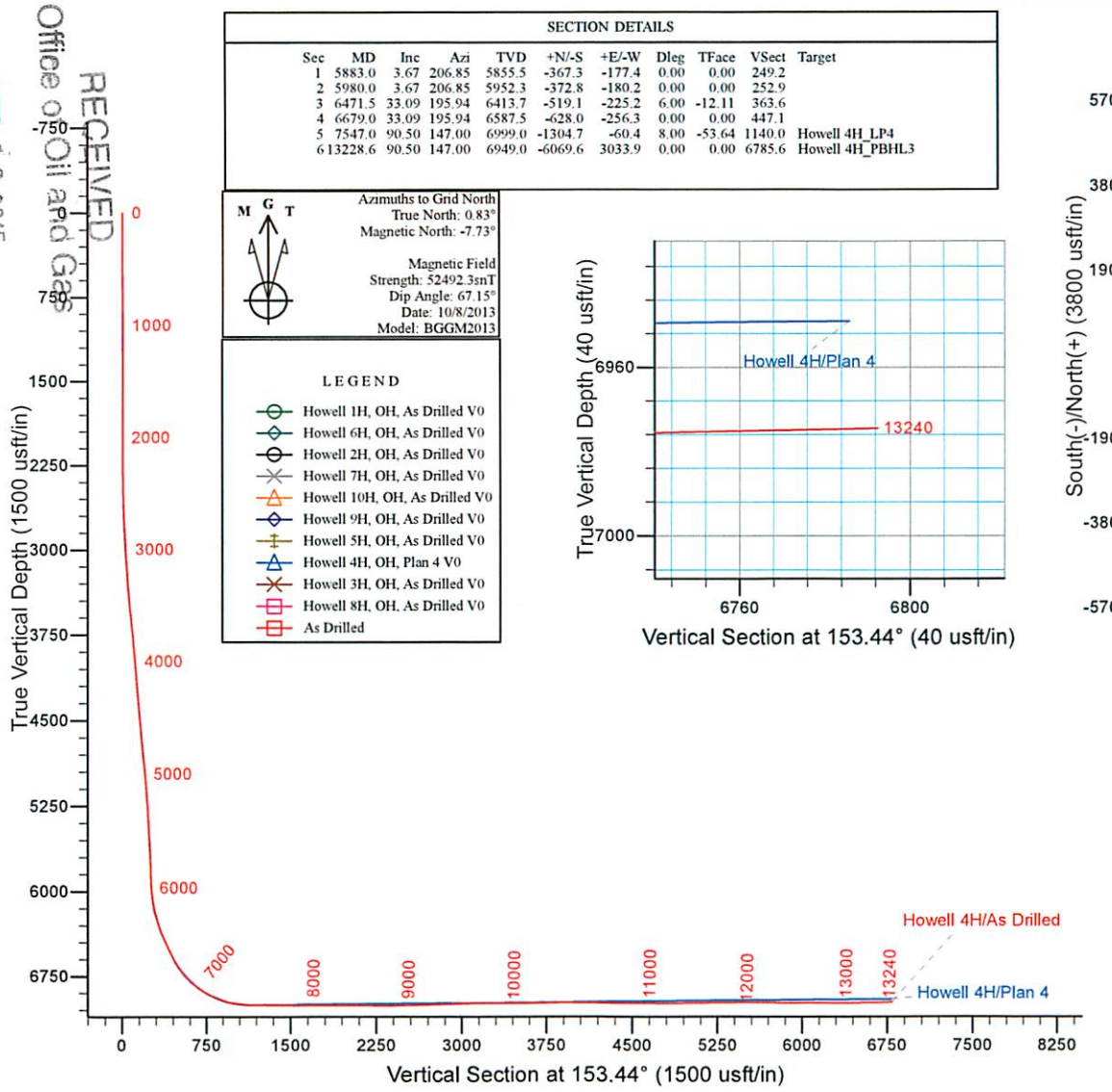
M G T

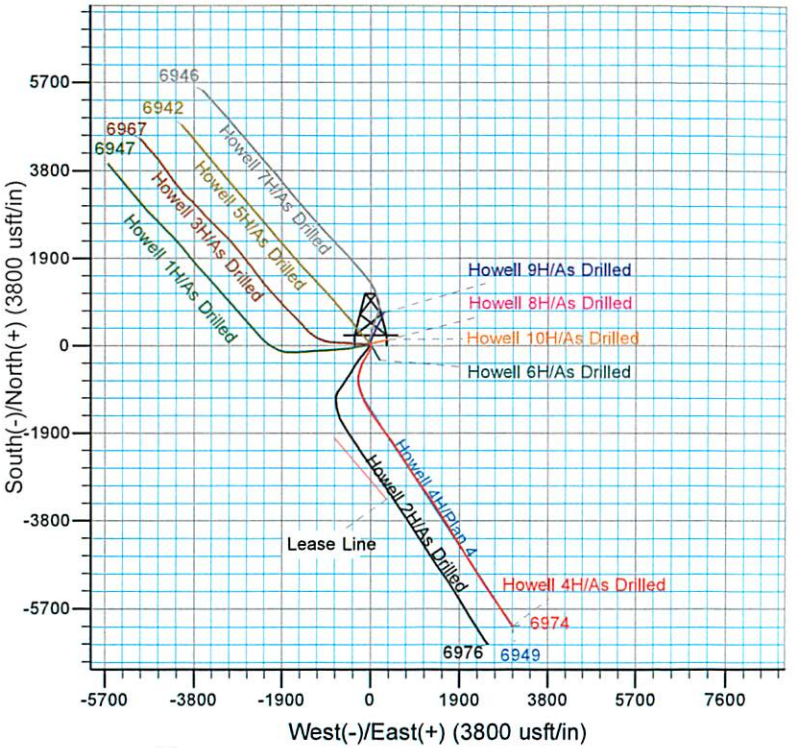
Azimuths to Grid North
True North: 0.83°
Magnetic North: -7.73°

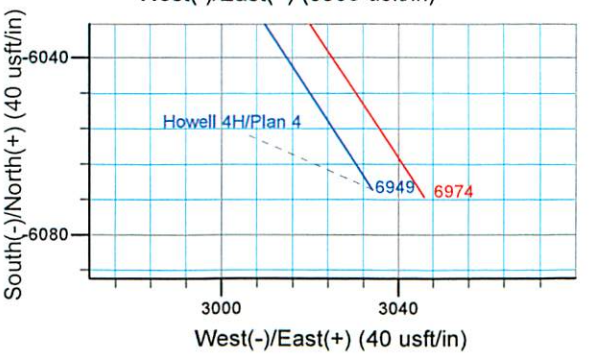
Magnetic Field
Strength: 52492.3snT
Dip Angle: 67.15°
Date: 10/8/2013
Model: BGGM2013

LEGEND

- Howell 1H, OH, As Drilled V0
- Howell 6H, OH, As Drilled V0
- Howell 2H, OH, As Drilled V0
- Howell 7H, OH, As Drilled V0
- Howell 10H, OH, As Drilled V0
- Howell 9H, OH, As Drilled V0
- Howell 5H, OH, As Drilled V0
- Howell 4H, OH, Plan 4 V0
- Howell 3H, OH, As Drilled V0
- Howell 8H, OH, As Drilled V0
- As Drilled







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Stone Energy

Mary Prospect
Howell Pad
Howell 4H

OH

Design: As Drilled

Standard Survey Report

18 October, 2013

Scientific Drilling

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www.scientificdrilling.com

Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 4H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 4H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Project Mary Prospect, West Virginia

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	West Virginia North 4701		

Site Howell Pad

Site Position:		**Northing:**	401,702.68 usft	**Latitude:**	39° 35' 44.492 N
From:	Map	**Easting:**	1,635,235.83 usft	**Longitude:**	80° 47' 40.046 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.83 °

Well Howell 4H

Well Position	**+N/-S**	0.0 usft	**Northing:**	401,685.24 usft	**Latitude:**	39° 35' 44.323 N
	+E/-W	0.0 usft	**Easting:**	1,635,258.13 usft	**Longitude:**	80° 47' 39.758 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,302.0 usft

Wellbore OH

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2010	3/26/2013	-8.49	67.17	52,600
	IGRF2010	7/29/2013	-8.50	67.14	52,558
	BGGM2013	9/24/2013	-8.55	67.15	52,497
	BGGM2013	10/8/2013	-8.55	67.15	52,492

Design As Drilled

Audit Notes:

Version: 1.0 **Phase:** ACTUAL **Tie On Depth:** 0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	153.44

Survey Program **Date** 10/18/2013

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.0	2,403.0	Survey 1 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
2,428.3	13,240.0	Survey 2 - MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
18.0	0.00	360.00	18.0	0.0	0.0	0.0	0.00	0.00	0.00
Ground Level									
103.0	0.55	102.05	103.0	-0.1	0.4	0.3	0.65	0.65	0.00
First SDI Gyro Survey									
203.0	0.10	120.00	203.0	-0.2	0.9	0.6	0.46	-0.45	17.95
303.0	0.32	138.33	303.0	-0.5	1.2	1.0	0.23	0.22	18.33

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 4H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 4H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
403.0	0.22	140.62	403.0	-0.8	1.5	1.4	0.10	-0.10	2.29
503.0	0.17	143.62	503.0	-1.1	1.7	1.8	0.05	-0.05	3.00
603.0	0.30	148.74	603.0	-1.4	1.9	2.2	0.13	0.13	5.12
703.0	0.24	144.04	703.0	-1.8	2.2	2.6	0.06	-0.06	-4.70
803.0	0.16	165.18	803.0	-2.1	2.4	3.0	0.11	-0.08	21.14
903.0	0.07	139.35	903.0	-2.3	2.4	3.2	0.10	-0.09	-25.83
1,003.0	0.21	129.98	1,003.0	-2.5	2.6	3.4	0.14	0.14	-9.37
1,103.0	0.12	166.96	1,103.0	-2.7	2.8	3.7	0.14	-0.09	36.98
1,203.0	0.20	151.61	1,203.0	-3.0	2.9	3.9	0.09	0.08	-15.35
1,303.0	0.32	159.47	1,303.0	-3.4	3.1	4.4	0.12	0.12	7.86
1,403.0	0.11	145.87	1,403.0	-3.7	3.2	4.8	0.21	-0.21	-13.60
1,503.0	0.22	145.42	1,503.0	-4.0	3.4	5.1	0.11	0.11	-0.45
1,603.0	0.17	236.14	1,603.0	-4.2	3.4	5.3	0.28	-0.05	90.72
1,703.0	0.38	267.65	1,703.0	-4.3	2.9	5.1	0.25	0.21	31.51
1,803.0	0.15	258.78	1,803.0	-4.3	2.5	5.0	0.23	-0.23	-8.87
1,903.0	0.02	270.73	1,903.0	-4.4	2.3	4.9	0.13	-0.13	11.95
2,003.0	0.21	205.33	2,003.0	-4.5	2.2	5.0	0.20	0.19	-65.40
2,103.0	0.33	194.10	2,103.0	-5.0	2.1	5.4	0.13	0.12	-11.23
2,203.0	0.53	164.69	2,203.0	-5.7	2.1	6.0	0.29	0.20	-29.41
2,303.0	0.45	172.49	2,303.0	-6.5	2.3	6.9	0.10	-0.08	7.80
2,403.0	0.71	130.54	2,403.0	-7.3	2.8	7.8	0.48	0.26	-41.95
Last SDI Gyro Survey									
2,428.3	0.69	95.45	2,428.3	-7.4	3.1	8.0	1.67	-0.08	-138.67
First SDI MWD Survey									
2,517.0	0.98	129.83	2,517.0	-8.0	4.2	9.0	0.64	0.33	38.76
2,609.0	1.88	162.72	2,608.9	-9.9	5.3	11.2	1.29	0.98	35.75
2,701.0	2.62	174.09	2,700.9	-13.5	5.9	14.7	0.94	0.80	12.36
2,794.0	3.11	182.71	2,793.7	-18.1	6.0	18.9	0.70	0.53	9.27
2,887.0	3.88	186.81	2,886.6	-23.7	5.5	23.7	0.87	0.83	4.41
2,977.0	4.49	193.25	2,976.3	-30.2	4.4	28.9	0.85	0.68	7.16
3,069.0	5.50	200.27	3,068.0	-37.8	2.0	34.7	1.28	1.10	7.63
3,162.0	6.34	205.27	3,160.5	-46.7	-1.7	41.0	1.06	0.90	5.38
3,255.0	7.20	205.05	3,252.8	-56.6	-6.4	47.7	0.93	0.92	-0.24
3,345.0	8.12	208.13	3,342.0	-67.3	-11.8	54.9	1.12	1.02	3.42
3,438.0	8.96	208.22	3,434.0	-79.5	-18.3	62.9	0.90	0.90	0.10
3,530.0	9.24	205.93	3,524.8	-92.4	-24.9	71.5	0.50	0.30	-2.49
3,628.0	9.14	210.53	3,621.6	-106.2	-32.3	80.5	0.76	-0.10	4.69
3,720.0	9.05	207.36	3,712.4	-118.9	-39.3	88.8	0.55	-0.10	-3.45
3,813.0	8.93	203.47	3,804.3	-132.0	-45.6	97.7	0.67	-0.13	-4.18
3,906.0	9.22	208.36	3,896.1	-145.2	-52.0	106.6	0.89	0.31	5.26
3,999.0	9.10	215.97	3,987.9	-157.7	-59.9	114.3	1.31	-0.13	8.18
4,091.0	8.68	213.42	4,078.8	-169.4	-68.0	121.1	0.63	-0.46	-2.77
4,183.0	8.29	210.54	4,169.8	-180.9	-75.1	128.2	0.63	-0.42	-3.13

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 4H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 4H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,273.0	7.72	209.06	4,259.0	-191.8	-81.4	135.2	0.67	-0.63	-1.64
4,367.0	8.13	210.51	4,352.1	-203.0	-87.8	142.3	0.49	0.44	1.54
4,458.0	7.37	207.47	4,442.2	-213.8	-93.8	149.3	0.95	-0.84	-3.34
4,552.0	7.74	207.34	4,535.4	-224.7	-99.5	156.5	0.39	0.39	-0.14
4,645.0	8.37	207.26	4,627.5	-236.3	-105.4	164.2	0.68	0.68	-0.09
4,736.0	8.95	204.22	4,717.4	-248.6	-111.4	172.6	0.81	0.64	-3.34
4,831.0	9.62	208.50	4,811.2	-262.4	-118.2	181.8	1.01	0.71	4.51
4,924.0	9.31	208.27	4,902.9	-275.8	-125.5	190.6	0.34	-0.33	-0.25
5,017.0	8.67	205.94	4,994.8	-288.7	-132.1	199.2	0.79	-0.69	-2.51
5,111.0	8.84	211.86	5,087.7	-301.3	-139.0	207.3	0.98	0.18	6.30
5,205.0	8.65	212.34	5,180.6	-313.4	-146.6	214.7	0.22	-0.20	0.51
5,297.0	7.34	210.39	5,271.7	-324.3	-153.3	221.5	1.45	-1.42	-2.12
5,391.0	6.00	213.50	5,365.1	-333.6	-159.0	227.3	1.48	-1.43	3.31
5,482.0	5.27	210.79	5,455.6	-341.1	-163.8	231.9	0.85	-0.80	-2.98
5,576.0	4.14	208.22	5,549.3	-347.8	-167.6	236.2	1.22	-1.20	-2.73
5,668.0	4.80	205.79	5,641.0	-354.2	-170.9	240.4	0.75	0.72	-2.64
5,759.0	3.71	208.34	5,731.8	-360.2	-173.9	244.5	1.22	-1.20	2.80
5,820.0	3.54	204.00	5,792.7	-363.7	-175.6	246.8	0.53	-0.28	-7.11
5,857.0	3.74	207.93	5,829.6	-365.8	-176.6	248.2	0.86	0.54	10.62
5,920.0	3.57	205.23	5,892.5	-369.4	-178.4	250.6	0.38	-0.27	-4.29
5,952.0	3.24	204.13	5,924.4	-371.1	-179.2	251.8	1.05	-1.03	-3.44
5,984.0	4.12	201.75	5,956.3	-373.0	-180.0	253.1	2.79	2.75	-7.44
6,016.0	6.25	202.51	5,988.2	-375.7	-181.1	255.0	6.66	6.66	2.38
6,047.0	7.92	201.93	6,019.0	-379.2	-182.6	257.6	5.39	5.39	-1.87
6,079.0	10.16	200.02	6,050.6	-383.9	-184.4	261.0	7.06	7.00	-5.97
6,111.0	11.79	196.35	6,082.0	-389.7	-186.2	265.3	5.54	5.09	-11.47
6,143.0	13.12	193.36	6,113.2	-396.4	-188.0	270.5	4.62	4.16	-9.34
6,175.0	14.07	193.56	6,144.3	-403.7	-189.8	276.2	2.97	2.97	0.63
6,207.0	15.77	195.36	6,175.2	-411.7	-191.8	282.5	5.51	5.31	5.63
6,239.0	18.28	195.90	6,205.8	-420.7	-194.3	289.4	7.86	7.84	1.69
6,270.0	20.93	196.07	6,235.0	-430.7	-197.2	297.1	8.55	8.55	0.55
6,302.0	23.40	196.46	6,264.7	-442.3	-200.6	305.9	7.73	7.72	1.22
6,334.0	24.94	196.11	6,293.9	-454.8	-204.3	315.5	4.83	4.81	-1.09
6,366.0	27.07	196.40	6,322.6	-468.3	-208.2	325.8	6.67	6.66	0.91
6,398.0	28.67	196.68	6,350.9	-482.7	-212.5	336.7	5.02	5.00	0.88
6,430.0	31.11	196.12	6,378.7	-497.9	-217.0	348.4	7.67	7.63	-1.75
6,462.0	31.80	195.72	6,406.0	-514.0	-221.5	360.7	2.25	2.16	-1.25
6,494.0	31.07	194.83	6,433.3	-530.1	-225.9	373.2	2.70	-2.28	-2.78
6,525.0	31.37	195.48	6,459.8	-545.6	-230.1	385.1	1.46	0.97	2.10
6,556.0	32.61	196.06	6,486.1	-561.4	-234.6	397.3	4.12	4.00	1.87
6,588.0	32.94	195.76	6,513.0	-578.1	-239.3	410.1	1.15	1.03	-0.94
6,620.0	33.95	196.47	6,539.7	-595.0	-244.2	423.0	3.38	3.16	2.22
6,651.0	34.38	196.62	6,565.3	-611.7	-249.2	435.7	1.41	1.39	0.48
6,683.0	34.87	194.88	6,591.6	-629.2	-254.1	449.2	3.45	1.53	-5.44

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Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 4H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,715.0	35.97	191.86	6,617.7	-647.2	-258.4	463.4	6.46	3.44	-9.44
6,747.0	38.53	188.62	6,643.2	-666.3	-261.8	478.9	10.08	8.00	-10.13
6,778.0	40.27	185.45	6,667.2	-685.8	-264.2	495.3	8.58	5.61	-10.23
6,810.0	41.85	181.75	6,691.3	-706.8	-265.5	513.5	9.06	4.94	-11.56
6,842.0	42.56	178.27	6,715.0	-728.3	-265.5	532.7	7.63	2.22	-10.88
6,874.0	44.05	175.63	6,738.3	-750.2	-264.4	552.8	7.33	4.66	-8.25
6,906.0	45.83	173.24	6,760.9	-772.7	-262.2	573.9	7.67	5.56	-7.47
6,938.0	47.52	172.03	6,782.9	-795.8	-259.2	595.9	5.95	5.28	-3.78
6,969.0	49.78	171.28	6,803.4	-818.8	-255.8	618.0	7.51	7.29	-2.42
7,001.0	51.52	170.76	6,823.7	-843.2	-251.9	641.6	5.58	5.44	-1.63
7,033.0	53.33	169.43	6,843.2	-868.2	-247.6	665.9	6.55	5.66	-4.16
7,065.0	55.44	168.29	6,861.8	-893.7	-242.5	691.0	7.20	6.59	-3.56
7,096.0	59.05	166.71	6,878.6	-919.2	-236.9	716.3	12.41	11.65	-5.10
7,128.0	62.36	165.69	6,894.2	-946.3	-230.2	743.5	10.71	10.34	-3.19
7,160.0	63.86	165.51	6,908.7	-973.9	-223.1	771.4	4.71	4.69	-0.56
7,191.0	65.46	165.03	6,922.0	-1,001.0	-216.0	798.8	5.35	5.16	-1.55
7,230.0	68.06	162.47	6,937.4	-1,035.4	-206.0	834.1	8.99	6.67	-6.56
7,261.0	69.36	161.50	6,948.6	-1,062.9	-197.1	862.6	5.11	4.19	-3.13
7,291.0	71.63	160.29	6,958.6	-1,089.6	-187.8	890.7	8.47	7.57	-4.03
7,322.0	73.41	158.94	6,967.9	-1,117.3	-177.5	920.1	7.09	5.74	-4.35
7,352.0	76.55	157.49	6,975.7	-1,144.2	-166.7	948.9	11.46	10.47	-4.83
7,382.0	80.08	155.84	6,981.8	-1,171.2	-155.1	978.3	12.94	11.77	-5.50
7,413.0	81.98	154.01	6,986.6	-1,198.9	-142.1	1,008.9	8.46	6.13	-5.90
7,443.0	82.68	152.13	6,990.6	-1,225.4	-128.7	1,038.6	6.63	2.33	-6.27
7,474.0	84.01	150.07	6,994.2	-1,252.4	-113.8	1,069.4	7.87	4.29	-6.65
7,504.0	85.39	149.38	6,997.0	-1,278.2	-98.7	1,099.2	5.14	4.60	-2.30
7,534.0	86.81	149.02	6,999.0	-1,303.9	-83.4	1,129.0	4.88	4.73	-1.20
7,564.0	89.13	148.65	7,000.1	-1,329.5	-67.9	1,158.9	7.83	7.73	-1.23
7,595.0	89.97	148.28	7,000.3	-1,356.0	-51.7	1,189.8	2.96	2.71	-1.19
7,655.0	90.44	147.75	7,000.1	-1,406.8	-19.9	1,249.5	1.18	0.78	-0.88
7,716.0	89.56	146.62	7,000.1	-1,458.1	13.2	1,310.1	2.35	-1.44	-1.85
7,777.0	89.33	145.93	7,000.7	-1,508.8	47.0	1,370.7	1.19	-0.38	-1.13
7,840.0	89.70	146.12	7,001.3	-1,561.1	82.2	1,433.1	0.66	0.59	0.30
7,904.0	89.23	145.05	7,001.8	-1,613.9	118.4	1,496.5	1.83	-0.73	-1.67
7,968.0	89.13	144.67	7,002.8	-1,666.2	155.2	1,559.8	0.61	-0.16	-0.59
8,031.0	89.63	144.42	7,003.4	-1,717.5	191.8	1,622.0	0.89	0.79	-0.40
8,095.0	90.40	144.14	7,003.4	-1,769.5	229.1	1,685.2	1.28	1.20	-0.44
8,158.0	89.53	143.60	7,003.5	-1,820.4	266.3	1,747.3	1.63	-1.38	-0.86
8,222.0	89.03	143.54	7,004.3	-1,871.9	304.3	1,810.4	0.79	-0.78	-0.09
8,285.0	89.60	143.24	7,005.0	-1,922.4	341.9	1,872.4	1.02	0.90	-0.48
8,349.0	90.17	144.06	7,005.2	-1,974.0	379.8	1,935.5	1.56	0.89	1.28
8,412.0	90.87	145.87	7,004.6	-2,025.8	416.2	1,997.7	2.27	1.11	1.98
8,476.0	90.37	145.48	7,003.9	-2,078.0	452.6	2,061.1	0.83	-0.78	0.27

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Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 4H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
8,539.0	89.90	145.78	7,003.7	-2,130.0	488.1	2,123.5	0.89	-0.75	0.48
8,603.0	89.29	146.54	7,004.2	-2,183.2	523.8	2,187.0	1.52	-0.95	1.19
8,667.0	89.06	147.46	7,005.1	-2,236.9	558.6	2,250.6	1.48	-0.36	1.44
8,730.0	89.40	146.18	7,006.0	-2,289.6	593.1	2,313.2	2.10	0.54	-2.03
8,794.0	91.21	147.52	7,005.6	-2,343.2	628.1	2,376.7	3.52	2.83	2.09
8,857.0	90.84	147.27	7,004.5	-2,396.2	662.0	2,439.4	0.71	-0.59	-0.40
8,921.0	91.91	149.21	7,003.0	-2,450.6	695.7	2,503.1	3.46	1.67	3.03
8,984.0	92.05	149.68	7,000.8	-2,504.9	727.7	2,565.9	0.78	0.22	0.75
9,048.0	90.47	147.57	6,999.4	-2,559.5	761.0	2,629.7	4.12	-2.47	-3.30
9,112.0	90.64	146.66	6,998.8	-2,613.2	795.8	2,693.3	1.45	0.27	-1.42
9,176.0	91.88	146.49	6,997.3	-2,666.6	831.0	2,756.8	1.96	1.94	-0.27
9,239.0	91.95	146.20	6,995.2	-2,719.0	865.9	2,819.3	0.47	0.11	-0.46
9,303.0	91.48	145.40	6,993.3	-2,771.9	901.9	2,882.7	1.45	-0.73	-1.25
9,366.0	92.46	145.94	6,991.2	-2,823.9	937.4	2,945.1	1.78	1.56	0.86
9,430.0	91.44	146.63	6,989.0	-2,877.1	972.9	3,008.5	1.92	-1.59	1.08
9,493.0	91.41	146.94	6,987.4	-2,929.8	1,007.4	3,071.1	0.49	-0.05	0.49
9,557.0	91.11	145.75	6,986.0	-2,983.1	1,042.8	3,134.6	1.92	-0.47	-1.86
9,621.0	90.47	144.52	6,985.1	-3,035.6	1,079.4	3,197.9	2.17	-1.00	-1.92
9,685.0	89.70	143.61	6,985.0	-3,087.4	1,117.0	3,261.0	1.86	-1.20	-1.42
9,748.0	90.40	143.52	6,985.0	-3,138.1	1,154.4	3,323.1	1.12	1.11	-0.14
9,812.0	90.84	143.62	6,984.3	-3,189.6	1,192.4	3,386.1	0.71	0.69	0.16
9,875.0	90.77	143.55	6,983.4	-3,240.3	1,229.8	3,448.2	0.16	-0.11	-0.11
9,939.0	90.37	144.45	6,982.8	-3,292.1	1,267.4	3,511.3	1.54	-0.63	1.41
10,002.0	90.44	146.60	6,982.3	-3,344.0	1,303.1	3,573.7	3.41	0.11	3.41
10,066.0	90.77	148.31	6,981.6	-3,397.9	1,337.5	3,637.4	2.72	0.52	2.67
10,130.0	91.38	147.98	6,980.4	-3,452.3	1,371.3	3,701.1	1.08	0.95	-0.52
10,193.0	91.95	148.49	6,978.6	-3,505.8	1,404.4	3,763.8	1.21	0.90	0.81
10,256.0	91.61	148.42	6,976.7	-3,559.5	1,437.4	3,826.5	0.55	-0.54	-0.11
10,320.0	90.97	148.03	6,975.2	-3,613.9	1,471.0	3,890.3	1.17	-1.00	-0.61
10,383.0	89.13	148.40	6,975.2	-3,667.4	1,504.2	3,953.0	2.98	-2.92	0.59
10,447.0	88.59	148.03	6,976.4	-3,721.8	1,537.9	4,016.7	1.02	-0.84	-0.58
10,510.0	88.96	147.99	6,977.8	-3,775.2	1,571.3	4,079.4	0.59	0.59	-0.06
10,575.0	89.76	148.05	6,978.5	-3,830.4	1,605.7	4,144.1	1.23	1.23	0.09
10,638.0	88.92	147.92	6,979.2	-3,883.8	1,639.1	4,206.8	1.35	-1.33	-0.21
10,700.0	88.35	147.65	6,980.7	-3,936.2	1,672.2	4,268.5	1.02	-0.92	-0.44
10,764.0	89.09	148.03	6,982.1	-3,990.4	1,706.2	4,332.2	1.30	1.16	0.59
10,828.0	89.89	148.39	6,982.7	-4,044.8	1,739.9	4,395.9	1.37	1.25	0.56
10,892.0	89.23	149.39	6,983.2	-4,099.6	1,773.0	4,459.7	1.87	-1.03	1.56
10,955.0	89.19	149.56	6,984.1	-4,153.8	1,805.0	4,522.6	0.28	-0.06	0.27
11,019.0	89.66	149.87	6,984.7	-4,209.1	1,837.3	4,586.4	0.88	0.73	0.48
11,083.0	89.16	149.67	6,985.4	-4,264.4	1,869.5	4,650.3	0.84	-0.78	-0.31
11,145.0	88.76	148.78	6,986.5	-4,317.7	1,901.2	4,712.1	1.57	-0.65	-1.44
11,272.0	90.47	148.25	6,987.3	-4,426.0	1,967.5	4,838.6	1.41	1.35	-0.42

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 4H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 4H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,336.0	89.87	147.85	6,987.2	-4,480.3	2,001.4	4,902.3	1.13	-0.94	-0.63
11,400.0	89.50	147.78	6,987.5	-4,534.4	2,035.5	4,966.0	0.59	-0.58	-0.11
11,463.0	90.67	149.11	6,987.4	-4,588.1	2,068.5	5,028.8	2.81	1.86	2.11
11,527.0	91.44	149.60	6,986.2	-4,643.2	2,101.1	5,092.6	1.43	1.20	0.77
11,591.0	91.34	149.15	6,984.7	-4,698.2	2,133.7	5,156.4	0.72	-0.16	-0.70
11,654.0	91.18	147.96	6,983.3	-4,751.9	2,166.5	5,219.2	1.91	-0.25	-1.89
11,718.0	91.68	147.58	6,981.7	-4,806.1	2,200.6	5,282.9	0.98	0.78	-0.59
11,782.0	90.77	146.42	6,980.3	-4,859.7	2,235.5	5,346.4	2.30	-1.42	-1.81
11,845.0	90.64	147.36	6,979.6	-4,912.5	2,269.9	5,409.0	1.51	-0.21	1.49
11,909.0	90.71	147.37	6,978.8	-4,966.4	2,304.4	5,472.7	0.11	0.11	0.02
11,972.0	90.30	146.68	6,978.2	-5,019.2	2,338.7	5,535.3	1.27	-0.65	-1.10
12,036.0	89.97	146.40	6,978.1	-5,072.6	2,374.0	5,598.8	0.68	-0.52	-0.44
12,099.0	89.26	145.96	6,978.5	-5,125.0	2,409.0	5,661.3	1.33	-1.13	-0.70
12,163.0	89.40	146.33	6,979.3	-5,178.1	2,444.7	5,724.8	0.62	0.22	0.58
12,226.0	89.23	146.09	6,980.0	-5,230.5	2,479.7	5,787.3	0.47	-0.27	-0.38
12,290.0	88.89	146.35	6,981.1	-5,283.7	2,515.3	5,850.7	0.67	-0.53	0.41
12,354.0	88.25	146.12	6,982.7	-5,336.8	2,550.9	5,914.2	1.06	-1.00	-0.36
12,417.0	89.33	146.83	6,984.0	-5,389.4	2,585.7	5,976.8	2.05	1.71	1.13
12,481.0	89.90	147.63	6,984.4	-5,443.2	2,620.3	6,040.4	1.53	0.89	1.25
12,545.0	90.30	146.43	6,984.3	-5,496.9	2,655.1	6,104.0	1.98	0.63	-1.88
12,609.0	91.61	146.60	6,983.3	-5,550.2	2,690.4	6,167.5	2.06	2.05	0.27
12,673.0	91.08	146.44	6,981.7	-5,603.6	2,725.7	6,231.0	0.87	-0.83	-0.25
12,736.0	90.30	145.97	6,981.0	-5,656.0	2,760.8	6,293.5	1.45	-1.24	-0.75
12,800.0	90.84	144.92	6,980.4	-5,708.7	2,797.1	6,356.9	1.84	0.84	-1.64
12,863.0	90.77	145.57	6,979.5	-5,760.4	2,833.0	6,419.2	1.04	-0.11	1.03
12,927.0	90.03	145.30	6,979.0	-5,813.1	2,869.3	6,482.6	1.23	-1.16	-0.42
12,991.0	90.74	144.75	6,978.6	-5,865.6	2,906.0	6,545.9	1.40	1.11	-0.86
13,054.0	91.58	145.57	6,977.3	-5,917.3	2,942.0	6,608.2	1.86	1.33	1.30
13,117.0	90.30	145.92	6,976.3	-5,969.3	2,977.4	6,670.7	2.11	-2.03	0.56
13,181.0	91.04	146.28	6,975.5	-6,022.4	3,013.1	6,734.1	1.29	1.16	0.56
Last SDI MWD Survey									
13,240.0	91.04	146.28	6,974.5	-6,071.5	3,045.8	6,792.6	0.00	0.00	0.00
Projection to Bit									

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Howell 4H
Project:	Mary Prospect	**TVD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Site:	Howell Pad	**MD Reference:**	GL 1302' & KB 18' @ 1320.0usft (Saxon 141)
Well:	Howell 4H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
18.0	18.0	0.0	0.0	Ground Level
103.0	103.0	-0.1	0.4	First SDI Gyro Survey
2,403.0	2,403.0	-7.3	2.8	Last SDI Gyro Survey
2,428.3	2,428.3	-7.4	3.1	First SDI MWD Survey
13,181.0	6,975.5	-6,022.4	3,013.1	Last SDI MWD Survey
13,240.0	6,974.5	-6,071.5	3,045.8	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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WV Department of
Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Fracture Date:	4/30/2014
State:	West Virginia
County/Parish:	Wetzel County
API Number:	
Operator Name:	Stone Energy
Well Name and Number:	Howell 4H
Longitude:	
Latitude:	
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	8838726

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
H015, Slickwater, WF115	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Friction Reducer, Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Iron Control Agent, Clay Control Agent, Buffer, Accelerator, Propping Agent, Fluid Loss Additive	Water (Including Mix Water Supplied by Client)*	NA		87.72740%	
			Crystalline silica	14808-60-7	98.41421%	12.07799%	
			Hydrochloric acid	7647-01-0	0.86317%	0.10593%	
			Carbohydrate polymer	Proprietary	0.47810%	0.05867%	
			Ammonium sulfate	Proprietary	0.11885%	0.01459%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.07188%	0.00882%	
			Distillates (petroleum), hydrotreated light	64742-47-8	0.05886%	0.00722%	
			Glutaraldehyde	111-30-8	0.05412%	0.00664%	
			Calcium chloride	10043-52-4	0.05123%	0.00629%	
			Diammonium peroxidisulphate	7727-54-0	0.02335%	0.00287%	
			Ammonium chloride	12125-02-9	0.01913%	0.00235%	
			Urea	57-13-6	0.01332%	0.00164%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00553%	0.00068%	
			Ethane-1,2-diol	107-21-1	0.00417%	0.00051%	
			Trisodium ortho phosphate	7601-54-9	0.00417%	0.00051%	
			Methanol	67-56-1	0.00340%	0.00042%	
			Sodium erythorbate	6381-77-7	0.00320%	0.00039%	
			Aliphatic acids	Proprietary	0.00255%	0.00031%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00255%	0.00031%	
			Sodium carbonate	497-19-8	0.00145%	0.00018%	
			Prop-2-yn-1-ol	107-19-7	0.00085%	0.00010%	
			Polypropylene glycol	25322-69-4	0.00024%	0.00003%	

* 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%

Report ID: RPT-27079 (Generated on 5/13/2014 3:41 PM)

All component information listed was obtained from the supplier's Material Safety Data Sheets (MSDS). As such, the Operator is not responsible for inaccurate and/or incomplete information. Any questions regarding the content of the MSDS should be directed to the supplier who provided it. The Occupational Safety and Health Administration's (OSHA) regulations govern the criteria for the disclosure of this information. Please note that Federal Law protects "proprietary", "trade secret", and "confidential business information" and the criteria for how this information is reported on an MSDS is subject to 29 CFR 1910.1200(i) and Appendix D.

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FORM WW 6

LONG. 80°47'39.8" — 800'

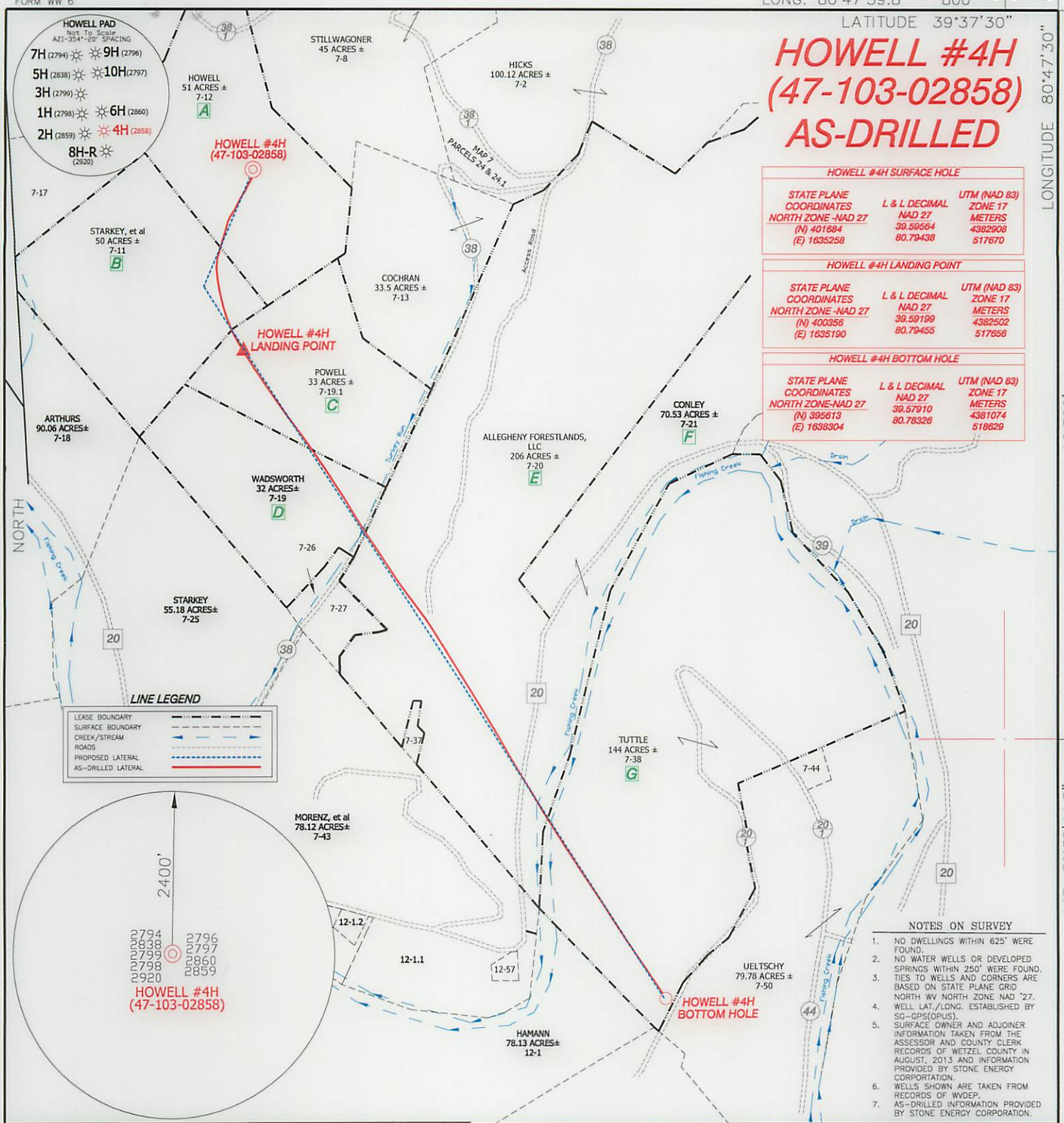
LATITUDE 39°37'30"

HOWELL #4H (47-103-02858) AS-DRILLED

LONGITUDE 80°47'30"

10,700'

LAT. 39°35'44.3"



HOWELL #4H SURFACE HOLE		
STATE PLANE COORDINATES NORTH ZONE -NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 401684	39.59564	4382908
(E) 1635258	80.79438	517670

HOWELL #4H LANDING POINT		
STATE PLANE COORDINATES NORTH ZONE -NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 400356	39.59199	4382502
(E) 1635190	80.79455	517656

HOWELL #4H BOTTOM HOLE		
STATE PLANE COORDINATES NORTH ZONE-NAD 27	L & L DECIMAL NAD 27	UTM (NAD 83) ZONE 17 METERS
(N) 395613	39.57910	4381074
(E) 1638304	80.78326	518629

NOTES ON SURVEY

1. NO DWELLINGS WITHIN 625' WERE FOUND.
2. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250' WERE FOUND.
3. TIES TO WELLS AND CORNERS ARE BASED ON STATE PLANE GRID NORTH WV NORTH ZONE NAD '27.
4. WELL LAT./LONG. ESTABLISHED BY SG-GPS(OPUS).
5. SURFACE OWNER AND ADJOINER INFORMATION TAKEN FROM THE ASSESSOR AND COUNTY CLERK RECORDS OF WETZEL COUNTY IN AUGUST, 2013 AND INFORMATION PROVIDED BY STONE ENERGY CORPORATION.
6. WELLS SHOWN ARE TAKEN FROM RECORDS OF WVDEP.
7. AS-DRILLED INFORMATION PROVIDED BY STONE ENERGY CORPORATION.

I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE RULES ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 834

HUPP Surveying & Mapping
P.O. Box 647 Grantsville, WV 26147
(304) 354-7035 EMAIL: hupp@frontiernet.net

DOYLE HUPP, JR. LICENSED No. 834 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.

DATE OCTOBER 15, 20 14

OPERATORS WELL NO. HOWELL #4H

API WELL NO. 47 — 103 — 02858
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1/2500 FILE NO. W2208 (BK 64-54)

SCALE 1" = 1000'

PROVEN SOURCE OF ELEVATION SG-GPS(OPUS)

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION
OFFICE OF OIL AND GAS

WELL TYPE : OIL ____ GAS X LIQUID INJECTION ____ WASTE DISPOSAL ____ IF "GAS" PRODUCTION X STORAGE ____ DEEP ____ SHALLOW X

LOCATION :

ELEVATION 1304' WATERSHED FISHING CREEK

DISTRICT GREEN COUNTY WETZEL QUADRANGLE PORTERS FALLS 7.5'

SURFACE OWNER CHARLES & RUTH HOWELL ACREAGE 51±

ROYALTY OWNER CHARLES & RUTH HOWELL, et al LEASE ACREAGE 516.00±

PROPOSED WORK : LEASE NO. ____

DRILL ____ CONVERT ____ DRILL DEEPER ____ REDRILL ____ FRACTURE OR STIMULATE ____ PLUG OFF OLD FORMATION ____ PERFORATE NEW FORMATION ____ PLUG AND ABANDON ____ CLEAN OUT AND REPLUG ____ OTHER ____

PHYSICAL CHANGE IN WELL (SPECIFY) ____ TARGET FORMATION MARCELLUS

ESTIMATED DEPTH TVD 6,975' MD 13,240'

COUNTY NAME PERMIT

WELL OPERATOR STONE ENERGY CORPORATION DESIGNATED AGENT TIM MCGREGOR

ADDRESS P.O. BOX 52807 LAFAYETTE, LA 70508 ADDRESS 1300 FORT PIERPONT DR., SUITE 201 MORGANTOWN, WV 26508