WR-35
Rev. 8/23/13

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APR 20 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

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

API 47 - 087 - 04754 County ROANE District SMITHFIELD
Quad LOONEYVILLE 7.5' Pad Name FERRELL, C.B. Field/Pool Name CLOVER
Farm name MAY, TIMOTHY D. Well Number 110
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,285,443 M Easting 475,638 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing 4,285,234 M Easting 475,776 M

Elevation (ft) 1,110' 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)
N/A

Date permit issued 1/8/15 Date drilling commenced 2/4/15 Date drilling ceased 2/7/15
Date completion activities began 3/23/15 Date completion activities ceased 3/26/15
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 Open mine(s) (Y/N) depths None
Salt water depth(s) ft 1700' Void(s) encountered (Y/N) depths None
Coal depth(s) ft None Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/26/15
W.S. 6/01/15

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API 47- 087 - 04754 Farm name MAY, TIMOTHY D. Well number 110

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	12 1/4"	11 5/8"	30'	Used	LS		Sand In
Surface	8 3/4"	7"	506'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2631.35'	New	J-55		
Tubing							
Packer type and depth set							

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Comment Details Circulated Est. 25 sks to surface on 7" surface cement job. Circulated Est. 20 sks to surface on 4 1/2" cement job.

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							
Surface	Reg Neat	130	15.6	1.18	153	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	120/125	13.2/14.2	1.64/1.27	197/186	50'	8
Tubing							

Drillers TD (ft) 2660' Loggers TD (ft) 2653'
Deepest formation penetrated Big Injun Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 600'

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
20 Centralizers every 88 from bottom on 4 1/2", Centralizer placed mid string on 7"

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	3/23/15	2406'	2416'	40	Big Injun

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	3/26/15	5	1800	2241	675	2,500	151	

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PRODUCING FORMATION(S)	DEPTHS			
Big Injun	2122'- 2150'	TVD	2382'- 2422'	MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ 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)
Sand/Shale	0	1402	0	1432	
Sand	1402	1618	1432	1692	
Shale	1618	1656	1692	1738	
Sand	1656	1824	1738	1738	
Shale	1824	1842	1954	1954	
Sand	1842	1976	1977	2168	
Little Lime	1976	2036	2168	2236	
Pencil Cave	2032	2036	2236	2240	
Big Lime	2036	2104	2240	2356	
Keener	2104	2122	2356	2382	
Big Injun	2122	2150	2382	2422	Drilled directional S 39° E a distance of 797'
Shale	2150	2333	2422	2660	
TD	2333		2660		

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Please insert additional pages as applicable.

Drilling Contractor Decker Drilling
Address 11565 State Route 676 City Vincent State OH Zip 45784

Logging Company Weatherford International
Address 777 North River Avenue City Weston State WV Zip 26452

Cementing Company Universal Services
Address Hall Rd City Buckhannon State WV Zip 26201

Stimulating Company Producers Service Corp.
Address 109 South Graham Street City Zanesville State OH Zip 43701

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations Manager Date 4/10/15

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

Prepared for:

H G Energy

Dustin Hendershot

304-481-7342

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Daniel L Graham

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #:	17988
WELL NAME:	C B Ferrell
COUNTY/STATE:	Roane/WV
TOWNSHIP/FIELD:	Clover Field/Roane Co Wv
DATE of SERVICE:	3/26/2015
CUSTOMER PO#:	

Description	Notes	Amount	Units	Unit Cost	Total Cost
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE 4 HRS		1	EA		
BLENDER CHARGE 0-10 BPM		1	EA		
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @40Miles	40	MI		
IC ACID 15%		250	GAL		
PRO HIB II		0.5	GAL		
ACID DELIVERY		2	HR		
PRO CLA LOK (KCL SUBSTITUTE)		15	GAL		
PRO NE-21		5	GAL		
PRO GEL 4		150	LB		
BUFFER I		50	LB		
BUFFER II		50	LB		
BIO CLEAR 750		1	LB		
AP BREAKER		15	LB		
BXL-A		10	GAL		
BXL-10C		10	GAL		
SAND 20/40 OTTAWA		25	CWT		
SAND DELIVERY / TON MILES		100	TMILE		
DATA VAN		1	STAGE		
2 INCH FLOW METER		1	EA		

Customer Approval: _____

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HG Energy, LLC

Roane County, West Virginia
CB Ferrell #110
CB Ferrell #110
Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

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Well:	CB Ferrell #110	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Project Roane County, West Virginia

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site CB Ferrell #110

Site Position:		**Northing:**	14,059,786.23 usft	**Latitude:**	38° 43' 1.900 N
From:	Lat/Long	**Easting:**	1,560,443.92 usft	**Longitude:**	81° 16' 49.400 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.18 °

Well CB Ferrell #110

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,059,786.23 usfl	**Latitude:**	38° 43' 1.900 N
	+E/-W	0.0 usft	**Easting:**	1,560,443.92 usfl	**Longitude:**	81° 16' 49.400 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usfl	**Ground Level:**	1,110.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/23/2015	-8.03	66.36	51,980

Design Wellbore #1

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	140.75

Survey Program Date 2/17/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
500.0	2,660.0	MWD (Wellbore #1)	MWD default	MWD - Standard

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Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.0	0.00
First Survey @ 500' MD / 500' TVD									
561.0	0.80	121.70	561.0	-0.2	0.4	0.4	1.31	0.4	121.70
591.0	0.80	126.60	591.0	-0.5	0.7	0.8	0.23	0.8	122.91
621.0	1.10	125.50	621.0	-0.8	1.1	1.3	1.00	1.3	124.04
651.0	1.60	129.90	651.0	-1.2	1.7	2.0	1.70	2.0	125.45
681.0	2.30	124.30	681.0	-1.8	2.5	3.0	2.42	3.1	125.83
711.0	2.80	130.20	710.9	-2.6	3.5	4.3	1.88	4.4	126.35
741.0	3.30	129.20	740.9	-3.6	4.8	5.8	1.68	6.0	127.23
771.0	3.90	132.20	770.8	-4.9	6.2	7.7	2.10	7.9	128.09
801.0	4.70	131.50	800.7	-6.4	7.9	9.9	2.67	10.1	128.92
831.0	5.50	130.60	830.6	-8.1	9.9	12.5	2.68	12.8	129.35
861.0	6.40	131.00	860.5	-10.1	12.2	15.6	3.00	15.9	129.64
891.0	7.60	131.00	890.2	-12.5	15.0	19.2	4.00	19.5	129.89
921.0	8.90	130.70	919.9	-15.4	18.3	23.4	4.34	23.9	130.06
951.0	10.10	130.70	949.5	-18.6	22.0	28.3	4.00	28.8	130.17
981.0	11.30	131.40	979.0	-22.2	26.2	33.8	4.02	34.4	130.32
1,011.0	12.60	132.90	1,008.3	-26.4	30.8	39.9	4.45	40.6	130.61
1,041.0	13.90	132.50	1,037.5	-31.1	35.9	46.8	4.34	47.5	130.91
1,071.0	14.90	134.00	1,066.6	-36.2	41.3	54.2	3.56	54.9	131.23
1,101.0	15.90	133.70	1,095.5	-41.7	47.0	62.1	3.34	62.9	131.56
1,131.0	16.90	134.00	1,124.3	-47.6	53.1	70.5	3.35	71.3	131.83
1,161.0	17.90	132.90	1,152.9	-53.7	59.7	79.4	3.51	80.3	132.01
1,191.0	18.90	131.50	1,181.4	-60.1	66.7	88.7	3.64	89.8	132.03
1,221.0	19.70	129.50	1,209.7	-66.5	74.2	98.5	3.46	99.7	131.88
1,251.0	20.90	126.30	1,237.9	-72.9	82.4	108.6	5.45	110.1	131.50

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Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
1,281.0	22.10	125.80	1,265.8	-79.4	91.3	119.3	4.05	121.0	131.00
1,311.0	23.70	125.80	1,293.4	-86.2	100.8	130.5	5.33	132.6	130.54
1,341.0	25.40	126.70	1,320.7	-93.6	110.8	142.6	5.80	145.1	130.18
1,371.0	27.00	126.90	1,347.6	-101.5	121.4	155.5	5.34	158.3	129.89
1,401.0	28.70	127.60	1,374.1	-110.0	132.6	169.1	5.77	172.3	129.68
1,431.0	29.80	127.70	1,400.3	-119.0	144.2	183.4	3.67	186.9	129.52
1,461.0	31.00	129.20	1,426.2	-128.4	156.1	198.2	4.73	202.1	129.44
1,491.0	32.30	129.50	1,451.7	-138.4	168.3	213.6	4.36	217.9	129.44
1,521.0	33.30	132.50	1,476.9	-149.1	180.5	229.6	6.36	234.1	129.55
1,551.0	34.30	134.00	1,501.9	-160.5	192.7	246.2	4.34	250.8	129.79
1,581.0	34.30	136.20	1,526.6	-172.5	204.6	263.0	4.13	267.6	130.13
1,611.0	34.20	139.70	1,551.4	-185.0	215.9	279.9	6.57	284.3	130.59
1,641.0	33.90	140.40	1,576.3	-197.9	226.7	296.7	1.65	300.9	131.12
1,671.0	34.00	142.20	1,601.2	-210.9	237.2	313.4	3.37	317.4	131.65
1,701.0	33.90	144.80	1,626.1	-224.4	247.1	330.1	4.85	333.8	132.24
1,731.0	34.50	144.40	1,650.9	-238.2	256.9	347.0	2.14	350.3	132.83
1,761.0	35.00	145.20	1,675.5	-252.1	266.8	364.0	2.26	367.1	133.38
1,791.0	36.30	146.70	1,699.9	-266.6	276.5	381.4	5.22	384.1	133.95
1,821.0	37.90	145.90	1,723.8	-281.7	286.6	399.4	5.57	401.8	134.50
1,851.0	39.50	146.60	1,747.3	-297.3	297.0	418.1	5.53	420.2	135.02
1,881.0	40.90	147.40	1,770.2	-313.5	307.6	437.4	4.97	439.2	135.55
1,911.0	41.40	147.70	1,792.8	-330.2	318.1	457.0	1.79	458.5	136.06
1,941.0	41.80	147.70	1,815.2	-347.0	328.8	476.7	1.33	478.0	136.54
1,971.0	41.40	147.00	1,837.6	-363.8	339.5	496.5	2.04	497.6	136.97
2,001.0	42.20	147.70	1,860.0	-380.6	350.3	516.4	3.09	517.3	137.37
2,031.0	44.30	147.50	1,881.8	-398.0	361.3	536.8	7.01	537.5	137.76
2,061.0	46.30	148.10	1,902.9	-416.0	372.7	558.0	6.82	558.5	138.14

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2,091.0	47.90	149.20	1,923.4	-434.8	384.1	579.7	5.97	580.2	138.54
2,121.0	47.90	149.20	1,943.5	-453.9	395.5	601.7	0.00	602.0	138.93
2,151.0	47.20	148.60	1,963.7	-472.8	407.0	623.7	2.76	623.9	139.28
2,181.0	46.30	148.20	1,984.3	-491.5	418.4	645.3	3.15	645.4	139.59
2,211.0	46.30	148.50	2,005.0	-509.9	429.8	666.8	0.72	666.9	139.87
2,241.0	46.40	147.70	2,025.7	-528.3	441.3	688.3	1.96	688.4	140.13
2,271.0	46.70	147.70	2,046.3	-546.8	452.9	710.0	1.00	710.0	140.36
2,301.0	46.70	147.80	2,066.9	-565.2	464.5	731.6	0.24	731.6	140.58
2,331.0	46.70	147.70	2,087.5	-583.7	476.2	753.3	0.24	753.3	140.79
2,361.0	46.60	147.70	2,108.1	-602.1	487.9	774.9	0.33	775.0	140.99
2,391.0	46.70	147.40	2,128.7	-620.5	499.6	796.6	0.80	796.6	141.16
2,421.0	46.20	147.30	2,149.3	-638.8	511.3	818.2	1.68	818.3	141.33
2,451.0	44.20	147.00	2,170.5	-656.7	522.8	839.4	6.70	839.4	141.48
2,481.0	42.70	146.70	2,192.3	-674.0	534.1	859.9	5.05	860.0	141.60
2,511.0	41.10	146.00	2,214.6	-690.7	545.2	879.8	5.56	879.9	141.71
2,541.0	39.30	145.60	2,237.5	-706.7	556.1	899.1	6.06	899.3	141.80
2,571.0	37.40	145.10	2,261.0	-722.0	566.7	917.7	6.42	917.8	141.87
2,601.0	35.40	145.10	2,285.2	-736.6	576.9	935.4	6.67	935.6	141.93
2,660.0	35.40	145.10	2,333.3	-764.6	596.4	969.5	0.00	969.7	142.05

TD @ 2660' MD / 2333' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
2,660.0	2,333.3	-764.6	596.4	TD @ 2660' MD / 2333' TVD

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Checked By: _____ Approved By: _____ Date: _____

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Wellbore #1

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Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #110
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker #9)
Site:	CB Ferrell #110	**MD Reference:**	well @ 1118.0usft (Decker #9)
Well:	CB Ferrell #110	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Project Roane County, West Virginia

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site CB Ferrell #110

Site Position:		**Northing:**	14,059,786.24 usft	**Latitude:**	38° 43' 1.900 N
From:	Lat/Long	**Easting:**	1,560,443.93 usft	**Longitude:**	81° 16' 49.400 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.18 °

Well CB Ferrell #110

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,059,786.24 usfl	**Latitude:**	38° 43' 1.900 N
	+E/-W	0.0 usft	**Easting:**	1,560,443.93 usfl	**Longitude:**	81° 16' 49.400 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usfl	**Ground Level:**	1,110.0 usfl

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/23/2015	-8.03	66.36	51,980

Design Wellbore #1

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	140.75

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Survey Program Date 2/17/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
500.0	2,660.0	MWD (Wellbore #1)	MWD default	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	14,059,786.24	1,560,443.93	38° 43' 1.900 N	81° 16' 49.400 W
500.0	0.00	0.00	500.0	0.0	0.0	14,059,786.24	1,560,443.93	38° 43' 1.900 N	81° 16' 49.400 W
First Survey @ 500' MD / 500' TVD									
561.0	0.80	121.70	561.0	-0.2	0.4	14,059,786.01	1,560,444.29	38° 43' 1.898 N	81° 16' 49.395 W
591.0	0.80	126.60	591.0	-0.5	0.7	14,059,785.78	1,560,444.64	38° 43' 1.895 N	81° 16' 49.391 W
621.0	1.10	125.50	621.0	-0.8	1.1	14,059,785.49	1,560,445.04	38° 43' 1.893 N	81° 16' 49.386 W
651.0	1.60	129.90	651.0	-1.2	1.7	14,059,785.05	1,560,445.60	38° 43' 1.888 N	81° 16' 49.379 W
681.0	2.30	124.30	681.0	-1.8	2.5	14,059,784.44	1,560,446.41	38° 43' 1.882 N	81° 16' 49.369 W
711.0	2.80	130.20	710.9	-2.6	3.5	14,059,783.63	1,560,447.47	38° 43' 1.874 N	81° 16' 49.355 W
741.0	3.30	129.20	740.9	-3.6	4.8	14,059,782.61	1,560,448.70	38° 43' 1.864 N	81° 16' 49.340 W
771.0	3.90	132.20	770.8	-4.9	6.2	14,059,781.38	1,560,450.12	38° 43' 1.852 N	81° 16' 49.322 W
801.0	4.70	131.50	800.7	-6.4	7.9	14,059,779.88	1,560,451.80	38° 43' 1.837 N	81° 16' 49.300 W

DDC

Survey Report - Geographic

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Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

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Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
831.0	5.50	130.60	830.6	-8.1	9.9	14,059,778.13	1,560,453.81	38° 43' 1.820 N	81° 16' 49.275 W
861.0	6.40	131.00	860.5	-10.1	12.2	14,059,776.10	1,560,456.17	38° 43' 1.800 N	81° 16' 49.245 W
891.0	7.60	131.00	890.2	-12.5	15.0	14,059,773.70	1,560,458.93	38° 43' 1.776 N	81° 16' 49.210 W
921.0	8.90	130.70	919.9	-15.4	18.3	14,059,770.89	1,560,462.18	38° 43' 1.749 N	81° 16' 49.169 W
951.0	10.10	130.70	949.5	-18.6	22.0	14,059,767.66	1,560,465.94	38° 43' 1.717 N	81° 16' 49.122 W
981.0	11.30	131.40	979.0	-22.2	26.2	14,059,764.00	1,560,470.14	38° 43' 1.681 N	81° 16' 49.068 W
1,011.0	12.60	132.90	1,008.3	-26.4	30.8	14,059,759.83	1,560,474.74	38° 43' 1.640 N	81° 16' 49.010 W
1,041.0	13.90	132.50	1,037.5	-31.1	35.9	14,059,755.16	1,560,479.79	38° 43' 1.594 N	81° 16' 48.946 W
1,071.0	14.90	134.00	1,066.6	-36.2	41.3	14,059,750.05	1,560,485.22	38° 43' 1.543 N	81° 16' 48.877 W
1,101.0	15.90	133.70	1,095.5	-41.7	47.0	14,059,744.53	1,560,490.97	38° 43' 1.489 N	81° 16' 48.805 W
1,131.0	16.90	134.00	1,124.3	-47.6	53.1	14,059,738.66	1,560,497.08	38° 43' 1.431 N	81° 16' 48.727 W
1,161.0	17.90	132.90	1,152.9	-53.7	59.7	14,059,732.50	1,560,503.59	38° 43' 1.370 N	81° 16' 48.645 W
1,191.0	18.90	131.50	1,181.4	-60.1	66.7	14,059,726.14	1,560,510.61	38° 43' 1.308 N	81° 16' 48.556 W
1,221.0	19.70	129.50	1,209.7	-66.5	74.2	14,059,719.70	1,560,518.15	38° 43' 1.244 N	81° 16' 48.461 W
1,251.0	20.90	126.30	1,237.9	-72.9	82.4	14,059,713.32	1,560,526.36	38° 43' 1.181 N	81° 16' 48.357 W
1,281.0	22.10	125.80	1,265.8	-79.4	91.3	14,059,706.85	1,560,535.25	38° 43' 1.118 N	81° 16' 48.244 W
1,311.0	23.70	125.80	1,293.4	-86.2	100.8	14,059,700.02	1,560,544.72	38° 43' 1.050 N	81° 16' 48.125 W
1,341.0	25.40	126.70	1,320.7	-93.6	110.8	14,059,692.65	1,560,554.77	38° 43' 0.978 N	81° 16' 47.997 W
1,371.0	27.00	126.90	1,347.6	-101.5	121.4	14,059,684.71	1,560,565.37	38° 43' 0.900 N	81° 16' 47.863 W
1,401.0	28.70	127.60	1,374.1	-110.0	132.6	14,059,676.23	1,560,576.53	38° 43' 0.816 N	81° 16' 47.722 W
1,431.0	29.80	127.70	1,400.3	-119.0	144.2	14,059,667.27	1,560,588.13	38° 43' 0.728 N	81° 16' 47.575 W
1,461.0	31.00	129.20	1,426.2	-128.4	156.1	14,059,657.83	1,560,600.02	38° 43' 0.635 N	81° 16' 47.425 W
1,491.0	32.30	129.50	1,451.7	-138.4	168.3	14,059,647.85	1,560,612.19	38° 43' 0.537 N	81° 16' 47.271 W
1,521.0	33.30	132.50	1,476.9	-149.1	180.5	14,059,637.19	1,560,624.45	38° 43' 0.432 N	81° 16' 47.116 W
1,551.0	34.30	134.00	1,501.9	-160.5	192.7	14,059,625.75	1,560,636.60	38° 43' 0.319 N	81° 16' 46.962 W
1,581.0	34.30	136.20	1,526.6	-172.5	204.6	14,059,613.78	1,560,648.53	38° 43' 0.201 N	81° 16' 46.811 W
1,611.0	34.20	139.70	1,551.4	-185.0	215.9	14,059,601.25	1,560,659.84	38° 43' 0.077 N	81° 16' 46.668 W
1,641.0	33.90	140.40	1,576.3	-197.9	226.7	14,059,588.37	1,560,670.63	38° 42' 59.950 N	81° 16' 46.531 W
1,671.0	34.00	142.20	1,601.2	-210.9	237.2	14,059,575.29	1,560,681.10	38° 42' 59.821 N	81° 16' 46.398 W
1,701.0	33.90	144.80	1,626.1	-224.4	247.1	14,059,561.83	1,560,691.06	38° 42' 59.688 N	81° 16' 46.272 W
1,731.0	34.50	144.40	1,650.9	-238.2	256.9	14,059,548.08	1,560,700.83	38° 42' 59.553 N	81° 16' 46.148 W
1,761.0	35.00	145.20	1,675.5	-252.1	266.8	14,059,534.11	1,560,710.69	38° 42' 59.415 N	81° 16' 46.023 W
1,791.0	36.30	146.70	1,699.9	-266.6	276.5	14,059,519.62	1,560,720.47	38° 42' 59.272 N	81° 16' 45.899 W
1,821.0	37.90	145.90	1,723.8	-281.7	286.6	14,059,504.57	1,560,730.52	38° 42' 59.123 N	81° 16' 45.772 W
1,851.0	39.50	146.60	1,747.3	-297.3	297.0	14,059,488.97	1,560,740.94	38° 42' 58.970 N	81° 16' 45.640 W
1,881.0	40.90	147.40	1,770.2	-313.5	307.6	14,059,472.73	1,560,751.48	38° 42' 58.809 N	81° 16' 45.506 W
1,911.0	41.40	147.70	1,792.8	-330.2	318.1	14,059,456.08	1,560,762.07	38° 42' 58.645 N	81° 16' 45.372 W
1,941.0	41.80	147.70	1,815.2	-347.0	328.8	14,059,439.24	1,560,772.71	38° 42' 58.479 N	81° 16' 45.237 W
1,971.0	41.40	147.00	1,837.6	-363.8	339.5	14,059,422.47	1,560,783.46	38° 42' 58.313 N	81° 16' 45.101 W
2,001.0	42.20	147.70	1,860.0	-380.6	350.3	14,059,405.63	1,560,794.25	38° 42' 58.147 N	81° 16' 44.964 W
2,031.0	44.30	147.50	1,881.8	-398.0	361.3	14,059,388.28	1,560,805.26	38° 42' 57.976 N	81° 16' 44.824 W
2,061.0	46.30	148.10	1,902.9	-416.0	372.7	14,059,370.23	1,560,816.62	38° 42' 57.798 N	81° 16' 44.680 W
2,091.0	47.90	149.20	1,923.4	-434.8	384.1	14,059,351.47	1,560,828.05	38° 42' 57.612 N	81° 16' 44.535 W
2,121.0	47.90	149.20	1,943.5	-453.9	395.5	14,059,332.35	1,560,839.45	38° 42' 57.424 N	81° 16' 44.390 W
2,151.0	47.20	148.60	1,963.7	-472.8	407.0	14,059,313.39	1,560,850.88	38° 42' 57.237 N	81° 16' 44.245 W
2,181.0	46.30	148.20	1,984.3	-491.5	418.4	14,059,294.78	1,560,862.33	38° 42' 57.053 N	81° 16' 44.100 W
2,211.0	46.30	148.50	2,005.0	-509.9	429.8	14,059,276.32	1,560,873.71	38° 42' 56.871 N	81° 16' 43.956 W
2,241.0	46.40	147.70	2,025.7	-528.3	441.3	14,059,257.89	1,560,885.18	38° 42' 56.689 N	81° 16' 43.810 W
2,271.0	46.70	147.70	2,046.3	-546.8	452.9	14,059,239.48	1,560,896.82	38° 42' 56.507 N	81° 16' 43.663 W
2,301.0	46.70	147.80	2,066.9	-565.2	464.5	14,059,221.02	1,560,908.47	38° 42' 56.325 N	81° 16' 43.515 W
2,331.0	46.70	147.70	2,087.5	-583.7	476.2	14,059,202.55	1,560,920.12	38° 42' 56.143 N	81° 16' 43.367 W
2,361.0	46.60	147.70	2,108.1	-602.1	487.9	14,059,184.11	1,560,931.78	38° 42' 55.961 N	81° 16' 43.219 W
2,391.0	46.70	147.40	2,128.7	-620.5	499.6	14,059,165.70	1,560,943.48	38° 42' 55.779 N	81° 16' 43.071 W
2,421.0	46.20	147.30	2,149.3	-638.8	511.3	14,059,147.39	1,560,955.21	38° 42' 55.598 N	81° 16' 42.922 W
2,451.0	44.20	147.00	2,170.5	-656.7	522.8	14,059,129.51	1,560,966.76	38° 42' 55.422 N	81° 16' 42.776 W

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Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #110
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker #9)
Site:	CB Ferrell #110	**MD Reference:**	well @ 1118.0usft (Decker #9)
Well:	CB Ferrell #110	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
2,481.0	42.70	146.70	2,192.3	-674.0	534.1	14,059,112.24	1,560,978.04	38° 42' 55.251 N	81° 16' 42.633 W
2,511.0	41.10	146.00	2,214.6	-690.7	545.2	14,059,095.56	1,560,989.14	38° 42' 55.087 N	81° 16' 42.492 W
2,541.0	39.30	145.60	2,237.5	-706.7	556.1	14,059,079.54	1,561,000.02	38° 42' 54.929 N	81° 16' 42.354 W
2,571.0	37.40	145.10	2,261.0	-722.0	566.7	14,059,064.23	1,561,010.60	38° 42' 54.778 N	81° 16' 42.220 W
2,601.0	35.40	145.10	2,285.2	-736.6	576.9	14,059,049.63	1,561,020.79	38° 42' 54.634 N	81° 16' 42.091 W
2,660.0	35.40	145.10	2,333.3	-764.6	596.4	14,059,021.60	1,561,040.34	38° 42' 54.357 N	81° 16' 41.843 W
TD @ 2660' MD / 2333' TVD									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.0	500.0	0.0	0.0	First Survey @ 500' MD / 500' TVD
2,660.0	2,333.3	-764.6	596.4	TD @ 2660' MD / 2333' TVD

Checked By: _____ Approved By: _____ Date: _____

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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 - 087 - 04755 County ROANE District SMITHFIELD
Quad LOONEYVILLE 7.5' Pad Name FERRELL, C.B. Field/Pool Name CLOVER
Farm name ~~MAY, TIMOTHY D.~~ CB Ferrell Well Number 105
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,285,444 M Easting 475,643 M
Landing Point of Curve Northing Easting
Bottom Hole Northing 4,285,522 M Easting 475,789 M

Elevation (ft) 1,110' 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)
N/A

Date permit issued 1/8/15 Date drilling commenced 2/10/13 Date drilling ceased 2/12/13
Date completion activities began 3/23/15 Date completion activities ceased 3/26/15
Verbal plugging (Y/N) N Date permission granted Granted by

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

Freshwater depth(s) ft None Open mine(s) (Y/N) depths None
Salt water depth(s) ft 1700' Void(s) encountered (Y/N) depths None
Coal depth(s) ft None Cavern(s) encountered (Y/N) depths None
Is coal being mined in area (Y/N) N

Reviewed by:
A.L. 5/26/15
W.S. 06/01/15

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API 47- 087 - 04755 Farm name MAY, TIMOTHY D. Well number 105

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	12 1/4"	11 5/8"	30'	Used	LS		Sand In
Surface	8 3/4"	7"	507'	New	LS	64'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2453.15'	New	J-55		Y
Tubing							
Packer type and depth set							

Comment Details Circulated Est. 25 sks to surface on 7" surface cement job. Circulated Est. 25 sks to surface on 4 1/2" cement job.

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							
Surface	Reg Neat	130	15.6	1.18	153	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	100/125	13.2/14.2	1.64/1.27	164/186	66'	8
Tubing							

Drillers TD (ft) 2510' Loggers TD (ft) 2511'
Deepest formation penetrated Big Injun Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 600'

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
20 Centralizers every 88 from bottom on 4 1/2", Centralizer placed mid string on 7"

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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- 087 - 04755 Farm name MAY, TIMOTHY D. Well number 105

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	3/23/15	2288'	2296'	32	Big Injun

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	3/26/15	5	551	1751	606	2,500	149	

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Please insert additional pages as applicable.

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API 47- 087 - 04755 Farm name MAY, TIMOTHY D. Well number 105

PRODUCING FORMATION(S)	DEPTHS			
Big Injun	2133'- 2166'	TVD	2270'- 2308'	MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface _____ psi Bottom Hole _____ psi DURATION OF TEST _____ hrs

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ 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)
Sand/Shale	0	1294	0	1314	
Sand	1294	1494	1314	1533	
Shale	1494	1538	1533	1568	
Sand	1538	1566	1568	1612	
Shale	1566	1682	1612	1744	
Sand	1682	1992	1744	2104	
Little Lime	1992	2032	2104	2150	
Pencil Cave	2032	2034	2150	2154	
Big Lime	2034	2118	2154	2250	
Keener	2118	2133	2250	2270	
Big Injun	2133	2166	2270	2308	Drilled directional N 59° E a distance of 615'
Shale	2166	2348	2308	2510	
TD	2348		2510		

Please insert additional pages as applicable.

Drilling Contractor Decker Drilling
Address 11565 State Route 676 City Vincent State OH Zip 45784

Logging Company Weatherford International
Address 777 North River Avenue City Weston State WV Zip 26452

Cementing Company Universal Services
Address Hall Rd City Buckhannon State WV Zip 26201

Stimulating Company Producers Service Corp.
Address 109 South Graham Street City Zanesville State OH Zip 43701

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations Manager Date 4/2/15

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

Received
Office of Oil & Gas
APR 09 2015

Prepared for:

H G Energy

Dustin Hendershot

304-481-7342

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Daniel L Graham

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #: 17986

WELL NAME: C B Ferrell #105

COUNTY/STATE: Roane/WV

TOWNSHIP/FIELD: Clover Field/Roane Co Wv

DATE of SERVICE: 3/26/2015

CUSTOMER PO#:

Description	Notes	Amount	Units	Unit Cost	Total Cost
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE 4 HRS		1	EA		
BLENDER CHARGE 0-10 BPM		1	EA		
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @40Miles	40	MI		
IC ACID 15%		250	GAL		
PRO HIB II		0.5	GAL		
ACID DELIVERY		2	HR		
PRO CLA LOK (KCL SUBSTITUTE)		15	GAL		
PRO NE-21		5	GAL		
PRO GEL 4		150	LB		
BUFFER I		50	LB		
BUFFER II		50	LB		
BIO CLEAR 750		1	LB		
AP BREAKER		15	LB		
BXL-A		10	GAL		
BXL-10C		10	GAL		
SAND 20/40 OTTAWA		25	CWT		
SAND DELIVERY / TON MILES		100	TMILE		
DATA VAN		1	STAGE		
2 INCH FLOW METER		1	EA		

Customer Approval: _____

Received
Office of Oil & Gas
APR 09 2015

HG Energy, LLC

Roane County, West Virginia
CB Ferrell #105
CB Ferrell #105

Wellbore #1

Design: Wellbore #1

Survey Report - Geographic

26 February, 2015

Received
Office of Oil & Gas
APR 09 2015

ADC
The APPALACHIAN DIRECTIONAL COMPANY

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #105
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker 9)
Site:	CB Ferrell #105	**MD Reference:**	well @ 1118.0usft (Decker 9)
Well:	CB Ferrell #105	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Project Roane County, West Virginia

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site CB Ferrell #105

Site Position:		**Northing:**	14,059,796.30 usft	**Latitude:**	38° 43' 2.000 N
From:	Lat/Long	**Easting:**	1,560,459.80 usft	**Longitude:**	81° 16' 49.200 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.18 °

Well CB Ferrell #105

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,059,796.30 usft	**Latitude:**	38° 43' 2.000 N
	+E/-W	0.0 usft	**Easting:**	1,560,459.80 usft	**Longitude:**	81° 16' 49.200 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,110.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/23/2015	-8.03	66.36	51,980

Design Wellbore #1

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	59.83

Survey Program **Date** 2/26/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
500.0	2,509.0	MWD SURVEY (Wellbore #1)	MWD default	MWD - Standard

Received
Office of Oil & Gas
APR 09 2015

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	14,059,796.30	1,560,459.80	38° 43' 2.000 N	81° 16' 49.200 W
500.0	0.00	0.00	500.0	0.0	0.0	14,059,796.30	1,560,459.80	38° 43' 2.000 N	81° 16' 49.200 W
FIRST SURVEY @ 500' MD / 500' TVD									
591.0	1.60	136.60	591.0	-0.9	0.9	14,059,795.38	1,560,460.68	38° 43' 1.991 N	81° 16' 49.189 W
621.0	1.50	139.20	621.0	-1.5	1.4	14,059,794.78	1,560,461.22	38° 43' 1.985 N	81° 16' 49.182 W
651.0	2.10	113.30	651.0	-2.0	2.2	14,059,794.26	1,560,461.98	38° 43' 1.980 N	81° 16' 49.172 W
681.0	3.60	96.50	680.9	-2.4	3.6	14,059,793.94	1,560,463.42	38° 43' 1.977 N	81° 16' 49.154 W
711.0	5.90	88.30	710.8	-2.4	6.1	14,059,793.88	1,560,465.90	38° 43' 1.976 N	81° 16' 49.123 W
741.0	7.70	85.00	740.6	-2.2	9.6	14,059,794.10	1,560,469.45	38° 43' 1.979 N	81° 16' 49.078 W
771.0	9.00	82.80	770.3	-1.7	14.0	14,059,794.57	1,560,473.78	38° 43' 1.983 N	81° 16' 49.024 W
801.0	10.40	79.00	799.9	-0.9	19.0	14,059,795.38	1,560,478.76	38° 43' 1.991 N	81° 16' 48.961 W
831.0	10.80	77.60	829.3	0.2	24.4	14,059,796.50	1,560,484.17	38° 43' 2.003 N	81° 16' 48.893 W

Survey Report - Geographic

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #105
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker 9)
Site:	CB Ferrell #105	**MD Reference:**	well @ 1118.0usft (Decker 9)
Well:	CB Ferrell #105	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
861.0	12.10	74.10	858.8	1.7	30.1	14,059,797.96	1,560,489.93	38° 43' 2.017 N	81° 16' 48.820 W
891.0	12.50	72.40	888.1	3.5	36.2	14,059,799.81	1,560,496.05	38° 43' 2.036 N	81° 16' 48.743 W
921.0	12.30	71.20	917.4	5.5	42.4	14,059,801.82	1,560,502.17	38° 43' 2.056 N	81° 16' 48.665 W
951.0	12.10	72.00	946.7	7.5	48.4	14,059,803.82	1,560,508.19	38° 43' 2.076 N	81° 16' 48.590 W
981.0	12.00	71.60	976.0	9.5	54.3	14,059,805.78	1,560,514.14	38° 43' 2.095 N	81° 16' 48.515 W
1,011.0	12.60	69.30	1,005.3	11.6	60.4	14,059,807.92	1,560,520.16	38° 43' 2.117 N	81° 16' 48.439 W
1,041.0	13.80	64.70	1,034.5	14.3	66.6	14,059,810.60	1,560,526.45	38° 43' 2.143 N	81° 16' 48.359 W
1,071.0	14.60	61.10	1,063.6	17.7	73.2	14,059,813.96	1,560,533.00	38° 43' 2.177 N	81° 16' 48.277 W
1,101.0	15.60	57.90	1,092.6	21.6	79.9	14,059,817.93	1,560,539.73	38° 43' 2.216 N	81° 16' 48.192 W
1,131.0	16.20	55.20	1,121.4	26.2	86.8	14,059,822.46	1,560,546.58	38° 43' 2.261 N	81° 16' 48.106 W
1,161.0	16.80	54.50	1,150.2	31.1	93.7	14,059,827.37	1,560,553.55	38° 43' 2.310 N	81° 16' 48.018 W
1,191.0	16.90	54.20	1,178.9	36.1	100.8	14,059,832.44	1,560,560.61	38° 43' 2.360 N	81° 16' 47.929 W
1,221.0	17.30	55.60	1,207.6	41.2	108.0	14,059,837.51	1,560,567.83	38° 43' 2.411 N	81° 16' 47.838 W
1,251.0	18.30	56.80	1,236.2	46.3	115.6	14,059,842.61	1,560,575.45	38° 43' 2.461 N	81° 16' 47.742 W
1,281.0	19.90	59.70	1,264.5	51.5	124.0	14,059,847.76	1,560,583.80	38° 43' 2.513 N	81° 16' 47.637 W
1,311.0	21.70	60.90	1,292.5	56.7	133.3	14,059,853.04	1,560,593.06	38° 43' 2.565 N	81° 16' 47.520 W
1,341.0	21.90	62.10	1,320.4	62.0	143.0	14,059,858.35	1,560,602.85	38° 43' 2.618 N	81° 16' 47.397 W
1,371.0	21.50	61.20	1,348.3	67.3	152.8	14,059,863.62	1,560,612.61	38° 43' 2.670 N	81° 16' 47.274 W
1,401.0	21.20	60.50	1,376.2	72.6	162.3	14,059,868.94	1,560,622.15	38° 43' 2.723 N	81° 16' 47.154 W
1,431.0	22.30	60.10	1,404.1	78.1	172.0	14,059,874.45	1,560,631.80	38° 43' 2.778 N	81° 16' 47.032 W
1,461.0	23.70	60.40	1,431.7	84.0	182.2	14,059,880.26	1,560,641.98	38° 43' 2.836 N	81° 16' 46.904 W
1,491.0	25.10	61.10	1,459.0	90.0	193.0	14,059,886.32	1,560,652.80	38° 43' 2.896 N	81° 16' 46.768 W
1,521.0	26.60	61.60	1,486.0	96.3	204.5	14,059,892.59	1,560,664.27	38° 43' 2.958 N	81° 16' 46.623 W
1,551.0	28.40	60.90	1,512.6	102.9	216.6	14,059,899.25	1,560,676.42	38° 43' 3.025 N	81° 16' 46.470 W
1,581.0	28.60	60.10	1,539.0	110.0	229.1	14,059,906.30	1,560,688.88	38° 43' 3.095 N	81° 16' 46.313 W
1,611.0	28.30	59.00	1,565.4	117.2	241.4	14,059,913.54	1,560,701.20	38° 43' 3.167 N	81° 16' 46.158 W
1,641.0	27.40	58.50	1,591.9	124.5	253.4	14,059,920.81	1,560,713.18	38° 43' 3.239 N	81° 16' 46.007 W
1,671.0	27.20	56.30	1,618.6	131.9	265.0	14,059,928.22	1,560,724.77	38° 43' 3.312 N	81° 16' 45.861 W
1,701.0	27.80	55.20	1,645.2	139.7	276.4	14,059,936.02	1,560,736.22	38° 43' 3.390 N	81° 16' 45.717 W
1,731.0	29.00	55.60	1,671.5	147.8	288.2	14,059,944.12	1,560,747.96	38° 43' 3.470 N	81° 16' 45.569 W
1,761.0	30.70	57.50	1,697.6	156.0	300.6	14,059,952.34	1,560,760.42	38° 43' 3.552 N	81° 16' 45.412 W
1,791.0	31.70	58.20	1,723.2	164.3	313.8	14,059,960.61	1,560,773.58	38° 43' 3.634 N	81° 16' 45.246 W
1,821.0	31.80	56.40	1,748.7	172.8	327.1	14,059,969.14	1,560,786.86	38° 43' 3.719 N	81° 16' 45.079 W
1,851.0	32.30	55.20	1,774.2	181.8	340.2	14,059,978.09	1,560,800.03	38° 43' 3.808 N	81° 16' 44.913 W
1,881.0	33.00	54.90	1,799.4	191.1	353.5	14,059,987.36	1,560,813.30	38° 43' 3.900 N	81° 16' 44.746 W
1,911.0	32.20	53.80	1,824.7	200.5	366.6	14,059,996.78	1,560,826.43	38° 43' 3.993 N	81° 16' 44.580 W
1,941.0	30.50	52.70	1,850.3	209.8	379.1	14,060,006.12	1,560,838.94	38° 43' 4.086 N	81° 16' 44.423 W
1,971.0	30.30	51.90	1,876.2	219.1	391.1	14,060,015.40	1,560,850.95	38° 43' 4.178 N	81° 16' 44.272 W
2,001.0	29.90	52.60	1,902.2	228.3	403.0	14,060,024.61	1,560,862.84	38° 43' 4.270 N	81° 16' 44.122 W
2,031.0	29.70	55.00	1,928.2	237.1	415.1	14,060,033.41	1,560,874.87	38° 43' 4.357 N	81° 16' 43.970 W
2,061.0	29.60	55.70	1,954.3	245.6	427.3	14,060,041.85	1,560,887.08	38° 43' 4.441 N	81° 16' 43.816 W
2,091.0	30.00	55.90	1,980.3	253.9	439.6	14,060,050.23	1,560,899.41	38° 43' 4.524 N	81° 16' 43.661 W
2,121.0	30.30	56.10	2,006.2	262.4	452.1	14,060,058.66	1,560,911.90	38° 43' 4.608 N	81° 16' 43.504 W
2,151.0	30.50	55.90	2,032.1	270.8	464.7	14,060,067.15	1,560,924.49	38° 43' 4.692 N	81° 16' 43.345 W
2,181.0	30.70	55.60	2,057.9	279.4	477.3	14,060,075.74	1,560,937.11	38° 43' 4.778 N	81° 16' 43.186 W
2,211.0	30.90	55.40	2,083.7	288.1	490.0	14,060,084.44	1,560,949.77	38° 43' 4.864 N	81° 16' 43.027 W
2,241.0	31.20	54.90	2,109.4	297.0	502.7	14,060,093.29	1,560,962.47	38° 43' 4.952 N	81° 16' 42.867 W
2,301.0	31.40	54.50	2,160.7	315.0	528.1	14,060,111.30	1,560,987.91	38° 43' 5.131 N	81° 16' 42.547 W
2,331.0	29.60	53.70	2,186.5	323.9	540.4	14,060,120.22	1,561,000.24	38° 43' 5.219 N	81° 16' 42.391 W
2,361.0	28.30	52.30	2,212.8	332.7	552.0	14,060,128.96	1,561,011.84	38° 43' 5.306 N	81° 16' 42.245 W
2,421.0	26.70	51.20	2,266.0	349.8	573.8	14,060,146.10	1,561,033.60	38° 43' 5.476 N	81° 16' 41.971 W
2,451.0	22.80	48.60	2,293.2	357.9	583.4	14,060,154.17	1,561,043.22	38° 43' 5.556 N	81° 16' 41.850 W
2,509.0	22.80	48.60	2,346.7	372.7	600.3	14,060,169.04	1,561,060.08	38° 43' 5.704 N	81° 16' 41.638 W

TD @ 2509' MD / 2347' TVD

Received
Office of Oil & Gas
APR 09 2015

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #105
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker 9)
Site:	CB Ferrell #105	**MD Reference:**	well @ 1118.0usft (Decker 9)
Well:	CB Ferrell #105	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.0	500.0	0.0	0.0	FIRST SURVEY @ 500' MD / 500' TVD
2,509.0	2,346.7	372.7	600.3	TD @ 2509' MD / 2347' TVD

Checked By: _____ Approved By: _____ Date: _____

HG Energy, LLC

Roane County, West Virginia
CB Ferrell #105
CB Ferrell #105
Wellbore #1

Design: Wellbore #1

HG Energy EOW Report

26 February, 2015

The APPALACHIAN DIRECTIONAL COMPANY

HG Energy EOW Report

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #105
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker 9)
Site:	CB Ferrell #105	**MD Reference:**	well @ 1118.0usft (Decker 9)
Well:	CB Ferrell #105	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Project — Roane County, West Virginia

Map System:	Universal Transverse Mercator	**System Datum:**	Mean Sea Level
Geo Datum:	NAD83 West Virginia - HARN		
Map Zone:	Zone 17N (84 W to 78 W)		

Site — CB Ferrell #105

Site Position:		**Northing:**	14,059,796.30 usft	**Latitude:**	38° 43' 2.000 N
From:	Lat/Long	**Easting:**	1,560,459.80 usft	**Longitude:**	81° 16' 49.200 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.18 °

Well — CB Ferrell #105

Well Position	**+N/-S**	0.0 usft	**Northing:**	14,059,796.30 usft	**Latitude:**	38° 43' 2.000 N
	+E/-W	0.0 usft	**Easting:**	1,560,459.80 usft	**Longitude:**	81° 16' 49.200 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	1,110.0 usft

Wellbore — Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/23/2015	-8.03	66.36	51,980

Design — Wellbore #1

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	59.83

Survey Program — Date 2/26/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
500.0	2,509.0	MWD SURVEY (Wellbore #1)	MWD default	MWD - Standard

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #105
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker 9)
Site:	CB Ferrell #105	**MD Reference:**	well @ 1118.0usft (Decker 9)
Well:	CB Ferrell #105	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.0	0.00
FIRST SURVEY @ 500' MD / 500' TVD									
591.0	1.60	136.60	591.0	-0.9	0.9	0.3	1.76	1.3	136.60
621.0	1.50	139.20	621.0	-1.5	1.4	0.5	0.41	2.1	137.09
651.0	2.10	113.30	651.0	-2.0	2.2	0.9	3.32	3.0	133.11
681.0	3.60	96.50	680.9	-2.4	3.6	1.9	5.67	4.3	123.14
711.0	5.90	88.30	710.8	-2.4	6.1	4.1	7.97	6.6	111.68
741.0	7.70	85.00	740.6	-2.2	9.6	7.2	6.14	9.9	102.87
771.0	9.00	82.80	770.3	-1.7	14.0	11.2	4.46	14.1	97.08
801.0	10.40	79.00	799.9	-0.9	19.0	15.9	5.13	19.0	92.79
831.0	10.80	77.60	829.3	0.2	24.4	21.2	1.59	24.4	89.54
861.0	12.10	74.10	858.8	1.7	30.1	26.9	4.91	30.2	86.84
891.0	12.50	72.40	888.1	3.5	36.2	33.1	1.80	36.4	84.48
921.0	12.30	71.20	917.4	5.5	42.4	39.4	1.09	42.7	82.58
951.0	12.10	72.00	946.7	7.5	48.4	45.6	0.87	49.0	81.17
981.0	12.00	71.60	976.0	9.5	54.3	51.7	0.43	55.2	80.11
1,011.0	12.60	69.30	1,005.3	11.6	60.4	58.0	2.58	61.5	79.11
1,041.0	13.80	64.70	1,034.5	14.3	66.6	64.8	5.31	68.2	77.89
1,071.0	14.60	61.10	1,063.6	17.7	73.2	72.2	3.97	75.3	76.44
1,101.0	15.60	57.90	1,092.6	21.6	79.9	80.0	4.34	82.8	74.86
1,131.0	16.20	55.20	1,121.4	26.2	86.8	88.2	3.17	90.6	73.22
1,161.0	16.80	54.50	1,150.2	31.1	93.7	96.7	2.11	98.8	71.66
1,191.0	16.90	54.20	1,178.9	36.1	100.8	105.3	0.44	107.1	70.28
1,221.0	17.30	55.60	1,207.6	41.2	108.0	114.1	1.91	115.6	69.12
1,251.0	18.30	56.80	1,236.2	46.3	115.6	123.3	3.55	124.6	68.18
1,281.0	19.90	59.70	1,264.5	51.5	124.0	133.1	6.20	134.3	67.46

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #105
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker 9)
Site:	CB Ferrell #105	**MD Reference:**	well @ 1118.0usft (Decker 9)
Well:	CB Ferrell #105	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
1,311.0	21.70	60.90	1,292.5	56.7	133.3	143.7	6.17	144.8	66.94
1,341.0	21.90	62.10	1,320.4	62.0	143.0	154.9	1.63	155.9	66.55
1,371.0	21.50	61.20	1,348.3	67.3	152.8	165.9	1.73	167.0	66.22
1,401.0	21.20	60.50	1,376.2	72.6	162.3	176.9	1.31	177.9	65.90
1,431.0	22.30	60.10	1,404.1	78.1	172.0	188.0	3.70	188.9	65.57
1,461.0	23.70	60.40	1,431.7	84.0	182.2	199.7	4.68	200.6	65.26
1,491.0	25.10	61.10	1,459.0	90.0	193.0	212.1	4.77	212.9	65.00
1,521.0	26.60	61.60	1,486.0	96.3	204.5	225.2	5.05	226.0	64.78
1,551.0	28.40	60.90	1,512.6	102.9	216.6	239.0	6.10	239.8	64.58
1,581.0	28.60	60.10	1,539.0	110.0	229.1	253.3	1.44	254.1	64.35
1,611.0	28.30	59.00	1,565.4	117.2	241.4	267.6	2.01	268.4	64.10
1,641.0	27.40	58.50	1,591.9	124.5	253.4	281.6	3.10	282.3	63.83
1,671.0	27.20	56.30	1,618.6	131.9	265.0	295.4	3.43	296.0	63.53
1,701.0	27.80	55.20	1,645.2	139.7	276.4	309.2	2.62	309.7	63.18
1,731.0	29.00	55.60	1,671.5	147.8	288.2	323.4	4.05	323.9	62.84
1,761.0	30.70	57.50	1,697.6	156.0	300.6	338.3	6.48	338.7	62.57
1,791.0	31.70	58.20	1,723.2	164.3	313.8	353.8	3.55	354.2	62.36
1,821.0	31.80	56.40	1,748.7	172.8	327.1	369.6	3.17	369.9	62.15
1,851.0	32.30	55.20	1,774.2	181.8	340.2	385.5	2.70	385.7	61.88
1,881.0	33.00	54.90	1,799.4	191.1	353.5	401.6	2.39	401.8	61.61
1,911.0	32.20	53.80	1,824.7	200.5	366.6	417.7	3.32	417.9	61.33
1,941.0	30.50	52.70	1,850.3	209.8	379.1	433.2	5.98	433.3	61.04
1,971.0	30.30	51.90	1,876.2	219.1	391.1	448.3	1.51	448.3	60.74
2,001.0	29.90	52.60	1,902.2	228.3	403.0	463.2	1.77	463.2	60.47
2,031.0	29.70	55.00	1,928.2	237.1	415.1	478.0	4.03	478.0	60.26
2,061.0	29.60	55.70	1,954.3	245.6	427.3	492.8	1.20	492.8	60.11
2,091.0	30.00	55.90	1,980.3	253.9	439.6	507.7	1.37	507.7	59.99

HG Energy EOW Report

Company:	HG Energy, LLC	**Local Co-ordinate Reference:**	Well CB Ferrell #105
Project:	Roane County, West Virginia	**TVD Reference:**	well @ 1118.0usft (Decker 9)
Site:	CB Ferrell #105	**MD Reference:**	well @ 1118.0usft (Decker 9)
Well:	CB Ferrell #105	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	EDM Compass

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Closure Distance (usft)	Closure Azimuth (°)
2,121.0	30.30	56.10	2,006.2	262.4	452.1	522.7	1.05	522.7	59.87
2,151.0	30.50	55.90	2,032.1	270.8	464.7	537.9	0.75	537.9	59.76
2,181.0	30.70	55.60	2,057.9	279.4	477.3	553.1	0.84	553.1	59.65
2,211.0	30.90	55.40	2,083.7	288.1	490.0	568.4	0.75	568.4	59.54
2,241.0	31.20	54.90	2,109.4	297.0	502.7	583.8	1.32	583.8	59.42
2,301.0	31.40	54.50	2,160.7	315.0	528.1	614.9	0.48	614.9	59.19
2,331.0	29.60	53.70	2,186.5	323.9	540.4	630.0	6.15	630.1	59.06
2,361.0	28.30	52.30	2,212.8	332.7	552.0	644.4	4.89	644.5	58.93
2,421.0	26.70	51.20	2,266.0	349.8	573.8	671.9	2.80	672.0	58.63
2,451.0	22.80	48.60	2,293.2	357.9	583.4	684.2	13.49	684.4	58.47
2,509.0	22.80	48.60	2,346.7	372.7	600.3	706.3	0.00	706.6	58.16

TD @ 2509' MD / 2347' TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
500.0	500.0	0.0	0.0	FIRST SURVEY @ 500' MD / 500' TVD
2,509.0	2,346.7	372.7	600.3	TD @ 2509' MD / 2347' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: HG Energy, LLC
CB Ferrell #105
Roane County, West Virginia
Rig:Decker 9
Created By: Jerry Arsenault
Date: 2/26/2015

CB Ferrell #105
Roane County, West Virginia
Q150161 & AM-150144
Design #1

The APPALACHIAN DIRECTIONAL COMPANY

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL: CB Ferrell #105: - plan hits target center	2161.0	301.5	518.7	14060097.84	1560978.52	38° 43' 4.997 N	81° 16' 42.664 W

PROJECT DETAILS:	Roane County, West Virginia
Geodetic System:	Universal Transverse Mercator
Datum:	NAD83 West Virginia - HARN
Ellipsoid:	GRS 1980
Zone:	Zone 17N (84 W to 78 W)
System Datum:	Mean Sea Level

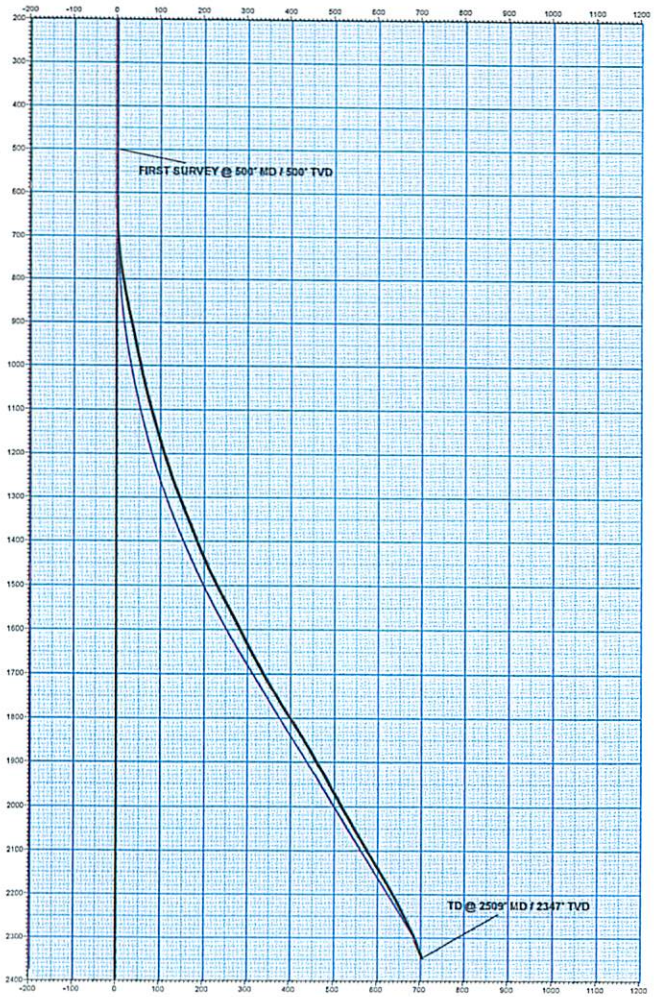
WELL DETAILS: CB Ferrell #105

Ground Level: 1110.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.0	0.0	14059796.30	1560459.80	38° 43' 2.000 N	81° 16' 49.200 W

ANNOTATIONS

MD	Inc	Azi	TVD	+N/-S	+E/-W	VSect	Departure	Annotation
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.0	FIRST SURVEY @ 500' MD / 500' TVD
2509.0	22.80	48.60	2346.7	372.7	600.3	706.3	714.0	TD @ 2509' MD / 2347' TVD

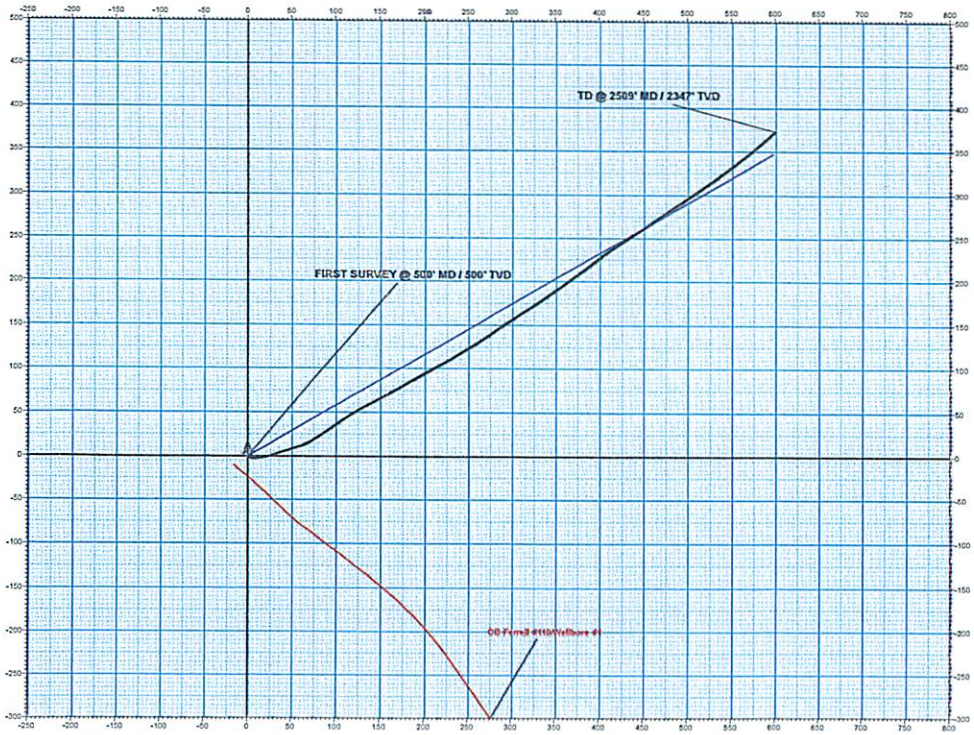


Vertical Section at 59.83° (100 usft/in)

HG Energy

Azimuths to Grid North
True North: 0.17°
Magnetic North: -7.86°

Magnetic Field
Strength: 51980.4snT
Dip Angle: 66.36°
Date: 1/23/2015
Model: IGRF2010



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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 - 095 - 02083 County Tyler District McElroy
Quad Shirley 7.5' Pad Name RPT8 Field/Pool Name
Farm name Jack Hair et al Well Number RPT8-3
Operator (as registered with the OOG) Jay-Bee Oil & Gas, Inc.
Address 3570 Shields Hill Rd. City Cairo State WV Zip 26337

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,370,421.7 Easting 518,383.5
Landing Point of Curve Northing 4,370,254.5 Easting 518,312.9
Bottom Hole Northing 4,368,168.7 Easting 518,893.5

Elevation (ft) 1244' 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)
EZ-MUD® (hydrotreated light petroleum distillate)

Date permit issued 2/5/2013 Date drilling commenced 4/19/2013 Date drilling ceased 6/22/2013
Date completion activities began 1/12/2014 Date completion activities ceased 2/20/2014
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 420' - 480' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2120' - 2310' Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
AL. 5/26/15

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API 47- 095 - 02083 Farm name Jack Hair et al Well number RPT8-3

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	17"	16"	40'	New	20/32/24		Yes
Surface	15"	11 3/4"	527'	New	20/23/24	50'	Yes
Coal							
Intermediate 1	11"	8 5/8"	2,301'	New	20/17/24	1500'	Yes
Intermediate 2							
Intermediate 3							
Production	7 7/8"	5 1/2"	14,168'	New	20/24/24		Yes
Tubing							
Packer type and depth set							

Comment Details

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							
Surface	Class A	330	15.6	1.26	416	CTS	0
Coal							
Intermediate 1	Class A	860	14.3	1.45	1,247	CTS	0
Intermediate 2							
Intermediate 3							
Production	Class A	1,730	14.3	1.35	2,336	1000' from surface	0
Tubing							

Drillers TD (ft) 14,200' Loggers TD (ft) 14,200'
Deepest formation penetrated Marcellus Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 5,800'

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 Spiral centralizer every joint from TD back to start of 90 degree.
90 - 70 degree every second joint.
70 degree - KOP every third joint.
KOP - Surface bow centralizer placed every 500'.

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- 095 - 02083 Farm name Jack Hair et al Well number RPT8-3

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	10-18-2014	13982	14162	72	Marcellus
2	1/13/2014	13754	13938	72	Marcellus
3	1/14/2014	13500	13694	72	Marcellus
4	1/15/2014	13242	13458	48	Marcellus
5	1/16/2014	12866	13102	48	Marcellus
6	1/17/2014	12636	12838	48	Marcellus
7	1/18/2014	12307	12522	48	Marcellus
8	1/19/2014	12046	12262	48	Marcellus
9	2/2/2014	11816	11998	48	Marcellus
10	2/2/2014	11604	11772	48	Marcellus
11	2/4/2014	11369	11560	48	Marcellus
12	2/4/2014	11066	11320	48	Marcellus
13	2/5/2014	10728	10962	48	Marcellus
14	2/5/2014	10440	10682	48	Marcellus
15	2/6/2014	10149	10391	48	Marcellus
16	2/7/2014	9881	10076	48	Marcellus

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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	1/13/14	71.8	7143	6952	4056	1474	10217	N/A
2	1/14/14	72.9	7618	6255	4799	1648	8553	N/A
3	1/15/14	72.3	7202	7122	5158	1846	7703	N/A
4	1/16/14	71.8	6867	5474	5018	1790	7787	N/A
5	1/17/14	70.2	7029	5127	5711	1803	7470	N/A
6	1/18/14	69.7	6997	5088	4349	1622	7680	N/A
7	2/2/14	69.5	6609	5944	4913	1659	6117	N/A
8	2/2/14	69.6	6404	4998	4971	1760	8321	N/A
9	2/4/14	71.0	6801	5544	5151	1490	6269	N/A
10	2/5/14	71.7	6600	6067	5976	1790	9529	N/A
11	2/5/14	70.2	6546	5339	5677	1700	7002	N/A
12	2/6/14	70.1	6709	5171	5736	1850	7024	N/A
13	2/6/14	69.6	6591	5310	4902	1600	7347	N/A
14	2/6/14	69.8	6431	5842	5053	1788	7136	N/A
15	2/7/14	70.0	6534	5420	5047	1786	6737	N/A
16	2/7/14	69.5	6312	5017	4497	1820	6709	N/A

Please insert additional pages as applicable.

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API 47- 095 - 02083 Farm name Jack Hair et al Well number RPT8-3

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	2/7/2014	9596	9816	48	Marcellus
18	2/7/2014	9345	9548	48	Marcellus
19	2/8/2014	9086	9292	48	Marcellus
20	2/8/2014	8838	9038	48	Marcellus
21	2/9/2014	8534	8780	48	Marcellus
22	2/12/2014	8250	8478	48	Marcellus
23	2/15/2014	7969	8204	48	Marcellus
24	2/16/2014	7740	7916	48	Marcellus
25	2/18/2014	7560	7704	72	Marcellus

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	2/8/14	70.5	6339	5136	5322	1660	7254	N/A
18	2/8/14	69.8	6174	4921	5149	1812	6816	N/A
19	2/8/14	70.4	6401	5203	4722	1722	6953	N/A
20	2/9/14	70.6	6375	5544	4685	1825	6647	N/A
21	2/9/14	69.6	6214	5084	5048	1818	6933	N/A
22	2/17/14	69.8	6288	5303	4968	1716	6157	N/A
23	2/17/14	70.2	6218	5880	5269	1771	6071	N/A
24	2/17/14	70.1	6237	4900	5171	1793	6816	N/A
25	2/18/14	69.5	6014	6161	5147	1878	5869	N/A

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API 47- 095 - 02083 Farm name Jack Hair et al Well number RPT8-3

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6,922' TVD	14,200' MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 3,200 psi Bottom Hole n/a psi DURATION OF TEST 18 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	5,000 mcfpd	150 bpd	- 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)
See Attached.	0		0		

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Please insert additional pages as applicable.

Drilling Contractor HWD
Address 7350 Coal Hill Rd. City Luthersburg State PA Zip 15848

Logging Company Precise Well Analysis
Address 1426 Barth Rd. City Belpre State OH Zip 45714

Cementing Company Nabors Completion & Production
Address PO Box 975682 City Dallas State TX Zip 75397

Stimulating Company Nabors Completion & Production
Address PO Box 975682 City Dallas State TX Zip 75397

Please insert additional pages as applicable.

Completed by Shane Dowell Telephone 304-628-3111
Signature Title Office Manager Date 4-24-2015

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

	rpt 8 pad	
	rpt 8-1	47-095-02085
	rpt 8-2	47-095-02084
	rpt 8-3	47-095-02083
	ELEVATION	1244
FORMATION	TOP	BOTTOM
MISC. RED ROCK & SHALES	0	2137
LIME	2137	2237
INJUN	2137	2254
SHALE	2254	2601
GORDON STRAY	2601	2621
SHALE	2621	2817
GORDON	2817	2847
SHALE	2847	3126
BAYARD	3126	3135
SHALE	3135	3464
WARREN	3464	3562
SHALE	3562	3798
BALLTOWN	3798	3961
SHALE	3961	4399
2ND RILEY	4399	4507
SHALE	4507	4658
3RD RILEY	4658	4699
SHALE	4699	4756
BENSON	4756	4759
SHALE	4759	5001
ALEXANDER	5001	5172
SHALE	5172	5417
ELK	5417	5465
SHALE	5465	6161
HAMILTON	6161	6335
SHALE	6155	6811
UPPER Marcellus	6811	6840
PARCELL LIME	6840	6875
SHALE	6875	6922
LOWER MARCELLUS	6922	

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Jay Bee Production Co. DRILLING into the future

Weatherford

JAY BEE OIL AND GAS INC.
RPT 8-3 STO-1
TYLER COUNTY, WV

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	5852.00	1.07	130.84	5847.34	-31.31	-155.28	0.00	0.00	-8.12	
2	5924.00	8.00	130.84	5919.07	-35.03	-150.97	9.62	0.00	-3.45	
3	6214.01	23.32	210.63	6199.66	-98.49	-165.15	8.00	98.51	54.52	
4	6542.78	23.32	210.63	6501.58	-210.49	-231.46	0.00	0.00	146.60	
5	7362.06	90.00	165.66	6940.00	-835.67	-209.52	9.00	-47.41	757.74	3H ST01 LP P1+200
6	15117.37	90.00	165.66	6940.00	-8349.36	1711.23	0.00	0.00	8513.05	3H ST01 PBHL P1

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
3H	0.00	0.00	360692.33	1636953.79	39°28'59.436N	080°47'10.601W	N/A

FIELD DETAILS

Tyler county, WV

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

System Datum: Mean Sea Level
Local North: Grid North

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
3H NO GO PT1	1260.00	-3299.60	366.80	357392.73	1637320.59	Circle (Radius: 50)
3H ST01 LP P1+200	6940.00	-835.67	-209.52	359856.66	1636744.27	Point
3H ST01 PBHL P1	6940.00	-8349.36	1711.23	352342.97	1638665.02	Point

SITE DETAILS

RPT 8

Site Centre Northing: 360692.33
Easting: 1636953.79

Ground Level: 1244.00
Positional Uncertainty: 0.00
Convergence: -0.82

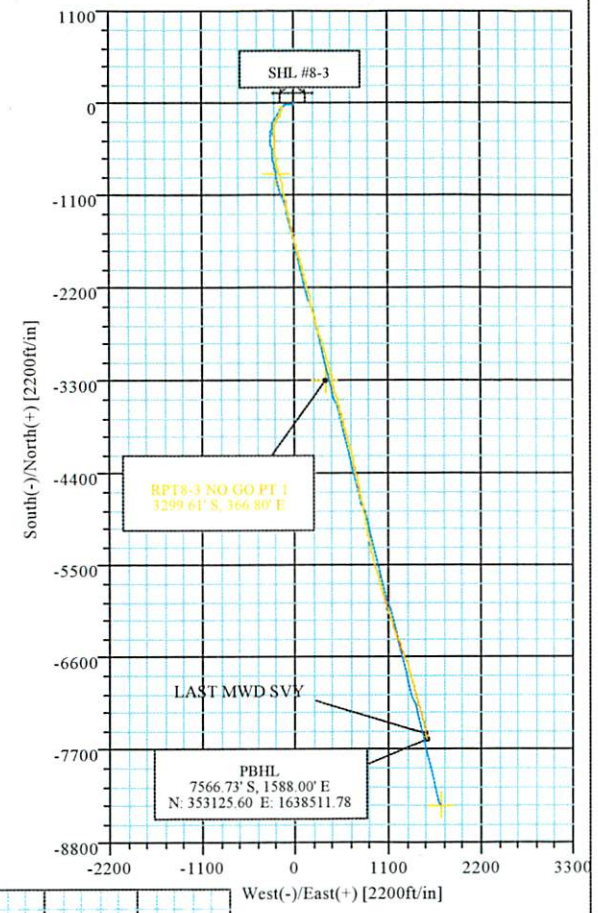
Azimuths to Grid North
True North: 0.82°
Magnetic North: -7.65°

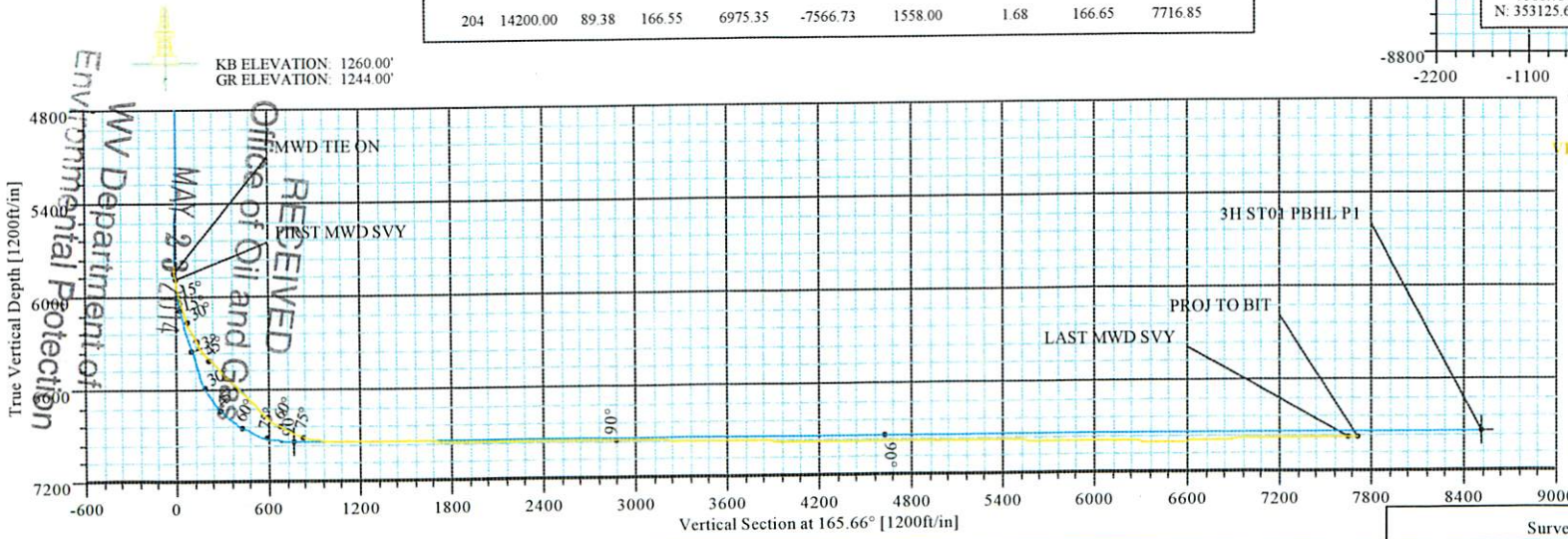
Magnetic Field
Strength: 52528nT
Dip Angle: 67.06°
Date: 6/5/2013
Model: IGRF2010

TOTAL CORRECTION TO GRID NORTH: 7.65° WEST

PROJECTION TO BIT

No	MD	Inc	Az	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
204	14200.00	89.38	166.55	6975.35	-7566.73	1558.00	1.68	166.65	7716.85





VERTICAL SECTION PLANE: 165.66°

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Survey: STO-1 MWD (3H/ST-01)

Weatherford International Ltd.
DIRECTIONAL REPORT

Company: JAY BEE OIL & GAS INC.		**Date:** 6/18/2013 **Time:** 07:57:38	**Page:** 1
Field: Tyler county, WV		**Co-ordinate(NE) Reference:** Well: 3H, Grid North	
Site: RPT 8		**Vertical (TVD) Reference:** SITE 1260.0	
Well: 3H		**Section (VS) Reference:** Well (0.00N,0.00E,165.66Azi)	
Wellpath: ST-01		**Survey Calculation Method:** Minimum Curvature	**Db:** Sybase

Plan: **Date Composed:**
Version:
Principal: **Tied-to:**

Field: Tyler county, WV

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

Site: RPT 8

Site Position: **Northing:** 360692.33 ft **Latitude:** 39 28 59.436 N
From: Map **Easting:** 1636953.79 ft **Longitude:** 80 47 10.601 W
Position Uncertainty: 0.00 ft **North Reference:** Grid
Ground Level: 1244.00 ft **Grid Convergence:** -0.82 deg

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Well: 3H **Slot Name:**

Well Position: +N/-S 0.00 ft **Northing:** 360692.33 ft **Latitude:** 39 28 59.436 N
+E/-W 0.00 ft **Easting:** 1636953.79 ft **Longitude:** 80 47 10.601 W
Position Uncertainty: 0.00 ft

Wellpath: ST-01 **Drilled From:** HORIZONTAL
Tie-on Depth: 5852.00 ft
Current Datum: SITE **Height** 1260.00 ft **Above System Datum:** Mean Sea Level
Magnetic Data: 6/5/2013 **Declination:** -8.47 deg
Field Strength: 52528 nT **Mag Dip Angle:** 67.06 deg

Vertical Section: Depth From (TVD) ft	+N/-S ft	+E/-W ft	Direction deg
0.00	0.00	0.00	165.66

Plan Section Information

MD	Incl	Azim	TVD	+N/-S	+E/-W	DLS	Build	Turn	TFO	Target

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annotation
1261.99	4.37	259.45	1260.00	-12.00	-51.42	-1.11	0.00	360680.33	1636902.36	3H NO GO PT1
5807.00	0.47	238.15	5802.34	-30.94	-155.44	-8.52	0.09	360661.39	1636798.35	
5852.00	1.07	130.84	5847.34	-31.31	-155.28	-8.12	2.87	360661.02	1636798.51	MWD TIE ON
5896.00	6.83	131.59	5891.21	-33.32	-153.01	-5.62	13.09	360659.01	1636800.78	FIRST MWD SVY
5941.00	12.15	134.35	5935.58	-38.41	-147.62	0.65	11.86	360653.92	1636806.17	
5985.00	13.77	150.28	5978.47	-46.20	-141.71	9.66	8.88	360646.13	1636812.08	
6030.00	16.15	174.49	6021.99	-57.09	-138.45	21.02	14.73	360635.24	1636815.34	
6072.00	18.43	194.18	6062.12	-69.35	-139.52	32.64	14.87	360622.98	1636814.27	
6116.00	22.27	200.21	6103.37	-83.93	-144.10	45.62	9.93	360608.4[illegible]	[illegible]	
6160.00	27.50	199.77	6143.27	-101.32	-150.42	60.91	11.89	360591.01	1636803.36	
6204.00	31.84	206.12	6181.51	-121.32	-158.97	78.16	12.17	360571.01	1636794.81	
6249.00	34.67	209.64	6219.14	-143.11	-170.53	96.41	7.61	360549.22	1636783.25	
6294.00	36.62	211.26	6255.70	-165.71	-183.83	115.01	4.81	360526.62	1636769.96	
6338.00	39.69	213.21	6290.30	-188.69	-198.34	133.68	7.49	360503.64	1636755.45	
6383.00	39.98	209.47	6324.86	-213.30	-213.32	153.82	5.36	360479.03	1636740.46	
6428.00	41.72	199.92	6358.93	-239.99	-225.55	176.65	14.40	360452.34	1636728.24	
6472.00	44.37	190.72	6391.12	-268.91	-233.41	202.72	15.48	360423.42	1636720.38	
6517.00	45.56	183.62	6422.98	-300.42	-237.35	232.27	11.45	360391.91	1636716.43	
6562.00	45.12	183.20	6454.61	-332.37	-239.26	262.76	1.18	360359.96	1636714.53	
6606.00	42.78	180.59	6486.28	-362.88	-240.28	292.06	6.72	360329.45	1636713.51	

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Weatherford International Ltd.
DIRECTIONAL REPORT

Company: JAY BEE OIL & GAS INC.
Field: Tyler county, WV
Site: RPT 8
Well: 3H
Wellpath: ST-01

Date: 6/18/2013 **Time:** 07:57:38 **Page:** 2
Co-ordinate(NE) Reference: Well: 3H, Grid North
Vertical (TVD) Reference: SITE 1260.0
Section (VS) Reference: Well (0.00N,0.00E,165.66Azi)
Survey Calculation Method: Minimum Curvature **Db:** Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
6651.00	43.90	178.81	6519.01	-393.76	-240.11	322.02	3.68	360298.57	1636713.67	
6695.00	48.12	177.87	6549.57	-425.40	-239.19	352.90	9.71	360266.93	1636714.60	
6740.00	48.91	176.94	6579.38	-459.07	-237.66	385.91	2.34	360233.26	1636716.13	
6784.00	48.74	176.01	6608.34	-492.13	-235.62	418.44	1.64	360200.20	1636718.16	
6828.00	45.25	173.40	6638.35	-524.16	-232.68	450.20	9.04	360168.17	1636721.11	
6873.00	40.44	170.40	6671.34	-554.44	-228.40	480.60	11.61	360137.89	1636725.38	
6917.00	38.99	169.77	6705.19	-582.14	-223.56	508.63	3.42	360110.19	1636730.22	
6962.00	42.16	170.69	6739.36	-610.98	-218.61	537.80	7.17	360081.35	1636735.18	
7006.00	48.37	171.31	6770.31	-641.84	-213.73	568.91	14.15	360050.49	1636740.06	
7050.00	55.28	170.99	6797.49	-676.00	-208.41	603.32	15.71	360016.33	1636745.38	
7095.00	59.96	170.10	6821.59	-713.47	-202.16	641.17	10.53	359978.86	1636751.63	
7139.00	60.00	169.65	6843.60	-750.97	-195.46	679.17	0.89	359941.36	1636758.33	
7184.00	62.13	167.26	6865.37	-789.55	-187.57	718.49	6.63	359902.78	1636766.22	
7228.00	66.11	166.43	6884.57	-828.09	-178.56	758.07	9.20	359864.24	1636775.23	
7273.00	72.17	165.44	6900.59	-868.86	-168.34	800.10	13.62	359823.47	1636785.45	
7317.00	76.39	165.54	6912.51	-909.85	-157.73	842.44	9.59	359782.48	1636796.06	
7361.00	79.81	166.77	6921.58	-951.65	-147.43	885.49	8.24	359740.68	1636806.36	
7405.00	83.55	167.51	6927.95	-994.09	-137.74	929.00	8.66	359698.24	1636816.04	
7450.00	86.85	168.02	6931.71	-1037.91	-128.24	973.80	7.42	359654.42	1636825.55	
7494.00	87.07	167.80	6934.05	-1080.87	-119.04	1017.71	0.71	359611.46	1636834.75	
7539.00	87.48	168.13	6936.19	-1124.83	-109.67	1062.62	1.17	359567.50	1636844.12	
7583.00	88.81	167.96	6937.61	-1167.85	-100.56	1106.56	3.05	359524.48	1636853.23	
7627.00	89.02	168.10	6938.44	-1210.89	-91.43	1150.51	0.57	359481.44	1636862.35	
7672.00	88.88	167.30	6939.27	-1254.85	-81.85	1195.48	1.80	359437.48	1636871.94	
7717.00	88.60	166.93	6940.26	-1298.70	-71.82	1240.45	1.03	359393.63	1636881.97	
7761.00	89.65	166.60	6940.93	-1341.53	-61.74	1284.44	2.50	359350.80	1636892.04	
7806.00	89.79	167.00	6941.15	-1385.34	-51.47	1329.43	0.94	359306.99	1636902.32	
7850.00	89.79	167.50	6941.31	-1428.25	-41.76	1373.41	1.14	359264.08	1636912.03	
7894.00	89.93	167.06	6941.42	-1471.17	-32.07	1417.39	1.05	359221.16	1636921.72	
7936.00	89.93	166.71	6941.47	-1512.08	-22.54	1459.38	0.83	359180.25	1636931.25	
7981.00	89.72	166.06	6941.61	-1555.81	-11.95	1504.38	1.52	359136.52	1636941.84	
8025.00	89.30	165.71	6941.98	-1598.48	-1.22	1548.38	1.24	359093.85	1636952.57	
8070.00	89.09	165.38	6942.61	-1642.05	10.01	1593.37	0.87	359050.28	1636963.80	
8114.00	89.37	164.94	6943.21	-1684.58	21.28	1637.37	1.19	359007.75	1636975.07	
8158.00	89.30	164.47	6943.72	-1727.02	32.89	1681.36	1.08	358965.31	1636986.68	
8203.00	89.30	164.43	6944.27	-1770.37	44.95	1726.34	0.09	358921.96	1636998.74	
8247.00	89.30	164.54	6944.80	-1812.76	56.72	1770.33	0.25	358879.57	1637010.51	
8292.00	89.44	165.06	6945.30	-1856.19	68.52	1815.32	1.20	358836.14	1637022.31	
8336.00	89.44	165.36	6945.73	-1898.73	79.75	1859.32	0.68	358793.60	1637033.54	
8381.00	89.58	165.41	6946.11	-1942.27	91.10	1904.32	0.33	358750.06	1637044.89	
8425.00	89.58	165.97	6946.44	-1984.90	101.98	1948.32	1.27	358707.43	1637055.77	
8470.00	89.44	166.06	6946.82	-2028.57	112.85	1993.31	0.37	358663.76	1637066.64	
8514.00	89.65	166.10	6947.17	-2071.27	123.44	2037.31	0.49	358621.06	1637077.23	
8559.00	89.86	166.31	6947.36	-2114.98	134.17	2082.31	0.66	358577.35	1637087.96	
8603.00	89.72	166.73	6947.52	-2157.76	144.42	2126.30	1.01	358534.57	1637098.21	
8648.00	89.51	167.21	6947.83	-2201.60	154.57	2171.29	1.16	358490.73	1637108.36	
8692.00	89.51	167.61	6948.20	-2244.54	164.16	2215.27	0.91	358447.79	1637117.95	
8736.00	89.30	168.38	6948.66	-2287.58	173.31	2259.23	1.81	358404.75	1637127.10	
8781.00	89.37	168.76	6949.18	-2331.68	182.23	2304.17	0.86	358360.65	1637136.02	
8825.00	89.65	168.29	6949.56	-2374.80	190.98	2348.11	1.24	358317.53	1637144.77	
8870.00	88.81	165.26	6950.16	-2418.60	201.27	2393.09	6.99	358273.73	1637155.06	
8914.00	88.88	165.94	6951.05	-2461.21	212.21	2437.08	1.55	358231.12	1637166.00	

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Date: 6/18/2013 **Time:** 07:57:38 **Page:** 3
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MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
8959.00	89.37	166.49	6951.74	-2504.91	222.94	2482.08	1.64	358187.42	1637176.72	
9004.00	89.37	164.83	6952.23	-2548.50	234.08	2527.07	3.69	358143.83	1637187.87	
9048.00	89.51	164.55	6952.66	-2590.94	245.70	2571.06	0.71	358101.39	1637199.48	
9092.00	89.65	162.72	6952.98	-2633.15	258.09	2615.03	4.17	358059.18	1637211.88	
9137.00	89.72	162.45	6953.23	-2676.09	271.56	2659.97	0.62	358016.24	1637225.35	
9181.00	89.65	162.41	6953.47	-2718.03	284.84	2703.90	0.18	357974.30	1637238.63	
9226.00	89.72	162.59	6953.72	-2760.95	298.38	2748.83	0.43	357931.38	1637252.16	
9271.00	89.93	162.19	6953.86	-2803.84	311.99	2793.75	1.00	357888.49	1637265.78	
9315.00	89.65	163.93	6954.02	-2845.93	324.81	2837.71	4.01	357846.40	1637278.60	
9359.00	90.07	164.60	6954.13	-2888.28	336.74	2881.69	1.80	357804.05	1637290.53	
9404.00	90.14	164.69	6954.05	-2931.67	348.66	2926.69	0.25	357760.66	1637302.44	
9448.00	90.07	165.14	6953.96	-2974.16	360.11	2970.68	1.04	357718.17	1637313.90	
9493.00	89.23	165.36	6954.24	-3017.67	371.57	3015.68	1.93	357674.66	1637325.35	
9535.00	89.37	165.13	6954.75	-3058.29	382.26	3057.68	0.64	357634.04	1637336.05	
9580.00	89.58	165.59	6955.16	-3101.82	393.63	3102.67	1.12	357590.51	1637347.42	
9624.00	89.44	166.15	6955.54	-3144.49	404.38	3146.67	1.31	357547.84	1637358.16	
9669.00	89.16	165.96	6956.09	-3188.16	415.22	3191.67	0.75	357504.17	1637369.01	
9713.00	89.16	165.91	6956.74	-3230.84	425.91	3235.66	0.11	357461.49	1637379.70	
9757.00	89.30	165.79	6957.33	-3273.50	436.67	3279.66	0.42	357418.83	1637390.45	
9799.00	89.51	166.18	6957.76	-3314.25	446.84	3321.65	1.05	357378.08	1637400.62	
9844.00	89.72	165.77	6958.07	-3357.90	457.74	3366.65	1.02	357334.43	1637411.53	
9889.00	89.65	165.43	6958.31	-3401.49	468.93	3411.65	0.77	357290.84	1637422.72	
9933.00	89.65	165.53	6958.58	-3444.08	479.96	3455.65	0.23	357248.25	1637433.75	
9964.00	89.65	164.85	6958.77	-3474.05	487.89	3486.65	2.19	357218.28	1637441.68	
9994.00	89.86	165.10	6958.90	-3503.03	495.67	3516.65	1.09	357189.30	1637449.45	
10024.00	90.00	165.17	6958.94	-3532.02	503.36	3546.64	0.52	357160.31	1637457.15	
10055.00	90.00	165.33	6958.94	-3562.00	511.25	3577.64	0.52	357130.33	1637465.04	
10085.00	90.07	165.45	6958.92	-3591.03	518.82	3607.64	0.46	357101.30	1637472.61	
10116.00	89.44	165.50	6959.05	-3621.04	526.60	3638.64	2.04	357071.29	1637480.38	
10147.00	89.02	165.04	6959.47	-3651.02	534.48	3669.64	2.01	357041.31	1637488.26	
10177.00	88.39	165.02	6960.15	-3679.99	542.23	3699.63	2.10	357012.34	1637496.01	
10208.00	87.06	165.36	6961.38	-3709.94	550.14	3730.60	4.43	356982.39	1637503.93	
10238.00	86.99	165.56	6962.93	-3738.94	557.66	3760.56	0.71	356953.39	1637511.45	
10269.00	87.13	166.01	6964.52	-3768.95	565.27	3791.52	1.52	356923.38	1637519.05	
10299.00	87.55	165.83	6965.91	-3798.02	572.56	3821.49	1.52	356894.31	1637526.34	
10330.00	87.90	165.26	6967.15	-3828.01	580.29	3852.46	2.16	356864.32	1637534.08	
10361.00	88.04	165.29	6968.24	-3857.97	588.16	3883.44	0.46	356834.36	1637541.95	
10391.00	88.04	165.33	6969.27	-3886.98	595.77	3913.43	0.13	356805.35	1637549.55	
10421.00	88.25	165.70	6970.24	-3916.01	603.27	3943.41	1.42	356776.32	1637557.05	
10452.00	88.39	165.85	6971.15	-3946.04	610.88	3974.40	0.66	356746.29	1637564.67	
10482.00	88.39	165.58	6971.99	-3975.10	618.28	4004.39	0.90	356717.23	1637572.07	
10513.00	88.46	165.37	6972.84	-4005.10	626.05	4035.37	0.71	356687.23	1637579.84	
10544.00	88.74	165.65	6973.60	-4035.11	633.81	4066.36	1.28	356657.22	1637587.59	
10574.00	88.88	165.66	6974.22	-4064.17	641.24	4096.36	0.47	356628.16	1637595.02	
10605.00	88.88	165.54	6974.83	-4094.19	648.95	4127.35	0.39	356598.14	1637602.73	
10635.00	89.23	165.86	6975.33	-4123.25	656.35	4157.35	1.58	356569.08	1637610.14	
10665.00	89.58	166.48	6975.64	-4152.38	663.53	4187.34	2.37	356539.95	1637617.31	
10695.00	89.93	167.24	6975.77	-4181.59	670.35	4217.34	2.79	356510.74	1637624.13	
10726.00	90.42	167.69	6975.67	-4211.86	677.07	4248.32	2.15	356480.47	1637630.86	
10757.00	90.84	168.02	6975.33	-4242.16	683.60	4279.30	1.72	356450.17	1637637.38	
10787.00	89.37	167.20	6975.27	-4271.46	690.03	4309.28	5.61	356420.87	1637643.82	
10818.00	89.16	167.04	6975.67	-4301.68	696.94	4340.27	0.85	356390.65	1637650.73	
10848.00	89.23	167.74	6976.09	-4330.95	703.49	4370.25	2.34	356361.38	1637657.28	

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Weatherford International Ltd.
DIRECTIONAL REPORT

Company: JAY BEE OIL & GAS INC.	**Date:** 6/18/2013	**Time:** 07:57:38	**Page:** 4
Field: Tyler county, WV	**Co-ordinate(NE) Reference:** Well: 3H, Grid North		
Site: RPT 8	**Vertical (TVD) Reference:** SITE 1260.0		
Well: 3H	**Section (VS) Reference:** Well (0.00N,0.00E,165.66Azi)		
Wellpath: ST-01	**Survey Calculation Method:** Minimum Curvature	**Db:** Sybase	

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
10879.00	89.30	167.72	6976.49	-4361.24	710.08	4401.23	0.23	356331.09	1637663.86	
10909.00	89.37	167.62	6976.84	-4390.55	716.48	4431.21	0.41	356301.78	1637670.27	
10939.00	89.51	167.42	6977.13	-4419.84	722.97	4461.19	0.81	356272.49	1637676.75	
10969.00	89.65	167.95	6977.35	-4449.14	729.36	4491.17	1.83	356243.19	1637683.15	
11000.00	89.86	168.05	6977.49	-4479.47	735.81	4522.14	0.75	356212.86	1637689.60	
11030.00	89.72	168.18	6977.60	-4508.82	741.99	4552.11	0.64	356183.51	1637695.78	
11061.00	90.00	168.64	6977.67	-4539.19	748.22	4583.08	1.74	356153.14	1637702.00	
11092.00	90.14	168.65	6977.63	-4569.58	754.32	4614.04	0.45	356122.75	1637708.11	
11122.00	90.35	168.16	6977.51	-4598.97	760.35	4644.00	1.78	356093.36	1637714.14	
11153.00	90.49	167.95	6977.28	-4629.30	766.77	4674.97	0.81	356063.03	1637720.55	
11183.00	90.77	168.31	6976.95	-4658.66	772.94	4704.94	1.52	356033.67	1637726.72	
11214.00	91.05	168.67	6976.46	-4689.03	779.12	4735.90	1.47	356003.30	1637732.91	
11244.00	91.19	168.84	6975.87	-4718.45	784.97	4765.85	0.73	355973.88	1637738.76	
11289.00	89.93	169.19	6975.43	-4762.62	793.54	4810.77	2.91	355929.71	1637747.33	
11333.00	90.00	169.26	6975.46	-4805.84	801.77	4854.69	0.22	355886.49	1637755.56	
11378.00	90.00	169.80	6975.46	-4850.09	809.95	4899.58	1.20	355842.24	1637763.73	
11422.00	90.28	170.26	6975.35	-4893.43	817.56	4943.46	1.22	355798.90	1637771.35	
11467.00	90.56	169.13	6975.02	-4937.70	825.61	4988.34	2.59	355754.63	1637779.40	
11511.00	90.84	169.52	6974.48	-4980.94	833.76	5032.25	1.09	355711.39	1637787.55	
11556.00	90.21	168.88	6974.07	-5025.14	842.20	5077.16	2.00	355667.19	1637795.98	
11600.00	88.88	169.58	6974.42	-5068.36	850.42	5121.07	3.42	355623.97	1637804.20	
11645.00	88.74	170.17	6975.35	-5112.65	858.33	5165.94	1.35	355579.68	1637812.11	
11689.00	88.81	170.18	6976.29	-5155.99	865.83	5209.80	0.16	355536.34	1637819.62	
11734.00	89.16	168.95	6977.09	-5200.24	873.98	5254.68	2.84	355492.09	1637827.77	
11778.00	89.51	168.49	6977.60	-5243.39	882.59	5298.62	1.31	355448.94	1637836.38	
11823.00	89.93	168.05	6977.82	-5287.45	891.74	5343.57	1.35	355404.88	1637845.52	
11867.00	90.28	167.77	6977.74	-5330.47	900.95	5387.54	1.02	355361.86	1637854.74	
11912.00	89.02	167.26	6978.02	-5374.41	910.68	5432.51	3.02	355317.92	1637864.47	
11956.00	88.95	166.65	6978.80	-5417.26	920.61	5476.49	1.40	355275.07	1637874.40	
12000.00	88.11	165.62	6979.92	-5459.97	931.15	5520.47	3.02	355232.36	1637884.94	
12045.00	87.83	164.97	6981.52	-5503.47	942.57	5565.44	1.57	355188.86	1637896.35	
12089.00	88.11	164.77	6983.08	-5545.91	954.04	5609.41	0.78	355146.42	1637907.83	
12132.00	88.25	164.71	6984.44	-5587.38	965.35	5652.39	0.35	355104.95	1637919.14	
12176.00	88.53	164.22	6985.68	-5629.75	977.13	5696.36	1.28	355062.58	1637930.92	
12219.00	88.88	164.23	6986.65	-5671.12	988.82	5739.33	0.81	355021.21	1637942.61	
12264.00	89.16	163.69	6987.42	-5714.36	1001.25	5784.31	1.35	354977.97	1637955.04	
12308.00	89.51	163.89	6987.93	-5756.61	1013.54	5828.28	0.92	354935.72	1637967.32	
12353.00	90.07	163.98	6988.10	-5799.85	1025.99	5873.26	1.26	354892.48	1637979.78	
12397.00	90.00	163.21	6988.07	-5842.06	1038.42	5917.23	1.76	354850.27	1637992.20	
12441.00	89.44	163.44	6988.28	-5884.21	1051.04	5961.19	1.38	354808.12	1638004.83	
12486.00	88.11	163.61	6989.25	-5927.35	1063.80	6006.15	2.98	354764.98	1638017.59	
12530.00	88.60	163.80	6990.51	-5969.57	1076.14	6050.11	1.19	354722.76	1638029.93	
12558.00	89.04	163.84	6991.09	-5996.45	1083.94	6078.09	1.58	354695.88	1638037.73	
12575.00	89.30	163.86	6991.33	-6012.78	1088.67	6095.08	1.53	354679.55	1638042.46	
12619.00	89.23	163.67	6991.90	-6055.02	1100.97	6139.05	0.46	354637.31	1638054.76	
12664.00	88.67	162.32	6992.72	-6098.05	1114.13	6183.99	3.25	354594.28	1638067.91	
12708.00	89.44	162.81	6993.45	-6140.02	1127.31	6227.92	2.07	354552.31	1638081.10	
12753.00	90.07	162.07	6993.64	-6182.92	1140.88	6272.85	2.16	354509.41	1638094.67	
12797.00	88.81	160.47	6994.07	-6224.59	1155.01	6316.72	4.63	354467.74	1638108.80	
12842.00	88.81	160.27	6995.00	-6266.96	1170.13	6361.51	0.44	354425.37	1638123.91	
12886.00	89.30	159.60	6995.73	-6308.29	1185.22	6405.29	1.89	354384.04	1638139.01	
12931.00	89.58	159.17	6996.17	-6350.40	1201.06	6450.02	1.14	354341.93	1638154.85	

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Company: JAY BEE OIL & GAS INC.	**Date:** 6/18/2013 **Time:** 07:57:38	**Page:** 5	
Field: Tyler county, WV	**Co-ordinate(NE) Reference:** Well: 3H, Grid North		
Site: RPT 8	**Vertical (TVD) Reference:** SITE 1260.0		
Well: 3H	**Section (VS) Reference:** Well (0.00N,0.00E,165.66Azi)		
Wellpath: ST-01	**Survey Calculation Method:** Minimum Curvature	**Db:** Sybase	

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
12975.00	90.56	159.93	6996.12	-6391.63	1216.44	6493.77	2.82	354300.70	1638170.22	
13019.00	91.26	160.64	6995.42	-6433.04	1231.28	6537.57	2.27	354259.29	1638185.06	
13064.00	91.33	160.07	6994.40	-6475.41	1246.40	6582.36	1.28	354216.92	1638200.19	
13109.00	92.10	160.21	6993.05	-6517.72	1261.68	6627.13	1.74	354174.61	1638215.47	
13151.00	92.80	160.41	6991.26	-6557.23	1275.82	6668.91	1.73	354135.10	1638229.61	
13195.00	92.59	161.16	6989.19	-6598.73	1290.28	6712.70	1.77	354093.60	1638244.07	
13240.00	91.89	161.53	6987.43	-6641.33	1304.67	6757.54	1.76	354051.00	1638258.45	
13285.00	91.89	161.29	6985.95	-6683.96	1319.01	6802.39	0.53	354008.37	1638272.79	
13329.00	92.24	162.26	6984.36	-6725.72	1332.76	6846.26	2.34	353966.61	1638286.54	
13374.00	92.52	162.38	6982.49	-6768.56	1346.41	6891.15	0.68	353923.77	1638300.20	
13418.00	92.31	163.31	6980.64	-6810.57	1359.38	6935.05	2.17	353881.76	1638313.17	
13462.00	92.31	163.28	6978.86	-6852.68	1372.02	6978.98	0.07	353839.65	1638325.80	
13507.00	91.47	163.86	6977.38	-6895.81	1384.74	7023.93	2.27	353796.52	1638338.52	
13551.00	90.00	164.67	6976.82	-6938.16	1396.67	7067.91	3.81	353754.17	1638350.45	
13596.00	88.95	165.63	6977.23	-6981.65	1408.20	7112.90	3.16	353710.68	1638361.99	
13638.00	89.37	165.69	6977.84	-7022.34	1418.60	7154.90	1.01	353669.99	1638372.39	
13683.00	89.93	166.31	6978.12	-7066.00	1429.49	7199.90	1.86	353626.33	1638383.27	
13727.00	89.86	166.22	6978.20	-7108.74	1439.93	7243.89	0.26	353583.59	1638393.72	
13772.00	89.72	165.65	6978.36	-7152.40	1450.87	7288.89	1.30	353539.93	1638404.66	
13816.00	89.72	165.32	6978.58	-7194.99	1461.90	7332.89	0.75	353497.34	1638415.68	
13861.00	90.28	165.41	6978.58	-7238.53	1473.27	7377.89	1.26	353453.80	1638427.05	
13905.00	90.70	165.55	6978.20	-7281.12	1484.30	7421.89	1.01	353411.21	1638438.09	
13950.00	90.84	165.09	6977.60	-7324.65	1495.70	7466.88	1.07	353367.68	1638449.49	
13994.00	90.49	164.76	6977.09	-7367.13	1507.14	7510.88	1.09	353325.20	1638460.93	
14039.00	90.63	165.35	6976.65	-7410.61	1518.75	7555.87	1.35	353281.72	1638472.54	
14084.00	91.12	165.13	6975.96	-7454.12	1530.21	7600.87	1.19	353238.21	1638484.00	
14128.00	90.56	166.27	6975.31	-7496.75	1541.08	7644.86	2.89	353195.58	1638494.87	LAST MWD SVY
14200.00	89.38	166.55	6975.35	-7566.73	1558.00	7716.85	1.68	353125.60	1638511.78	PROJ TO BIT

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----> Deg Min Sec	<--- Longitude ---> Deg Min Sec
3H NO GO PT1 -Circle (Radius: 50)			1260.00	-3299.60	366.80	357392.73	1637320.59	39 28 26.879 N	80 47 5.321 W
3H ST01 LP P1+200			6940.00	-835.67	-209.52	359856.66	1636744.27	39 28 51.148 N	80 47 13.120 W
3H ST01 PBHL P1			6940.00	-8349.36	1711.23	352342.97	1638665.02	39 27 37.162 N	80 46 47.260 W

Casing Points

MD	TVD	Diameter	Hole Size	Name

Annotation

MD ft	TVD ft	
5852.00	5847.34	MWD TIE ON
5896.00	5891.21	FIRST MWD SVY
14128.00	6975.31	LAST MWD SVY
14200.00	6975.35	PROJ TO BIT

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Weatherford International Ltd.
DIRECTIONAL REPORT

Company: JAY BEE OIL & GAS INC.		**Date:** 6/18/2013	**Time:** 07:57:38	**Page:**	6
Field: Tyler county, WV		**Co-ordinate(NE) Reference:**	Well: 3H, Grid North		
Site: RPT 8		**Vertical (TVD) Reference:**	SITE 1260.0		
Well: 3H		**Section (VS) Reference:**	Well (0.00N,0.00E,165.66Azi)		
Wellpath: ST-01		**Survey Calculation Method:**	Minimum Curvature	**Db:**	Sybase

Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction

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Office of Oil and Gas
WV Dept. of Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/13/2014
Job End Date:	2/28/2014
State:	West Virginia
County:	Tyler
API Number:	47-095-02083-00-00
Operator Name:	Jay-Bee Oil & Gas, Inc.
Well Name and Number:	RPT8-3
Longitude:	-80.78612100
Latitude:	39.48319900
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,922
Total Base Water Volume (gal):	7,606,914
Total Base Non Water Volume:	

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FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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
Water	Jay-Bee Oil & Gas, Inc.	Water					
			Water	7732-18-5	100.00000	92.85979	
100 Mesh	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica	14808-60-7	99.90000	2.86394	
			Aluminum Oxide	1344-28-1	1.10000	0.03154	
			Iron Oxide	1309-37-1	0.10000	0.00287	
			Titanium Oxide	13463-67-7	0.10000	0.00287	
30/50 Mesh	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica	14808-60-7	99.90000	2.75720	
			Aluminum Oxide	1344-28-1	1.10000	0.03036	
			Iron Oxide	1309-37-1	0.10000	0.00276	
			Titanium Oxide	13463-67-7	0.10000	0.00276	
20/40 Mesh	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica	14808-60-7	99.90000	0.72688	
			Aluminum Oxide	1344-28-1	1.10000	0.00800	

			Titanium Oxide	13463-67-7	0.10000	0.00073	
			Iron Oxide	1309-37-1	0.10000	0.00073	
HCL Acid 22 Baume	Nabors Completion and Production Services	Bulk Acid					
			Water	7732-18-5	87.50000	0.55543	
			Hydrogen Chloride	7641-01-1	18.00000	0.11426	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.02556	
			Mineral Spirits	8052-41-3	10.00000	0.00852	
			Ethoxylated Alcohols	68551-12-2	4.00000	0.00341	
KR-153-SL	Nabors Completion and Production Services	Biocides					
			Polyethylene Glycol	25322-68-3	50.00000	0.01160	
			2,2-Dibromo-3-nitrilo-propionamide	10222-01-2	20.00000	0.00464	
Super TSC LT	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Water	7732-18-5	60.00000	0.01340	
Super Max II	Nabors Completion and Production Services	Surfactant & Foamer					
			Ethylhexanol	104-76-7	40.00000	0.00396	
			Isopropyl Alcohol	67-63-0	30.00000	0.00297	
			Glycol Ethers	111-76-2	7.00000	0.00069	
LSG-100L	Nabors Completion and Production Services	Petroleum Distillates					
			Petroleum Distillates	64742-47-8	60.00000	0.00549	
Acid Inhibitor AL-2	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Propargyl Alcohol	107-19-7	40.00000	0.00051	
			Isopropyl Alcohol	67-63-0	40.00000	0.00051	
			Glycol Ethers	111-76-2	40.00000	0.00051	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00017	
			Tar bases	72480-70-7	10.00000	0.00013	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
WFR-3B NON-MSDS	Nabors Completion and Production Services	Friction Reducer					
			Propylene Glycol	57-55-6	25.00000	0.02130	
Super TSC LT NON-MSDS	Nabors Completion and Production Services	Paraffin & Scale Additives					
			proprietary	proprietary	15.00000	0.00335	
			proprietary	proprietary	15.00000	0.00335	

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			proprietary	proprietary	15.00000	0.00335	
			proprietary	proprietary	15.00000	0.00335	
LSG-100L NON-MSDS	Nabors Completion and Production Services	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.00458	
			Suspending Agent	14808-60-7	2.00000	0.00018	
			Surfactant	68439-51-0	2.00000	0.00018	
Super Max II NON-MSDS	Nabors Completion and Production Services	Surfactant & Foamer					
			proprietary	proprietary	7.00000	0.00069	

* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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FORM WW-6

Top Hole 10,329'

LATITUDE 39-30-00 N — Bottom Hole 8,812'

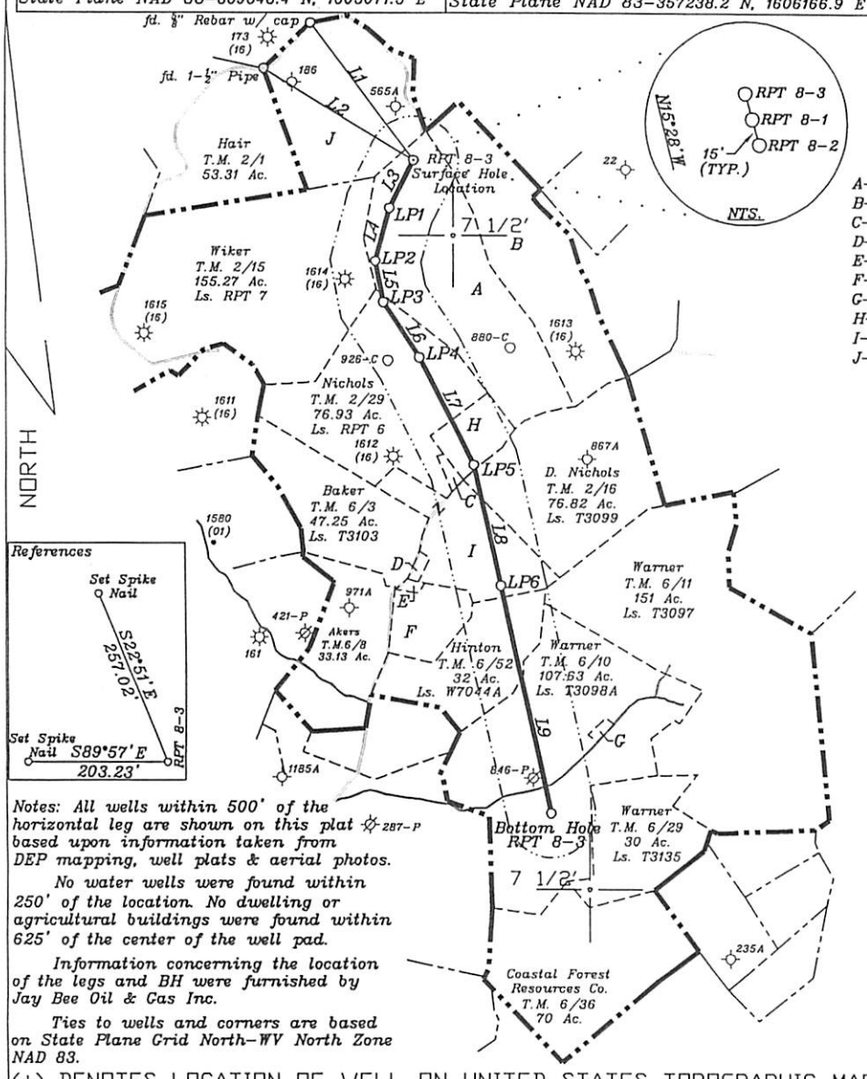
Surface Hole Location UTM NAD 83(Meters)-4370421.7 N, 518393.5 E Geo. NAD 83-39.483199 N, 80.786121 W State Plane NAD 83-360706.7 N, 1605507.6 E	**Landing Point 3** UTM NAD 83(Meters)-4369923.2 N, 518295.9 E Geo. NAD 83-39.478709 N, 80.787270 W State Plane NAD 83-359076.2 N, 1605159.9 E	**Landing Point 6** UTM NAD 83(Meters)-4368953.9 N, 518712.2 E Geo. NAD 83-39.469966 N, 80.782457 W State Plane NAD 83-355872.6 N, 1606472.9 E
Landing Point 1 UTM NAD 83(Meters)-4370254.5 N, 518312.9 E Geo. NAD 83-39.481694 N, 80.787063 W State Plane NAD 83-360162.3 N, 1605234.0 E	**Landing Point 4** UTM NAD 83(Meters)-4369733.8 N, 518421.2 E Geo. NAD 83-39.477000 N, 80.785818 W State Plane NAD 83-358447.8 N, 1605560.8 E	**Bottom Hole Location** UTM NAD 83(Meters)-4368168.7 N, 518893.5 E Geo. NAD 83-39.462887 N, 80.780372 W State Plane NAD 83-353285.9 N, 1607024.7 E
Landing Point 2 UTM NAD 83(Meters)-4370066.6 N, 518266.6 E Geo. NAD 83-39.480002 N, 80.787607 W State Plane NAD 83-359548.4 N, 1605071.5 E	**Landing Point 5** UTM NAD 83(Meters)-4369368.4 N, 518612.0 E Geo. NAD 83-39.473703 N, 80.783610 W State Plane NAD 83-357238.2 N, 1606166.9 E	

Top Hole 6,004'

Bottom Hole 13,424'

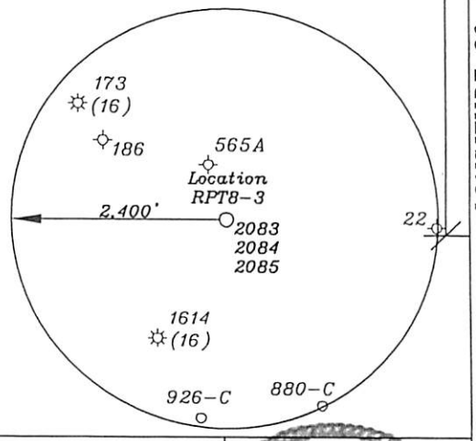
LONGITUDE 80-45-00 W BH

LONGITUDE 80-47-00 W TH



A-Hair TM. 2/17 85 Ac. Ls. RPT 8
B-Sherwood TM. 2/18 62.5 Ac.
C-Nichols T.M. 6/4 1.25 Ac.
D-Cole TM. 6/5 1 Ac.
E-Hostuttler TM. 6/6 0.38 Ac.
F-Catrell TM. 6/7 14.62 Ac.
G-Warner TM. 6/10.1 0.368 Ac.
H-D. Nichols, et al TM. 2/19 12.5 Ac. Ls.T3099A
I-Liller TM. 6/3.1 15 Ac. Ls. T3180
J-Hair TM. 2/2 53.75 Ac. Ls. TI-I3

NUMBER	DIRECTION	DISTANCE
L1	S37°31'E	1,904'
L2	S58°44'E	1,988'
L3	S26°41'W	609'
L4	S14°50'W	635'
L5	S10°36'E	480'
L6	S32°32'E	745'
L7	S26°37'E	1,353'
L8	S12°38'E	1,399'
L9	S12°02'E	2,645'



Notes: All wells within 500' of the horizontal leg are shown on this plat based upon information taken from DEP mapping, well plats & aerial photos.

No water wells were found within 250' of the location. No dwelling or agricultural buildings were found within 625' of the center of the well pad.

Information concerning the location of the legs and BH were furnished by Jay Bee Oil & Gas Inc.

Ties to wells and corners are based on State Plane Grid North-WV North Zone NAD 83.

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

FILE NO.
DRAWING NO. 1
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY 1 in 200
PROVEN SOURCE OF ELEVATION GPS submeter unit

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 ENVIROMENTAL PROTECTION.

(SIGNED) David L Jackson

R.P.E. _____ L.L.S. 708

DAVID JACKSON LICENSED No. 708 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

STATE OF WEST VIRGINIA
Division of Environmental Protection
OFFICE OF OIL AND GAS

DATE April 21, 2015
OPERATOR'S WELL NO. RPT 8-3
API WELL NO.
47 — 095 — 02083
STATE COUNTY PERMIT

WELL TYPE: OIL__ GAS X LIQUID INJECTION__ WASTE DISPOSAL__
(IF 'GAS') PRODUCTION X STORAGE__ DEEP__ SHALLOW X

LOCATION: ELEVATION 1,244.5' WATER SHED Big Run
DISTRICT McElroy COUNTY Tyler
QUADRANGLE Shirley 7 1/2'

SURFACE OWNER Jack Hair et al ACREAGE 85 ac

OIL & GAS ROYALTY OWNER Jack Hair(85 Ac.), Cecil Nichols(76.93 Ac.), Lester Nichols(12.5 Ac.), Duane G. Nichols(76.82 Ac.), Linda Liller(15 Ac.), Thomas E. Hilton(32 Ac.) & Richard Warner(107.63 Ac.)

LEASE NO. RPT 8, RPT 6, T3098A, T3180, W7044A & T3099A

PROPOSED WORK: DRILL X CONVERT__ DRILL DEEPER__ REDRILL__ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION__ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY)__

PLUG AND ABANDON__ CLEAN OUT AND REPLUG__

TARGET FORMATION Marcellus ESTIMATED DEPTH 7,500'+ Horizontal leg

WELL OPERATOR Jay Bee Oil & Gas, Inc. DESIGNATED AGENT Randy Broda

ADDRESS 1720 Rt. 22 East Union, NJ 07083 ADDRESS Rt. 1 Box 5 Cairo, WV 26337

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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 - 095 - 02084 County Tyler District McElroy
Quad Shirley 7.5' Pad Name RPT8 Field/Pool Name
Farm name Jack Hair et al Well Number RPT-8-2
Operator (as registered with the OOG) Jay-Bee Oil & Gas, Inc.
Address 3570 Shields Hill Rd. City Cairo State WV Zip 26337

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

Top hole	Northing 4,370,413.0	Easting 518,396.1
Landing Point of Curve	Northing 4,370,369.8	Easting 518,592.0
Bottom Hole	Northing 4,368,238.4	Easting 519,565.9

Elevation (ft) 1244' 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)
EZ-MUD® (hydrotreated light petroleum distillate)

Date permit issued 2/5/2013 Date drilling commenced 5/14/2013 Date drilling ceased 7/15/2013
Date completion activities began 1/13/2014 Date completion activities ceased 2/28/2014
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 420'- 480' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2120' - 2310' Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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WV Dept. of Environmental Protection

Reviewed by:
AL. 5/26/15 ✓
W.S. 6/02/15

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API 47- 095 - 02084 Farm name Jack Hair et al Well number RPT-8-2

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	17"	16"	40'	New	20/32/24		Yes
Surface	15"	11 3/4"	547.5'	New	20/23/24	50'	Yes
Coal							
Intermediate 1	11"	8 5/8"	2345.4'	New	20/17/24	1500'	Yes
Intermediate 2							
Intermediate 3							
Production	7 7/8"	5 1/2"	15,311'	New	20/24/24		Yes
Tubing							
Packer type and depth set							

Comment Details

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							
Surface	Class A	310	15.6	1.26	391	CTS	0
Coal							
Intermediate 1	Class A	655	14.7	1.45	950	CTS	0
Intermediate 2							
Intermediate 3							
Production	Class A	1,921	14.3	1.35	2,594	300' from Surface	0
Tubing							

Drillers TD (ft) 15,347' Loggers TD (ft) 15,347'
Deepest formation penetrated Marcellus Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) 6,250'

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 Spiral centralizer every joint from TD back to start of 90 degree.
90 - 70 degree every second joint.
70 degree - KOP every third joint.
KOP - Surface bow centralizer placed every 500'.

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- 095 - 02084 Farm name Jack Hair et al Well number RPT-8-2

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	1/12/2014	15122	15274	72	Marcellus
2	1/13/2014	14798	15057	72	Marcellus
3	1/14/2014	14590	14761	72	Marcellus
4	1/15/2014	14310	14550	72	Marcellus
5	1/16/2014	14024	14262	72	Marcellus
6	1/17/2014	13710	13941	72	Marcellus
7	1/18/2014	13458	13654	72	Marcellus
8	1/19/2014	13208	13410	72	Marcellus
9	1/19/2014	12871	13120	72	Marcellus
10	1/19/2014	12614	12790	72	Marcellus
11	1/19/2014	12368	12564	72	Marcellus
12	1/20/2014	12091	12328	72	Marcellus
13	1/20/2014	11828	12052	72	Marcellus
14	1/20/2014	11532	11764	72	Marcellus
15	1/20/2014	11263	11498	72	Marcellus
16	1/21/2014	10970	11216	72	Marcellus

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	1/13/14	68.6	7452	5265	4328	1589	8434	N/A
2	1/14/14	71.9	7251	5674	4567	1800	8570	N/A
3	1/15/14	71.1	7003	5541	4733	1880	7535	N/A
4	1/16/14	69.6	6832	5343	8465	1580	6410	N/A
5	1/17/14	71.6	6689	6796	4986	1615	6516	N/A
6	1/18/14	70.7	6610	5024	3768	1841	7196	N/A
7	1/18/14	70.3	6581	5178	4578	1886	7759	N/A
8	1/19/14	71.6	7099	5869	4252	1665	7282	N/A
9	1/19/14	70.8	6602	5628	3725	1778	6795	N/A
10	1/19/14	72.5	6698	5481	4280	1802	6600	N/A
11	1/20/14	69.8	6585	7544	4613	1776	7436	N/A
12	1/20/14	71.3	6553	6640	5517	1780	6942	N/A
13	1/20/14	72.3	6825	5488	4573	1775	7355	N/A
14	1/20/14	72.1	6737	5789	4614	1796	6887	N/A
15	1/20/14	69.9	7108	6154	4589	996	6632	N/A
16	1/21/14	71.9	6853	5671	5084	1756	6926	N/A

Please insert additional pages as applicable.

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API 47- 095 - 02084 Farm name Jack Hair et al Well number RPT8-2

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	1/21/2014	10750	10892	72	Marcellus
18	1/22/2014	10448	10680	72	Marcellus
19	1/22/2014	10166	10392	72	Marcellus
20	1/23/2014	9880	10108	72	Marcellus
21	1/23/2014	9691	9844	72	Marcellus
22	1/23/2014	9374	9620	72	Marcellus
23	1/24/2014	9096	9310	72	Marcellus
24	1/24/2014	8830	9039	72	Marcellus
25	1/25/2014	8554	8773	72	Marcellus
26	1/28/2014	8316	8488	72	Marcellus
27	1/28/2014	8022	8252	72	Marcellus
28	1/29/2014	7774	7976	72	Marcellus
29	2/1/2014	7574	7722	72	Marcellus
30	2/1/2014	7318	7526	72	Marcellus

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	1/22/14	70.9	6904	5206	4980	1249	8125	N/A
18	1/22/14	71.4	6615	6594	4222	1784	8563	N/A
19	1/23/14	72.7	6564	5688	4258	1787	6872	N/A
20	1/23/14	71.0	6353	5887	4970	1777	7105	N/A
21	1/23/14	69.7	6309	5745	4864	1821	6762	N/A
22	1/24/14	69.6	6411	5677	4084	1665	7687	N/A
23	1/24/14	70.3	6544	7112	4712	1787	8376	N/A
24	1/25/14	69.7	6414	6964	4633	1855	6331	N/A
25	1/25/14	70.1	6322	5414	4428	1865	7187	N/A
26	2/1/14	68.9	6378	6277	5053	1561	5737	N/A
27	2/1/14	70.1	6351	5947	4831	1614	5979	N/A
28	2/1/14	70.3	6313	6335	4614	1752	6290	N/A
29	2/2/14	71.5	6067	5339	4538	1611	6740	N/A
30	2/2/14	70.3	5494	5918	4658	1884	6426	N/A

Please insert additional pages as applicable.

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API 47- 095 - 02084 Farm name Jack Hair et al Well number RPT-8-2

PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6,922' TVD	15,347' MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 3,400 psi Bottom Hole n/a psi DURATION OF TEST 18 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	7,000 mcfpd	200 bpd	- 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)
See Attached.	0		0		

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Please insert additional pages as applicable.

Drilling Contractor HWD
Address 7350 Coal Hill Rd. City Luthersburg State PA Zip 15848

Logging Company Precise Well Analysis
Address 1426 Barth Rd. City Belpre State OH Zip 45714

Cementing Company Nabors
Address PO Box 975682 City Dallas State TX Zip 75397

Stimulating Company Nabors
Address PO Box 975682 City Dallas State TX Zip 75397

Please insert additional pages as applicable.

Completed by Shane Dowell Telephone 304-628-311
Signature Title Office Manager Date 4-24-2015

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

	rpt 8 pad	
	rpt 8-1	47-095-02085
	rpt 8-2	47-095-02084
	rpt 8-3	47-095-02083
	ELEVATION	1244
FORMATION	TOP	BOTTOM
MISC. RED ROCK & SHALES	0	2137
LIME	2137	2237
INJUN	2137	2254
SHALE	2254	2601
GORDON STRAY	2601	2621
SHALE	2621	2817
GORDON	2817	2847
SHALE	2847	3126
BAYARD	3126	3135
SHALE	3135	3464
WARREN	3464	3562
SHALE	3562	3798
BALLTOWN	3798	3961
SHALE	3961	4399
2ND RILEY	4399	4507
SHALE	4507	4658
3RD RILEY	4658	4699
SHALE	4699	4756
BENSON	4756	4759
SHALE	4759	5001
ALEXANDER	5001	5172
SHALE	5172	5417
ELK	5417	5465
SHALE	5465	6161
HAMILTON	6161	6335
SHALE	6155	6811
UPPER Marcellus	6811	6840
PARCELL LIME	6840	6875
SHALE	6875	6922
LOWER MARCELLUS	6922	

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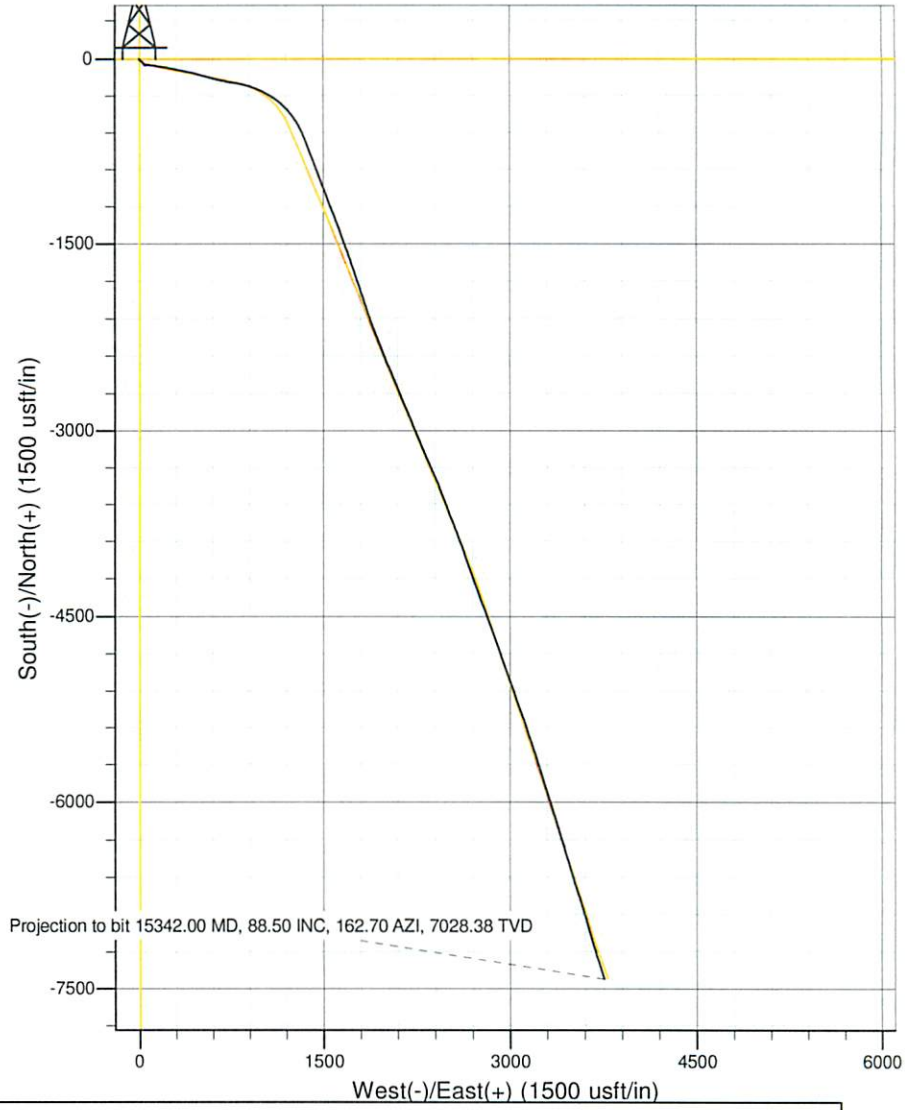
Azimuths to Grid North
True North: 0.82°
Magnetic North: -6.76°

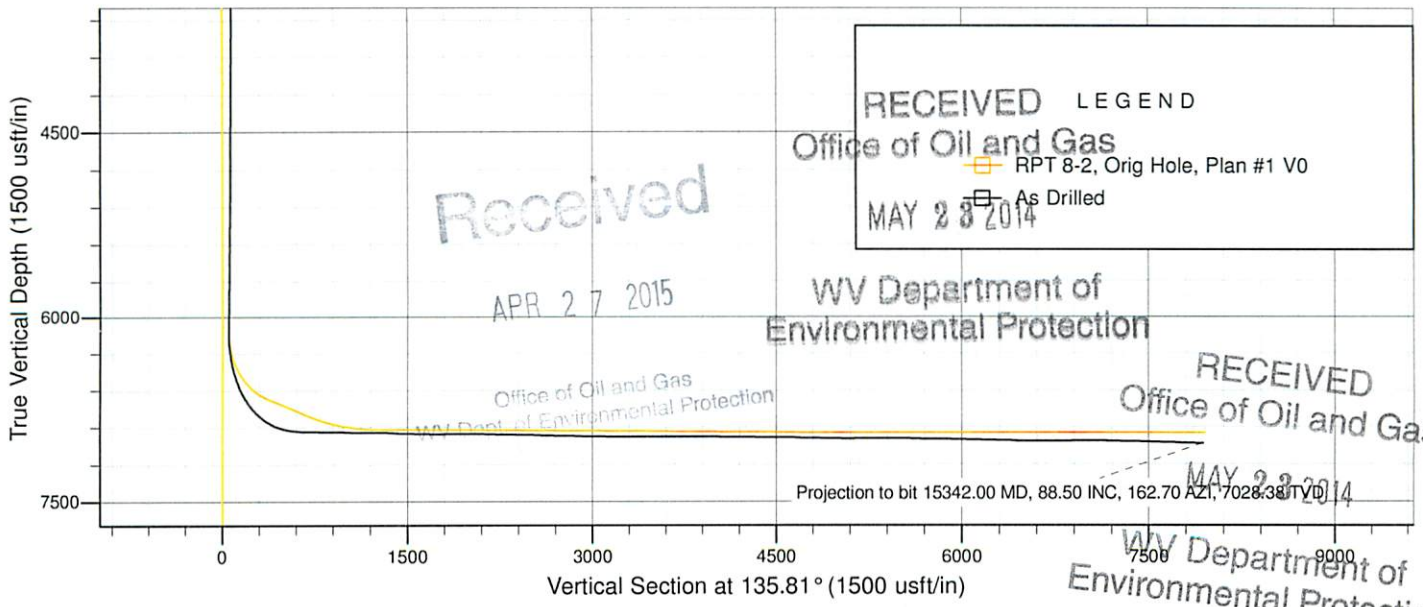
Magnetic Field
Strength: 52620.0snT
Dip Angle: 67.13°
Date: 07/05/2013
Model: USER DEFINED

PROJECT DETAILS: Tyler County, WV	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	West Virginia Northern Zone
System Datum:	Mean Sea Level

Directional Drilling Contractors, LLC.
An Archer Company



WELL DETAILS: RPT 8-2					
			Ground Level:	1244.00	
+N/-S	+E/-W	Northing	Easting	Latittude	Longitude
0.00	0.00	360670.9848	1605472.7020	39° 28' 59.158 N	80° 47' 10.474 W



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Jay Bee Oil & Gas

Tyler County, WV
RPT 8 Pad
RPT 8-2

Orig Hole

Design: As Drilled

Standard Survey Report

24 July, 2013

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Directional Drilling Contractors

Survey Report

Directional Drilling Contractors, LLC.
An Archer Company

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Project Tyler County, WV

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	West Virginia Northern Zone		

Site RPT 8 Pad

Site Position:		**Northing:**	360,699.2955 usft	**Latitude:**	39° 28' 59.436 N
From:	Lat/Long	**Easting:**	1,605,463.2041 usft	**Longitude:**	80° 47' 10.601 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.82 °

Well RPT 8-2

Well Position	**+N/-S**	0.00 usft	**Northing:**	360,670.9848 usft	**Latitude:**	39° 28' 59.158 N
	+E/-W	0.00 usft	**Easting:**	1,605,472.7020 usft	**Longitude:**	80° 47' 10.474 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,244.00 usft

Wellbore Orig Hole

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	User Defined	07/05/13	-7.58	67.13	52,620

Design As Drilled

Audit Notes:

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

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	135.81

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Survey Program **Date** 07/24/13

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
100.00	6,050.00	GYRO (Orig Hole)	NS-GYRO-MS	North sensing gyrocompassing m/s
6,068.00	15,342.00	MWD (Orig Hole)	MWD	MWD - Standard

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)**
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.29	26.49	100.00	0.23	0.11	-0.08	0.29	0.29	0.00
200.00	0.73	296.81	200.00	0.74	-0.34	-0.77	0.78	0.44	-89.68
300.00	0.62	286.96	299.99	1.19	-1.43	-1.85	0.16	-0.11	-9.85
400.00	0.35	239.40	399.99	1.19	-2.21	-2.39	0.46	-0.27	-47.56
500.00	0.42	122.31	499.99	0.84	-2.16	-2.11	0.66	0.07	-117.09
600.00	1.91	121.67	599.96	-0.23	-0.43	-0.13	1.49	1.49	-0.64
700.00	2.16	127.20	699.90	-2.25	2.49	3.34	0.32	0.25	5.53
800.00	2.01	129.78	799.83	-4.51	5.33	6.95	0.18	-0.15	2.58
900.00	2.14	130.47	899.77	-6.84	8.10	10.55	0.13	0.13	0.69

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Directional Drilling Contractors

Survey Report

Directional Drilling Contractors, LLC.
An Archer Company

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

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)
1,000.00	2.14	129.54	999.70	-9.24	10.96	14.27	0.03	0.00	-0.93
1,100.00	2.10	133.72	1,099.63	-11.70	13.73	17.96	0.16	-0.04	4.18
1,200.00	2.45	132.51	1,199.55	-14.41	16.63	21.92	0.35	0.35	-1.21
1,300.00	2.58	128.71	1,299.45	-17.26	19.96	26.29	0.21	0.13	-3.80
1,400.00	2.33	129.79	1,399.36	-19.97	23.28	30.54	0.25	-0.25	1.08
1,500.00	1.99	137.52	1,499.29	-22.55	26.01	34.30	0.45	-0.34	7.73
1,600.00	2.09	134.58	1,599.23	-25.11	28.48	37.86	0.14	0.10	-2.94
1,700.00	2.35	134.65	1,699.15	-27.83	31.24	41.73	0.26	0.26	0.07
1,800.00	2.42	121.54	1,799.07	-30.38	34.50	45.83	0.55	0.07	-13.11
1,900.00	2.30	126.37	1,898.98	-32.67	37.91	49.85	0.23	-0.12	4.83
2,000.00	1.98	127.31	1,998.91	-34.91	40.90	53.54	0.32	-0.32	0.94
2,100.00	1.54	138.82	2,098.86	-36.97	43.16	56.59	0.56	-0.44	11.51
2,200.00	1.95	138.95	2,198.82	-39.26	45.16	59.63	0.41	0.41	0.13
2,300.00	2.39	128.35	2,298.75	-41.84	47.92	63.40	0.59	0.44	-10.60
2,400.00	2.38	129.58	2,398.66	-44.46	51.15	67.53	0.05	-0.01	1.23
2,500.00	1.26	142.32	2,498.61	-46.65	53.42	70.69	1.18	-1.12	12.74
2,600.00	0.79	152.24	2,598.59	-48.13	54.42	72.44	0.50	-0.47	9.92
2,700.00	0.17	188.78	2,698.59	-48.89	54.72	73.19	0.66	-0.62	36.54
2,800.00	0.71	188.78	2,798.58	-49.64	54.60	73.65	0.54	0.54	0.00
2,900.00	0.24	59.59	2,898.58	-50.15	54.68	74.08	0.88	-0.47	-129.19
3,000.00	0.36	254.85	2,998.58	-50.13	54.56	73.97	0.59	0.12	-164.74
3,100.00	0.50	148.37	3,098.58	-50.58	54.49	74.25	0.69	0.14	-106.48
3,200.00	0.36	300.86	3,198.58	-50.79	54.45	74.37	0.84	-0.14	152.49
3,300.00	0.75	247.31	3,298.57	-50.88	53.57	73.83	0.61	0.39	-53.55
3,400.00	0.62	299.27	3,398.57	-50.87	52.50	73.07	0.61	-0.13	51.96
3,500.00	0.65	240.99	3,498.56	-50.88	51.53	72.40	0.62	0.03	-58.28
3,600.00	0.11	44.40	3,598.56	-51.09	51.10	72.25	0.76	-0.54	163.41
3,700.00	0.62	295.45	3,698.56	-50.79	50.68	71.74	0.66	0.51	-108.95
3,800.00	0.71	263.37	3,798.55	-50.63	49.57	70.86	0.38	0.09	-32.08
3,900.00	0.44	310.33	3,898.55	-50.45	48.67	70.10	0.52	-0.27	46.96
4,000.00	0.76	276.03	3,998.54	-50.13	47.71	69.20	0.47	0.32	-34.30
4,100.00	0.32	335.59	4,098.54	-49.81	46.94	68.43	0.66	-0.44	59.56
4,200.00	0.69	288.50	4,198.54	-49.36	46.25	67.63	0.53	0.37	-47.09
4,300.00	0.14	70.92	4,298.53	-49.13	45.80	67.15	0.81	-0.55	142.42
4,400.00	0.31	328.23	4,398.53	-48.86	45.77	66.94	0.37	0.17	-102.69
4,500.00	0.57	256.05	4,498.53	-48.75	45.14	66.42	0.56	0.26	-72.18
4,600.00	0.38	36.52	4,598.53	-48.60	44.86	66.12	0.90	-0.19	140.47
4,700.00	0.64	305.48	4,698.53	-48.01	44.60	65.52	0.75	0.26	-91.04
4,800.00	0.41	250.11	4,798.52	-47.81	43.81	64.82	0.53	-0.23	-55.37
4,900.00	0.48	44.26	4,898.52	-47.63	43.77	64.66	0.87	0.07	154.15
5,000.00	0.35	270.29	4,998.52	-47.33	43.75	64.44	0.77	-0.13	-133.97
5,100.00	0.89	325.58	5,098.51	-46.69	43.01	63.46	0.75	0.54	55.29
5,200.00	0.41	0.43	5,198.51	-45.69	42.57	62.44	0.60	-0.48	34.85

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Directional Drilling Contractors

Survey Report

Directional Drilling Contractors, LLC.
An Archer Company

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

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)
5,300.00	0.88	298.91	5,298.50	-44.96	41.90	61.45	0.77	0.47	-61.52
5,400.00	0.97	320.37	5,398.49	-43.94	40.69	59.87	0.36	0.09	21.46
5,500.00	0.74	22.14	5,498.48	-42.69	40.39	58.77	0.90	-0.23	61.77
5,600.00	0.31	281.37	5,598.48	-42.04	40.37	58.28	0.85	-0.43	-100.77
5,700.00	0.97	330.23	5,698.47	-41.25	39.69	57.24	0.80	0.66	48.86
5,800.00	0.98	341.93	5,798.46	-39.70	39.00	55.65	0.20	0.01	11.70
5,900.00	0.19	4.99	5,898.45	-38.72	38.75	54.78	0.81	-0.79	23.06
6,000.00	0.79	305.62	5,998.45	-38.16	38.20	53.99	0.71	0.60	-59.37
6,050.00	0.87	319.12	6,048.44	-37.67	37.68	53.27	0.42	0.16	27.00
6,068.00	0.70	302.40	6,066.44	-37.51	37.49	53.03	1.58	-0.94	-92.89
6,112.00	0.40	274.10	6,110.44	-37.35	37.11	52.65	0.90	-0.68	-64.32
6,157.00	0.40	99.70	6,155.44	-37.37	37.11	52.66	1.78	0.00	-387.56
6,201.00	1.90	115.40	6,199.43	-37.70	37.92	53.47	3.45	3.41	35.68
6,245.00	5.40	107.80	6,243.33	-38.65	40.55	55.98	8.01	7.95	-17.27
6,290.00	8.40	105.00	6,288.00	-40.15	45.75	60.67	6.71	6.67	-6.22
6,334.00	11.40	99.40	6,331.34	-41.69	53.14	66.94	7.15	6.82	-12.73
6,379.00	14.90	96.20	6,375.16	-43.04	63.28	74.97	7.94	7.78	-7.11
6,424.00	17.80	97.00	6,418.33	-44.51	75.87	84.79	6.46	6.44	1.78
6,469.00	21.20	96.20	6,460.74	-46.22	90.79	96.42	7.58	7.56	-1.78
6,513.00	23.40	95.50	6,501.45	-47.92	107.39	109.22	5.04	5.00	-1.59
6,558.00	24.90	98.80	6,542.51	-50.23	125.65	123.60	4.48	3.33	7.33
6,602.00	28.50	99.30	6,581.81	-53.34	145.17	139.43	8.20	8.18	1.14
6,647.00	32.00	100.10	6,620.68	-57.17	167.51	157.75	7.83	7.78	1.78
6,691.00	35.90	100.40	6,657.17	-61.54	191.69	177.74	8.87	8.86	0.68
6,736.00	39.50	100.60	6,692.77	-66.56	218.74	200.19	8.00	8.00	0.44
6,780.00	43.10	100.80	6,725.82	-71.95	247.27	223.94	8.19	8.18	0.45
6,825.00	46.80	100.90	6,757.67	-77.94	278.49	249.99	8.22	8.22	0.22
6,869.00	50.90	100.90	6,786.61	-84.20	311.02	277.15	9.32	9.32	0.00
6,914.00	55.30	101.70	6,813.62	-91.26	346.29	306.80	9.88	9.78	1.78
6,958.00	58.80	102.70	6,837.55	-99.06	382.37	337.55	8.18	7.95	2.27
7,003.00	63.00	103.20	6,859.43	-107.88	420.68	370.57	9.38	9.33	1.11
7,047.00	66.00	105.10	6,878.38	-117.59	459.18	404.37	7.85	6.82	4.32
7,092.00	70.50	105.70	6,895.05	-128.69	499.47	440.41	10.08	10.00	1.33
7,136.00	75.10	105.70	6,908.05	-140.06	539.92	476.76	10.45	10.45	0.00
7,181.00	79.30	104.90	6,918.02	-151.64	582.24	514.55	9.49	9.33	-1.78
7,225.00	81.50	103.90	6,925.36	-162.42	624.26	551.58	5.48	5.00	-2.27
7,270.00	85.10	101.80	6,930.61	-172.36	667.82	589.06	9.25	8.00	-4.67
7,314.00	88.70	99.90	6,932.99	-180.63	710.96	625.06	9.25	8.18	-4.32
7,359.00	88.60	99.80	6,934.05	-188.32	755.29	661.47	0.31	-0.22	-0.22
7,403.00	88.60	99.10	6,935.12	-195.54	798.68	696.89	1.59	0.00	-1.59
7,448.00	89.30	102.70	6,935.95	-204.05	842.85	733.78	8.15	1.56	8.00
7,492.00	89.60	105.80	6,936.37	-214.88	885.49	771.27	7.08	0.68	7.05
7,537.00	89.30	110.10	6,936.80	-228.74	928.29	811.04	9.58	-0.67	9.56

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Directional Drilling Contractors

Survey Report

Directional Drilling Contractors, LLC.
An Archer Company

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

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)
7,582.00	89.30	112.90	6,937.35	-245.23	970.15	852.04	6.22	0.00	6.22
7,626.00	89.30	117.60	6,937.89	-264.00	1,009.93	893.22	10.68	0.00	10.68
7,671.00	88.60	119.80	6,938.72	-285.60	1,049.39	936.22	5.13	-1.56	4.89
7,715.00	89.40	123.60	6,939.48	-308.71	1,086.82	978.88	8.82	1.82	8.64
7,760.00	89.00	126.50	6,940.11	-334.55	1,123.65	1,023.08	6.50	-0.89	6.44
7,804.00	88.60	130.90	6,941.03	-362.05	1,157.97	1,066.72	10.04	-0.91	10.00
7,846.00	88.90	135.30	6,941.95	-390.73	1,188.62	1,108.65	10.50	0.71	10.48
7,891.00	89.20	139.00	6,942.70	-423.71	1,219.22	1,153.62	8.25	0.67	8.22
7,935.00	90.30	142.70	6,942.89	-457.83	1,246.99	1,197.45	8.77	2.50	8.41
7,980.00	90.30	146.60	6,942.65	-494.52	1,273.02	1,241.90	8.67	0.00	8.67
8,024.00	89.50	150.70	6,942.73	-532.09	1,295.91	1,284.79	9.49	-1.82	9.32
8,068.00	88.40	154.40	6,943.54	-571.12	1,316.18	1,326.91	8.77	-2.50	8.41
8,113.00	87.30	157.60	6,945.23	-612.20	1,334.47	1,369.11	7.51	-2.44	7.11
8,157.00	87.60	159.20	6,947.18	-653.07	1,350.65	1,409.70	3.70	0.68	3.64
8,201.00	88.40	159.80	6,948.72	-694.25	1,366.05	1,449.97	2.27	1.82	1.36
8,246.00	88.40	159.40	6,949.98	-736.42	1,381.73	1,491.13	0.89	0.00	-0.89
8,290.00	88.30	159.10	6,951.24	-777.54	1,397.31	1,531.48	0.72	-0.23	-0.68
8,334.00	88.90	159.40	6,952.32	-818.68	1,412.90	1,571.84	1.52	1.36	0.68
8,379.00	88.50	159.10	6,953.34	-860.75	1,428.84	1,613.11	1.11	-0.89	-0.67
8,424.00	89.10	159.10	6,954.28	-902.78	1,444.89	1,654.44	1.33	1.33	0.00
8,469.00	89.30	159.10	6,954.91	-944.81	1,460.94	1,695.77	0.44	0.44	0.00
8,513.00	90.30	160.40	6,955.06	-986.09	1,476.17	1,735.98	3.73	2.27	2.95
8,558.00	90.60	159.50	6,954.71	-1,028.36	1,491.59	1,777.05	2.11	0.67	-2.00
8,602.00	90.60	159.40	6,954.25	-1,069.56	1,507.04	1,817.35	0.23	0.00	-0.23
8,646.00	90.50	159.40	6,953.83	-1,110.75	1,522.52	1,857.68	0.23	-0.23	0.00
8,691.00	90.40	159.30	6,953.47	-1,152.85	1,538.39	1,898.93	0.31	-0.22	-0.22
8,735.00	89.80	158.80	6,953.40	-1,193.94	1,554.12	1,939.36	1.78	-1.36	-1.14
8,780.00	89.60	158.30	6,953.63	-1,235.83	1,570.57	1,980.86	1.20	-0.44	-1.11
8,824.00	89.60	158.30	6,953.94	-1,276.71	1,586.84	2,021.52	0.00	0.00	0.00
8,869.00	89.60	158.70	6,954.25	-1,318.57	1,603.33	2,063.04	0.89	0.00	0.89
8,914.00	89.80	158.10	6,954.49	-1,360.41	1,619.90	2,104.58	1.41	0.44	-1.33
8,958.00	89.10	159.90	6,954.91	-1,401.49	1,635.67	2,145.03	4.39	-1.59	4.09
9,003.00	89.20	159.70	6,955.58	-1,443.72	1,651.20	2,186.13	0.50	0.22	-0.44
9,047.00	89.30	159.50	6,956.15	-1,484.95	1,666.54	2,226.39	0.51	0.23	-0.45
9,092.00	89.20	159.40	6,956.74	-1,527.08	1,682.33	2,267.61	0.31	-0.22	-0.22
9,136.00	89.00	160.10	6,957.43	-1,568.36	1,697.56	2,307.83	1.65	-0.45	1.59
9,166.00	88.60	160.80	6,958.06	-1,596.62	1,707.60	2,335.09	2.69	-1.33	2.33
9,196.00	88.50	161.40	6,958.82	-1,625.00	1,717.31	2,362.20	2.03	-0.33	2.00
9,227.00	88.70	160.90	6,959.58	-1,654.33	1,727.33	2,390.23	1.74	0.65	-1.61
9,257.00	88.80	161.10	6,960.23	-1,682.68	1,737.09	2,417.36	0.75	0.33	0.67
9,288.00	89.00	161.30	6,960.83	-1,712.03	1,747.08	2,445.36	0.91	0.65	0.65
9,318.00	89.00	161.50	6,961.35	-1,740.45	1,756.65	2,472.41	0.67	0.00	0.67
9,349.00	88.80	161.80	6,961.95	-1,769.87	1,766.40	2,500.31	1.16	-0.65	0.97
9,380.00	88.60	162.00	6,962.65	-1,799.33	1,776.03	2,528.14	0.91	-0.65	0.65

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Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

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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)
9,411.00	88.50	161.10	6,963.44	-1,828.73	1,785.84	2,556.06	2.92	-0.32	-2.90
9,441.00	88.50	161.10	6,964.22	-1,857.10	1,795.55	2,583.17	0.00	0.00	0.00
9,471.00	88.60	160.90	6,964.98	-1,885.46	1,805.32	2,610.31	0.75	0.33	-0.67
9,502.00	88.90	160.80	6,965.66	-1,914.73	1,815.48	2,638.39	1.02	0.97	-0.32
9,532.00	89.00	161.60	6,966.21	-1,943.13	1,825.15	2,665.49	2.69	0.33	2.67
9,563.00	89.30	161.30	6,966.67	-1,972.51	1,835.01	2,693.44	1.37	0.97	-0.97
9,593.00	88.90	161.70	6,967.14	-2,000.96	1,844.53	2,720.47	1.89	-1.33	1.33
9,623.00	89.00	161.60	6,967.69	-2,029.43	1,853.97	2,747.47	0.47	0.33	-0.33
9,654.00	89.40	160.70	6,968.12	-2,058.76	1,863.99	2,775.48	3.18	1.29	-2.90
9,685.00	89.30	159.60	6,968.47	-2,087.92	1,874.51	2,803.72	3.56	-0.32	-3.55
9,714.00	89.00	158.90	6,968.90	-2,115.04	1,884.79	2,830.33	2.63	-1.03	-2.41
9,745.00	88.50	158.60	6,969.58	-2,143.92	1,896.02	2,858.87	1.88	-1.61	-0.97
9,775.00	88.30	158.10	6,970.42	-2,171.79	1,907.08	2,886.57	1.79	-0.67	-1.67
9,806.00	88.50	158.60	6,971.28	-2,200.60	1,918.51	2,915.19	1.74	0.65	1.61
9,836.00	89.10	158.90	6,971.91	-2,228.55	1,929.39	2,942.81	2.24	2.00	1.00
9,867.00	88.90	158.80	6,972.45	-2,257.46	1,940.57	2,971.33	0.72	-0.65	-0.32
9,898.00	88.90	157.90	6,973.05	-2,286.26	1,952.00	2,999.96	2.90	0.00	-2.90
9,928.00	89.50	158.60	6,973.46	-2,314.13	1,963.12	3,027.69	3.07	2.00	2.33
9,958.00	89.70	158.50	6,973.67	-2,342.05	1,974.09	3,055.36	0.75	0.67	-0.33
9,988.00	89.50	158.50	6,973.88	-2,369.96	1,985.08	3,083.03	0.67	-0.67	0.00
10,019.00	89.20	158.30	6,974.23	-2,398.78	1,996.50	3,111.65	1.16	-0.97	-0.65
10,049.00	89.30	157.30	6,974.63	-2,426.55	2,007.83	3,139.47	3.35	0.33	-3.33
10,080.00	89.30	157.70	6,975.01	-2,455.19	2,019.69	3,168.27	1.29	0.00	1.29
10,110.00	89.50	157.20	6,975.32	-2,482.90	2,031.20	3,196.16	1.79	0.67	-1.67
10,141.00	89.50	157.20	6,975.59	-2,511.47	2,043.21	3,225.02	0.00	0.00	0.00
10,172.00	89.50	156.70	6,975.86	-2,540.00	2,055.35	3,253.94	1.61	0.00	-1.61
10,202.00	89.30	157.40	6,976.18	-2,567.62	2,067.04	3,281.90	2.43	-0.67	2.33
10,232.00	89.80	157.10	6,976.41	-2,595.29	2,078.64	3,309.82	1.94	1.67	-1.00
10,262.00	89.90	158.60	6,976.49	-2,623.07	2,089.95	3,337.63	5.01	0.33	5.00
10,293.00	90.20	158.10	6,976.46	-2,651.88	2,101.39	3,366.26	1.88	0.97	-1.61
10,324.00	90.10	158.10	6,976.38	-2,680.65	2,112.95	3,394.94	0.32	-0.32	0.00
10,354.00	90.00	158.70	6,976.36	-2,708.54	2,124.00	3,422.64	2.03	-0.33	2.00
10,385.00	90.00	158.10	6,976.36	-2,737.36	2,135.41	3,451.27	1.94	0.00	-1.94
10,415.00	89.80	158.00	6,976.41	-2,765.19	2,146.62	3,479.03	0.75	-0.67	-0.33
10,445.00	89.60	157.50	6,976.56	-2,792.95	2,157.98	3,506.86	1.80	-0.67	-1.67
10,490.00	89.60	157.20	6,976.88	-2,834.48	2,175.31	3,548.72	0.67	0.00	-0.67
10,534.00	90.60	158.70	6,976.80	-2,875.26	2,191.83	3,589.47	4.10	2.27	3.41
10,578.00	90.50	157.90	6,976.38	-2,916.14	2,208.10	3,630.13	1.83	-0.23	-1.82
10,623.00	90.70	158.10	6,975.91	-2,957.86	2,224.95	3,671.79	0.63	0.44	0.44
10,667.00	90.30	157.70	6,975.52	-2,998.63	2,241.51	3,712.56	1.29	-0.91	-0.91
10,712.00	90.00	157.90	6,975.41	-3,040.29	2,258.51	3,754.29	0.80	-0.67	0.44
10,756.00	89.90	157.70	6,975.45	-3,081.03	2,275.13	3,795.09	0.51	-0.23	-0.45
10,798.00	89.70	157.50	6,975.59	-3,119.86	2,291.14	3,834.09	0.67	-0.48	-0.48

Directional Drilling Contractors, LLC.
An Archer Company

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

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)
10,842.00	89.60	157.00	6,975.86	-3,160.44	2,308.15	3,875.04	1.16	-0.23	-1.14
10,887.00	89.60	157.70	6,976.17	-3,201.97	2,325.48	3,916.90	1.56	0.00	1.56
10,931.00	89.70	155.90	6,976.44	-3,242.40	2,342.82	3,957.98	4.10	0.23	-4.09
10,976.00	89.60	155.20	6,976.72	-3,283.37	2,361.44	4,000.33	1.57	-0.22	-1.56
11,020.00	89.30	157.30	6,977.14	-3,323.64	2,379.16	4,041.56	4.82	-0.68	4.77
11,065.00	89.50	156.80	6,977.61	-3,365.07	2,396.71	4,083.50	1.20	0.44	-1.11
11,110.00	89.80	157.70	6,977.89	-3,406.57	2,414.11	4,125.39	2.11	0.67	2.00
11,154.00	89.90	159.40	6,978.00	-3,447.52	2,430.20	4,165.97	3.87	0.23	3.86
11,198.00	89.90	158.70	6,978.08	-3,488.61	2,445.93	4,206.40	1.59	0.00	-1.59
11,243.00	89.90	158.60	6,978.16	-3,530.52	2,462.31	4,247.87	0.22	0.00	-0.22
11,287.00	90.00	158.80	6,978.20	-3,571.52	2,478.29	4,288.41	0.51	0.23	0.45
11,332.00	88.90	159.70	6,978.63	-3,613.60	2,494.24	4,329.69	3.16	-2.44	2.00
11,377.00	88.90	159.50	6,979.49	-3,655.77	2,509.92	4,370.86	0.44	0.00	-0.44
11,421.00	88.80	159.40	6,980.37	-3,696.96	2,525.36	4,411.16	0.32	-0.23	-0.23
11,465.00	89.20	159.00	6,981.14	-3,738.08	2,540.98	4,451.54	1.29	0.91	-0.91
11,509.00	89.30	159.40	6,981.72	-3,779.21	2,556.61	4,491.92	0.94	0.23	0.91
11,554.00	89.00	160.40	6,982.39	-3,821.47	2,572.07	4,533.00	2.32	-0.67	2.22
11,598.00	89.00	160.40	6,983.15	-3,862.91	2,586.83	4,573.00	0.00	0.00	0.00
11,642.00	89.50	160.00	6,983.73	-3,904.31	2,601.73	4,613.07	1.46	1.14	-0.91
11,687.00	89.40	160.10	6,984.16	-3,946.60	2,617.08	4,654.11	0.31	-0.22	0.22
11,732.00	88.30	160.60	6,985.07	-3,988.97	2,632.21	4,695.03	2.69	-2.44	1.11
11,776.00	88.80	161.90	6,986.18	-4,030.63	2,646.35	4,734.75	3.16	1.14	2.95
11,821.00	88.50	160.50	6,987.24	-4,073.21	2,660.85	4,775.40	3.18	-0.67	-3.11
11,865.00	89.00	160.10	6,988.20	-4,114.63	2,675.68	4,815.43	1.46	1.14	-0.91
11,910.00	89.10	160.50	6,988.94	-4,156.99	2,690.84	4,856.38	0.92	0.22	0.89
11,954.00	89.30	160.20	6,989.56	-4,198.42	2,705.64	4,896.40	0.82	0.45	-0.68
11,998.00	89.20	160.00	6,990.14	-4,239.79	2,720.61	4,936.50	0.51	-0.23	-0.45
12,043.00	89.10	159.30	6,990.80	-4,281.98	2,736.26	4,977.66	1.57	-0.22	-1.56
12,088.00	89.00	159.30	6,991.55	-4,324.06	2,752.17	5,018.92	0.22	-0.22	0.00
12,132.00	89.30	159.20	6,992.20	-4,365.21	2,767.75	5,059.29	0.72	0.68	-0.23
12,177.00	90.40	159.90	6,992.32	-4,407.37	2,783.47	5,100.48	2.90	2.44	1.56
12,221.00	90.50	160.10	6,991.97	-4,448.71	2,798.52	5,140.62	0.51	0.23	0.45
12,265.00	90.50	159.90	6,991.59	-4,490.06	2,813.57	5,180.75	0.45	0.00	-0.45
12,310.00	90.40	160.00	6,991.24	-4,532.33	2,829.00	5,221.82	0.31	-0.22	0.22
12,354.00	90.60	160.20	6,990.85	-4,573.70	2,843.97	5,261.92	0.64	0.45	0.45
12,399.00	91.10	159.90	6,990.18	-4,616.00	2,859.33	5,302.95	1.30	1.11	-0.67
12,443.00	89.80	160.70	6,989.84	-4,657.42	2,874.16	5,342.99	3.47	-2.95	1.82
12,488.00	89.90	160.30	6,989.96	-4,699.84	2,889.18	5,383.88	0.92	0.22	-0.89
12,532.00	90.20	160.20	6,989.92	-4,741.25	2,904.05	5,423.94	0.72	0.68	-0.23
12,575.00	90.30	160.20	6,989.73	-4,781.71	2,918.61	5,463.10	0.23	0.23	0.00
12,619.00	89.30	160.80	6,989.88	-4,823.18	2,933.30	5,503.08	2.65	-2.27	1.36
12,663.00	88.60	161.30	6,990.69	-4,864.79	2,947.59	5,542.87	1.95	-1.59	1.14
12,708.00	88.80	161.50	6,991.71	-4,907.43	2,961.94	5,583.45	0.63	0.44	0.44

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

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)
12,753.00	89.20	161.20	6,992.50	-4,950.06	2,976.32	5,624.05	1.11	0.89	-0.67
12,797.00	89.10	160.50	6,993.15	-4,991.62	2,990.76	5,663.91	1.61	-0.23	-1.59
12,842.00	89.10	160.20	6,993.86	-5,033.99	3,005.89	5,704.84	0.67	0.00	-0.67
12,886.00	89.20	160.30	6,994.51	-5,075.40	3,020.75	5,744.89	0.32	0.23	0.23
12,931.00	89.30	160.60	6,995.10	-5,117.80	3,035.81	5,785.79	0.70	0.22	0.67
12,975.00	89.30	161.10	6,995.64	-5,159.36	3,050.24	5,825.65	1.14	0.00	1.14
13,020.00	89.80	161.20	6,995.99	-5,201.95	3,064.78	5,866.32	1.13	1.11	0.22
13,064.00	89.20	160.60	6,996.37	-5,243.52	3,079.18	5,906.17	1.93	-1.36	-1.36
13,109.00	89.30	160.20	6,996.96	-5,285.91	3,094.27	5,947.09	0.92	0.22	-0.89
13,153.00	88.70	161.20	6,997.73	-5,327.43	3,108.81	5,987.00	2.65	-1.36	2.27
13,197.00	88.80	161.60	6,998.69	-5,369.13	3,122.84	6,026.67	0.94	0.23	0.91
13,239.00	88.90	161.60	6,999.53	-5,408.97	3,136.10	6,064.48	0.24	0.24	0.00
13,284.00	89.30	160.80	7,000.24	-5,451.56	3,150.60	6,105.13	1.99	0.89	-1.78
13,328.00	89.00	161.20	7,000.89	-5,493.16	3,164.92	6,144.94	1.14	-0.68	0.91
13,373.00	88.50	162.30	7,001.87	-5,535.89	3,179.01	6,185.40	2.68	-1.11	2.44
13,417.00	88.80	162.30	7,002.91	-5,577.79	3,192.38	6,224.77	0.68	0.68	0.00
13,462.00	88.90	162.50	7,003.81	-5,620.68	3,205.99	6,265.00	0.50	0.22	0.44
13,506.00	89.10	162.10	7,004.58	-5,662.59	3,219.36	6,304.38	1.02	0.45	-0.91
13,550.00	89.10	162.40	7,005.27	-5,704.49	3,232.78	6,343.77	0.68	0.00	0.68
13,595.00	88.00	163.00	7,006.41	-5,747.44	3,246.15	6,383.90	2.78	-2.44	1.33
13,639.00	88.20	163.30	7,007.87	-5,789.53	3,258.90	6,422.96	0.82	0.45	0.68
13,684.00	88.20	162.90	7,009.28	-5,832.56	3,271.98	6,462.93	0.89	0.00	-0.89
13,728.00	89.10	162.60	7,010.32	-5,874.57	3,285.02	6,502.15	2.16	2.05	-0.68
13,772.00	89.60	162.10	7,010.82	-5,916.50	3,298.36	6,541.51	1.61	1.14	-1.14
13,817.00	90.40	162.40	7,010.82	-5,959.35	3,312.08	6,581.80	1.90	1.78	0.67
13,861.00	90.70	162.50	7,010.40	-6,001.30	3,325.35	6,621.13	0.72	0.68	0.23
13,906.00	90.20	162.70	7,010.04	-6,044.24	3,338.80	6,661.30	1.20	-1.11	0.44
13,950.00	90.30	162.50	7,009.85	-6,086.23	3,351.96	6,700.58	0.51	0.23	-0.45
13,995.00	90.60	162.30	7,009.50	-6,129.12	3,365.57	6,740.82	0.80	0.67	-0.44
14,040.00	90.10	163.20	7,009.22	-6,172.10	3,378.91	6,780.94	2.29	-1.11	2.00
14,084.00	90.40	163.20	7,009.03	-6,214.22	3,391.63	6,820.00	0.68	0.68	0.00
14,129.00	90.60	163.00	7,008.64	-6,257.27	3,404.71	6,860.00	0.63	0.44	-0.44
14,173.00	90.10	163.50	7,008.37	-6,299.40	3,417.39	6,899.05	1.61	-1.14	1.14
14,218.00	90.00	163.50	7,008.33	-6,342.55	3,430.17	6,938.89	0.22	-0.22	0.00
14,262.00	90.10	163.50	7,008.29	-6,384.74	3,442.67	6,977.86	0.23	0.23	0.00
14,307.00	90.20	163.60	7,008.18	-6,427.90	3,455.41	7,017.68	0.31	0.22	0.22
14,352.00	90.20	163.90	7,008.02	-6,471.10	3,468.00	7,057.44	0.67	0.00	0.67
14,396.00	90.10	164.50	7,007.90	-6,513.44	3,479.98	7,096.15	1.38	-0.23	1.36
14,441.00	89.90	163.70	7,007.90	-6,556.71	3,492.31	7,135.78	1.83	-0.44	-1.78
14,485.00	88.50	162.70	7,008.52	-6,598.83	3,505.03	7,174.84	3.91	-3.18	-2.27
14,529.00	88.70	162.30	7,009.59	-6,640.78	3,518.25	7,214.14	1.02	0.45	-0.91
14,573.00	88.40	162.40	7,010.71	-6,682.70	3,531.59	7,253.49	0.72	-0.68	0.23
14,618.00	88.80	162.50	7,011.80	-6,725.59	3,545.15	7,293.70	0.92	0.89	0.22
14,662.00	88.80	162.50	7,012.73	-6,767.54	3,558.38	7,333.01	0.00	0.00	0.00

Directional Drilling Contractors

Survey Report

Directional Drilling Contractors, LLC.
An Archer Company

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

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)
14,707.00	89.10	163.00	7,013.55	-6,810.51	3,571.72	7,373.12	1.30	0.67	1.11
14,751.00	89.40	162.90	7,014.13	-6,852.57	3,584.62	7,412.27	0.72	0.68	-0.23
14,796.00	89.50	163.50	7,014.56	-6,895.65	3,597.63	7,452.23	1.35	0.22	1.33
14,840.00	88.00	163.80	7,015.52	-6,937.86	3,610.01	7,491.12	3.48	-3.41	0.68
14,882.00	88.40	163.40	7,016.84	-6,978.13	3,621.87	7,528.26	1.35	0.95	-0.95
14,927.00	88.20	163.60	7,018.17	-7,021.26	3,634.64	7,568.09	0.63	-0.44	0.44
14,971.00	88.40	163.30	7,019.48	-7,063.42	3,647.17	7,607.06	0.82	0.45	-0.68
15,016.00	88.50	163.40	7,020.70	-7,106.52	3,660.06	7,646.94	0.31	0.22	0.22
15,060.00	88.20	163.50	7,021.96	-7,148.68	3,672.59	7,685.91	0.72	-0.68	0.23
15,105.00	88.40	163.90	7,023.30	-7,191.85	3,685.21	7,725.66	0.99	0.44	0.89
15,149.00	88.80	163.70	7,024.37	-7,234.09	3,697.48	7,764.51	1.02	0.91	-0.45
15,194.00	89.40	162.40	7,025.08	-7,277.13	3,710.60	7,804.51	3.18	1.33	-2.89
15,238.00	88.80	162.90	7,025.77	-7,319.12	3,723.72	7,843.77	1.77	-1.36	1.14
15,282.00	88.50	162.70	7,026.81	-7,361.14	3,736.73	7,882.97	0.82	-0.68	-0.45
15,342.00	88.50	162.70	7,028.38	-7,418.41	3,754.56	7,936.46	0.00	0.00	0.00

Projection to bit 15342.00 MD, 88.50 INC, 162.70 AZI, 7028.38 TVD

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
15,342.00	7,028.38	-7,418.41	3,754.56	Projection to bit 15342.00 MD, 88.50 INC, 162.70 AZI, 7028.38 TVD

Checked By: _____ Approved By: _____ Date: _____

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Jay Bee Oil & Gas

Tyler County, WV
RPT 8 Pad
RPT 8-2

Orig Hole

Design: As Drilled

Survey Report - Geographic

24 July, 2013

Received

APR 27 2015

Office of Oil and Gas
WV Dept. of Environmental Protection

Directional Drilling Contractors, LLC.

An Archer Company

Directional Drilling Contractors

Survey Report - Geographic

Directional Drilling Contractors, LLC.
An Archer Company

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Project Tyler County, WV

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	West Virginia Northern Zone		

Site RPT 8 Pad

Site Position:		**Northing:**	360,699.2955 usft	**Latitude:**	39° 28' 59.436 N
From:	Lat/Long	**Easting:**	1,605,463.2041 usft	**Longitude:**	80° 47' 10.601 W
Position Uncertainty:	0.00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.82 °

Well RPT 8-2

Well Position	**+N/-S**	0.00 usft	**Northing:**	360,670.9848 usft	**Latitude:**	39° 28' 59.158 N
	+E/-W	0.00 usft	**Easting:**	1,605,472.7020 usft	**Longitude:**	80° 47' 10.474 W
Position Uncertainty		0.00 usft	**Wellhead Elevation:**	usft	**Ground Level:**	1,244.00 usft

Wellbore Orig Hole

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	User Defined	07/05/13	-7.58	67.13	52,620

Design As Drilled

Audit Notes:

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

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.00	0.00	0.00	135.81

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APR 27 2015
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WV Dept. of Environmental Protection

Survey Program **Date** 07/24/13

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
100.00	6,050.00	GYRO (Orig Hole)	NS-GYRO-MS	North sensing gyrocompassing m/s
6,068.00	15,342.00	MWD (Orig Hole)	MWD	MWD - Standard

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Map Northing (usft)**	**Map Easting (usft)**	**Latitude**	**Longitude**
0.00	0.00	0.00	0.00	0.00	0.00	360,670.9848	1,605,472.7020	39° 28' 59.158 N	80° 47' 10.474 W
100.00	0.29	26.49	100.00	0.23	0.11	360,671.2113	1,605,472.8148	39° 28' 59.160 N	80° 47' 10.473 W
200.00	0.73	296.81	200.00	0.74	-0.34	360,671.7251	1,605,472.3592	39° 28' 59.165 N	80° 47' 10.479 W
300.00	0.62	286.96	299.99	1.19	-1.43	360,672.1703	1,605,471.2731	39° 28' 59.169 N	80° 47' 10.493 W
400.00	0.35	239.40	399.99	1.19	-2.21	360,672.1726	1,605,470.4927	39° 28' 59.169 N	80° 47' 10.503 W
500.00	0.42	122.31	499.99	0.84	-2.16	360,671.8213	1,605,470.5396	39° 28' 59.166 N	80° 47' 10.502 W
600.00	1.91	121.67	599.96	-0.23	-0.43	360,670.7503	1,605,472.2677	39° 28' 59.156 N	80° 47' 10.480 W
700.00	2.16	127.20	699.90	-2.25	2.49	360,668.7360	1,605,475.1871	39° 28' 59.136 N	80° 47' 10.442 W
800.00	2.01	129.78	799.83	-4.51	5.33	360,666.4746	1,605,478.0359	39° 28' 59.114 N	80° 47' 10.406 W
900.00	2.14	130.47	899.77	-6.84	8.10	360,664.1406	1,605,480.8040	39° 28' 59.091 N	80° 47' 10.370 W
1,000.00	2.14	129.54	999.70	-9.24	10.96	360,661.7402	1,605,483.6642	39° 28' 59.068 N	80° 47' 10.333 W

Directional Drilling Contractors

Survey Report - Geographic

Directional Drilling Contractors, LLC.
An Archer Company

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,100.00	2.10	133.72	1,099.63	-11.70	13.73	360,659.2853	1,605,486.4283	39° 28' 59.044 N	80° 47' 10.297 W
1,200.00	2.45	132.51	1,199.55	-14.41	16.63	360,656.5748	1,605,489.3280	39° 28' 59.018 N	80° 47' 10.260 W
1,300.00	2.58	128.71	1,299.45	-17.26	19.96	360,653.7229	1,605,492.6599	39° 28' 58.990 N	80° 47' 10.217 W
1,400.00	2.33	129.79	1,399.36	-19.97	23.28	360,651.0145	1,605,495.9781	39° 28' 58.964 N	80° 47' 10.174 W
1,500.00	1.99	137.52	1,499.29	-22.55	26.01	360,648.4331	1,605,498.7127	39° 28' 58.939 N	80° 47' 10.139 W
1,600.00	2.09	134.58	1,599.23	-25.11	28.48	360,645.8726	1,605,501.1840	39° 28' 58.914 N	80° 47' 10.107 W
1,700.00	2.35	134.65	1,699.15	-27.83	31.24	360,643.1519	1,605,503.9413	39° 28' 58.887 N	80° 47' 10.071 W
1,800.00	2.42	121.54	1,799.07	-30.38	34.50	360,640.6067	1,605,507.1992	39° 28' 58.863 N	80° 47' 10.029 W
1,900.00	2.30	126.37	1,898.98	-32.67	37.91	360,638.3124	1,605,510.6143	39° 28' 58.840 N	80° 47' 9.985 W
2,000.00	1.98	127.31	1,998.91	-34.91	40.90	360,636.0754	1,605,513.6040	39° 28' 58.819 N	80° 47' 9.946 W
2,100.00	1.54	138.82	2,098.86	-36.97	43.16	360,634.0170	1,605,515.8628	39° 28' 58.799 N	80° 47' 9.917 W
2,200.00	1.95	138.95	2,198.82	-39.26	45.16	360,631.7225	1,605,517.8649	39° 28' 58.776 N	80° 47' 9.891 W
2,300.00	2.39	128.35	2,298.75	-41.84	47.92	360,629.1457	1,605,520.6174	39° 28' 58.751 N	80° 47' 9.856 W
2,400.00	2.38	129.58	2,398.66	-44.46	51.15	360,626.5291	1,605,523.8529	39° 28' 58.726 N	80° 47' 9.814 W
2,500.00	1.26	142.32	2,498.61	-46.65	53.42	360,624.3359	1,605,526.1254	39° 28' 58.704 N	80° 47' 9.785 W
2,600.00	0.79	152.24	2,598.59	-48.13	54.42	360,622.8557	1,605,527.1185	39° 28' 58.690 N	80° 47' 9.772 W
2,700.00	0.17	188.78	2,698.59	-48.89	54.72	360,622.0990	1,605,527.4170	39° 28' 58.683 N	80° 47' 9.768 W
2,800.00	0.71	188.78	2,798.58	-49.64	54.60	360,621.3401	1,605,527.2998	39° 28' 58.675 N	80° 47' 9.769 W
2,900.00	0.24	59.59	2,898.58	-50.15	54.68	360,620.8338	1,605,527.3858	39° 28' 58.670 N	80° 47' 9.768 W
3,000.00	0.36	254.85	2,998.58	-50.13	54.56	360,620.8577	1,605,527.2632	39° 28' 58.670 N	80° 47' 9.769 W
3,100.00	0.50	148.37	3,098.58	-50.58	54.49	360,620.4040	1,605,527.1888	39° 28' 58.666 N	80° 47' 9.770 W
3,200.00	0.36	300.86	3,198.58	-50.79	54.45	360,620.1937	1,605,527.1479	39° 28' 58.664 N	80° 47' 9.771 W
3,300.00	0.75	247.31	3,298.57	-50.88	53.57	360,620.1024	1,605,526.2744	39° 28' 58.663 N	80° 47' 9.782 W
3,400.00	0.62	299.27	3,398.57	-50.87	52.50	360,620.1144	1,605,525.1986	39° 28' 58.663 N	80° 47' 9.796 W
3,500.00	0.65	240.99	3,498.56	-50.88	51.53	360,620.1039	1,605,524.2306	39° 28' 58.662 N	80° 47' 9.808 W
3,600.00	0.11	44.40	3,598.56	-51.09	51.10	360,619.8974	1,605,523.8017	39° 28' 58.660 N	80° 47' 9.813 W
3,700.00	0.62	295.45	3,698.56	-50.79	50.68	360,620.1985	1,605,523.3803	39° 28' 58.663 N	80° 47' 9.819 W
3,800.00	0.71	263.37	3,798.55	-50.63	49.57	360,620.3594	1,605,522.2763	39° 28' 58.665 N	80° 47' 9.833 W
3,900.00	0.44	310.33	3,898.55	-50.45	48.67	360,620.5364	1,605,521.3682	39° 28' 58.666 N	80° 47' 9.845 W
4,000.00	0.76	276.03	3,998.54	-50.13	47.71	360,620.8546	1,605,520.4159	39° 28' 58.669 N	80° 47' 9.857 W
4,100.00	0.32	335.59	4,098.54	-49.81	46.94	360,621.1785	1,605,519.6410	39° 28' 58.672 N	80° 47' 9.867 W
4,200.00	0.69	288.50	4,198.54	-49.36	46.25	360,621.6239	1,605,518.9546	39° 28' 58.677 N	80° 47' 9.876 W
4,300.00	0.14	70.92	4,298.53	-49.13	45.80	360,621.8549	1,605,518.4990	39° 28' 58.679 N	80° 47' 9.881 W
4,400.00	0.31	328.23	4,398.53	-48.86	45.77	360,622.1248	1,605,518.4720	39° 28' 58.682 N	80° 47' 9.882 W
4,500.00	0.57	256.05	4,498.53	-48.75	45.14	360,622.2349	1,605,517.8469	39° 28' 58.683 N	80° 47' 9.890 W
4,600.00	0.38	36.52	4,598.53	-48.60	44.86	360,622.3815	1,605,517.5615	39° 28' 58.684 N	80° 47' 9.893 W
4,700.00	0.64	305.48	4,698.53	-48.01	44.60	360,622.9721	1,605,517.3040	39° 28' 58.690 N	80° 47' 9.897 W
4,800.00	0.41	250.11	4,798.52	-47.81	43.81	360,623.1746	1,605,516.5128	39° 28' 58.692 N	80° 47' 9.907 W
4,900.00	0.48	44.26	4,898.52	-47.63	43.77	360,623.3528	1,605,516.4687	39° 28' 58.693 N	80° 47' 9.908 W
5,000.00	0.35	270.29	4,998.52	-47.33	43.75	360,623.6544	1,605,516.4556	39° 28' 58.696 N	80° 47' 9.908 W
5,100.00	0.89	325.58	5,098.51	-46.69	43.01	360,624.2966	1,605,515.7111	39° 28' 58.703 N	80° 47' 9.917 W
5,200.00	0.41	0.43	5,198.51	-45.69	42.57	360,625.2950	1,605,515.2748	39° 28' 58.712 N	80° 47' 9.923 W
5,300.00	0.88	298.91	5,298.50	-44.96	41.90	360,626.0241	1,605,514.6053	39° 28' 58.720 N	80° 47' 9.932 W
5,400.00	0.97	320.37	5,398.49	-43.94	40.69	360,627.0472	1,605,513.3932	39° 28' 58.729 N	80° 47' 9.947 W
5,500.00	0.74	22.14	5,498.48	-42.69	40.39	360,628.2973	1,605,513.0966	39° 28' 58.742 N	80° 47' 9.951 W
5,600.00	0.31	281.37	5,598.48	-42.04	40.37	360,628.9488	1,605,513.0748	39° 28' 58.748 N	80° 47' 9.952 W
5,700.00	0.97	330.23	5,698.47	-41.25	39.69	360,629.7369	1,605,512.3893	39° 28' 58.756 N	80° 47' 9.961 W
5,800.00	0.98	341.93	5,798.46	-39.70	39.00	360,631.2846	1,605,511.7037	39° 28' 58.771 N	80° 47' 9.970 W
5,900.00	0.19	4.99	5,898.45	-38.72	38.75	360,632.2628	1,605,511.4529	39° 28' 58.781 N	80° 47' 9.973 W
6,000.00	0.79	305.62	5,998.45	-38.16	38.20	360,632.8295	1,605,510.9069	39° 28' 58.786 N	80° 47' 9.980 W
6,050.00	0.87	319.12	6,048.44	-37.67	37.68	360,633.3172	1,605,510.3783	39° 28' 58.791 N	80° 47' 9.987 W
6,068.00	0.70	302.40	6,066.44	-37.51	37.49	360,633.4795	1,605,510.1960	39° 28' 58.793 N	80° 47' 9.989 W
6,112.00	0.40	274.10	6,110.44	-37.35	37.11	360,633.6345	1,605,509.8159	39° 28' 58.794 N	80° 47' 9.994 W
6,157.00	0.40	99.70	6,155.44	-37.37	37.11	360,633.6192	1,605,509.8140	39° 28' 58.794 N	80° 47' 9.994 W
6,201.00	1.90	115.40	6,199.43	-37.70	37.92	360,633.2805	1,605,510.6244	39° 28' 58.791 N	80° 47' 9.984 W

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Directional Drilling Contractors

Survey Report - Geographic

Directional Drilling Contractors, LLC.
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Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
6,245.00	5.40	107.80	6,243.33	-38.65	40.55	360,632.3344	1,605,513.2554	39° 28' 58.782 N	80° 47' 9.950 W
6,290.00	8.40	105.00	6,288.00	-40.15	45.75	360,630.8360	1,605,518.4475	39° 28' 58.768 N	80° 47' 9.884 W
6,334.00	11.40	99.40	6,331.34	-41.69	53.14	360,629.2936	1,605,525.8438	39° 28' 58.753 N	80° 47' 9.789 W
6,379.00	14.90	96.20	6,375.16	-43.04	63.28	360,627.9420	1,605,535.9863	39° 28' 58.742 N	80° 47' 9.659 W
6,424.00	17.80	97.00	6,418.33	-44.51	75.87	360,626.4786	1,605,548.5675	39° 28' 58.729 N	80° 47' 9.499 W
6,469.00	21.20	96.20	6,460.74	-46.22	90.79	360,624.7611	1,605,563.4878	39° 28' 58.714 N	80° 47' 9.308 W
6,513.00	23.40	95.50	6,501.45	-47.92	107.39	360,623.0643	1,605,580.0961	39° 28' 58.700 N	80° 47' 9.096 W
6,558.00	24.90	98.80	6,542.51	-50.23	125.65	360,620.7583	1,605,598.3544	39° 28' 58.679 N	80° 47' 8.863 W
6,602.00	28.50	99.30	6,581.81	-53.34	145.17	360,617.6438	1,605,617.8742	39° 28' 58.651 N	80° 47' 8.613 W
6,647.00	32.00	100.10	6,620.68	-57.17	167.51	360,613.8166	1,605,640.2146	39° 28' 58.617 N	80° 47' 8.328 W
6,691.00	35.90	100.40	6,657.17	-61.54	191.69	360,609.4418	1,605,664.3897	39° 28' 58.577 N	80° 47' 8.018 W
6,736.00	39.50	100.60	6,692.77	-66.56	218.74	360,604.4258	1,605,691.4428	39° 28' 58.531 N	80° 47' 7.673 W
6,780.00	43.10	100.80	6,725.82	-71.95	247.27	360,599.0331	1,605,719.9729	39° 28' 58.482 N	80° 47' 7.308 W
6,825.00	46.80	100.90	6,757.67	-77.94	278.49	360,593.0488	1,605,751.1910	39° 28' 58.427 N	80° 47' 6.908 W
6,869.00	50.90	100.90	6,786.61	-84.20	311.02	360,586.7851	1,605,783.7178	39° 28' 58.370 N	80° 47' 6.493 W
6,914.00	55.30	101.70	6,813.62	-91.26	346.29	360,579.7286	1,605,818.9955	39° 28' 58.305 N	80° 47' 6.041 W
6,958.00	58.80	102.70	6,837.55	-99.06	382.37	360,571.9211	1,605,855.0763	39° 28' 58.233 N	80° 47' 5.580 W
7,003.00	63.00	103.20	6,859.43	-107.88	420.68	360,563.1081	1,605,893.3865	39° 28' 58.151 N	80° 47' 5.090 W
7,047.00	66.00	105.10	6,878.38	-117.59	459.18	360,553.3934	1,605,931.8865	39° 28' 58.061 N	80° 47' 4.597 W
7,092.00	70.50	105.70	6,895.05	-128.69	499.47	360,542.2937	1,605,972.1707	39° 28' 57.957 N	80° 47' 4.081 W
7,136.00	75.10	105.70	6,908.05	-140.06	539.92	360,530.9228	1,606,012.6239	39° 28' 57.850 N	80° 47' 3.563 W
7,181.00	79.30	104.90	6,918.02	-151.64	582.24	360,519.3487	1,606,054.9412	39° 28' 57.742 N	80° 47' 3.021 W
7,225.00	81.50	103.90	6,925.36	-162.42	624.26	360,508.5616	1,606,096.9592	39° 28' 57.641 N	80° 47' 2.483 W
7,270.00	85.10	101.80	6,930.61	-172.36	667.82	360,498.6271	1,606,140.5236	39° 28' 57.549 N	80° 47' 1.926 W
7,314.00	88.70	99.90	6,932.99	-180.63	710.96	360,490.3597	1,606,183.6649	39° 28' 57.473 N	80° 47' 1.374 W
7,359.00	88.60	99.80	6,934.05	-188.32	755.29	360,482.6638	1,606,227.9893	39° 28' 57.404 N	80° 47' 0.808 W
7,403.00	88.60	99.10	6,935.12	-195.54	798.68	360,475.4417	1,606,271.3789	39° 28' 57.338 N	80° 47' 0.253 W
7,448.00	89.30	102.70	6,935.95	-204.05	842.85	360,466.9352	1,606,315.5521	39° 28' 57.260 N	80° 46' 59.688 W
7,492.00	89.60	105.80	6,936.37	-214.88	885.49	360,456.1062	1,606,358.1910	39° 28' 57.159 N	80° 46' 59.142 W
7,537.00	89.30	110.10	6,936.80	-228.74	928.29	360,442.2418	1,606,400.9886	39° 28' 57.029 N	80° 46' 58.594 W
7,582.00	89.30	112.90	6,937.35	-245.23	970.15	360,425.7521	1,606,442.8501	39° 28' 56.871 N	80° 46' 58.057 W
7,626.00	89.30	117.60	6,937.89	-264.00	1,009.93	360,406.9897	1,606,482.6320	39° 28' 56.692 N	80° 46' 57.546 W
7,671.00	88.60	119.80	6,938.72	-285.60	1,049.39	360,385.3848	1,606,522.0943	39° 28' 56.484 N	80° 46' 57.039 W
7,715.00	89.40	123.60	6,939.48	-308.71	1,086.82	360,362.2719	1,606,559.5171	39° 28' 56.261 N	80° 46' 56.558 W
7,760.00	89.00	126.50	6,940.11	-334.55	1,123.65	360,336.4342	1,606,596.3488	39° 28' 56.010 N	80° 46' 56.083 W
7,804.00	88.60	130.90	6,941.03	-362.05	1,157.97	360,308.9364	1,606,630.6718	39° 28' 55.743 N	80° 46' 55.640 W
7,846.00	88.90	135.30	6,941.95	-390.73	1,188.62	360,280.2528	1,606,661.3237	39° 28' 55.464 N	80° 46' 55.244 W
7,891.00	89.20	139.00	6,942.70	-423.71	1,219.22	360,247.2719	1,606,691.9177	39° 28' 55.143 N	80° 46' 54.848 W
7,935.00	90.30	142.70	6,942.89	-457.83	1,246.99	360,213.1568	1,606,719.6917	39° 28' 54.809 N	80° 46' 54.488 W
7,980.00	90.30	146.60	6,942.65	-494.52	1,273.02	360,176.4609	1,606,745.7219	39° 28' 54.450 N	80° 46' 54.149 W
8,024.00	89.50	150.70	6,942.73	-532.09	1,295.91	360,138.8931	1,606,768.6085	39° 28' 54.082 N	80° 46' 53.850 W
8,068.00	88.40	154.40	6,943.54	-571.12	1,316.18	360,099.8609	1,606,788.8843	39° 28' 53.700 N	80° 46' 53.585 W
8,113.00	87.30	157.60	6,945.23	-612.20	1,334.47	360,058.7865	1,606,807.1723	39° 28' 53.296 N	80° 46' 53.344 W
8,157.00	87.60	159.20	6,947.18	-653.07	1,350.65	360,017.9182	1,606,823.3532	39° 28' 52.895 N	80° 46' 53.130 W
8,201.00	88.40	159.80	6,948.72	-694.25	1,366.05	359,976.7302	1,606,838.7527	39° 28' 52.490 N	80° 46' 52.926 W
8,246.00	88.40	159.40	6,949.98	-736.42	1,381.73	359,934.5691	1,606,854.4322	39° 28' 52.075 N	80° 46' 52.719 W
8,290.00	88.30	159.10	6,951.24	-777.54	1,397.31	359,893.4402	1,606,870.0146	39° 28' 51.671 N	80° 46' 52.512 W
8,334.00	88.90	159.40	6,952.32	-818.68	1,412.90	359,852.3068	1,606,885.5986	39° 28' 51.267 N	80° 46' 52.306 W
8,379.00	88.50	159.10	6,953.34	-860.75	1,428.84	359,810.2367	1,606,901.5376	39° 28' 50.853 N	80° 46' 52.095 W
8,424.00	89.10	159.10	6,954.28	-902.78	1,444.89	359,768.2069	1,606,917.5872	39° 28' 50.440 N	80° 46' 51.883 W
8,469.00	89.30	159.10	6,954.91	-944.81	1,460.94	359,726.1718	1,606,933.6388	39° 28' 50.027 N	80° 46' 51.671 W
8,513.00	90.30	160.40	6,955.06	-986.09	1,476.17	359,684.8930	1,606,948.8673	39° 28' 49.621 N	80° 46' 51.469 W
8,558.00	90.60	159.50	6,954.71	-1,028.36	1,491.59	359,642.6221	1,606,964.2945	39° 28' 49.205 N	80° 46' 51.264 W
8,602.00	90.60	159.40	6,954.25	-1,069.56	1,507.04	359,601.4243	1,606,979.7387	39° 28' 48.801 N	80° 46' 51.060 W
8,646.00	90.50	159.40	6,953.83	-1,110.75	1,522.52	359,560.2395	1,606,995.2190	39° 28' 48.396 N	80° 46' 50.855 W

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,691.00	90.40	159.30	6,953.47	-1,152.85	1,538.39	359,518.1320	1,607,011.0882	39° 28' 47.982 N	80° 46' 50.645 W
8,735.00	89.80	158.80	6,953.40	-1,193.94	1,554.12	359,477.0411	1,607,026.8204	39° 28' 47.578 N	80° 46' 50.437 W
8,780.00	89.60	158.30	6,953.63	-1,235.83	1,570.57	359,435.1587	1,607,043.2761	39° 28' 47.166 N	80° 46' 50.219 W
8,824.00	89.60	158.30	6,953.94	-1,276.71	1,586.84	359,394.2778	1,607,059.5445	39° 28' 46.765 N	80° 46' 50.005 W
8,869.00	89.60	158.70	6,954.25	-1,318.57	1,603.33	359,352.4101	1,607,076.0367	39° 28' 46.353 N	80° 46' 49.787 W
8,914.00	89.80	158.10	6,954.49	-1,360.41	1,619.90	359,310.5710	1,607,092.6020	39° 28' 45.942 N	80° 46' 49.568 W
8,958.00	89.10	159.90	6,954.91	-1,401.49	1,635.67	359,269.4973	1,607,108.3687	39° 28' 45.538 N	80° 46' 49.359 W
9,003.00	89.20	159.70	6,955.58	-1,443.72	1,651.20	359,227.2698	1,607,123.9054	39° 28' 45.123 N	80° 46' 49.153 W
9,047.00	89.30	159.50	6,956.15	-1,484.95	1,666.54	359,186.0329	1,607,139.2413	39° 28' 44.718 N	80° 46' 48.950 W
9,092.00	89.20	159.40	6,956.74	-1,527.08	1,682.33	359,143.9001	1,607,155.0360	39° 28' 44.304 N	80° 46' 48.741 W
9,136.00	89.00	160.10	6,957.43	-1,568.36	1,697.56	359,102.6250	1,607,170.2632	39° 28' 43.898 N	80° 46' 48.540 W
9,166.00	88.60	160.80	6,958.06	-1,596.62	1,707.60	359,074.3610	1,607,180.2998	39° 28' 43.620 N	80° 46' 48.406 W
9,196.00	88.50	161.40	6,958.82	-1,625.00	1,717.31	359,045.9876	1,607,190.0142	39° 28' 43.341 N	80° 46' 48.277 W
9,227.00	88.70	160.90	6,959.58	-1,654.33	1,727.33	359,016.6591	1,607,200.0270	39° 28' 43.052 N	80° 46' 48.144 W
9,257.00	88.80	161.10	6,960.23	-1,682.68	1,737.09	358,988.3003	1,607,209.7917	39° 28' 42.774 N	80° 46' 48.015 W
9,288.00	89.00	161.30	6,960.83	-1,712.03	1,747.08	358,958.9596	1,607,219.7801	39° 28' 42.485 N	80° 46' 47.882 W
9,318.00	89.00	161.50	6,961.35	-1,740.45	1,756.65	358,930.5309	1,607,229.3474	39° 28' 42.205 N	80° 46' 47.755 W
9,349.00	88.80	161.80	6,961.95	-1,769.87	1,766.40	358,901.1127	1,607,239.1050	39° 28' 41.916 N	80° 46' 47.625 W
9,380.00	88.60	162.00	6,962.65	-1,799.33	1,776.03	358,871.6543	1,607,248.7335	39° 28' 41.626 N	80° 46' 47.497 W
9,411.00	88.50	161.10	6,963.44	-1,828.73	1,785.84	358,842.2574	1,607,258.5411	39° 28' 41.337 N	80° 46' 47.367 W
9,441.00	88.50	161.10	6,964.22	-1,857.10	1,795.55	358,813.8846	1,607,268.2553	39° 28' 41.058 N	80° 46' 47.237 W
9,471.00	88.60	160.90	6,964.98	-1,885.46	1,805.32	358,785.5281	1,607,278.0192	39° 28' 40.779 N	80° 46' 47.108 W
9,502.00	88.90	160.80	6,965.66	-1,914.73	1,815.48	358,756.2506	1,607,288.1860	39° 28' 40.491 N	80° 46' 46.973 W
9,532.00	89.00	161.60	6,966.21	-1,943.13	1,825.15	358,727.8561	1,607,297.8523	39° 28' 40.212 N	80° 46' 46.844 W
9,563.00	89.30	161.30	6,966.67	-1,972.51	1,835.01	358,698.4700	1,607,307.7133	39° 28' 39.923 N	80° 46' 46.713 W
9,593.00	88.90	161.70	6,967.14	-2,000.96	1,844.53	358,670.0239	1,607,317.2312	39° 28' 39.643 N	80° 46' 46.587 W
9,623.00	89.00	161.60	6,967.69	-2,029.43	1,853.97	358,641.5541	1,607,326.6743	39° 28' 39.363 N	80° 46' 46.461 W
9,654.00	89.40	160.70	6,968.12	-2,058.76	1,863.99	358,612.2200	1,607,336.6890	39° 28' 39.075 N	80° 46' 46.328 W
9,685.00	89.30	159.60	6,968.47	-2,087.92	1,874.51	358,583.0642	1,607,347.2145	39° 28' 38.788 N	80° 46' 46.189 W
9,714.00	89.00	158.90	6,968.90	-2,115.04	1,884.79	358,555.9484	1,607,357.4877	39° 28' 38.522 N	80° 46' 46.053 W
9,745.00	88.50	158.60	6,969.58	-2,143.92	1,896.02	358,527.0632	1,607,368.7206	39° 28' 38.238 N	80° 46' 45.904 W
9,775.00	88.30	158.10	6,970.42	-2,171.79	1,907.08	358,499.1905	1,607,379.7843	39° 28' 37.964 N	80° 46' 45.758 W
9,806.00	88.50	158.60	6,971.28	-2,200.60	1,918.51	358,470.3887	1,607,391.2168	39° 28' 37.681 N	80° 46' 45.607 W
9,836.00	89.10	158.90	6,971.91	-2,228.55	1,929.39	358,442.4348	1,607,402.0875	39° 28' 37.406 N	80° 46' 45.463 W
9,867.00	88.90	158.80	6,972.45	-2,257.46	1,940.57	358,413.5274	1,607,413.2709	39° 28' 37.122 N	80° 46' 45.315 W
9,898.00	88.90	157.90	6,973.05	-2,286.26	1,952.00	358,384.7199	1,607,424.7057	39° 28' 36.839 N	80° 46' 45.164 W
9,928.00	89.50	158.60	6,973.46	-2,314.13	1,963.12	358,356.8586	1,607,435.8212	39° 28' 36.565 N	80° 46' 45.018 W
9,958.00	89.70	158.50	6,973.67	-2,342.05	1,974.09	358,328.9372	1,607,446.7916	39° 28' 36.291 N	80° 46' 44.873 W
9,988.00	89.50	158.50	6,973.88	-2,369.96	1,985.08	358,301.0254	1,607,457.7864	39° 28' 36.016 N	80° 46' 44.727 W
10,019.00	89.20	158.30	6,974.23	-2,398.78	1,996.50	358,272.2042	1,607,469.1975	39° 28' 35.733 N	80° 46' 44.577 W
10,049.00	89.30	157.30	6,974.63	-2,426.55	2,007.83	358,244.4308	1,607,480.5316	39° 28' 35.460 N	80° 46' 44.427 W
10,080.00	89.30	157.70	6,975.01	-2,455.19	2,019.69	358,215.7929	1,607,492.3939	39° 28' 35.179 N	80° 46' 44.271 W
10,110.00	89.50	157.20	6,975.32	-2,482.90	2,031.20	358,188.0881	1,607,503.8979	39° 28' 34.907 N	80° 46' 44.119 W
10,141.00	89.50	157.20	6,975.59	-2,511.47	2,043.21	358,159.5115	1,607,515.9104	39° 28' 34.626 N	80° 46' 43.960 W
10,172.00	89.50	156.70	6,975.86	-2,540.00	2,055.35	358,130.9876	1,607,528.0475	39° 28' 34.346 N	80° 46' 43.801 W
10,202.00	89.30	157.40	6,976.18	-2,567.62	2,067.04	358,103.3639	1,607,539.7446	39° 28' 34.074 N	80° 46' 43.646 W
10,232.00	89.80	157.10	6,976.41	-2,595.29	2,078.64	358,075.6988	1,607,551.3455	39° 28' 33.803 N	80° 46' 43.493 W
10,262.00	89.90	158.60	6,976.49	-2,623.07	2,089.95	358,047.9137	1,607,562.6561	39° 28' 33.530 N	80° 46' 43.344 W
10,293.00	90.20	158.10	6,976.46	-2,651.88	2,101.39	358,019.1008	1,607,574.0931	39° 28' 33.246 N	80° 46' 43.193 W
10,324.00	90.10	158.10	6,976.38	-2,680.65	2,112.95	357,990.3380	1,607,585.6557	39° 28' 32.964 N	80° 46' 43.040 W
10,354.00	90.00	158.70	6,976.36	-2,708.54	2,124.00	357,962.4448	1,607,596.6993	39° 28' 32.690 N	80° 46' 42.894 W
10,385.00	90.00	158.10	6,976.36	-2,737.36	2,135.41	357,933.6219	1,607,608.1111	39° 28' 32.406 N	80° 46' 42.744 W
10,415.00	89.80	158.00	6,976.41	-2,765.19	2,146.62	357,905.7966	1,607,619.3250	39° 28' 32.133 N	80° 46' 42.596 W
10,445.00	89.60	157.50	6,976.56	-2,792.95	2,157.98	357,878.0309	1,607,630.6843	39° 28' 31.860 N	80° 46' 42.446 W
10,490.00	89.60	157.20	6,976.88	-2,834.48	2,175.31	357,836.5026	1,607,648.0134	39° 28' 31.452 N	80° 46' 42.217 W

Directional Drilling Contractors

Survey Report - Geographic

DDC Directional Drilling Contractors, LLC.
An Archer Company

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,534.00	90.60	158.70	6,976.80	-2,875.26	2,191.83	357,795.7226	1,607,664.5310	39° 28' 31.052 N	80° 46' 41.999 W
10,578.00	90.50	157.90	6,976.38	-2,916.14	2,208.10	357,754.8430	1,607,680.7990	39° 28' 30.650 N	80° 46' 41.784 W
10,623.00	90.70	158.10	6,975.91	-2,957.86	2,224.95	357,713.1221	1,607,697.6553	39° 28' 30.240 N	80° 46' 41.562 W
10,667.00	90.30	157.70	6,975.52	-2,998.63	2,241.51	357,672.3565	1,607,714.2085	39° 28' 29.839 N	80° 46' 41.343 W
10,712.00	90.00	157.90	6,975.41	-3,040.29	2,258.51	357,630.6926	1,607,731.2112	39° 28' 29.430 N	80° 46' 41.119 W
10,756.00	89.90	157.70	6,975.45	-3,081.03	2,275.13	357,589.9543	1,607,747.8362	39° 28' 29.030 N	80° 46' 40.900 W
10,798.00	89.70	157.50	6,975.59	-3,119.86	2,291.14	357,551.1236	1,607,763.8411	39° 28' 28.648 N	80° 46' 40.688 W
10,842.00	89.60	157.00	6,975.86	-3,160.44	2,308.15	357,510.5477	1,607,780.8560	39° 28' 28.250 N	80° 46' 40.464 W
10,887.00	89.60	157.70	6,976.17	-3,201.97	2,325.48	357,469.0196	1,607,798.1850	39° 28' 27.842 N	80° 46' 40.236 W
10,931.00	89.70	155.90	6,976.44	-3,242.40	2,342.82	357,428.5801	1,607,815.5174	39° 28' 27.444 N	80° 46' 40.007 W
10,976.00	89.60	155.20	6,976.72	-3,283.37	2,361.44	357,387.6166	1,607,834.1424	39° 28' 27.042 N	80° 46' 39.762 W
11,020.00	89.30	157.30	6,977.14	-3,323.64	2,379.16	357,347.3470	1,607,851.8614	39° 28' 26.647 N	80° 46' 39.529 W
11,065.00	89.50	156.80	6,977.61	-3,365.07	2,396.71	357,305.9114	1,607,869.4071	39° 28' 26.240 N	80° 46' 39.298 W
11,110.00	89.80	157.70	6,977.89	-3,406.57	2,414.11	357,264.4136	1,607,886.8086	39° 28' 25.832 N	80° 46' 39.068 W
11,154.00	89.90	159.40	6,978.00	-3,447.52	2,430.20	357,223.4628	1,607,902.8983	39° 28' 25.430 N	80° 46' 38.856 W
11,198.00	89.90	158.70	6,978.08	-3,488.61	2,445.93	357,182.3719	1,607,918.6305	39° 28' 25.026 N	80° 46' 38.648 W
11,243.00	89.90	158.60	6,978.16	-3,530.52	2,462.31	357,140.4601	1,607,935.0134	39° 28' 24.614 N	80° 46' 38.431 W
11,287.00	90.00	158.80	6,978.20	-3,571.52	2,478.29	357,099.4657	1,607,950.9964	39° 28' 24.211 N	80° 46' 38.220 W
11,332.00	88.90	159.70	6,978.63	-3,613.60	2,494.24	357,057.3877	1,607,966.9384	39° 28' 23.797 N	80° 46' 38.009 W
11,377.00	88.90	159.50	6,979.49	-3,655.77	2,509.92	357,015.2178	1,607,982.6212	39° 28' 23.383 N	80° 46' 37.801 W
11,421.00	88.80	159.40	6,980.37	-3,696.96	2,525.36	356,974.0260	1,607,998.0632	39° 28' 22.978 N	80° 46' 37.597 W
11,465.00	89.20	159.00	6,981.14	-3,738.08	2,540.98	356,932.9001	1,608,013.6855	39° 28' 22.574 N	80° 46' 37.390 W
11,509.00	89.30	159.40	6,981.72	-3,779.21	2,556.61	356,891.7714	1,608,029.3088	39° 28' 22.169 N	80° 46' 37.184 W
11,554.00	89.00	160.40	6,982.39	-3,821.47	2,572.07	356,849.5174	1,608,044.7716	39° 28' 21.754 N	80° 46' 36.979 W
11,598.00	89.00	160.40	6,983.15	-3,862.91	2,586.83	356,808.0731	1,608,059.5292	39° 28' 21.346 N	80° 46' 36.783 W
11,642.00	89.50	160.00	6,983.73	-3,904.31	2,601.73	356,766.6781	1,608,074.4323	39° 28' 20.939 N	80° 46' 36.586 W
11,687.00	89.40	160.10	6,984.16	-3,946.60	2,617.08	356,724.3805	1,608,089.7856	39° 28' 20.523 N	80° 46' 36.382 W
11,732.00	88.30	160.60	6,985.07	-3,988.97	2,632.21	356,682.0105	1,608,104.9146	39° 28' 20.107 N	80° 46' 36.182 W
11,776.00	88.80	161.90	6,986.18	-4,030.63	2,646.35	356,640.3599	1,608,119.0530	39° 28' 19.697 N	80° 46' 35.994 W
11,821.00	88.50	160.50	6,987.24	-4,073.21	2,660.85	356,597.7736	1,608,133.5506	39° 28' 19.278 N	80° 46' 35.801 W
11,865.00	89.00	160.10	6,988.20	-4,114.63	2,675.68	356,556.3590	1,608,148.3792	39° 28' 18.871 N	80° 46' 35.605 W
11,910.00	89.10	160.50	6,988.94	-4,156.99	2,690.84	356,513.9987	1,608,163.5463	39° 28' 18.455 N	80° 46' 35.404 W
11,954.00	89.30	160.20	6,989.56	-4,198.42	2,705.64	356,472.5652	1,608,178.3409	39° 28' 18.047 N	80° 46' 35.207 W
11,998.00	89.20	160.00	6,990.14	-4,239.79	2,720.61	356,431.1961	1,608,193.3163	39° 28' 17.641 N	80° 46' 35.009 W
12,043.00	89.10	159.30	6,990.80	-4,281.98	2,736.26	356,389.0096	1,608,208.9634	39° 28' 17.226 N	80° 46' 34.802 W
12,088.00	89.00	159.30	6,991.55	-4,324.06	2,752.17	356,346.9204	1,608,224.8676	39° 28' 16.812 N	80° 46' 34.591 W
12,132.00	89.30	159.20	6,992.20	-4,365.21	2,767.75	356,305.7791	1,608,240.4547	39° 28' 16.408 N	80° 46' 34.385 W
12,177.00	90.40	159.90	6,992.32	-4,407.37	2,783.47	356,263.6161	1,608,256.1768	39° 28' 15.993 N	80° 46' 34.177 W
12,221.00	90.50	160.10	6,991.97	-4,448.71	2,798.52	356,222.2709	1,608,271.2252	39° 28' 15.587 N	80° 46' 33.978 W
12,265.00	90.50	159.90	6,991.59	-4,490.06	2,813.57	356,180.9261	1,608,286.2735	39° 28' 15.180 N	80° 46' 33.778 W
12,310.00	90.40	160.00	6,991.24	-4,532.33	2,829.00	356,138.6547	1,608,301.7008	39° 28' 14.765 N	80° 46' 33.574 W
12,354.00	90.60	160.20	6,990.85	-4,573.70	2,843.97	356,097.2836	1,608,316.6770	39° 28' 14.358 N	80° 46' 33.375 W
12,399.00	91.10	159.90	6,990.18	-4,616.00	2,859.33	356,054.9888	1,608,332.0292	39° 28' 13.942 N	80° 46' 33.172 W
12,443.00	89.80	160.70	6,989.84	-4,657.42	2,874.16	356,013.5666	1,608,346.8605	39° 28' 13.535 N	80° 46' 32.975 W
12,488.00	89.90	160.30	6,989.96	-4,699.84	2,889.18	355,971.1480	1,608,361.8817	39° 28' 13.118 N	80° 46' 32.776 W
12,532.00	90.20	160.20	6,989.92	-4,741.25	2,904.05	355,929.7363	1,608,376.7500	39° 28' 12.710 N	80° 46' 32.579 W
12,575.00	90.30	160.20	6,989.73	-4,781.71	2,918.61	355,889.2788	1,608,391.3156	39° 28' 12.313 N	80° 46' 32.386 W
12,619.00	89.30	160.80	6,989.88	-4,823.18	2,933.30	355,847.8036	1,608,406.0028	39° 28' 11.905 N	80° 46' 32.191 W
12,663.00	88.60	161.30	6,990.69	-4,864.79	2,947.59	355,806.1957	1,608,420.2889	39° 28' 11.496 N	80° 46' 32.002 W
12,708.00	88.80	161.50	6,991.71	-4,907.43	2,961.94	355,763.5571	1,608,434.6384	39° 28' 11.076 N	80° 46' 31.811 W
12,753.00	89.20	161.20	6,992.50	-4,950.06	2,976.32	355,720.9267	1,608,449.0265	39° 28' 10.657 N	80° 46' 31.620 W
12,797.00	89.10	160.50	6,993.15	-4,991.62	2,990.76	355,679.3664	1,608,463.4587	39° 28' 10.248 N	80° 46' 31.428 W
12,842.00	89.10	160.20	6,993.86	-5,033.99	3,005.89	355,636.9922	1,608,478.5892	39° 28' 9.829 N	80° 46' 31.228 W
12,886.00	89.20	160.30	6,994.51	-5,075.40	3,020.75	355,595.5851	1,608,493.4559	39° 28' 9.424 N	80° 46' 31.030 W
12,931.00	89.30	160.60	6,995.10	-5,117.80	3,035.81	355,553.1830	1,608,508.5129	39° 28' 9.008 N	80° 46' 30.831 W

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Directional Drilling Contractors

Survey Report - Geographic

Directional Drilling Contractors, LLC.
An Archer Company

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WV Dept. of Environmental Protection

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,975.00	89.30	161.10	6,995.64	-5,159.36	3,050.24	355,511.6211	1,608,522.9456	39° 28' 8.599 N	80° 46' 30.639 W
13,020.00	89.80	161.20	6,995.99	-5,201.95	3,064.78	355,469.0360	1,608,537.4842	39° 28' 8.180 N	80° 46' 30.446 W
13,064.00	89.20	160.60	6,996.37	-5,243.52	3,079.18	355,427.4602	1,608,551.8811	39° 28' 7.771 N	80° 46' 30.255 W
13,109.00	89.30	160.20	6,996.96	-5,285.91	3,094.27	355,385.0713	1,608,566.9751	39° 28' 7.354 N	80° 46' 30.055 W
13,153.00	88.70	161.20	6,997.73	-5,327.43	3,108.81	355,343.5511	1,608,581.5153	39° 28' 6.946 N	80° 46' 29.862 W
13,197.00	88.80	161.60	6,998.69	-5,369.13	3,122.84	355,301.8593	1,608,595.5462	39° 28' 6.536 N	80° 46' 29.676 W
13,239.00	88.90	161.60	6,999.53	-5,408.97	3,136.10	355,262.0146	1,608,608.8008	39° 28' 6.144 N	80° 46' 29.499 W
13,284.00	89.30	160.80	7,000.24	-5,451.56	3,150.60	355,219.4211	1,608,623.3008	39° 28' 5.725 N	80° 46' 29.307 W
13,328.00	89.00	161.20	7,000.89	-5,493.16	3,164.92	355,177.8229	1,608,637.6242	39° 28' 5.316 N	80° 46' 29.117 W
13,373.00	88.50	162.30	7,001.87	-5,535.89	3,179.01	355,135.0975	1,608,651.7130	39° 28' 4.896 N	80° 46' 28.929 W
13,417.00	88.80	162.30	7,002.91	-5,577.79	3,192.38	355,093.1920	1,608,665.0867	39° 28' 4.484 N	80° 46' 28.751 W
13,462.00	88.90	162.50	7,003.81	-5,620.68	3,205.99	355,050.3071	1,608,678.6906	39° 28' 4.062 N	80° 46' 28.570 W
13,506.00	89.10	162.10	7,004.58	-5,662.59	3,219.36	355,008.3965	1,608,692.0660	39° 28' 3.649 N	80° 46' 28.392 W
13,550.00	89.10	162.40	7,005.27	-5,704.49	3,232.78	354,966.4963	1,608,705.4783	39° 28' 3.237 N	80° 46' 28.213 W
13,595.00	88.00	163.00	7,006.41	-5,747.44	3,246.15	354,923.5467	1,608,718.8557	39° 28' 2.814 N	80° 46' 28.035 W
13,639.00	88.20	163.30	7,007.87	-5,789.53	3,258.90	354,881.4590	1,608,731.6028	39° 28' 2.400 N	80° 46' 27.865 W
13,684.00	88.20	162.90	7,009.28	-5,832.56	3,271.98	354,838.4237	1,608,744.6779	39° 28' 1.977 N	80° 46' 27.690 W
13,728.00	89.10	162.60	7,010.32	-5,874.57	3,285.02	354,796.4150	1,608,757.7220	39° 28' 1.564 N	80° 46' 27.516 W
13,772.00	89.60	162.10	7,010.82	-5,916.50	3,298.36	354,754.4892	1,608,771.0620	39° 28' 1.151 N	80° 46' 27.339 W
13,817.00	90.40	162.40	7,010.82	-5,959.35	3,312.08	354,711.6318	1,608,784.7807	39° 28' 0.729 N	80° 46' 27.156 W
13,861.00	90.70	162.50	7,010.40	-6,001.30	3,325.35	354,669.6818	1,608,798.0478	39° 28' 0.317 N	80° 46' 26.979 W
13,906.00	90.20	162.70	7,010.04	-6,044.24	3,338.80	354,626.7424	1,608,811.5041	39° 27' 59.894 N	80° 46' 26.800 W
13,950.00	90.30	162.50	7,009.85	-6,086.23	3,351.96	354,584.7563	1,608,824.6618	39° 27' 59.481 N	80° 46' 26.624 W
13,995.00	90.60	162.30	7,009.50	-6,129.12	3,365.57	354,541.8641	1,608,838.2680	39° 27' 59.059 N	80° 46' 26.443 W
14,040.00	90.10	163.20	7,009.22	-6,172.10	3,378.91	354,498.8896	1,608,851.6119	39° 27' 58.636 N	80° 46' 26.265 W
14,084.00	90.40	163.20	7,009.03	-6,214.22	3,391.63	354,456.7680	1,608,864.3292	39° 27' 58.222 N	80° 46' 26.096 W
14,129.00	90.60	163.00	7,008.64	-6,257.27	3,404.71	354,413.7130	1,608,877.4103	39° 27' 57.798 N	80° 46' 25.921 W
14,173.00	90.10	163.50	7,008.37	-6,299.40	3,417.39	354,371.5809	1,608,890.0906	39° 27' 57.384 N	80° 46' 25.752 W
14,218.00	90.00	163.50	7,008.33	-6,342.55	3,430.17	354,328.4341	1,608,902.8713	39° 27' 56.959 N	80° 46' 25.581 W
14,262.00	90.10	163.50	7,008.29	-6,384.74	3,442.67	354,286.2460	1,608,915.3680	39° 27' 56.544 N	80° 46' 25.414 W
14,307.00	90.20	163.60	7,008.18	-6,427.90	3,455.41	354,243.0883	1,608,928.1109	39° 27' 56.119 N	80° 46' 25.244 W
14,352.00	90.20	163.90	7,008.02	-6,471.10	3,468.00	354,199.8863	1,608,940.7032	39° 27' 55.694 N	80° 46' 25.075 W
14,396.00	90.10	164.50	7,007.90	-6,513.44	3,479.98	354,157.5491	1,608,952.6834	39° 27' 55.277 N	80° 46' 24.915 W
14,441.00	89.90	163.70	7,007.90	-6,556.71	3,492.31	354,114.2711	1,608,965.0114	39° 27' 54.851 N	80° 46' 24.750 W
14,485.00	88.50	162.70	7,008.52	-6,598.83	3,505.03	354,072.1547	1,608,977.7271	39° 27' 54.437 N	80° 46' 24.580 W
14,529.00	88.70	162.30	7,009.59	-6,640.78	3,518.25	354,030.2038	1,608,990.9541	39° 27' 54.024 N	80° 46' 24.404 W
14,573.00	88.40	162.40	7,010.71	-6,682.70	3,531.59	353,988.2885	1,609,004.2907	39° 27' 53.612 N	80° 46' 24.226 W
14,618.00	88.80	162.50	7,011.80	-6,725.59	3,545.15	353,945.3960	1,609,017.8559	39° 27' 53.190 N	80° 46' 24.046 W
14,662.00	88.80	162.50	7,012.73	-6,767.54	3,558.38	353,903.4416	1,609,031.0840	39° 27' 52.777 N	80° 46' 23.869 W
14,707.00	89.10	163.00	7,013.55	-6,810.51	3,571.72	353,860.4731	1,609,044.4261	39° 27' 52.354 N	80° 46' 23.691 W
14,751.00	89.40	162.90	7,014.13	-6,852.57	3,584.62	353,818.4106	1,609,057.3260	39° 27' 51.940 N	80° 46' 23.519 W
14,796.00	89.50	163.50	7,014.56	-6,895.65	3,597.63	353,775.3334	1,609,070.3318	39° 27' 51.516 N	80° 46' 23.346 W
14,840.00	88.00	163.80	7,015.52	-6,937.86	3,610.01	353,733.1241	1,609,082.7147	39° 27' 51.101 N	80° 46' 23.180 W
14,882.00	88.40	163.40	7,016.84	-6,978.13	3,621.87	353,692.8529	1,609,094.5671	39° 27' 50.704 N	80° 46' 23.022 W
14,927.00	88.20	163.60	7,018.17	-7,021.26	3,634.64	353,649.7251	1,609,107.3422	39° 27' 50.280 N	80° 46' 22.851 W
14,971.00	88.40	163.30	7,019.48	-7,063.42	3,647.17	353,607.5666	1,609,119.8702	39° 27' 49.865 N	80° 46' 22.684 W
15,016.00	88.50	163.40	7,020.70	-7,106.52	3,660.06	353,564.4691	1,609,132.7589	39° 27' 49.441 N	80° 46' 22.512 W
15,060.00	88.20	163.50	7,021.96	-7,148.68	3,672.59	353,522.3095	1,609,145.2872	39° 27' 49.026 N	80° 46' 22.344 W
15,105.00	88.40	163.90	7,023.30	-7,191.85	3,685.21	353,479.1374	1,609,157.9116	39° 27' 48.601 N	80° 46' 22.176 W
15,149.00	88.80	163.70	7,024.37	-7,234.09	3,697.48	353,436.8972	1,609,170.1835	39° 27' 48.185 N	80° 46' 22.012 W
15,194.00	89.40	162.40	7,025.08	-7,277.13	3,710.60	353,393.8584	1,609,183.3008	39° 27' 47.762 N	80° 46' 21.837 W
15,238.00	88.80	162.90	7,025.77	-7,319.12	3,723.72	353,351.8659	1,609,196.4202	39° 27' 47.349 N	80° 46' 21.662 W
15,282.00	88.50	162.70	7,026.81	-7,361.14	3,736.73	353,309.8454	1,609,209.4278	39° 27' 46.935 N	80° 46' 21.488 W
15,342.00	88.50	162.70	7,028.38	-7,418.41	3,754.56	353,252.5794	1,609,227.2641	39° 27' 46.372 N	80° 46' 21.250 W

Projection to bit 15342.00 MD, 88.50 INC, 162.70 AZI, 7028.38 TVD

Company:	Jay Bee Oil & Gas	**Local Co-ordinate Reference:**	Well RPT 8-2
Project:	Tyler County, WV	**TVD Reference:**	RKB=16' @ 1260.00usft
Site:	RPT 8 Pad	**MD Reference:**	RKB=16' @ 1260.00usft
Well:	RPT 8-2	**North Reference:**	Grid
Wellbore:	Orig Hole	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	EDM 5000.1 Single User Db

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
15,342.00	7,028.38	-7,418.41	3,754.56	Projection to bit 15342.00 MD, 88.50 INC, 162.70 AZI, 7028.38 TVD

Checked By: _____ Approved By: _____ Date: _____

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APR 27 2015
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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/13/2014
Job End Date:	2/28/2014
State:	West Virginia
County:	Tyler
API Number:	47-095-02084-00-00
Operator Name:	Jay-Bee Oil & Gas, Inc.
Well Name and Number:	RPT8-2
Longitude:	-80.78609100
Latitude:	39.48312000
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,922
Total Base Water Volume (gal):	8,977,710
Total Base Non Water Volume:	

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WV Dept. of Environmental Protection
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FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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
Water	Jay-Bee Oil & Gas, Inc.	Water					
			Water	7732-18-5	100.00000	92.87393	
100 Mesh	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica	14808-60-7	99.90000	2.91364	
			Aluminum Oxide	1344-28-1	1.10000	0.03208	
			Titanium Oxide	13463-67-7	0.10000	0.00292	
			Iron Oxide	1309-37-1	0.10000	0.00292	
30/50 Mesh	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica	14808-60-7	99.90000	2.82913	
			Aluminum Oxide	1344-28-1	1.10000	0.03115	
			Titanium Oxide	13463-67-7	0.10000	0.00283	
			Iron Oxide	1309-37-1	0.10000	0.00283	
HCL Acid 22 Baume	Nabors Completion and Production Services	Bulk Acid					
			Water	7732-18-5	87.50000	0.54311	
			Hydrogen Chloride	7641-01-1	18.00000	0.11173	

20/40 Mesh	Nabors Completion and Production Services	Sand - Bulk - West Virginia					
			Crystalline Silica	14808-60-7	99.90000	0.61747	
			Aluminum Oxide	1344-28-1	1.10000	0.00680	
			Titanium Oxide	13463-67-7	0.10000	0.00062	
			Iron Oxide	1309-37-1	0.10000	0.00062	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.02395	
			Mineral Spirits	8052-41-3	10.00000	0.00798	
			Ethoxylated Alcohols	68551-12-2	4.00000	0.00319	
KR-153-SL	Nabors Completion and Production Services	Biocides					
			Polyethylene Glycol	25322-68-3	50.00000	0.01098	
			2,2-Dibromo-3-nitrilo-propionamide	10222-01-2	20.00000	0.00439	
Super TSC LT	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Water	7732-18-5	60.00000	0.01313	
Super Max II	Nabors Completion and Production Services	Surfactant & Foamer					
			Ethylhexanol	104-76-7	40.00000	0.00396	
			Isopropyl Alcohol	67-63-0	30.00000	0.00297	
			Glycol Ethers	111-76-2	7.00000	0.00069	
LSG-100L	Nabors Completion and Production Services	Petroleum Distillates					
			Petroleum Distillates	64742-47-8	60.00000	0.00242	
Acid Inhibitor AL-2	Nabors Completion and Production Services	Acid Corrosion Inhibitors					
			Glycol Ethers	111-76-2	40.00000	0.00048	
			Propargyl Alcohol	107-19-7	40.00000	0.00048	
			Isopropyl Alcohol	67-63-0	40.00000	0.00048	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00016	
			Tar bases	72480-70-7	10.00000	0.00012	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
WFR-3B NON-MSDS	Nabors Completion and Production Services	Friction Reducer					
			Propylene Glycol	57-55-6	25.00000	0.01996	
Super TSC LT NON-MSDS	Nabors Completion and Production Services	Paraffin & Scale Additives					
			proprietary	proprietary	15.00000	0.00328	
			proprietary	proprietary	15.00000	0.00328	

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			proprietary	proprietary	15.00000	0.00328	
			proprietary	proprietary	15.00000	0.00328	
LSG-100L NON-MSDS	Nabors Completion and Production Services	Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.00201	
			Suspending Agent	14808-60-7	2.00000	0.00008	
			Surfactant	68439-51-0	2.00000	0.00008	
Super Max II NON-MSDS	Nabors Completion and Production Services	Surfactant & Foamer					
			proprietary	proprietary	7.00000	0.00069	

* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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FORM WW-6

Top Hole 10,321'

Bottom Hole 6,601'

Top Hole 6,033'

Bottom Hole 13,233'

LATITUDE 39-30-00 N

LONGITUDE 80-45-00 W BH

LONGITUDE 80-47-00 W TH

NORTH

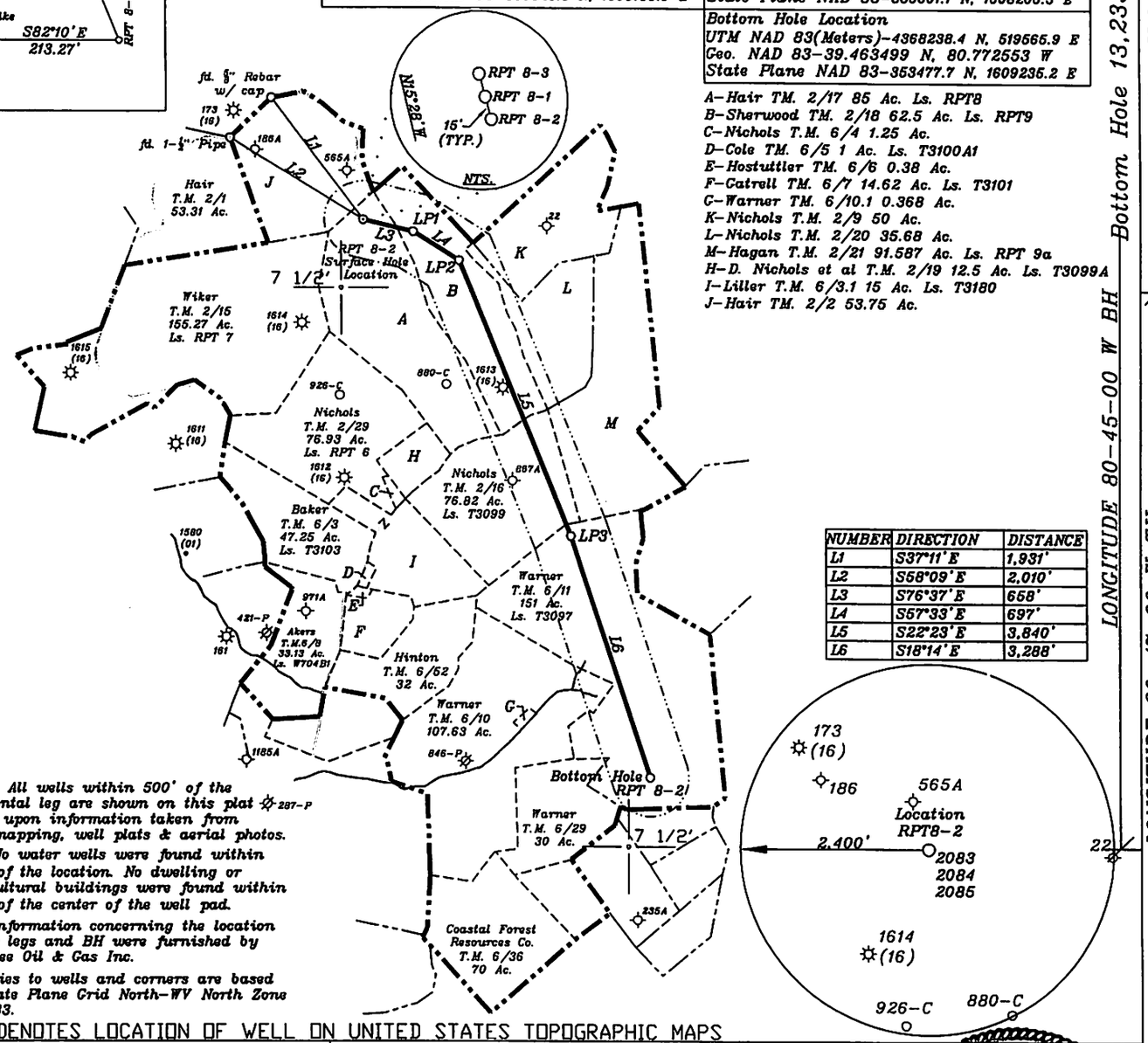
References

Set Spike Nail — S82°10'E 213.27' — Set Spike Nail

Set Spike Nail — S22°06'E 286.80' — RPT 8-2

Surface Hole Location	Landing Point 2
UTM NAD 83(Meters)-4370413.0 N, 518396.1 E	UTM NAD 83(Meters)-4370258.9 N, 518773.0 E
Geo. NAD 83-39.483120 N, 80.786091 W	Geo. NAD 83-39.481723 N, 80.781714 W
State Plane NAD 83-360677.8 N, 1605515.6 E	State Plane NAD 83-360151.6 N, 1606743.8 E
Landing Point 1	**Landing Point 3**
UTM NAD 83(Meters)-4370369.8 N, 518592.0 E	UTM NAD 83(Meters)-4369184.7 N, 519236.6 E
Geo. NAD 83-39.482727 N, 80.783815 W	Geo. NAD 83-39.472034 N, 80.776353 W
State Plane NAD 83-360525.6 N, 1606155.9 E	State Plane NAD 83-356601.1 N, 1608206.5 E
	Bottom Hole Location
	UTM NAD 83(Meters)-4368238.4 N, 519665.9 E
	Geo. NAD 83-39.463499 N, 80.772553 W
	State Plane NAD 83-353477.7 N, 1609235.2 E

A-Hair T.M. 2/17 85 Ac. Ls. RPT8
B-Sherwood T.M. 2/18 62.5 Ac. Ls. RPT9
C-Nichols T.M. 6/4 1.25 Ac.
D-Cole T.M. 6/5 1 Ac. Ls. T3100A1
E-Hostuttler T.M. 6/6 0.38 Ac.
F-Catrell T.M. 6/7 14.62 Ac. Ls. T3101
G-Warner T.M. 6/10.1 0.368 Ac.
K-Nichols T.M. 2/9 50 Ac.
L-Nichols T.M. 2/20 35.68 Ac.
M-Hagan T.M. 2/21 91.587 Ac. Ls. RPT 9a
H-D. Nichols et al T.M. 2/19 12.5 Ac. Ls. T3099A
I-Liller T.M. 6/3.1 15 Ac. Ls. T3180
J-Hair TM. 2/2 53.75 Ac.



NUMBER	DIRECTION	DISTANCE
L1	S37°11'E	1,931'
L2	S58°09'E	2,010'
L3	S76°37'E	658'
L4	S57°33'E	697'
L5	S22°23'E	3,840'
L6	S18°14'E	3,288'

Notes: All wells within 500' of the horizontal leg are shown on this plat based upon information taken from DEP mapping, well plats & aerial photos.

No water wells were found within 250' of the location. No dwelling or agricultural buildings were found within 625' of the center of the well pad.

Information concerning the location of the legs and BH were furnished by Jay Bee Oil & Gas Inc.

Ties to wells and corners are based on State Plane Grid North-WV North Zone NAD 83.

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

FILE NO.
DRAWING NO. 1
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY 1 in 200
PROVEN SOURCE OF ELEVATION GPS submeter unit

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 ENVIROMENTAL PROTECTION.

(SIGNED) David L Jackson

R.P.E. _____ L.L.S. 708

DAVID JACKSON LICENSED No. 708 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

STATE OF WEST VIRGINIA
Division of Environmental Protection
OFFICE OF OIL AND GAS

DATE April 21, 2015
OPERATOR'S WELL NO. RPT 8-2
API WELL NO.
47 — 095 — 02084
STATE COUNTY PERMIT

WELL TYPE: OIL__ GAS X LIQUID INJECTION__ WASTE DISPOSAL__
(IF "GAS") PRODUCTION X STORAGE__ DEEP__ SHALLOW X

LOCATION: ELEVATION 1,244.5' WATER SHED Big Run
DISTRICT McElroy COUNTY Tyler
QUADRANGLE Shirley 7 1/2'

SURFACE OWNER Jack Hair et al ACREAGE 85 ac

OIL & GAS ROYALTY OWNER Jack Hair(85 Ac.), Micheal Sherwood(62.5 Ac.), Duane Nichols(76.82 Ac.), Harold T. Warner(151 Ac.)

LEASE NO. RPT 8, RPT 9, T3099 & T3897

PROPOSED WORK: DRILL X CONVERT__ DRILL DEEPER__ REDRILL__ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION__ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY)

PLUG AND ABANDON__ CLEAN OUT AND REPLUG__

TARGET FORMATION Marcellus ESTIMATED DEPTH 7,500'+ Horizontal leg

WELL OPERATOR Jay Bee Oil & Gas, Inc. DESIGNATED AGENT Randy Broda

ADDRESS 1720 Rt. 22 East Union, NJ 07083 ADDRESS Rt. 1 Box 5 Cairo, WV 26337

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 - 095 - 02085 County Tyler District McElroy
Quad Shirley 7.5' Pad Name RPT8 Field/Pool Name
Farm name Jack Hair et al Well Number RPT8-1
Operator (as registered with the OOG) Jay-Bee Oil & Gas, Inc.
Address 3570 Shields Hill Rd. City Cairo State WV Zip 26337

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

Top hole	Northing 4,370,417.4	Easting 518,394.8
Landing Point of Curve	Northing 4,369,869.2	Easting 518,696.2
Bottom Hole	Northing 4,368,112.8	Easting 519,216.2

Elevation (ft) 1244' 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)
EZ-MUD® (hydrotreated light petroleum distillate)

Date permit issued 2/5/2013 Date drilling commenced 5/6/2013 Date drilling ceased 7/6/2013
Date completion activities began 1/13/2014 Date completion activities ceased 2/28/2014
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 420'- 480' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 2120' - 2310' Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
AL 5/26/15
W.S. 6/02/15

Office of Oil and Gas
WV Dept. of Environmental Protection

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Rev. 8/23/13

API 47- 095 - 02085 Farm name Jack Hair et al Well number RPT8-1

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	17"	16"	30'	New	20/32/24		Yes
Surface	15"	11 3/4"	546'	New	20/23/24	50'	Yes
Coal							
Intermediate 1	11"	8 5/8"	2,411'	New	20/17/24	1,500'	Yes
Intermediate 2							
Intermediate 3							
Production	7 7/8"	5 1/2"	13,954'	New	20/24/24		Yes
Tubing							
Packer type and depth set							

Comment Details

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							
Surface	Class A	265	15.6	1.26	334	CTS	0
Coal							
Intermediate 1	Class A	665	14.3	1.45	964	CTS	0
Intermediate 2							
Intermediate 3							
Production	Class A	1,855	14.3	1.35	2,504	300' from surface	0
Tubing							

Drillers TD (ft) 14,812' Loggers TD (ft) 14,812'
Deepest formation penetrated Marcellus Plug back to (ft) 13,954'
Plug back procedure 5 1/2 Production Casing

Kick off depth (ft) 6,270'

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 Spiral centralizer every joint from TD back to start of 90 degree.
90 - 70 degree every second joint.
70 degree - KOP every third joint.
KOP - Surface bow centralizer placed every 500'.

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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WV Dept. of Environmental Protection

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API 47- 095 - 02085 Farm name Jack Hair et al Well number RPT8-1

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	10-18-2013	13726	13937	96	Marcellus
2-9	1-31-2014 Super Frac	11450	13508	168	Marcellus
10	1-31-2014	10873	11150	48	Marcellus
11	1-31-2014	10623	10802	48	Marcellus
12	1-31-2014	10387	10566	48	Marcellus
13	1-31-2014	10162	10385	48	Marcellus
14	1-31-2014	9850	10046	48	Marcellus
15	1-31-2014	9502	9748	48	Marcellus
16	1-31-2014	9230	9456	48	Marcellus
17	1-31-2014	8896	9174	48	Marcellus
18	1-31-2014	8640	8861	48	Marcellus
19	1-31-2014	8406	8592	48	Marcellus
20	1-31-2014	8188	8371	48	Marcellus

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	1-13-14	71.8	6799	6979	5874	1120	6416	N/A
2-9	2-11-14	68.0	7219	8254	4958	7673	40782	N/A
10	2-13-14	69.7	6846	5970	4951	1930	6694	N/A
11	2-13-14	68.7	7063	5698	4719	1600	6693	N/A
12	2-13-14	70.2	6582	6179	5123	1834	7871	N/A
13	2-14-14	70.8	6699	5581	4612	1785	6920	N/A
14	2-14-14	68.7	6709	5514	4538	1791	7648	N/A
15	2-14-14	70.1	6375	5543	4614	1722	6902	N/A
16	2-15-14	69.9	6620	5243	4725	1877	6978	N/A
17	2-15-14	69.7	6430	5825	5113	1745	6541	N/A
18	2-16-14	70.1	6454	5323	5214	1791	6577	N/A
19	2-16-14	70.7	6410	5465	5216	1769	6181	N/A
20	2-16-14	70.3	6346	5156	5153	1745	5832	N/A

Please insert additional pages as applicable.

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API 47- 095 - 02085 Farm name Jack Hair et al Well number RPT8-1

PRODUCING FORMATION(S)	DEPTHS			
Marcellus	6,922'	TVD	13,954'	MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 3,000 psi Bottom Hole n/a psi DURATION OF TEST 18 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	4,000 mcfpd	75 bpd	- 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)
See Attached.	0		0		

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WV Dept. of Environmental Protection

Please insert additional pages as applicable.

Drilling Contractor HWD
Address 7350 Coal Hill Rd. City Luthersburg State PA Zip 15848

Logging Company Precise Well Analysis
Address 1426 Barth Rd. City Belpre State OH Zip 45714

Cementing Company Nabors Completion & Production
Address PO Box 975682 City Dallas State TX Zip 75397

Stimulating Company Nabors Completion & Production
Address PO Box 975682 City Dallas State TX Zip 75397

Please insert additional pages as applicable.

Completed by Shane Dowell Telephone 304-628-311
Signature Title Office Manager Date 4-24-2015

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

	rpt 8 pad	
	rpt 8-1	47-095-02085
	rpt 8-2	47-095-02084
	rpt 8-3	47-095-02083
	ELEVATION	1244
FORMATION	TOP	BOTTOM
MISC. RED ROCK & SHALES	0	2137
LIME	2137	2237
INJUN	2137	2254
SHALE	2254	2601
GORDON STRAY	2601	2621
SHALE	2621	2817
GORDON	2817	2847
SHALE	2847	3126
BAYARD	3126	3135
SHALE	3135	3464
WARREN	3464	3562
SHALE	3562	3798
BALLTOWN	3798	3961
SHALE	3961	4399
2ND RILEY	4399	4507
SHALE	4507	4658
3RD RILEY	4658	4699
SHALE	4699	4756
BENSON	4756	4759
SHALE	4759	5001
ALEXANDER	5001	5172
SHALE	5172	5417
ELK	5417	5465
SHALE	5465	6161
HAMILTON	6161	6335
SHALE	6155	6811
UPPER Marcellus	6811	6840
PARCELL LIME	6840	6875
SHALE	6875	6922
LOWER MARCELLUS	6922	

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Office of Oil and Gas
WV Dept. of Environmental Protection

Jay Bee Production Co. DRILLING into the future

JAY BEE OIL AND GAS INC.
RPT 8-1
TYLER COUNTY, WV

Weatherford

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	5916.00	0.82	17.44	5910.04	-145.95	-26.26	0.00	0.00	129.88	
2	5998.00	0.00	0.00	5992.04	-145.39	-26.08	1.00	180.00	129.41	
3	6373.00	0.00	0.00	6367.04	-145.39	-26.08	0.00	0.00	129.41	
4	7273.00	90.00	161.35	6940.00	-688.25	157.16	10.00	161.35	702.37	
5	15445.49	90.00	161.35	6940.00	-8431.53	2770.79	0.00	0.00	8874.85	1H PBHL P1

WELL DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
1H	-13.66	4.63	360678.67	1636958.41	39°28'59.302N	080°47'10.539W	N/A

FIELD DETAILS

Tyler county, WV

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

System Datum: Mean Sea Level
Local North: Grid North

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
1H PBHL P1	6940.00	-8431.53	2770.79	352247.14	1639729.21	Point
1H LP P1	6940.00	-644.74	175.63	360033.93	1637134.04	Point

SITE DETAILS

RPT 8

Site Centre Northing: 360692.33
Easting: 1636953.79

Ground Level: 1244.00
Positional Uncertainty: 0.00
Convergence: -0.82

Azimuths to Grid North
True North: 0.82°
Magnetic North: -7.65°

Magnetic Field
Strength: 52531nT
Dip Angle: 67.06°
Date: 5/28/2013
Model: IGRF2010

TOTAL CORRECTION TO GRID NORTH: 7.65° WEST

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WV Dept. of Environmental Protection
APR 27 2015
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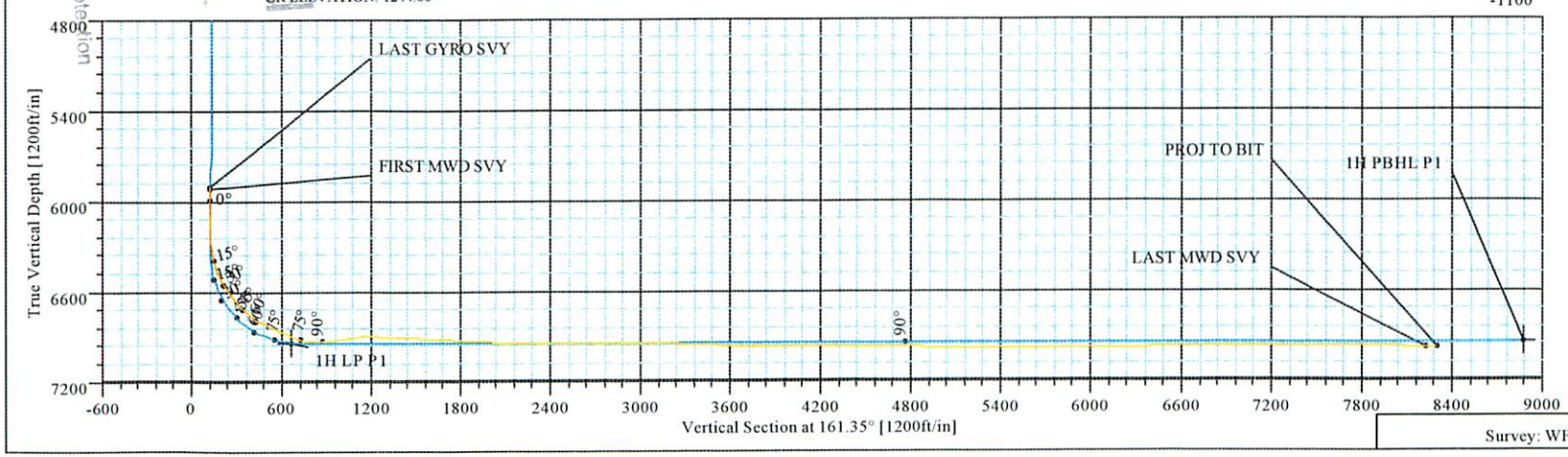
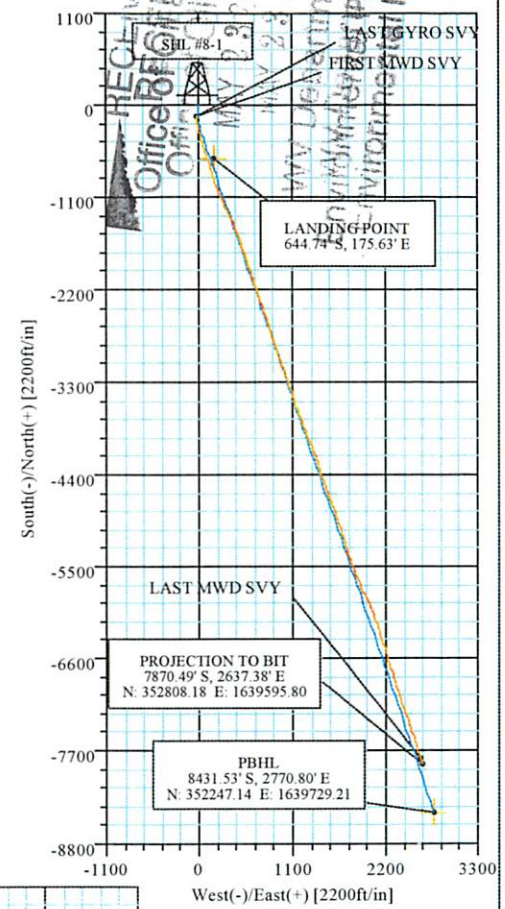
PROJECTION TO BIT

No	MD	Inc	Az	TVD	+N/-S	+E/-W	DLeg	TFace	VSec
215	14812.00	89.37	161.95	6976.69	-7870.49	2637.38	0.00	0.00	8300.61

KB ELEVATION: 1260.00'
GR ELEVATION: 1244.00'





Survey: WFT MWD (1H/HORIZONTAL)

Weatherford International Ltd.
DIRECTIONAL REPORT

WV Department of Environmental Protection
MAY 2014
RECEIVED
Office of Oil & Gas

Company: JAY BEE OIL & GAS INC.	**Date:** 8/20/2013	**Time:** 08:27:05	**Page:** 1
Field: Tyler county, WV	**Co-ordinate(NE) Reference:**	Well: 1H, Grid North	
Site: RPT 8	**Vertical (TVD) Reference:**	SITE 1260.0	
Well: 1H	**Section (VS) Reference:**	Well (0.00N,0.00E,161.35Azi)	
Wellpath: HORIZONTAL	**Survey Calculation Method:**	Minimum Curvature	**Db:** Sybase

Plan: **Date Composed:**
Version:
Principal: **Tied-to:**

Field: Tyler county, WV

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

Site: RPT 8

Site Position:			**Northing:**	360692.33 ft	**Latitude:**	39	28	59.436	N
From:	Map		**Easting:**	1636953.79 ft	**Longitude:**	80	47	10.601	W
Position Uncertainty:	0.00 ft				**North Reference:**			Grid	
Ground Level:	1244.00 ft				**Grid Convergence:**			-0.82 deg	

Received
APR 27 2015
Office of Oil and Gas
WV Dept. of Environmental Protection

Well: 1H **Slot Name:**

Well Position:	+N/-S	-13.66 ft	**Northing:**	360678.67 ft	**Latitude:**	39	28	59.302	N
	+E/-W	4.63 ft	**Easting :**	1636958.41 ft	**Longitude:**	80	47	10.539	W
Position Uncertainty:		0.00 ft							

Wellpath: HORIZONTAL **Drilled From:** Surface
Tie-on Depth: 0.00 ft
Current Datum: SITE **Height** 1260.00 ft **Above System Datum:** Mean Sea Level
Magnetic Data: 5/28/2013 **Declination:** -8.47 deg
Field Strength: 52531 nT **Mag Dip Angle:** 67.06 deg

Vertical Section: Depth From (TVD) ft	**+N/-S** ft	**+E/-W** ft	**Direction** deg
0.00	0.00	0.00	161.35

Plan Section Information

MD	Incl	Azim	TVD	+N/-S	+E/-W	DLS	Build	Turn	TFO	Target

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
5916.00	0.82	17.44	5910.04	-145.95	-26.26	129.88	0.00	360532.72	1636932.16	LAST GYRO SVY
5923.00	0.50	339.29	5917.04	-145.87	-26.25	129.81	7.53	360532.80	1636932.16	FIRST MWD SVY
5967.00	0.49	337.94	5961.04	-145.51	-26.39	129.43	0.03	360533.16	1636932.02	
6011.00	0.49	324.73	6005.04	-145.19	-26.57	129.07	0.26	360533.48	1636931.84	
6056.00	0.49	320.42	6050.04	-144.88	-26.80	128.70	0.08	360533.79	1636931.61	
6100.00	0.56	301.11	6094.03	-144.63	-27.11	128.36	0.43	360534.04	1636931.31	
6144.00	0.56	308.85	6138.03	-144.38	-27.46	128.02	0.17	360534.29	1636930.95	
6189.00	0.53	317.57	6183.03	-144.09	-27.77	127.64	0.20	360534.58	1636930.64	
6233.00	0.41	315.88	6227.03	-143.82	-28.02	127.31	0.27	360534.85	1636930.40	
6278.00	3.32	189.74	6272.01	-144.99	-28.35	128.31	7.95	360533.68	1636930.06	
6323.00	8.34	188.74	6316.76	-149.51	-29.07	132.36	11.16	360529.16	1636929.35	
6367.00	12.78	182.16	6360.00	-157.53	-29.74	139.75	10.44	360521.14	1636928.68	
6412.00	15.64	178.98	6403.62	-168.57	-29.82	150.18	6.59	360510.10	1636928.60	
6456.00	19.88	175.97	6445.52	-181.97	-29.18	163.08	9.86	360496.70	1636929.23	
6500.00	23.85	173.48	6486.34	-198.28	-27.65	179.02	9.26	360480.39	1636930.77	
6545.00	28.00	165.40	6526.82	-217.55	-23.95	198.47	12.09	360461.12	1636934.46	
6589.00	31.07	160.38	6565.10	-238.25	-17.53	220.13	8.96	360440.42	1636940.88	
6633.00	34.13	158.70	6602.17	-260.45	-9.23	243.82	7.25	360418.22	1636949.18	
6678.00	37.23	162.22	6638.72	-285.18	-0.49	270.05	8.26	360393.49	1636957.93	
6722.00	40.13	164.67	6673.07	-311.54	7.33	297.52	7.45	360367.13	1636965.74	

Weatherford International Ltd.
DIRECTIONAL REPORT

Company: JAY BEE OIL & GAS INC.
Field: Tyler county, WV
Site: RPT 8
Well: 1H
Wellpath: HORIZONTAL

Date: 8/20/2013 Time: 08:27:05 Page: 2
Co-ordinate(NE) Reference: Well: 1H, Grid North
Vertical (TVD) Reference: SITE 1260.0
Section (VS) Reference: Well (0.00N,0.00E,161.35Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
6767.00	44.32	164.68	6706.38	-340.70	15.32	327.71	9.31	360337.97	1636973.73	
6811.00	47.72	164.65	6736.93	-371.23	23.69	359.31	7.73	360307.44	1636982.11	
6856.00	53.81	166.70	6765.38	-404.99	32.28	394.05	13.98	360273.68	1636990.70	
6900.00	60.32	167.46	6789.29	-440.96	40.53	430.77	14.87	360237.71	1636998.94	
6945.00	64.48	164.46	6810.14	-479.63	50.22	470.51	10.97	360199.04	1637008.63	
6989.00	64.65	160.91	6829.04	-517.56	62.04	510.22	7.30	360161.11	1637020.46	
7033.00	64.81	160.67	6847.83	-555.13	75.13	550.01	0.61	360123.54	1637033.55	
7078.00	64.88	160.10	6866.95	-593.50	88.81	590.74	1.16	360085.17	1637047.22	
7123.00	65.04	159.72	6886.00	-631.79	102.81	631.49	0.84	360046.88	1637061.23	
7167.00	68.98	160.35	6903.18	-669.85	116.64	671.98	9.05	360008.82	1637075.05	
7212.00	74.36	162.87	6917.33	-710.38	130.09	714.68	13.08	359968.29	1637088.51	
7256.00	80.59	165.43	6926.87	-751.67	141.81	757.55	15.25	359927.00	1637100.22	
7301.00	85.95	164.98	6932.14	-794.87	153.22	802.12	11.95	359883.80	1637111.63	
7346.00	86.99	164.72	6934.91	-838.22	164.95	846.95	2.38	359840.45	1637123.37	
7390.00	92.45	164.07	6935.13	-880.58	176.79	890.87	12.50	359798.09	1637135.20	
7434.00	97.56	161.51	6931.29	-922.43	189.74	934.67	12.98	359756.24	1637148.16	
7479.00	100.68	161.22	6924.16	-964.53	203.94	979.10	6.96	359714.14	1637162.35	
7523.00	100.75	161.00	6915.98	-1005.44	217.94	1022.33	0.52	359673.23	1637176.35	
7565.00	98.91	158.08	6908.81	-1044.20	232.40	1063.69	8.13	359634.47	1637190.82	
7610.00	95.88	155.31	6903.01	-1085.18	250.06	1108.16	9.09	359593.49	1637208.47	
7654.00	93.29	154.43	6899.50	-1124.88	268.68	1151.73	6.21	359553.79	1637227.10	
7699.00	89.23	153.44	6898.51	-1165.28	288.45	1196.34	9.29	359513.39	1637246.86	
7743.00	88.46	152.53	6899.39	-1204.47	308.43	1239.86	2.71	359474.20	1637266.84	
7788.00	88.46	151.88	6900.60	-1244.27	329.40	1284.27	1.44	359434.40	1637287.82	
7832.00	87.62	153.53	6902.11	-1283.34	349.57	1327.74	4.21	359395.33	1637307.98	
7876.00	86.71	156.79	6904.28	-1323.22	368.03	1371.43	7.68	359355.45	1637326.44	
7921.00	86.64	156.86	6906.89	-1364.52	385.71	1416.21	0.22	359314.15	1637344.12	
7965.00	86.64	157.42	6909.47	-1404.99	402.77	1460.02	1.27	359273.68	1637361.18	
8010.00	86.29	156.72	6912.25	-1446.36	420.27	1504.80	1.74	359232.31	1637378.68	
8055.00	86.64	156.72	6915.02	-1487.61	438.02	1549.57	0.78	359191.06	1637396.43	
8099.00	86.08	158.40	6917.82	-1528.20	454.78	1593.39	4.02	359150.47	1637413.20	
8144.00	87.00	159.15	6920.53	-1570.07	471.04	1638.26	2.64	359108.60	1637429.46	
8188.00	87.97	161.30	6922.46	-1611.43	485.91	1682.20	5.36	359067.24	1637444.33	
8233.00	87.97	161.16	6924.06	-1654.01	500.38	1727.17	0.31	359024.66	1637458.80	
8273.00	87.48	161.24	6925.64	-1691.85	513.26	1767.14	1.24	358986.82	1637471.68	
8317.00	87.48	161.45	6927.58	-1733.50	527.33	1811.10	0.48	358945.17	1637485.74	
8362.00	87.41	161.80	6929.59	-1776.16	541.50	1856.06	0.79	358902.51	1637499.91	
8406.00	87.41	162.08	6931.57	-1817.95	555.12	1900.01	0.64	358860.72	1637513.54	
8451.00	86.99	162.16	6933.77	-1860.72	568.92	1944.95	0.95	358817.95	1637527.34	
8495.00	86.78	162.17	6936.16	-1902.55	582.38	1988.88	0.48	358776.12	1637540.79	
8540.00	88.88	162.43	6937.87	-1945.38	596.05	2033.84	4.70	358733.29	1637554.46	
8584.00	88.60	161.89	6938.83	-1987.26	609.53	2077.82	1.38	358691.41	1637567.94	
8629.00	88.60	161.98	6939.93	-2030.03	623.48	2122.81	0.20	358648.64	1637581.89	
8674.00	89.23	162.72	6940.79	-2072.90	637.12	2167.79	2.16	358605.77	1637595.53	
8718.00	89.02	162.10	6941.46	-2114.84	650.41	2211.78	1.49	358563.83	1637608.83	
8763.00	88.88	161.73	6942.28	-2157.61	664.38	2256.77	0.88	358521.06	1637622.79	
8807.00	88.74	161.93	6943.20	-2199.40	678.10	2300.76	0.55	358479.27	1637636.51	
8852.00	90.63	161.55	6943.44	-2242.14	692.20	2345.76	4.28	358436.53	1637650.61	
8896.00	90.77	160.98	6942.91	-2283.80	706.33	2389.75	1.33	358394.87	1637664.74	
8941.00	91.05	161.29	6942.19	-2326.38	720.88	2434.75	0.93	358352.29	1637679.29	
8985.00	88.88	160.70	6942.22	-2367.98	735.20	2478.74	5.11	358310.69	1637693.62	
9030.00	89.09	160.52	6943.02	-2410.42	750.14	2523.73	0.61	358268.25	1637708.56	

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Weatherford International Ltd.
DIRECTIONAL REPORT

Company: JAY BEE OIL & GAS INC.
Field: Tyler County WV
Site: RPT 8
Well: 1H
Wellpath: HORIZONTAL

Date: 8/20/2013 Time: 08:27:05 Page: 3
Co-ordinate(NE) Reference: Well: 1H, Grid North
Vertical (TVD) Reference: SITE 1260.0
Section (VS) Reference: Well (0.00N,0.00E,161.35Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
9075.00	89.79	161.25	6943.46	-2452.93	764.88	2568.73	2.25	358225.74	1637723.29	
9119.00	90.07	162.30	6943.54	-2494.73	778.64	2612.72	2.47	358183.94	1637737.05	
9164.00	89.72	162.66	6943.59	-2537.64	792.18	2657.72	1.12	358141.03	1637750.60	
9209.00	90.00	162.81	6943.70	-2580.61	805.54	2702.70	0.71	358098.06	1637763.95	
9253.00	90.00	162.66	6943.70	-2622.63	818.60	2746.69	0.34	358056.04	1637777.01	
9298.00	89.44	162.15	6943.94	-2665.52	832.20	2791.68	1.68	358013.15	1637790.62	
9342.00	89.37	162.37	6944.38	-2707.43	845.61	2835.67	0.52	357971.24	1637804.02	
9384.00	89.51	163.01	6944.79	-2747.52	858.10	2877.66	1.56	357931.15	1637816.52	
9429.00	89.58	163.30	6945.15	-2790.59	871.14	2922.64	0.66	357888.08	1637829.56	
9473.00	89.72	162.06	6945.41	-2832.59	884.24	2966.62	2.84	357846.08	1637842.66	
9517.00	90.14	161.18	6945.47	-2874.35	898.12	3010.62	2.22	357804.32	1637856.53	
9562.00	90.49	160.96	6945.22	-2916.91	912.71	3055.62	0.92	357761.76	1637871.13	
9607.00	89.02	160.28	6945.41	-2959.36	927.65	3100.61	3.60	357719.31	1637886.06	
9651.00	88.95	159.91	6946.19	-3000.73	942.62	3144.60	0.86	357677.94	1637901.04	
9696.00	87.76	159.69	6947.48	-3042.94	958.16	3189.56	2.69	357635.73	1637916.57	
9740.00	87.83	160.41	6949.18	-3084.27	973.16	3233.52	1.64	357594.40	1637931.57	
9785.00	87.76	160.77	6950.91	-3126.68	988.10	3278.48	0.81	357551.99	1637946.51	
9829.00	86.99	160.31	6952.92	-3168.12	1002.74	3322.43	2.04	357510.55	1637961.16	
9874.00	86.71	159.76	6955.40	-3210.36	1018.09	3367.35	1.37	357468.31	1637976.50	
9919.00	87.76	160.29	6957.57	-3252.60	1033.44	3412.28	2.61	357426.07	1637991.85	
9964.00	87.76	160.38	6959.33	-3294.94	1048.57	3457.24	0.20	357383.73	1638006.99	
10008.00	87.48	159.99	6961.15	-3336.30	1063.47	3501.19	1.09	357342.37	1638021.89	
10053.00	89.09	162.39	6962.50	-3378.87	1077.97	3546.17	6.42	357299.80	1638036.39	
10097.00	89.37	162.06	6963.09	-3420.77	1091.41	3590.16	0.98	357257.90	1638049.82	
10142.00	88.95	161.68	6963.75	-3463.53	1105.41	3635.15	1.26	357215.14	1638063.82	
10186.00	89.23	161.69	6964.45	-3505.30	1119.23	3679.15	0.64	357173.37	1638077.65	
10231.00	89.58	161.64	6964.92	-3548.01	1133.39	3724.14	0.79	357130.66	1638091.80	
10275.00	89.09	160.98	6965.43	-3589.69	1147.49	3768.14	1.87	357088.98	1638105.90	
10320.00	89.44	160.94	6966.01	-3632.22	1162.16	3813.14	0.78	357046.45	1638120.58	
10364.00	89.37	160.43	6966.46	-3673.74	1176.72	3857.13	1.17	357004.93	1638135.13	
10409.00	89.02	159.86	6967.10	-3716.06	1192.00	3902.12	1.49	356962.61	1638150.41	
10453.00	89.58	160.71	6967.63	-3757.48	1206.84	3946.10	2.31	356921.19	1638165.26	
10498.00	89.93	160.44	6967.83	-3799.92	1221.81	3991.10	0.98	356878.75	1638180.22	
10542.00	89.51	159.58	6968.04	-3841.27	1236.85	4035.09	2.18	356837.40	1638195.26	
10587.00	89.58	159.53	6968.40	-3883.43	1252.57	4080.06	0.19	356795.24	1638210.98	
10631.00	89.93	160.07	6968.59	-3924.72	1267.76	4124.05	1.46	356753.95	1638226.17	
10662.00	89.72	159.54	6968.68	-3953.82	1278.46	4155.03	1.84	356724.85	1638236.87	
10692.00	89.58	158.55	6968.86	-3981.83	1289.19	4185.01	3.33	356696.84	1638247.60	
10723.00	89.37	157.62	6969.15	-4010.59	1300.76	4215.96	3.08	356668.08	1638259.17	
10753.00	89.37	157.34	6969.48	-4038.30	1312.25	4245.89	0.93	356640.37	1638270.66	
10784.00	89.23	157.81	6969.86	-4066.95	1324.07	4276.82	1.58	356611.72	1638282.49	
10814.00	89.44	158.99	6970.20	-4094.84	1335.12	4306.78	3.99	356583.83	1638293.53	
10845.00	89.37	159.37	6970.53	-4123.82	1346.13	4337.75	1.25	356554.85	1638304.55	
10876.00	88.88	158.77	6971.00	-4152.77	1357.21	4368.72	2.50	356525.90	1638315.62	
10906.00	87.41	160.13	6971.97	-4180.84	1367.73	4398.69	6.67	356497.83	1638326.15	
10937.00	88.04	161.54	6973.20	-4210.10	1377.90	4429.66	4.98	356468.57	1638336.31	
10968.00	88.60	162.28	6974.11	-4239.56	1387.52	4460.65	2.99	356439.11	1638345.94	
10998.00	89.65	162.99	6974.57	-4268.19	1396.47	4490.64	4.22	356410.48	1638354.89	
11028.00	90.21	163.09	6974.61	-4296.88	1405.23	4520.62	1.90	356381.79	1638363.64	
11059.00	90.56	162.86	6974.40	-4326.52	1414.30	4551.61	1.35	356352.15	1638372.72	
11090.00	91.40	163.53	6973.87	-4356.19	1423.26	4582.59	3.47	356322.48	1638381.68	
11121.00	91.33	163.55	6973.13	-4385.91	1432.04	4613.56	0.23	356292.76	1638390.46	
11151.00	91.12	163.13	6972.49	-4414.65	1440.64	4643.53	1.56	356264.02	1638399.06	

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Office of Oil and Gas
WV Dept. of Environmental Protection

Weatherford International Ltd.
DIRECTIONAL REPORT

Company: GAY BEE OIL & GAS INC.
Field: Tyler county, WV
Site: RPT 8
Well: 1H
Wellpath: HORIZONTAL
Survey

Date: 8/20/2013 Time: 08:27:05 Page: 4
Co-ordinate(NE) Reference: Well: 1H, Grid North
Vertical (TVD) Reference: SITE 1260.0
Section (VS) Reference: Well (0.00N,0.00E,161.35Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
11181.00	89.79	162.37	6972.25	-4443.30	1449.54	4673.52	5.11	356235.37	1638407.95	
11212.00	89.72	161.21	6972.38	-4472.74	1459.23	4704.52	3.75	356205.93	1638417.64	
11243.00	89.58	161.11	6972.57	-4502.08	1469.24	4735.52	0.55	356176.59	1638427.65	
11274.00	89.16	160.36	6972.91	-4531.34	1479.46	4766.51	2.77	356147.33	1638437.88	
11304.00	88.95	159.53	6973.41	-4559.52	1489.75	4796.50	2.85	356119.15	1638448.16	
11335.00	88.88	159.32	6973.99	-4588.54	1500.64	4827.48	0.71	356090.13	1638459.06	
11366.00	88.95	159.32	6974.58	-4617.54	1511.59	4858.45	0.23	356061.13	1638470.00	
11396.00	89.30	160.42	6975.04	-4645.70	1521.91	4888.44	3.85	356032.97	1638480.32	
11427.00	89.51	160.27	6975.36	-4674.89	1532.34	4919.43	0.83	356003.78	1638490.75	
11457.00	89.65	160.25	6975.58	-4703.13	1542.47	4949.43	0.47	355975.54	1638500.88	
11486.00	89.72	160.11	6975.74	-4730.41	1552.30	4978.42	0.54	355948.26	1638510.72	
11517.00	89.86	160.17	6975.85	-4759.57	1562.83	5009.41	0.49	355919.10	1638521.25	
11547.00	90.14	160.68	6975.85	-4787.83	1572.88	5039.41	1.94	355890.84	1638531.30	
11578.00	90.07	160.38	6975.80	-4817.06	1583.22	5070.41	0.99	355861.61	1638541.63	
11609.00	89.58	160.24	6975.89	-4846.25	1593.66	5101.40	1.64	355832.42	1638552.08	
11639.00	88.46	161.63	6976.40	-4874.60	1603.46	5131.39	5.95	355804.07	1638561.87	
11670.00	87.83	161.00	6977.41	-4903.95	1613.39	5162.38	2.87	355774.72	1638571.80	
11700.00	88.04	160.92	6978.49	-4932.29	1623.17	5192.36	0.75	355746.38	1638581.58	
11731.00	88.25	161.55	6979.49	-4961.62	1633.13	5223.34	2.14	355717.05	1638591.55	
11762.00	88.39	161.54	6980.40	-4991.02	1642.94	5254.33	0.45	355687.65	1638601.36	
11793.00	87.97	161.24	6981.39	-5020.38	1652.83	5285.31	1.66	355658.29	1638611.24	
11823.00	87.69	160.90	6982.52	-5048.74	1662.56	5315.29	1.47	355629.93	1638620.97	
11854.00	88.18	161.06	6983.64	-5078.03	1672.65	5346.27	1.66	355600.64	1638631.07	
11884.00	88.81	162.19	6984.43	-5106.49	1682.11	5376.26	4.31	355572.18	1638640.52	
11914.00	88.67	162.12	6985.09	-5135.04	1691.30	5406.25	0.52	355543.63	1638649.71	
11945.00	88.95	162.45	6985.73	-5164.56	1700.73	5437.24	1.40	355514.11	1638659.14	
11989.00	90.70	163.73	6985.86	-5206.65	1713.52	5481.21	4.93	355472.02	1638671.94	
12033.00	90.49	163.74	6985.41	-5248.89	1725.85	5525.17	0.48	355429.78	1638684.26	
12078.00	90.42	163.26	6985.05	-5292.04	1738.63	5570.14	1.08	355386.63	1638697.04	
12123.00	89.93	162.13	6984.91	-5335.00	1752.01	5615.13	2.74	355343.67	1638710.43	
12167.00	88.81	160.16	6985.40	-5376.63	1766.23	5659.12	5.15	355302.04	1638724.64	
12212.00	89.30	159.84	6986.14	-5418.91	1781.62	5704.10	1.30	355259.76	1638740.03	
12256.00	90.42	159.75	6986.25	-5460.20	1796.82	5748.08	2.55	355218.47	1638755.23	
12301.00	90.21	159.22	6986.00	-5502.35	1812.59	5793.06	1.27	355176.32	1638771.00	
12343.00	89.93	159.11	6985.95	-5541.60	1827.52	5835.03	0.72	355137.07	1638785.94	
12388.00	91.89	158.59	6985.23	-5583.56	1843.76	5879.98	4.51	355095.11	1638802.17	
12433.00	91.96	158.39	6983.72	-5625.41	1860.25	5924.90	0.47	355053.26	1638818.66	
12477.00	91.47	157.27	6982.40	-5666.13	1876.84	5968.79	2.78	355012.54	1638835.26	
12522.00	91.19	156.31	6981.36	-5707.48	1894.57	6013.64	2.22	354971.19	1638852.99	
12566.00	89.30	153.87	6981.17	-5747.38	1913.10	6057.37	7.01	354931.29	1638871.52	
12611.00	89.09	153.98	6981.80	-5787.80	1932.88	6101.99	0.53	354890.87	1638891.30	
12655.00	88.95	153.66	6982.56	-5827.28	1952.29	6145.60	0.79	354851.39	1638910.71	
12699.00	89.16	153.64	6983.28	-5866.70	1971.82	6189.20	0.48	354811.97	1638930.23	
12744.00	92.52	156.57	6982.62	-5907.50	1990.76	6233.92	9.91	354771.17	1638949.17	
12788.00	93.01	157.19	6980.50	-5947.92	2008.01	6277.73	1.79	354730.75	1638966.43	
12833.00	93.43	156.81	6977.97	-5989.28	2025.57	6322.53	1.26	354689.39	1638983.98	
12877.00	93.15	158.29	6975.45	-6029.88	2042.34	6366.36	3.42	354648.79	1639000.76	
12921.00	92.87	159.49	6973.14	-6070.87	2058.17	6410.26	2.80	354607.80	1639016.58	
12966.00	91.47	161.04	6971.43	-6113.19	2073.35	6455.21	4.64	354565.48	1639031.76	
13010.00	90.56	163.00	6970.65	-6155.03	2086.93	6499.20	4.91	354523.64	1639045.34	
13055.00	90.35	163.31	6970.30	-6198.10	2099.97	6544.18	0.83	354480.57	1639058.38	
13097.00	90.28	163.60	6970.06	-6238.36	2111.93	6586.15	0.71	354440.31	1639070.34	

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WV Dept. of Environmental Protection

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DIRECTIONAL REPORT

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Company: SAY BEE OIL & GAS INC.
Field: Tyler county, WV
Site: RPT 8
Well: 1H
Wellpath: HORIZONTAL

Date: 8/20/2013 **Time:** 08:27:05 **Page:** 5
Co-ordinate(NE) Reference: Well: 1H, Grid North
Vertical (TVD) Reference: SITE 1260.0
Section (VS) Reference: Well (0.00N,0.00E,161.35Azi)
Survey Calculation Method: Minimum Curvature **Db:** Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	N/S ft	E/W ft	VS ft	DLS deg/100ft	MapN ft	MapE ft	Annontation
13142.00	90.28	163.33	6969.84	-6281.50	2124.74	6631.12	0.60	354397.17	1639083.15	
13186.00	90.00	163.02	6969.74	-6323.62	2137.47	6675.10	0.95	354355.05	1639095.88	
13231.00	89.37	162.63	6969.98	-6366.61	2150.76	6720.08	1.65	354312.06	1639109.17	
13273.00	89.16	162.63	6970.52	-6406.69	2163.30	6762.07	0.50	354271.98	1639121.71	
13318.00	88.67	162.12	6971.38	-6449.57	2176.92	6807.05	1.57	354229.10	1639135.33	
13363.00	89.37	162.35	6972.15	-6492.42	2190.65	6852.04	1.64	354186.25	1639149.06	
13407.00	89.79	163.20	6972.47	-6534.44	2203.68	6896.02	2.15	354144.23	1639162.09	
13452.00	90.00	163.73	6972.55	-6577.58	2216.48	6940.99	1.27	354101.09	1639174.90	
13496.00	91.33	163.77	6972.04	-6619.82	2228.79	6984.95	3.02	354058.85	1639187.21	
13540.00	91.12	163.14	6971.10	-6661.99	2241.32	7028.91	1.51	354016.68	1639199.74	
13585.00	91.12	163.01	6970.22	-6705.03	2254.42	7073.88	0.29	353973.64	1639212.83	
13629.00	90.56	160.84	6969.57	-6746.85	2268.07	7117.87	5.09	353931.82	1639226.48	
13673.00	90.98	161.96	6968.98	-6788.55	2282.10	7161.87	2.72	353890.12	1639240.52	
13718.00	91.12	163.00	6968.16	-6831.45	2295.65	7206.85	2.33	353847.22	1639254.06	
13762.00	90.91	163.16	6967.38	-6873.54	2308.45	7250.82	0.60	353805.13	1639266.86	
13807.00	89.72	162.18	6967.13	-6916.50	2321.85	7295.81	3.43	353762.17	1639280.27	
13851.00	89.37	161.90	6967.48	-6958.35	2335.42	7339.80	1.02	353720.32	1639293.83	
13896.00	89.09	161.70	6968.09	-7001.10	2349.47	7384.80	0.76	353677.57	1639307.89	
13940.00	88.74	160.24	6968.92	-7042.68	2363.82	7428.79	3.41	353635.99	1639322.23	
13984.00	89.51	160.18	6969.59	-7084.08	2378.71	7472.77	1.76	353594.59	1639337.13	
14029.00	89.79	160.14	6969.87	-7126.41	2393.99	7517.76	0.63	353552.26	1639352.40	
14073.00	89.72	160.55	6970.05	-7167.84	2408.78	7561.76	0.95	353510.83	1639367.20	
14115.00	89.72	160.65	6970.26	-7207.46	2422.74	7603.75	0.24	353471.21	1639381.15	
14160.00	89.58	161.04	6970.53	-7249.97	2437.50	7648.75	0.92	353428.70	1639395.91	
14204.00	89.37	161.00	6970.94	-7291.57	2451.81	7692.75	0.49	353387.10	1639410.22	
14249.00	89.16	161.19	6971.51	-7334.14	2466.39	7737.74	0.63	353344.53	1639424.80	
14293.00	88.95	161.46	6972.24	-7375.82	2480.48	7781.74	0.78	353302.85	1639438.89	
14338.00	88.81	161.73	6973.12	-7418.51	2494.68	7826.73	0.68	353260.16	1639453.10	
14383.00	89.23	162.64	6973.89	-7461.35	2508.45	7871.71	2.23	353217.32	1639466.86	
14427.00	89.16	163.00	6974.51	-7503.38	2521.44	7915.70	0.83	353175.29	1639479.86	
14472.00	90.00	162.62	6974.84	-7546.37	2534.74	7960.68	2.05	353132.30	1639493.15	
14517.00	89.86	162.64	6974.89	-7589.31	2548.18	8005.67	0.31	353089.36	1639506.59	
14561.00	89.93	162.72	6974.97	-7631.32	2561.27	8049.66	0.24	353047.35	1639519.69	
14606.00	89.86	162.72	6975.06	-7674.29	2574.64	8094.64	0.16	353004.38	1639533.06	
14650.00	89.65	162.67	6975.24	-7716.30	2587.73	8138.63	0.49	352962.37	1639546.14	
14695.00	89.65	162.31	6975.52	-7759.21	2601.27	8183.62	0.80	352919.46	1639559.68	
14740.00	89.37	161.95	6975.90	-7802.04	2615.08	8228.62	1.01	352876.63	1639573.49	LAST MWD SVY
14812.00	89.37	161.95	6976.69	-7870.49	2637.38	8300.61	0.00	352808.18	1639595.80	PROJ TO BIT

Targets

Name	Description Dip.	Dir.	TVD ft	+N/-S ft	+E/-W ft	Map Northing ft	Map Easting ft	<---- Latitude ----> Deg Min Sec	<--- Longitude ---> Deg Min Sec
1H PBHL P1			6940.00	-8431.53	2770.79	352247.14	1639729.21	39 27 36.364 N	80 46 33.676 W
1H LP P1			6940.00	-644.74	175.63	360033.93	1637134.04	39 28 52.955 N	80 47 8.182 W

Casing Points

MD	TVD	Diameter	Hole Size	Name

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Weatherford International Ltd.
DIRECTIONAL REPORT

WV Department of Environmental Protection
Office of Oil and Gas
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Company: JAY BEE OIL & GAS INC.	**Date:** 8/20/2013	**Time:** 08:27:05	**Page:** 6
Field: Tyler county, WV	**Co-ordinate(NE) Reference:** Well: 1H, Grid North		
Site: RPT 8	**Vertical (TVD) Reference:** SITE 1260.0		
Well: 1H	**Section (VS) Reference:** Well (0.00N,0.00E,161.35Azi)		
Wellpath: HORIZONTAL	**Survey Calculation Method:** Minimum Curvature		**Db:** Sybase

Annotation

MD ft	TVD ft	
5916.00	5910.04	LAST GYRO SVY
5923.00	5917.04	FIRST MWD SVY
14740.00	6975.90	LAST MWD SVY
14812.00	6976.69	PROJ TO BIT

Formations

MD	TVD	Formations	Lithology	Dip Angle	Dip Direction

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	1/13/2014
Job End Date:	2/28/2014
State:	West Virginia
County:	Tyler
API Number:	47-095-02085-00-00
Operator Name:	Jay-Bee Oil & Gas, Inc.
Well Name and Number:	RPT8-1
Longitude:	-80.78610600
Latitude:	39.48315900
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,922
Total Base Water Volume (gal):	5,125,470
Total Base Non Water Volume:	

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Frac Focus
Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

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
Water	Jay-Bee Oil & Gas, Inc.	Water					
			Water	7732-18-5	100.00000	93.03399	
100 Mesh	Nabors Completion and Production Services	Sand Bulk West Virginia					
			Crystalline Silica	14808-60-7	99.90000	2.90239	
			Aluminum Oxide	1344-28-1	1.10000	0.03196	
			Iron Oxide	1309-37-1	0.10000	0.00291	
			Titanium Oxide	13463-67-7	0.10000	0.00291	
30/50 Mesh	Nabors Completion and Production Services	Bulk Sand West Virginia					
			Crystalline Silica	14808-60-7	99.90000	2.55082	
			Aluminum Oxide	1344-28-1	1.10000	0.02809	
			Iron Oxide	1309-37-1	0.10000	0.00255	
			Titanium Oxide	13463-67-7	0.10000	0.00255	
20/40 Mesh	Nabors Completion and Production Services	Bulk Sand West Virginia					
			Crystalline Silica	14808-60-7	99.90000	0.71772	
			Aluminum Oxide	1344-28-1	1.10000	0.00790	

			Titanium Oxide	13463-67-7	0.10000	0.00072	
			Iron Oxide	1309-37-1	0.10000	0.00072	
HCL Acid 22 Baume	Nabors Completion and Production Services	Bulk Acid					
			Water	7732-18-5	87.50000	0.54794	
			Hydrogen Chloride	7641-01-1	18.00000	0.11272	
WFR-3B	Nabors Completion and Production Services	Friction Reducer					
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.02755	
			Mineral Spirits	8052-41-3	10.00000	0.00919	
			Ethoxylated Alcohols	68551-12-2	4.00000	0.00367	
KR-153-SL	Nabors Completion and Production Services	Biocides					
			Polyethylene Glycol	25322-68-3	50.00000	0.01279	
			2,2-Dibromo-3-nitrilo-propionamide	10222-01-2	20.00000	0.00512	
Super TSC LT	Nabors Completion and Production Services	Paraffin & Scale Additives					
			Water	7732-18-5	60.00000	0.01532	
Super Max II	Nabors Completion and Production Services	Surfactant & Foamer					
			Ethylhexanol	104-76-7	40.00000	0.00330	
			Isopropyl Alcohol	67-63-0	30.00000	0.00248	
			Glycol Ethers	111-76-2	7.00000	0.00058	
CaCl2	Nabors Completion and Production Services	Perforation					
			Calcium chloride	10043-52-4	100.00000	0.00479	
LSG-100L	Nabors Completion and Production Services	Gelling Agents					
			Petroleum Distillates	64742-47-8	60.00000	0.00326	
Acid Inhibitor AL-2	Nabors Completion and Production Services	Acid Corrosion Inhibitor					
			Propargyl Alcohol	107-19-7	40.00000	0.00050	
			Isopropyl Alcohol	67-63-0	40.00000	0.00050	
			Glycol Ethers	111-76-2	40.00000	0.00050	
			Ethoxylated Nonylphenol	68412-54-4	13.00000	0.00016	
			Tar bases	72480-70-7	10.00000	0.00013	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS.							
		Friction Reducer					
			Propylene Glycol	57-55-6	25.00000	0.02296	
		Paraffin & Scale Additives					
			proprietary	proprietary	15.00000	0.00383	

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			proprietary	proprietary	15.00000	0.00383	
			proprietary	proprietary	15.00000	0.00383	
			proprietary	proprietary	15.00000	0.00383	
		Gelling Agents					
			Guar Gum	9000-30-0	50.00000	0.00271	
			Suspending Agent	14808-60-7	2.00000	0.00011	
			Surfactant	68439-51-0	2.00000	0.00011	
		Surfactant & Foamer					
			proprietary	proprietary	7.00000	0.00058	

* 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%

Note: For Field Development Products (products that begin with FDP), MSDS level only information has been provided.
Ingredient information for chemicals subject to 29 CFR 1910.1200(i) and Appendix D are obtained from suppliers Material Safety Data Sheets (MSDS)

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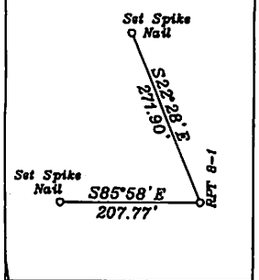
FORM WW-6

Top Hole 10,325'

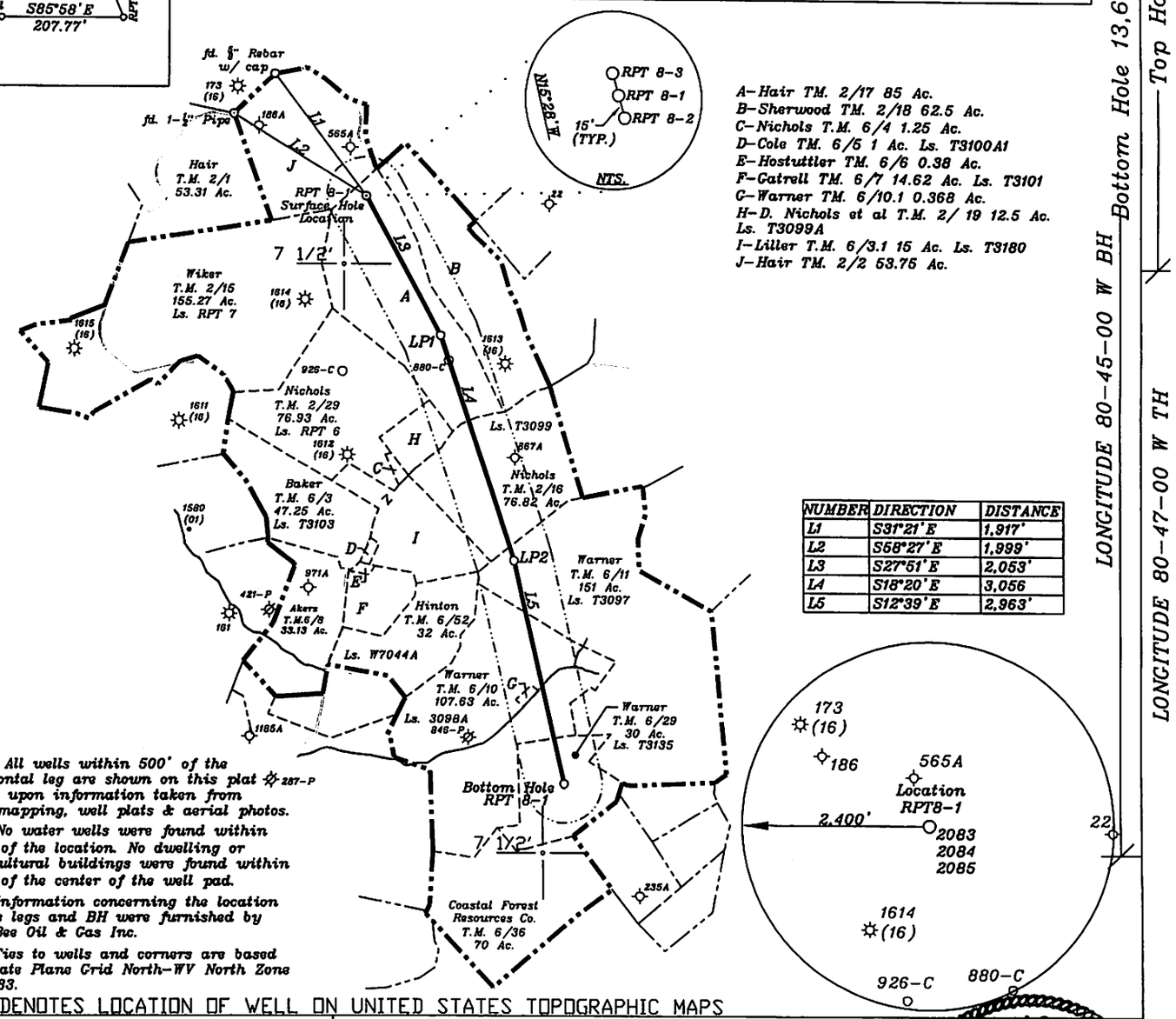
LATITUDE 39-30-00 N

Bottom Hole 7,756'

References



Surface Hole Location	Landing Point 2
UTM NAD 83(Meters)-4370417.4 N, 518394.8 E	UTM NAD 83(Meters)-4368990.2 N, 519003.9 E
Geo. NAD 83-39.483159 N, 80.786106 W	Geo. NAD 83-39.470287 N, 80.779065 W
State Plane NAD 83-360692.3 N, 1605511.6 E	State Plane NAD 83-355975.8 N, 1607432.0 E
Landing Point 1	**Bottom Hole Location**
UTM NAD 83(Meters)-4369869.3 N, 518696.2 E	UTM NAD 83(Meters)-4368112.8 N, 519216.2 E
Geo. NAD 83-39.478214 N, 80.782617 W	Geo. NAD 83-39.462376 N, 80.776621 W
State Plane NAD 83-358877.2 N, 1606470.7 E	State Plane NAD 83-353085.0 N, 1608080.8 E



NUMBER	DIRECTION	DISTANCE
L1	S31°21' E	1,917'
L2	S58°27' E	1,999'
L3	S27°51' E	2,053'
L4	S18°20' E	3,056
L5	S12°39' E	2,963'

Note: All wells within 500' of the horizontal leg are shown on this plat ☼ 287-P based upon information taken from DEP mapping, well plats & aerial photos.

No water wells were found within 250' of the location. No dwelling or agricultural buildings were found within 625' of the center of the well pad.

Information concerning the location of the legs and BH were furnished by Jay Bee Oil & Gas Inc.

Ties to wells and corners are based on State Plane Grid North-WV North Zone NAD 83.

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

FILE NO.
DRAWING NO. 1
SCALE 1" = 2000'
MINIMUM DEGREE OF ACCURACY 1 in 200
PROVEN SOURCE OF ELEVATION GPS submeter unit

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 ENVIROMENTAL PROTECTION.

(SIGNED) David L Jackson

R.P.E. _____ L.L.S. 708

DAVID JACKSON LICENSED No. 708 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

STATE OF WEST VIRGINIA
Division of Environmental Protection
OFFICE OF OIL AND GAS

DATE April 21, 2015
OPERATOR'S WELL NO. RPT 8-1
API WELL NO.
47 — 095 — 02085
STATE COUNTY PERMIT

WELL TYPE: OIL__ GAS X LIQUID INJECTION__ WASTE DISPOSAL__
(IF "GAS") PRODUCTION X STORAGE__ DEEP__ SHALLOW X

LOCATION: ELEVATION 1,244.5' WATER SHED Big Run
DISTRICT McElroy COUNTY Tyler
QUADRANGLE Shirley 7 1/2'

SURFACE OWNER Jack Hair et al ACREAGE 85 ac

OIL & GAS ROYALTY OWNER Jack Hair(85 Ac.), Duane Nichols(76.82 Ac.), Harold T. Warner(151 Ac.),Richard Warner(107.63Ac.)&(30 Ac.)

LEASE NO. RPT 8, T3099, T3097, T3098A & T3135

PROPOSED WORK: DRILL X CONVERT__ DRILL DEEPER__ REDRILL__ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION__ PERFORATE NEW FORMATION X OTHER PHYSICAL CHANGE IN WELL (SPECIFY)

PLUG AND ABANDON__ CLEAN OUT AND REPLUG__

TARGET FORMATION Marcellus ESTIMATED DEPTH 7,500'+ Horizontal leg

WELL OPERATOR Jay Bee Oil & Gas, Inc. DESIGNATED AGENT Randy Broda

ADDRESS 1720 Rt. 22 East Union, NJ 07083 ADDRESS Rt. 1 Box 5 Cairo, WV 26337

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 - 02757 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #16H
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 4,373,429	Easting 528,123
Landing Point of Curve	Northing 4,373,258	Easting 528,504
Bottom Hole	Northing 4,371,345	Easting 529,702

Elevation (ft) 1,291 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 10/05/2012 Date drilling ceased 5/11/2013
Date completion activities began 9/3/2013 Date completion activities ceased 5/28/2014
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 70 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,629 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,035 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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FEB 26 2015
Reviewed by:
A.L. 5/19/15
W.S. 6/01/15

WR-35
Rev. 8/23/13

API 47- 103 - 02757 Farm name WV Conservation Commission Well number #16H

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"	1,273'	New	J55	131' & 219'	Y - CTS
Coal	17.5"	13.375"	1,273'	New	J55	131' & 219'	Y - CTS
Intermediate 1	12.25"	9.625"	2,773'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	14,798'	New	P110		N - TOC @ 382'
Tubing	N/A	2.375"	7,771'	New	N80		N/A
Packer type and depth set							

Comment Details The cement on the 13-3/8" surface/coal string did not circulate but the annulus was grouted from surface.

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"	1,038	15.6	1.19	1,235	Surface	8.0
Coal	Class "A"	1,038	15.6	1.19	1,235	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-552 Tail-406	Lead-15.0 Tail-15.5	Lead-1.26 Tail-1.19	Lead-696 Tail-483	Surface	10.0
Intermediate 2							
Intermediate 3							
Production	Lead-FlexSeal Tail-Class "A"	Lead-874 Tail-2,095	Lead-15.0 Tail-15.4	Lead-1.25 Tail-1.22	Lead-1,093 Tail-2,556'	219'	7.0
Tubing							

Drillers TD (ft) 14,810 MD / 7,390 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 5,907 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 3, 5, 7, 9, 11, 13, 15, 17, 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, 40, 43, 46, 49, 52, 55, 58 and 62. 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 #213 and then every fourth joint to the calculated top of cement at joint #313. A total of 53 rigid left/right centralizers were used and 26 bow spring centralizers were used. The joint numbers begin at the 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 - 02757 Farm name WV Conservation Commission Well number #16H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	9/9/13	14,508	14,699	72	Marcellus Shale
2	11/20/13	14,238	14,431	72	Marcellus Shale
3	11/21/13	13,965	14,156	72	Marcellus Shale
4	11/22/13	13,695	13,892	72	Marcellus Shale
5	11/23/13	13,427	13,621	72	Marcellus Shale
6	11/27/13	13,160	13,351	72	Marcellus Shale
7	11/28/13	12,895	13,092	72	Marcellus Shale
8	11/29/13	12,630	12,827	72	Marcellus Shale
9	11/30/13	12,365	12,562	72	Marcellus Shale
10	12/1/13	12,100	12,296	72	Marcellus Shale
11	12/2/13	11,836	12,026	72	Marcellus Shale
12	12/3/13	11,570	11,766	72	Marcellus Shale
13	12/4/13	11,305	11,507	72	Marcellus Shale
14	12/5/13	11,041	11,237	72	Marcellus Shale
15	12/613	10,780	10,970	72	Marcellus Shale
16	12/7/13	10,500	10,707	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	11/20/13	85.2	8,261	6,105	4,205	212,240	7,507	
2	11/21/13	85.7	8,269	6,509	4,562	404,900	8,913	
3	11/22/13	85.7	8,031	6,420	4,112	413,880	9,130	
4	11/23/13	85.4	8,179	6,532	4,300	410,100	8,580	
5	11/27/13	82.2	8,326	7,082	5,017	363,540	8,354	
6	11/28/13	83.2	8,431	7,892	4,753	416,080	9,833	
7	11/29/13	80.7	8,439	6,269	4,641	407,460	9,946	
8	11/30/13	84.7	8,403	6,489	4,641	250,240	7,228	
9	12/1/13	84.8	8,109	6,706	4,185	409,960	8,544	
10	12/2/13	80.2	8,271	6,724	4,450	409,780	8,528	
11	12/3/13	80.2	7,720	6,899	4,752	405,920	8,516	
12	12/4/13	81.1	7,612	6,458	4,741	416,580	8,515	
13	12/5/13	77.5	7,862	7,469	4,488	295,780	7,560	
14	12/6/13	80.4	7,515	6,640	4,150	420,290	8,522	
15	12/7/13	80.0	7,509	7,390	4,602	416,180	8,513	
16	12/7/13	78.6	7,806	6,564	4,564	408,300	8,617	

Please insert additional pages as applicable.

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API 47- 103 - 02757 Farm name WV Conservation Commission Well number #16H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	12/7/13	10,235	10,431	72	Marcellus Shale
18	12/8/13	9,925	10,185	72	Marcellus Shale
19	12/9/13	9,715	9,906	72	Marcellus Shale
20	12/10/13	9,450	9,646	72	Marcellus Shale
21	12/10/13	9,188	9,381	72	Marcellus Shale
22	12/13/13	8,919	9,116	72	Marcellus Shale
23	12/13/13	8,655	8,851	72	Marcellus Shale
24	12/14/13	8,391	8,591	72	Marcellus Shale
25	12/14/13	8,111	8,316	72	Marcellus Shale
26	12/15/13	7,834	8,042	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	12/8/13	79.8	7,832	6,674	5,397	410,960	8,466	
18	12/9/13	80.0	7,697	6,375	6,038	301,980	7,661	
19	12/10/13	79.2	7,612	6,612	3,923	408,600	8,433	
20	12/10/13	78.9	7,601	6,806	4,150	408,600	8,527	
21	12/11/13	69.8	8,161	6,766	Screened	90,147	8,630	
22	12/13/13	79.9	7,552	6,551	4,261	281,820	8,164	
23	12/14/13	80.4	7,272	6,259	4,488	412,199	8,397	
24	12/14/13	80.2	7,256	5,923	4,676	409,360	8,313	
25	12/15/13	78.5	7,941	6,680	4,941	409,300	4,309	
26	12/16/13	79.3	7,455	6,188	4,223	411,800	8,251	

Please insert additional pages as applicable.

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WR-35
Rev. 8/23/13

API 47- 103 - 02757 Farm name WV Conservation Commission Well number #16H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,303' to 7,388' TVD	7,834 to 14,699' MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 2,258 psi Bottom Hole 4,516 calculated psi DURATION OF TEST 170 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	4,438 mcfpd	bpd	19.0 bpd	298 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
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 2/24/2015

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

MILL-WETZEL #16H
API 47-103-02757
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,035		FW @ 70'
Coal	1,035		*	1,040		
Sandstone & Shale	1,040		*	2,190		SW @ 1,629'
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		~	6,235	6,285	
Rhinestreet	6,235	6,285	~	6,534	6,565	
Undiff Devonian Shale	6,534	6,565	~	6,797	6,877	
Cashaqua	6,797	6,877	~	6,903	7,010	
Middlesex	6,903	7,010	~	7,074	7,243	
West River	7,074	7,243	~	7,174	7,419	
Geneseo	7,174	7,419	~	7,192	7,456	
Tully Limestone	7,192	7,456	~	7,221	7,512	
Hamilton Shale	7,221	7,512	~	7,280	7,706	
Marcellus	7,280	7,706	~	7,390	14,810	
TD				7,390	14,810	

* 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:	12/16/2013
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02757
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #16H
Longitude:	528,123
Latitude:	4,373,429
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	9069368

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, Sapphire VF105	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, AntiFoam Agent, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Rheology Modifier, Iron Control Agent, Clay Control Agent, Accelerator, Fluid Loss Additive , Propping	Water (Including Mix Water Supplied by Client)*	NA		88.51275%	
			Crystalline silica	14808-60-7	98.25484%	11.28678%	
			Hydrochloric acid	7647-01-0	0.86826%	0.09974%	
			Carbohydrate polymer	Proprietary	0.42800%	0.04917%	
			Ammonium sulfate	Proprietary	0.21420%	0.02461%	
			Fatty acid amidoalkyl betaine	Proprietary	0.12133%	0.01394%	
			Propan-2-ol	67-63-0	0.09136%	0.01049%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.07413%	0.00852%	
			Calcium chloride	10043-52-4	0.06084%	0.00699%	
			Glutaraldehyde	111-30-8	0.05726%	0.00658%	
			Diammonium peroxidisulphate	7727-54-0	0.01917%	0.00220%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00570%	0.00066%	
			Polypropylene glycol	25322-69-4	0.00395%	0.00045%	
			Ethane-1,2-diol	107-21-1	0.00362%	0.00042%	
			Trisodium ortho phosphate	7601-54-9	0.00362%	0.00042%	
			Methanol	67-56-1	0.00341%	0.00039%	
			Sodium erythorbate	6381-77-7	0.00275%	0.00032%	
			Aliphatic acids	Proprietary	0.00256%	0.00029%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00256%	0.00029%	
			Sulfonated polystyrene	Proprietary	0.00242%	0.00028%	
			Prop-2-yn-1-ol	107-19-7	0.00085%	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-23501 (Generated on 1/23/2014 4:16 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 16H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Mills-Wetzel 16H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	370004.38	1669041.12	39° 30' 35.809 N	80° 40' 22.931 W	MW3#16H

ANNOTATIONS

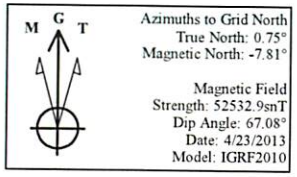
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
103.00	103.00	0.09	83.27	0.01	0.08	0.04	0.08	First SDI Gyro Survey
2802.86	2803.00	0.93	75.89	1.69	18.05	10.11	19.66	Last SDI Gyro Survey
2821.61	2821.76	1.26	90.97	1.73	18.40	10.31	20.02	First SDI MWD Survey
7388.88	14745.00	89.26	145.54	-6228.35	5039.90	8011.96	8261.08	Last SDI MWD Survey
7389.73	14810.00	89.26	145.54	-6281.94	5076.68	8076.72	8326.07	Projection to Bit

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 16H - Slot MW3#16H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#16H(0.00N, 0.00E)
Measured Depth Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Calculation Method: Minimum Curvature

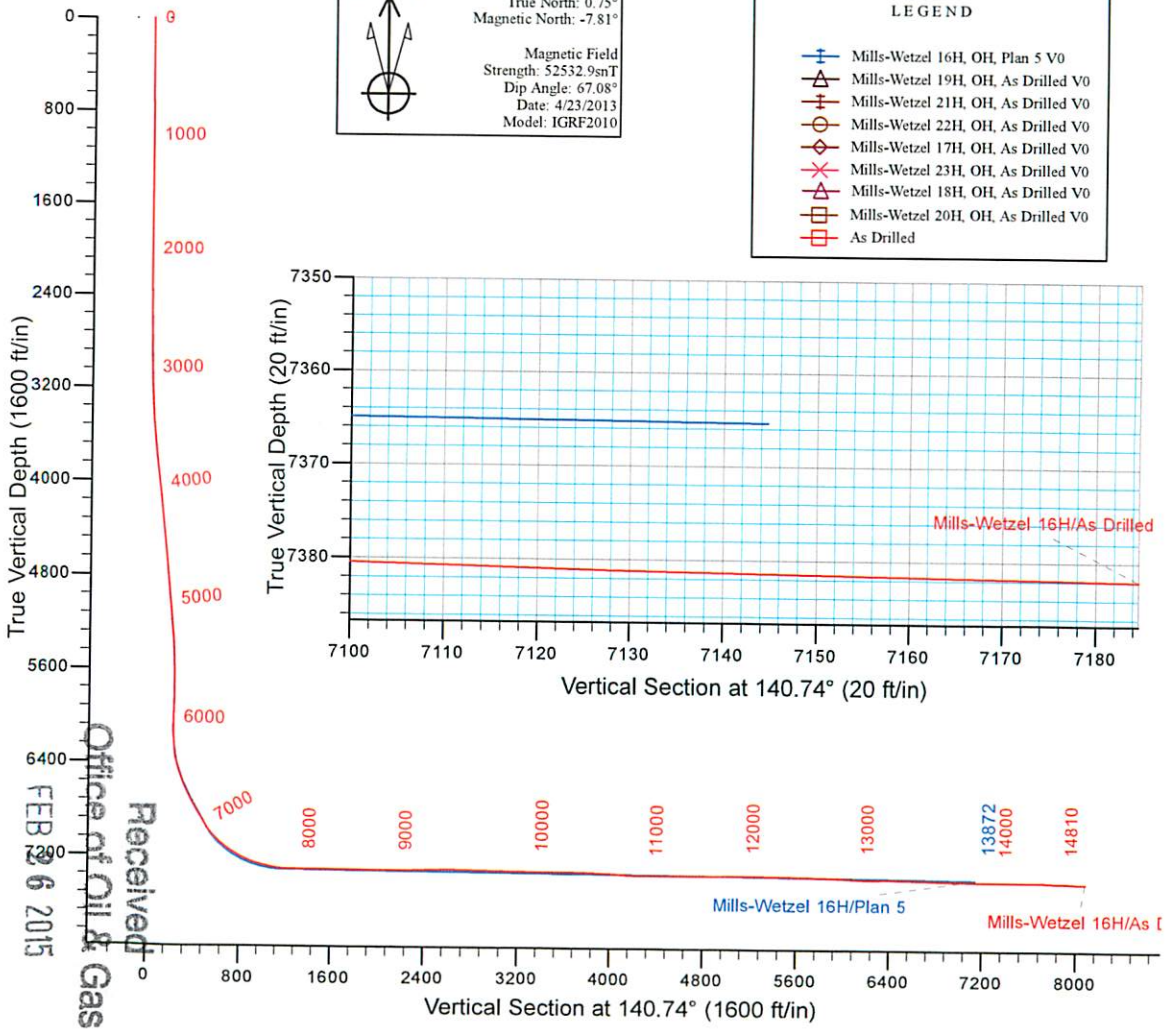


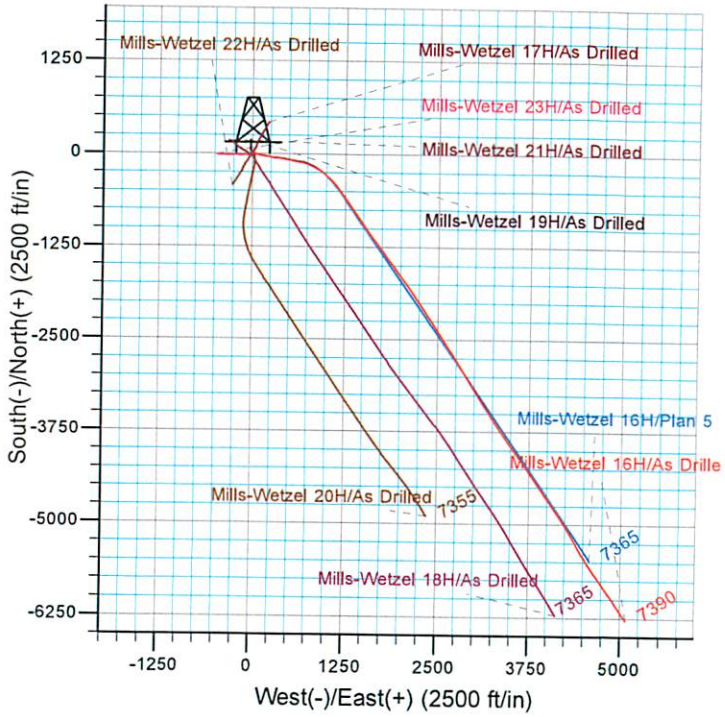
Azimuths to Grid North
True North: 0.75°
Magnetic North: -7.81°

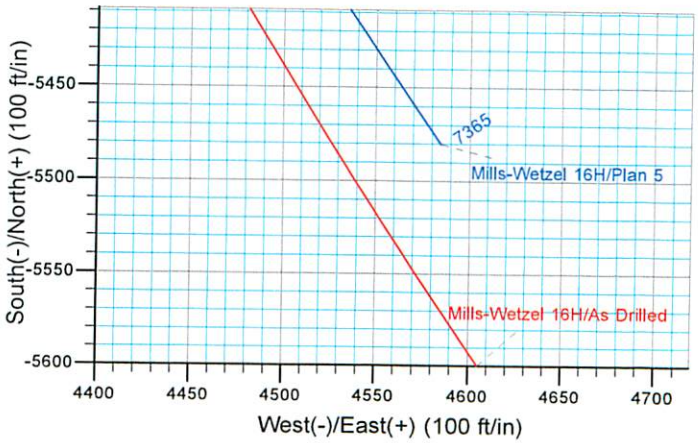
Magnetic Field
Strength: 52532.9snT
Dip Angle: 67.08°
Date: 4/23/2013
Model: IGRF2010

LEGEND

- Mills-Wetzel 16H, OH, Plan 5 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, 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 16H - Slot MW3#16H

OH

Design: As Drilled

Standard Survey Report

06 June, 2013

Scientific Drilling

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Scientific Drilling International

Survey Report

Scientific Drilling

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	**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 16H - Slot MW3#16H

Well Position	**+N/-S**	0.00 ft	**Northing:**	370,004.38 usft	**Latitude:**	39° 30' 35.809 N
	+E/-W	0.00 ft	**Easting:**	1,669,041.12 usft	**Longitude:**	80° 40' 22.931 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	4/23/2013	-8.55	67.08	52,533

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	140.74

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

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
103.00	2,803.00	SDI Keeper Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
2,821.76	7,208.00	SDI MWD (OH)	MWD SDI	MWD - Standard ver 1.0.1
7,239.00	14,810.00	Survey 3 - Lateral (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	0.09	83.27	103.00	0.01	0.08	0.04	0.09	0.09	0.00
First SDI Gyro Survey									
203.00	0.07	100.10	203.00	0.01	0.22	0.13	0.03	-0.02	16.83
303.00	0.21	82.48	303.00	0.02	0.46	0.27	0.14	0.14	-17.62
403.00	0.20	99.68	403.00	0.02	0.81	0.50	0.06	-0.01	17.20
503.00	0.06	35.70	503.00	0.03	1.02	0.62	0.18	0.11	-63.98
603.00	0.09	113.71	603.00	0.04	1.12	0.68	0.10	0.03	78.01
703.00	0.13	129.27	703.00	-0.06	1.28	0.86	0.05	0.04	15.56

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	**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)
803.00	0.21	141.42	803.00	-0.28	1.48	1.15	0.09	0.08	12.15
903.00	0.15	102.83	902.99	-0.45	1.72	1.44	0.13	-0.06	-38.59
1,003.00	0.52	99.96	1,002.99	-0.56	2.30	1.89	0.37	0.37	-2.87
1,103.00	0.07	29.46	1,102.99	-0.58	2.77	2.21	0.50	-0.45	-70.50
1,203.00	0.02	3.18	1,202.99	-0.51	2.81	2.17	0.05	-0.05	-26.28
1,303.00	0.12	65.21	1,302.99	-0.45	2.90	2.19	0.11	0.10	62.03
1,403.00	0.20	63.52	1,402.99	-0.33	3.15	2.25	0.08	0.08	-1.69
1,503.00	0.32	15.36	1,502.99	0.02	3.38	2.13	0.24	0.12	-48.16
1,603.00	0.25	73.61	1,602.99	0.35	3.67	2.05	0.28	-0.07	58.25
1,703.00	0.36	118.02	1,702.99	0.26	4.15	2.43	0.25	0.11	44.41
1,803.00	0.30	134.99	1,802.99	-0.07	4.62	2.98	0.11	-0.06	16.97
1,903.00	0.29	126.05	1,902.98	-0.40	5.01	3.48	0.05	-0.01	-8.94
2,003.00	0.13	85.05	2,002.98	-0.54	5.32	3.79	0.21	-0.16	-41.00
2,103.00	0.22	19.76	2,102.98	-0.35	5.50	3.75	0.20	0.09	-65.29
2,203.00	0.67	71.47	2,202.98	0.01	6.12	3.86	0.56	0.45	51.71
2,303.00	1.32	79.38	2,302.97	0.41	7.81	4.62	0.66	0.65	7.91
2,403.00	1.41	81.09	2,402.94	0.81	10.15	5.80	0.10	0.09	1.71
2,503.00	1.44	83.87	2,502.91	1.14	12.62	7.10	0.08	0.03	2.78
2,603.00	0.97	84.45	2,602.88	1.35	14.71	8.26	0.47	-0.47	0.58
2,703.00	0.98	88.00	2,702.87	1.47	16.41	9.25	0.06	0.01	3.55
2,803.00	0.93	75.89	2,802.86	1.69	18.05	10.11	0.21	-0.05	-12.11
Last SDI Gyro Survey									
2,821.76	1.26	90.97	2,821.61	1.73	18.40	10.31	2.32	1.76	80.37
First SDI MWD Survey									
2,832.00	0.89	83.24	2,831.85	1.74	18.59	10.42	3.87	-3.61	-75.49
2,925.00	1.86	93.37	2,924.82	1.73	20.82	11.83	1.07	1.04	10.89
3,016.00	2.05	91.42	3,015.77	1.60	23.92	13.89	0.22	0.21	-2.14
3,108.00	1.93	83.34	3,107.72	1.74	27.10	15.80	0.33	-0.13	-8.78
3,231.00	2.66	97.87	3,230.62	1.59	31.99	19.01	0.75	0.59	11.81
3,323.00	3.53	108.75	3,322.48	0.39	36.79	22.98	1.14	0.95	11.83
3,418.00	5.02	112.45	3,417.22	-2.14	43.40	29.12	1.59	1.57	3.89
3,511.00	6.43	111.27	3,509.75	-5.58	52.01	37.23	1.52	1.52	-1.27
3,606.00	6.46	106.05	3,604.15	-8.99	62.10	46.26	0.62	0.03	-5.49
3,698.00	7.34	103.29	3,695.48	-11.77	72.80	55.18	1.02	0.96	-3.00
3,795.00	8.53	105.98	3,791.55	-15.17	85.74	66.01	1.28	1.23	2.77
3,886.01	8.85	103.30	3,881.52	-18.64	99.05	77.11	0.57	0.35	-2.94
3,979.01	8.91	99.69	3,973.41	-21.50	113.11	88.22	0.60	0.06	-3.88
4,072.01	8.99	96.87	4,065.27	-23.58	127.42	98.89	0.48	0.09	-3.03
4,259.01	7.64	97.36	4,250.30	-26.92	154.26	118.46	0.72	-0.72	0.26
4,447.01	7.73	102.81	4,436.62	-31.33	178.98	137.52	0.39	0.05	2.90
4,538.01	7.40	100.65	4,526.83	-33.77	190.71	146.83	0.48	-0.36	-2.37
4,632.01	7.28	99.17	4,620.06	-35.84	202.53	155.91	0.24	-0.13	-1.57
4,724.01	7.04	97.06	4,711.34	-37.46	213.88	164.35	0.39	-0.26	-2.29
4,815.01	6.72	94.84	4,801.68	-38.59	224.72	172.09	0.46	-0.35	-2.44

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	**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)
4,908.01	7.15	102.77	4,894.00	-40.33	235.79	180.44	1.13	0.46	8.53
5,006.01	7.19	103.37	4,991.24	-43.10	247.71	190.12	0.09	0.04	0.61
5,099.01	7.45	103.51	5,083.48	-45.85	259.23	199.55	0.28	0.28	0.15
5,189.01	6.01	104.60	5,172.86	-48.40	269.46	208.00	1.61	-1.60	1.21
5,281.01	4.86	108.49	5,264.44	-50.85	277.82	215.18	1.31	-1.25	4.23
5,376.01	4.71	113.20	5,359.11	-53.66	285.22	222.04	0.44	-0.16	4.96
5,469.01	3.79	114.84	5,451.86	-56.46	291.52	228.19	1.00	-0.99	1.76
5,561.01	2.40	105.08	5,543.72	-58.24	296.14	232.49	1.61	-1.51	-10.61
5,651.01	1.17	74.70	5,633.68	-58.49	298.85	234.40	1.68	-1.37	-33.76
5,744.01	0.99	2.19	5,726.66	-57.43	299.79	234.18	1.38	-0.19	-77.97
5,838.01	1.24	352.11	5,820.65	-55.61	299.68	232.71	0.34	0.27	-10.72
5,929.01	1.14	342.67	5,911.63	-53.77	299.28	231.02	0.24	-0.11	-10.37
6,020.01	1.18	333.82	6,002.61	-52.07	298.60	229.27	0.20	0.04	-9.73
6,052.01	1.19	337.41	6,034.60	-51.47	298.32	228.63	0.23	0.03	11.22
6,098.00	1.11	335.93	6,080.58	-50.62	297.96	227.75	0.19	-0.17	-3.22
6,130.00	1.10	30.28	6,112.58	-50.07	297.99	227.34	3.15	-0.03	169.84
6,162.00	2.16	63.98	6,144.56	-49.54	298.68	227.37	4.33	3.31	105.31
6,193.00	3.73	77.11	6,175.52	-49.06	300.19	227.95	5.48	5.06	42.35
6,225.00	5.58	82.57	6,207.41	-48.63	302.75	229.23	5.94	5.78	17.06
6,257.00	7.36	86.53	6,239.21	-48.30	306.34	231.25	5.73	5.56	12.38
6,289.00	9.03	89.76	6,270.88	-48.17	310.90	234.03	5.41	5.22	10.09
6,321.00	10.42	91.87	6,302.42	-48.25	316.30	237.52	4.48	4.34	6.59
6,352.00	12.25	95.66	6,332.82	-48.67	322.37	241.68	6.37	5.90	12.23
6,384.00	14.07	100.97	6,363.98	-49.74	329.57	247.07	6.82	5.69	16.59
6,416.00	16.29	104.15	6,394.86	-51.58	337.74	253.67	7.41	6.94	9.94
6,448.00	17.66	103.45	6,425.46	-53.81	346.82	261.13	4.33	4.28	-2.19
6,480.00	19.84	102.64	6,455.76	-56.12	356.84	269.27	6.86	6.81	-2.53
6,511.00	21.81	101.98	6,484.74	-58.47	367.61	277.90	6.40	6.35	-2.13
6,543.00	23.56	101.83	6,514.26	-61.02	379.68	287.51	5.47	5.47	-0.47
6,575.00	25.43	101.29	6,543.38	-63.67	392.68	297.79	5.89	5.84	-1.69
6,607.00	27.07	100.40	6,572.08	-66.33	406.58	308.65	5.27	5.13	-2.78
6,639.00	28.60	99.49	6,600.37	-68.91	421.30	319.96	4.96	4.78	-2.84
6,671.00	31.29	98.73	6,628.10	-71.43	437.07	331.89	8.49	8.41	-2.38
6,702.00	34.38	98.95	6,654.14	-74.02	453.67	344.40	9.98	9.97	0.71
6,734.00	36.31	99.93	6,680.24	-77.06	471.93	358.31	6.29	6.03	3.06
6,766.00	36.26	99.99	6,706.04	-80.33	490.59	372.65	0.19	-0.16	0.19
6,798.00	35.83	99.97	6,731.91	-83.60	509.13	386.91	1.34	-1.34	-0.06
6,827.00	35.29	100.06	6,755.50	-86.53	525.74	399.69	1.87	-1.86	0.31
6,859.00	35.03	99.91	6,781.67	-89.72	543.89	413.65	0.86	-0.81	-0.47
6,890.00	35.79	99.56	6,806.93	-92.76	561.59	427.20	2.54	2.45	-1.13
6,922.00	37.21	100.20	6,832.65	-96.03	580.34	441.60	4.59	4.44	2.00
6,954.00	37.21	100.32	6,858.14	-99.47	599.38	456.32	0.23	0.00	0.38
6,986.00	37.58	100.11	6,883.56	-102.92	618.51	471.09	1.22	1.16	-0.66

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Company:	Stone Energy	Local Co-ordinate Reference:	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	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)
7,018.00	37.72	100.01	6,908.90	-106.34	637.75	485.91	0.48	0.44	-0.31
7,049.00	38.50	100.73	6,933.29	-109.78	656.57	500.49	2.90	2.52	2.32
7,081.00	40.07	103.98	6,958.06	-114.12	676.36	516.37	8.09	4.91	10.16
7,112.00	41.59	106.59	6,981.52	-119.47	695.90	532.88	7.37	4.90	8.42
7,144.00	43.30	109.33	7,005.13	-126.14	716.44	551.04	7.87	5.34	8.56
7,176.00	45.40	111.06	7,028.02	-133.87	737.43	570.30	7.57	6.56	5.41
7,208.00	47.34	113.20	7,050.10	-142.60	758.88	590.64	7.76	6.06	6.69
7,239.00	49.56	114.47	7,070.66	-151.97	780.10	611.33	7.79	7.16	4.10
7,271.00	51.79	115.77	7,090.93	-162.49	802.50	633.65	7.64	6.97	4.06
7,302.00	54.10	117.76	7,109.61	-173.63	824.59	656.25	9.04	7.45	6.42
7,334.00	56.01	119.78	7,127.94	-186.26	847.57	680.57	7.90	5.97	6.31
7,366.00	57.14	121.82	7,145.57	-199.93	870.51	705.68	6.39	3.53	6.38
7,398.00	58.06	123.11	7,162.72	-214.44	893.30	731.33	4.46	2.88	4.03
7,429.00	59.94	124.87	7,178.69	-229.30	915.33	756.78	7.78	6.06	5.68
7,460.00	61.81	126.53	7,193.77	-245.10	937.32	782.93	7.63	6.03	5.35
7,492.00	64.25	127.91	7,208.29	-262.35	960.03	810.65	8.54	7.63	4.31
7,523.00	65.47	129.61	7,221.46	-279.92	981.91	838.10	6.33	3.94	5.48
7,555.00	66.93	130.91	7,234.37	-298.84	1,004.25	866.89	5.88	4.56	4.06
7,587.00	69.27	132.58	7,246.31	-318.61	1,026.39	896.22	8.77	7.31	5.22
7,619.00	71.00	134.34	7,257.18	-339.31	1,048.24	926.07	7.48	5.41	5.50
7,651.00	73.72	135.88	7,266.88	-360.92	1,069.75	956.41	9.66	8.50	4.81
7,682.00	76.10	137.04	7,274.95	-382.61	1,090.37	986.26	8.48	7.68	3.74
7,714.00	77.42	138.60	7,282.28	-405.70	1,111.28	1,017.36	6.29	4.13	4.88
7,745.00	78.41	140.67	7,288.77	-428.79	1,130.91	1,047.67	7.27	3.19	6.68
7,777.00	79.41	142.24	7,294.92	-453.35	1,150.48	1,079.07	5.74	3.13	4.91
7,809.00	81.99	143.45	7,300.09	-478.52	1,169.55	1,110.62	8.88	8.06	3.78
7,840.00	84.59	144.53	7,303.72	-503.42	1,187.65	1,141.36	9.07	8.39	3.48
7,872.00	86.27	145.39	7,306.26	-529.54	1,205.96	1,173.17	5.89	5.25	2.69
7,904.00	87.72	145.92	7,307.94	-555.92	1,223.99	1,205.01	4.82	4.53	1.66
7,935.00	88.73	146.29	7,308.90	-581.64	1,241.27	1,235.85	3.47	3.26	1.19
7,998.00	89.80	146.59	7,309.71	-634.13	1,276.09	1,298.54	1.76	1.70	0.48
8,062.00	89.70	146.22	7,309.99	-687.44	1,311.50	1,362.22	0.60	-0.16	-0.58
8,125.00	89.60	145.99	7,310.37	-739.74	1,346.64	1,424.95	0.40	-0.16	-0.37
8,187.00	90.03	145.66	7,310.57	-791.03	1,381.46	1,486.70	0.87	0.69	-0.53
8,247.00	90.17	145.27	7,310.47	-840.46	1,415.48	1,546.50	0.69	0.23	-0.65
8,307.00	89.87	144.30	7,310.45	-889.47	1,450.08	1,606.35	1.69	-0.50	-1.62
8,367.00	90.00	144.95	7,310.52	-938.40	1,484.81	1,666.21	1.10	0.22	1.08
8,428.00	89.53	145.16	7,310.77	-988.40	1,519.75	1,727.04	0.84	-0.77	0.34
8,490.00	89.80	143.80	7,311.13	-1,038.86	1,555.77	1,788.90	2.24	0.44	-2.19
8,551.00	89.66	143.89	7,311.42	-1,088.11	1,591.76	1,849.81	0.27	-0.23	0.15
8,612.00	88.79	144.00	7,312.24	-1,137.42	1,627.66	1,910.71	1.44	-1.43	0.18
8,673.00	89.63	143.42	7,313.08	-1,186.58	1,663.76	1,971.62	1.67	1.38	-0.95
8,734.00	90.24	142.96	7,313.15	-1,235.42	1,700.31	2,032.57	1.25	1.00	0.75

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	**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)
8,795.00	90.17	142.89	7,312.93	-1,284.09	1,737.08	2,093.52	0.16	-0.11	-0.11
8,855.00	90.47	143.05	7,312.60	-1,331.99	1,773.21	2,153.48	0.57	0.50	0.27
8,916.00	89.73	144.80	7,312.49	-1,381.29	1,809.13	2,214.38	3.11	-1.21	2.87
8,977.00	90.27	144.19	7,312.49	-1,430.95	1,844.56	2,275.25	1.34	0.89	-1.00
9,038.00	90.94	144.06	7,311.85	-1,480.37	1,880.30	2,336.14	1.12	1.10	-0.21
9,101.00	90.94	145.93	7,310.82	-1,531.97	1,916.44	2,398.95	2.97	0.00	2.97
9,165.00	90.91	145.73	7,309.78	-1,584.91	1,952.38	2,462.69	0.32	-0.05	-0.31
9,228.00	90.91	145.16	7,308.78	-1,636.79	1,988.11	2,525.47	0.90	0.00	-0.90
9,291.00	90.64	145.19	7,307.93	-1,688.50	2,024.08	2,588.28	0.43	-0.43	0.05
9,355.00	88.96	144.61	7,308.15	-1,740.86	2,060.88	2,652.11	2.78	-2.63	-0.91
9,419.00	88.15	145.36	7,309.77	-1,793.26	2,097.59	2,715.91	1.72	-1.27	1.17
9,482.00	88.39	144.72	7,311.67	-1,844.87	2,133.67	2,778.70	1.08	0.38	-1.02
9,544.00	88.59	144.04	7,313.30	-1,895.25	2,169.77	2,840.56	1.14	0.32	-1.10
9,608.00	88.89	144.37	7,314.71	-1,947.15	2,207.19	2,904.42	0.70	0.47	0.52
9,672.00	89.36	145.47	7,315.69	-1,999.52	2,243.97	2,968.25	1.87	0.73	1.72
9,735.00	90.07	145.90	7,316.00	-2,051.55	2,279.48	3,031.01	1.32	1.13	0.68
9,799.00	89.33	147.38	7,316.34	-2,105.00	2,314.68	3,094.67	2.59	-1.16	2.31
9,862.00	89.40	147.59	7,317.03	-2,158.12	2,348.54	3,157.23	0.35	0.11	0.33
9,925.00	89.46	147.55	7,317.66	-2,211.30	2,382.32	3,219.78	0.11	0.10	-0.06
9,989.00	89.46	147.64	7,318.26	-2,265.33	2,416.62	3,283.32	0.14	0.00	0.14
10,053.00	89.23	147.73	7,319.00	-2,319.41	2,450.83	3,346.84	0.39	-0.36	0.14
10,116.00	89.77	147.65	7,319.55	-2,372.66	2,484.50	3,409.38	0.87	0.86	-0.13
10,148.00	90.20	147.65	7,319.55	-2,399.69	2,501.62	3,441.15	1.34	1.34	0.00
10,180.00	89.90	147.71	7,319.53	-2,426.73	2,518.73	3,472.91	0.96	-0.94	0.19
10,212.00	89.03	147.15	7,319.82	-2,453.70	2,535.96	3,504.69	3.23	-2.72	-1.75
10,244.00	89.19	147.02	7,320.32	-2,480.56	2,553.34	3,536.49	0.64	0.50	-0.41
10,275.00	89.46	146.98	7,320.69	-2,506.55	2,570.23	3,567.31	0.88	0.87	-0.13
10,307.00	89.50	146.84	7,320.98	-2,533.36	2,587.70	3,599.12	0.45	0.13	-0.44
10,339.00	88.99	147.11	7,321.40	-2,560.19	2,605.13	3,630.93	1.80	-1.59	0.84
10,371.00	88.12	146.92	7,322.21	-2,587.02	2,622.55	3,662.73	2.78	-2.72	-0.59
10,403.00	88.05	147.06	7,323.27	-2,613.84	2,639.97	3,694.52	0.49	-0.22	0.44
10,434.00	88.22	147.01	7,324.28	-2,639.84	2,656.83	3,725.32	0.57	0.55	-0.16
10,466.00	88.19	147.05	7,325.29	-2,666.67	2,674.24	3,757.11	0.16	-0.09	0.13
10,497.00	88.25	147.03	7,326.25	-2,692.67	2,691.10	3,787.91	0.20	0.19	-0.06
10,529.00	88.46	147.13	7,327.17	-2,719.52	2,708.48	3,819.70	0.73	0.66	0.31
10,560.00	88.73	147.66	7,327.93	-2,745.63	2,725.18	3,850.48	1.92	0.87	1.71
10,591.00	89.23	148.39	7,328.48	-2,771.92	2,741.59	3,881.22	2.85	1.61	2.35
10,623.00	89.06	149.58	7,328.96	-2,799.34	2,758.08	3,912.89	3.76	-0.53	3.72
10,655.00	88.73	150.65	7,329.57	-2,827.08	2,774.02	3,944.45	3.50	-1.03	3.34
10,687.00	87.51	150.23	7,330.62	-2,854.90	2,789.80	3,975.98	4.03	-3.81	-1.31
10,751.00	86.41	149.79	7,334.02	-2,910.25	2,821.74	4,039.05	1.85	-1.72	-0.69
10,783.00	86.57	149.00	7,335.98	-2,937.74	2,838.00	4,070.63	2.51	0.50	-2.47
10,814.00	86.68	148.88	7,337.80	-2,964.25	2,853.97	4,101.26	0.52	0.35	-0.39
10,878.00	87.62	148.67	7,340.98	-3,018.91	2,887.10	4,164.55	1.50	1.47	-0.33

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Company:	Stone Energy	Local Co-ordinate Reference:	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	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)
10,941.00	87.85	147.77	7,343.47	-3,072.42	2,920.26	4,226.97	1.47	0.37	-1.43
11,004.00	89.09	148.34	7,345.16	-3,125.86	2,953.58	4,289.43	2.17	1.97	0.90
11,067.00	89.87	148.15	7,345.73	-3,179.43	2,986.73	4,351.89	1.27	1.24	-0.30
11,131.00	90.10	147.66	7,345.74	-3,233.65	3,020.74	4,415.39	0.85	0.36	-0.77
11,194.00	90.57	147.34	7,345.38	-3,286.78	3,054.59	4,477.95	0.90	0.75	-0.51
11,257.00	90.20	146.65	7,344.95	-3,339.61	3,088.90	4,540.57	1.24	-0.59	-1.10
11,320.00	90.60	146.86	7,344.51	-3,392.30	3,123.44	4,603.23	0.72	0.63	0.33
11,384.00	89.63	146.92	7,344.39	-3,445.91	3,158.40	4,666.86	1.52	-1.52	0.09
11,447.00	89.50	147.00	7,344.86	-3,498.72	3,192.75	4,729.48	0.24	-0.21	0.13
11,510.00	90.44	146.84	7,344.90	-3,551.51	3,227.13	4,792.12	1.51	1.49	-0.25
11,574.00	89.93	146.21	7,344.69	-3,604.89	3,262.43	4,855.79	1.27	-0.80	-0.98
11,637.00	89.09	145.66	7,345.23	-3,657.08	3,297.72	4,918.53	1.59	-1.33	-0.87
11,700.00	90.00	146.18	7,345.73	-3,709.25	3,333.02	4,981.27	1.66	1.44	0.83
11,763.00	89.77	146.13	7,345.86	-3,761.58	3,368.11	5,043.99	0.37	-0.37	-0.08
11,826.00	89.43	145.64	7,346.30	-3,813.73	3,403.44	5,106.73	0.95	-0.54	-0.78
11,889.00	90.44	145.30	7,346.37	-3,865.64	3,439.15	5,169.52	1.69	1.60	-0.54
11,953.00	91.17	144.84	7,345.47	-3,918.10	3,475.79	5,233.33	1.35	1.14	-0.72
12,016.00	90.27	143.94	7,344.68	-3,969.31	3,512.47	5,296.19	2.02	-1.43	-1.43
12,079.00	89.97	142.46	7,344.54	-4,019.76	3,550.21	5,359.13	2.40	-0.48	-2.35
12,143.00	89.80	142.96	7,344.67	-4,070.68	3,588.98	5,423.10	0.83	-0.27	0.78
12,206.00	88.89	144.17	7,345.39	-4,121.36	3,626.40	5,486.01	2.40	-1.44	1.92
12,270.00	88.36	144.75	7,346.93	-4,173.42	3,663.59	5,549.86	1.23	-0.83	0.91
12,333.00	89.23	144.32	7,348.25	-4,224.72	3,700.13	5,612.71	1.54	1.38	-0.68
12,397.00	89.87	144.40	7,348.76	-4,276.73	3,737.42	5,676.58	1.01	1.00	0.13
12,460.00	90.13	144.84	7,348.76	-4,328.09	3,773.90	5,739.43	0.81	0.41	0.70
12,524.00	88.86	145.59	7,349.32	-4,380.65	3,810.41	5,803.23	2.30	-1.98	1.17
12,555.00	87.62	144.92	7,350.27	-4,406.11	3,828.07	5,834.12	4.55	-4.00	-2.16
12,587.00	87.85	144.99	7,351.54	-4,432.29	3,846.43	5,866.01	0.75	0.72	0.22
12,619.00	88.02	144.80	7,352.69	-4,458.45	3,864.82	5,897.91	0.80	0.53	-0.59
12,651.00	87.62	144.64	7,353.91	-4,484.56	3,883.29	5,929.81	1.35	-1.25	-0.50
12,683.00	88.42	144.93	7,355.01	-4,510.69	3,901.73	5,961.71	2.66	2.50	0.91
12,715.00	87.88	145.49	7,356.05	-4,536.95	3,919.98	5,993.59	2.43	-1.69	1.75
12,746.00	86.30	145.68	7,357.62	-4,562.49	3,937.47	6,024.44	5.13	-5.10	0.61
12,778.00	86.34	145.68	7,359.67	-4,588.87	3,955.48	6,056.26	0.13	0.13	0.00
12,810.00	86.54	145.80	7,361.66	-4,615.26	3,973.46	6,088.07	0.73	0.63	0.38
12,842.00	87.62	145.76	7,363.29	-4,641.69	3,991.43	6,119.91	3.38	3.38	-0.13
12,873.00	88.29	145.78	7,364.40	-4,667.30	4,008.86	6,150.77	2.16	2.16	0.06
12,905.00	89.13	145.25	7,365.12	-4,693.67	4,026.97	6,182.65	3.10	2.63	-1.66
12,936.00	89.33	144.75	7,365.53	-4,719.06	4,044.75	6,213.56	1.74	0.65	-1.61
12,968.00	89.83	144.19	7,365.77	-4,745.10	4,063.35	6,245.49	2.35	1.56	-1.75
13,000.00	90.17	144.48	7,365.77	-4,771.10	4,082.00	6,277.43	1.40	1.06	0.91
13,032.00	90.70	144.75	7,365.53	-4,797.19	4,100.53	6,309.36	1.86	1.66	0.84
13,064.00	90.87	145.42	7,365.09	-4,823.43	4,118.85	6,341.26	2.16	0.53	2.09

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FEB 26 2015

Company:	Stone Energy	Local Co-ordinate Reference:	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	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)
13,095.00	89.90	145.48	7,364.88	-4,848.96	4,136.43	6,372.16	3.14	-3.13	0.19
13,127.00	89.60	146.28	7,365.02	-4,875.45	4,154.38	6,404.03	2.67	-0.94	2.50
13,159.00	88.89	146.79	7,365.44	-4,902.14	4,172.02	6,435.86	2.73	-2.22	1.59
13,191.00	88.72	147.53	7,366.11	-4,929.02	4,189.37	6,467.65	2.37	-0.53	2.31
13,223.00	89.09	147.79	7,366.72	-4,956.05	4,206.48	6,499.41	1.41	1.16	0.81
13,254.00	89.40	147.74	7,367.13	-4,982.27	4,223.02	6,530.18	1.01	1.00	-0.16
13,285.00	88.52	147.64	7,367.69	-5,008.47	4,239.58	6,560.95	2.86	-2.84	-0.32
13,317.00	87.72	148.34	7,368.74	-5,035.59	4,256.54	6,592.67	3.32	-2.50	2.19
13,349.00	87.82	148.13	7,369.98	-5,062.78	4,273.37	6,624.37	0.73	0.31	-0.66
13,381.00	88.32	148.05	7,371.06	-5,089.92	4,290.28	6,656.09	1.58	1.56	-0.25
13,413.00	88.79	148.42	7,371.87	-5,117.12	4,307.12	6,687.81	1.87	1.47	1.16
13,445.00	89.56	148.56	7,372.33	-5,144.40	4,323.84	6,719.51	2.45	2.41	0.44
13,476.00	90.00	149.53	7,372.45	-5,170.98	4,339.78	6,750.19	3.44	1.42	3.13
13,508.00	90.03	149.80	7,372.44	-5,198.60	4,355.95	6,781.80	0.85	0.09	0.84
13,540.00	88.56	149.89	7,372.83	-5,226.27	4,372.02	6,813.40	4.60	-4.59	0.28
13,604.00	89.36	149.80	7,374.00	-5,281.60	4,404.16	6,876.58	1.26	1.25	-0.14
13,667.00	88.45	149.04	7,375.20	-5,335.83	4,436.21	6,938.84	1.88	-1.44	-1.21
13,731.00	87.65	147.71	7,377.38	-5,390.29	4,469.75	7,002.24	2.42	-1.25	-2.08
13,794.00	88.29	148.05	7,379.61	-5,443.61	4,503.22	7,064.71	1.15	1.02	0.54
13,858.00	88.96	147.39	7,381.15	-5,497.71	4,537.39	7,128.22	1.47	1.05	-1.03
13,921.00	89.40	146.46	7,382.05	-5,550.49	4,571.77	7,190.84	1.63	0.70	-1.48
13,985.00	90.00	146.02	7,382.38	-5,603.70	4,607.33	7,254.55	1.16	0.94	-0.69
14,048.00	90.91	145.80	7,381.88	-5,655.87	4,642.64	7,317.29	1.49	1.44	-0.35
14,111.00	90.20	143.96	7,381.27	-5,707.39	4,678.88	7,380.12	3.13	-1.13	-2.92
14,174.00	91.14	143.76	7,380.53	-5,758.27	4,716.03	7,443.02	1.53	1.49	-0.32
14,237.00	90.30	144.90	7,379.74	-5,809.44	4,752.77	7,505.89	2.25	-1.33	1.81
14,300.00	88.66	144.83	7,380.31	-5,860.96	4,789.02	7,568.72	2.61	-2.60	-0.11
14,364.00	89.80	144.82	7,381.17	-5,913.27	4,825.89	7,632.55	1.78	1.78	-0.02
14,427.00	88.86	145.32	7,381.91	-5,964.91	4,861.96	7,695.37	1.69	-1.49	0.79
14,491.00	87.62	146.50	7,383.88	-6,017.89	4,897.81	7,759.08	2.67	-1.94	1.84
14,554.00	88.79	146.27	7,385.85	-6,070.33	4,932.67	7,821.74	1.89	1.86	-0.37
14,618.00	89.73	145.90	7,386.68	-6,123.43	4,968.37	7,885.46	1.58	1.47	-0.58
14,681.00	88.52	145.71	7,387.64	-6,175.54	5,003.78	7,948.20	1.94	-1.92	-0.30
14,745.00	89.26	145.54	7,388.88	-6,228.35	5,039.90	8,011.96	1.19	1.16	-0.27
Last SDI MWD Survey									
14,810.00	89.26	145.54	7,389.72	-6,281.94	5,076.68	8,076.72	0.00	0.00	0.00
Projection to Bit									

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 16H - Slot MW3#16H
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 16H	**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	0.01	0.08	First SDI Gyro Survey
2,803.00	2,802.86	1.69	18.05	Last SDI Gyro Survey
2,821.76	2,821.61	1.73	18.40	First SDI MWD Survey
14,745.00	7,388.88	-6,228.35	5,039.90	Last SDI MWD Survey
14,810.00	7,389.72	-6,281.94	5,076.68	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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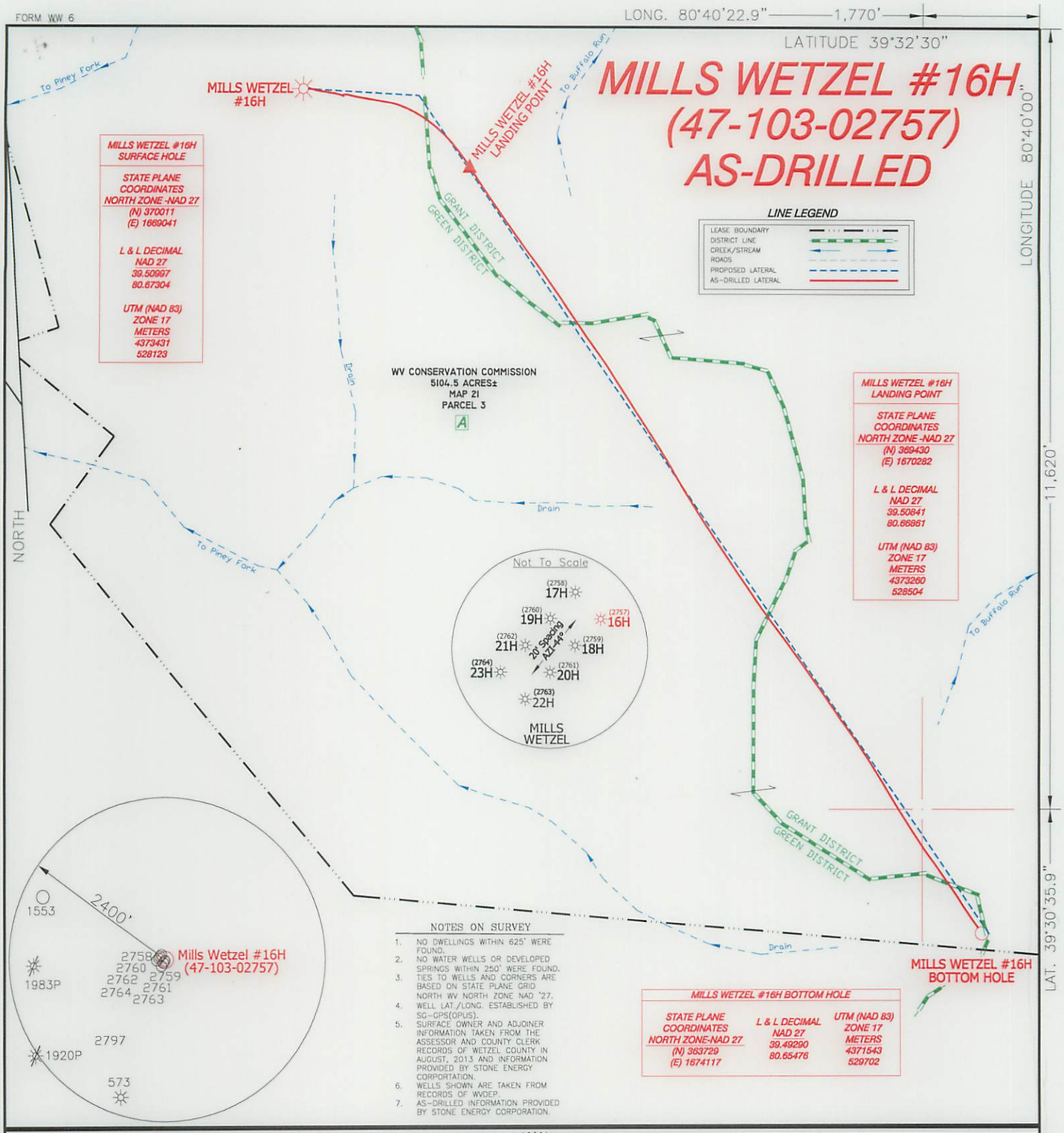
FORM WW 6



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 DECEMBER 15, 20 14

OPERATORS WELL NO. MILLS WETZEL #16H

API WELL NO. 47 — 103 — 02757
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 7,390' TVD 14810' 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 - 02758 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #17H
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 4,373,435	Easting 528,119
Landing Point of Curve	Northing 4,373,896	Easting 528,204
Bottom Hole	Northing 4,375,167	Easting 527,306

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 11/27/2012 Date drilling ceased 7/6/2013
Date completion activities began 9/12/2013 Date completion activities ceased 7/16/2014
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 75 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,700 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,030 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Office of Oil & Gas
FEB 26 2015

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

WR-35
Rev. 8/23/13

API 47- 103 - 02758 Farm name WV Conservation Commission Well number #17H

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"	73'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,189'	New	J55	122' & 247'	Y - CTS
Coal	17.5"	13.375"	1,189'	New	J55		Y - CTS
Intermediate 1	12.25"	9.625"	2,646'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	13,036'	New	P110		N - TOC @ 1,082'
Tubing	N/A	2.375"	7,707'	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 52 bbls cement to surface. TOC from the CBL on 5.5" casing is @ 310'.

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-536 Tail-420	Lead-15.0 Tail-15.5	Lead-1.26 Tail-1.19	Lead-675 Tail-500	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-GasStop Tail-HalCem	Lead-942 Tail-1,662	Lead-15.3 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,187 Tail-1,994	310'	7.0
Tubing							

Drillers TD (ft) 13,070 MD / 7,239 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft) N/A
Plug back procedure

Kick off depth (ft) 6,445 MD/ 6,396 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, 17, 19, 21, 23, 25 and 27. 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 #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 #149 and then every eighth joint calculated top of cement at joint #294. 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

Received
Office of Oil & Gas
FEB 26 2015

API 47- 103 - 02758 Farm name WV Conservation Commission Well number #17H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	1/20/14	12,720	12,926	72	Marcellus Shale
2	4/1/14	12,450	12,637	72	Marcellus Shale
3	4/3/14	12,194	12,370	72	Marcellus Shale
4	4/6/14	11,926	12,116	72	Marcellus Shale
5	4/7/14	11,657	11,847	72	Marcellus Shale
6	4/9/14	11,394	11,578	72	Marcellus Shale
7	4/12/14	11,132	11,327	72	Marcellus Shale
8	4/14/14	10,866	11,064	72	Marcellus Shale
9	4/15/14	10,609	10,791	72	Marcellus Shale
10	4/16/14	10,354	10,543	72	Marcellus Shale
11	4/18/14	10,099	10,273	72	Marcellus Shale
12	4/20/14	9,844	10,030	72	Marcellus Shale
13	4/22/14	9,594	9,775	72	Marcellus Shale
14	4/23/14	9,340	9,523	72	Marcellus Shale
15	4/24/14	9,090	9,273	72	Marcellus Shale
16	4/27/14	8,837	9,019	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	84.1	8,150	6,566	4,757	347,980	8,979	
2	4/3/14	82.2	8,039	6,577	4,541	420,160	9,042	
3	4/6/14	85.0	8,103	6,977	4,598	421,540	8,856	
4	4/7/14	80.5	8,363	7,325	4,902	415,800	10,982	
5	4/9/14	79.0	8,161	6,520	4,049	373,020	8,534	
6	4/12/14	85.1	7,820	6,863	4,170	421,600	8,957	
7	4/14/14	82.7	8,020	7,312	4,782	430,721	9,088	
8	4/15/14	76.6	7,687	7,226	4,782	422,344	9,104	
9	4/16/14	76.9	7,495	7,022	5,392	415,580	10,640	
10	4/18/14	80.2	7,579	6,317	4,595	297,720	7,897	
11	4/20/14	84.0	8,026	6,986	4,887	213,086	10,147	
12	4/22/14	79.4	8,068	6,857	4,782	420,400	9,084	
13	4/23/14	81.7	7,654	6,303	4,629	414,700	8,912	
14	4/24/14	85.0	7,258	7,349	4,293	419,020	8,787	
15	4/27/14	85.0	7,049	7,134	4,720	419,980	8,719	
16	4/29/14	83.5	7,356	7,617	4,720	419,700	8,883	

Please insert additional pages as applicable.

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API 47- 103 - 02758 Farm name WV Conservation Commission Well number #17H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	4/29/14	8,581	8,766	72	Marcellus Shale
18	5/2/14	8,329	8,509	72	Marcellus Shale
19	5/3/13	8,073	8,260	72	Marcellus Shale
20	5/4/13	7,813	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	5/2/14	82.8	8,114	8,995	5,217	401,800	7,347	
18	5/3/14	83.8	7,520	8,953	4,288	285,420	8,013	
19	5/4/14	84.5	7,475	7,036	4,696	422,220	7,294	
20	5/5/14	82.1	7,191	7,205	4,720	421,900	8,790	

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Please insert additional pages as applicable.

WR-35
Rev. 8/23/13

API 47- 103 - 02758 Farm name WV Conservation Commission Well number #17H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,280' to 7,248' TVD	7,813' to 12,937' MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 2,154 psi Bottom Hole 4,316 calculated psi DURATION OF TEST 60 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	4,508 mcfpd	bpd	20.1 bpd	444 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 and Halliburton
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston / Jane Lew 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 #17H
API 47-103-02758
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,030		FW @ 75'
Coal	1,030		*	1,035		
Sandstone & Shale	1,035		*	2,190		SW @ 1,700'
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		~	6,540	6,595	
Rhinestreet	6,540	6,595	~	6,705	6,772	
Undiff Devonian Shale	6,705	6,772	~	6,741	6,819	
Cashaqua	6,741	6,819	~	6,896	7,022	
Middlesex	6,896	7,022	~	7,035	7,231	
West River	7,035	7,231	~	7,155	7,448	
Geneseo	7,155	7,448	~	7,178	7,498	
Tully Limestone	7,178	7,498	~	7,202	7,553	
Hamilton Shale	7,202	7,553	~	7,269	7,754	
Marcellus	7,269	7,754	~	7,239	13,070	
TD				7,239	13,070	

* 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:	4710302758H000
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #17H
Longitude:	528,119
Latitude:	4,373,435
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	7481309

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		89.82180%	
			Crystalline silica	14808-60-7	98.48962%	10.02447%	
			Hydrochloric acid	7647-01-0	0.83414%	0.08490%	
			Carbohydrate polymer	Proprietary	0.60817%	0.06190%	
			Ammonium sulfate	7783-20-2	0.20595%	0.02096%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06856%	0.00698%	
			Glutaraldehyde	111-30-8	0.04949%	0.00504%	
			Urea	57-13-6	0.03433%	0.00349%	
			Diammonium peroxidisulphate	7727-54-0	0.01437%	0.00146%	
			Calcium chloride	10043-52-4	0.01140%	0.00116%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00527%	0.00054%	
			Trisodium ortho phosphate	7601-54-9	0.00456%	0.00046%	
			Ethane-1,2-diol	107-21-1	0.00456%	0.00046%	
			Sodium erythorbate	6381-77-7	0.00362%	0.00037%	
			Methanol	67-56-1	0.00311%	0.00032%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00234%	0.00024%	
			Aliphatic acids	Proprietary	0.00234%	0.00024%	
			Prop-2-yn-1-ol	107-19-7	0.00078%	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-27144 (Generated on 5/14/2014 4:48 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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STONE ENERGY

Project: Heather Prospect (NAD 27)
Site: Mills-Wetzel Pad 3
Well: Mills-Wetzel 17H
Wellbore: OH
Design: As Drilled

Scientific Drilling

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WELL DETAILS: Mills-Wetzel 17H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	370018.99	1669027.46	39° 30' 35.951 N	80° 40' 23.108 W	MW3#17H

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
18.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	Ground Level
103.00	103.00	0.12	136.50	-0.06	0.06	-0.06	0.09	First SDI Gyro Survey
5875.70	5916.21	10.75	28.11	404.11	231.05	404.11	488.95	Last SDI Gyro Survey
5901.03	5942.00	10.77	26.35	408.39	233.26	408.39	493.76	First SDI MWD Survey
7243.40	13000.00	93.60	327.71	5669.33	-2537.14	5669.33	6715.82	Last SDI MWD Survey
7239.01	13070.00	93.60	327.71	5728.38	-2574.46	5728.38	6785.68	Projection to Bit

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 17H - Slot MW3#17H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#17H(0.00N, 0.00E)
Measured Depth Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Calculation Method: Minimum Curvature

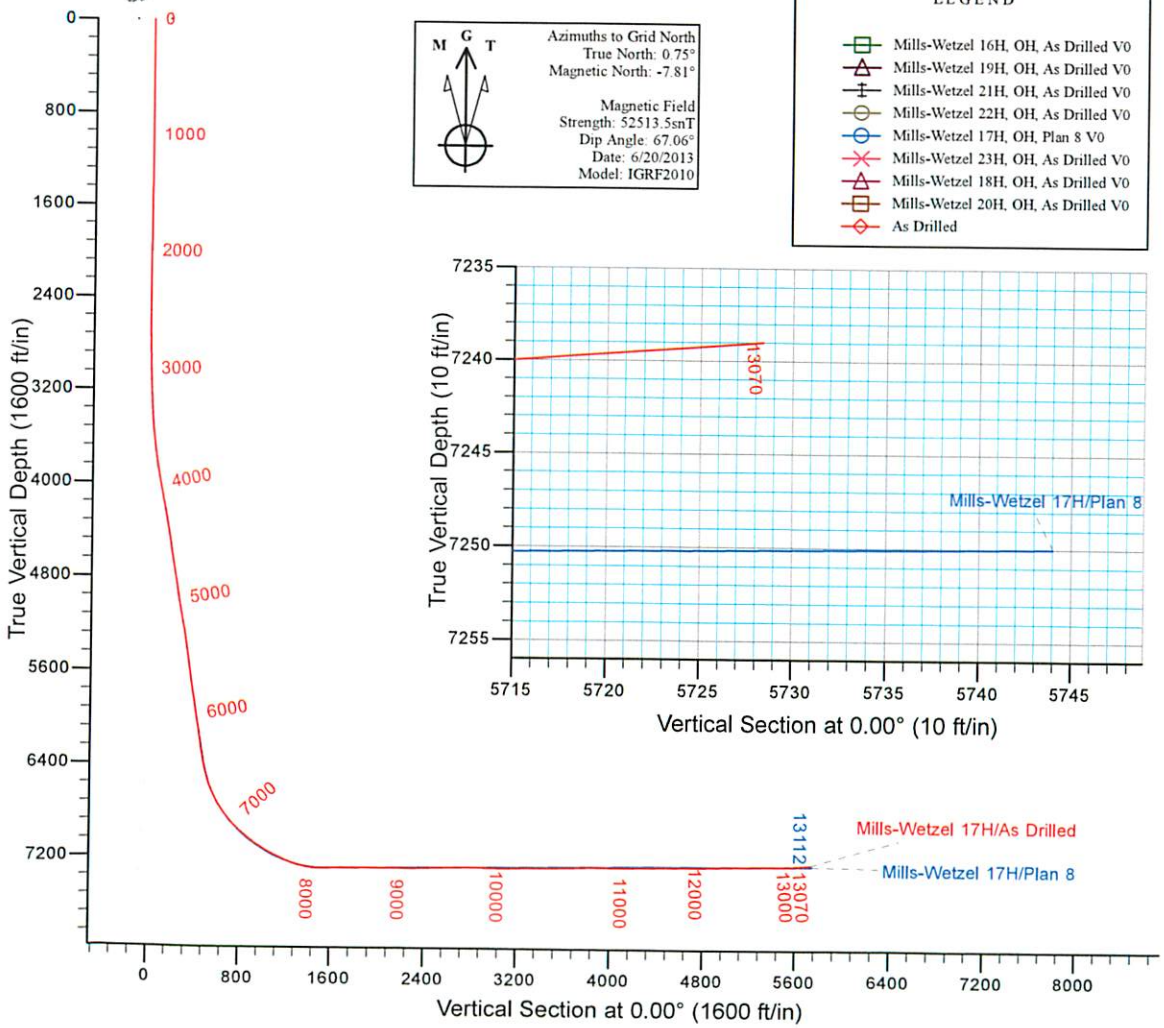
M G T

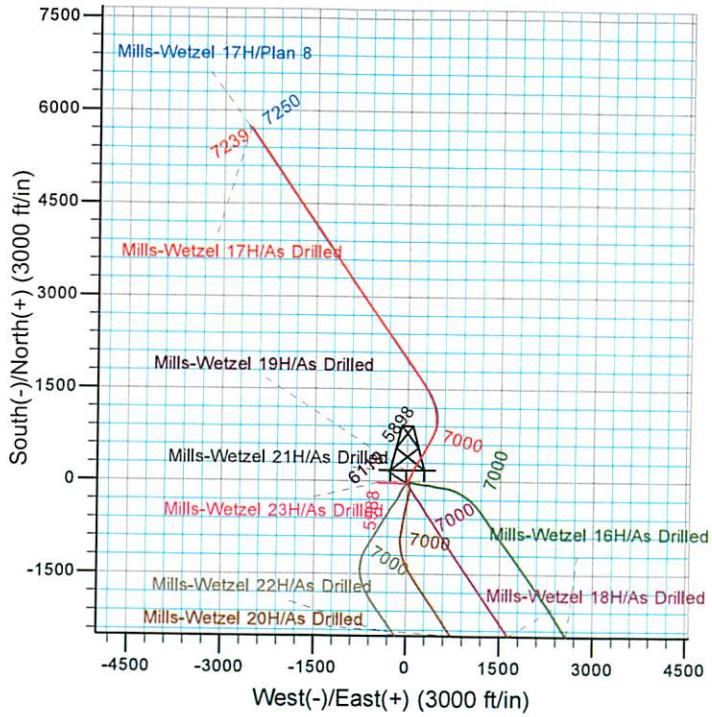
Azimuths to Grid North
True North: 0.75°
Magnetic North: -7.81°

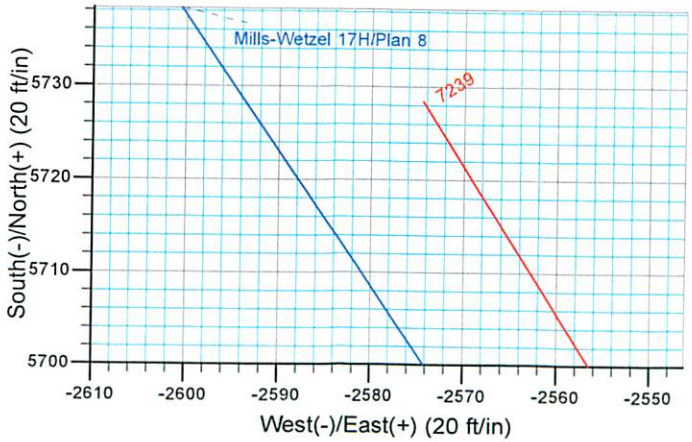
Magnetic Field
Strength: 52513.5snT
Dip Angle: 67.06°
Date: 6/20/2013
Model: IGRF2010

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, Plan 8 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 17H - Slot MW3#17H

OH

Design: As Drilled

Standard Survey Report

02 July, 2013

Scientific Drilling

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Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 17H - Slot MW3#17H
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 17H	**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 17H - Slot MW3#17H

Well Position	**+N/-S**	0.00 ft	**Northing:**	370,018.99 usft	**Latitude:**	39° 30' 35.951 N
	+E/-W	0.00 ft	**Easting:**	1,669,027.46 usft	**Longitude:**	80° 40' 23.108 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	6/20/2013	-8.56	67.06	52,514

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** 7/2/2013

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.00	5,916.26	Survey #3 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
5,942.00	13,070.00	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									
103.00	0.12	136.50	103.00	-0.06	0.06	-0.06	0.14	0.14	0.00
First SDI Gyro Survey									
203.00	0.10	95.10	203.00	-0.15	0.22	-0.15	0.08	-0.02	-41.40
303.00	0.09	112.31	303.00	-0.19	0.38	-0.19	0.03	-0.01	17.21
403.00	0.10	103.55	403.00	-0.24	0.54	-0.24	0.02	0.01	-8.76
503.00	0.21	79.22	503.00	-0.22	0.80	-0.22	0.13	0.11	-24.33

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 17H - Slot MW3#17H
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 17H	**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)
603.00	0.19	91.82	603.00	-0.19	1.15	-0.19	0.05	-0.02	12.60
703.00	0.16	103.21	703.00	-0.23	1.45	-0.23	0.05	-0.03	11.39
803.00	0.11	79.87	803.00	-0.25	1.68	-0.25	0.07	-0.05	-23.34
903.00	0.27	103.11	902.99	-0.28	2.00	-0.28	0.17	0.16	23.24
1,003.00	0.29	88.44	1,002.99	-0.33	2.49	-0.33	0.07	0.02	-14.67
1,103.00	0.21	90.28	1,102.99	-0.32	2.92	-0.32	0.08	-0.08	1.84
1,203.00	0.47	85.97	1,202.99	-0.29	3.52	-0.29	0.26	0.26	-4.31
1,303.00	0.33	96.85	1,302.99	-0.30	4.21	-0.30	0.16	-0.14	10.88
1,403.00	0.59	117.93	1,402.98	-0.58	4.95	-0.58	0.31	0.26	21.08
1,503.00	0.58	122.92	1,502.98	-1.09	5.83	-1.09	0.05	-0.01	4.99
1,603.00	0.64	119.99	1,602.97	-1.65	6.74	-1.65	0.07	0.06	-2.93
1,703.00	0.42	212.83	1,702.97	-2.23	7.02	-2.23	0.78	-0.22	92.84
1,803.00	0.55	164.12	1,802.97	-3.00	6.96	-3.00	0.42	0.13	-48.71
1,903.00	0.62	161.86	1,902.96	-3.98	7.26	-3.98	0.07	0.07	-2.26
2,003.00	0.63	165.34	2,002.96	-5.02	7.56	-5.02	0.04	0.01	3.48
2,103.00	0.41	150.25	2,102.95	-5.87	7.88	-5.87	0.26	-0.22	-15.09
2,203.00	0.71	118.32	2,202.95	-6.47	8.60	-6.47	0.42	0.30	-31.93
2,303.00	1.52	101.65	2,302.93	-7.03	10.45	-7.03	0.86	0.81	-16.67
2,403.00	1.43	97.97	2,402.90	-7.47	12.98	-7.47	0.13	-0.09	-3.68
2,503.00	1.37	82.74	2,502.87	-7.50	15.40	-7.50	0.38	-0.06	-15.23
2,603.00	1.50	71.05	2,602.83	-6.92	17.83	-6.92	0.32	0.13	-11.69
2,703.00	1.60	56.53	2,702.80	-5.73	20.23	-5.73	0.40	0.10	-14.52
2,803.00	1.80	51.25	2,802.75	-3.97	22.62	-3.97	0.25	0.20	-5.28
2,903.00	1.42	16.31	2,902.72	-1.80	24.19	-1.80	1.03	-0.38	-34.94
3,003.00	1.39	0.17	3,002.69	0.60	24.54	0.60	0.40	-0.03	-16.14
3,103.00	1.44	357.10	3,102.66	3.07	24.48	3.07	0.09	0.05	-3.07
3,203.00	2.81	18.60	3,202.59	6.65	25.20	6.65	1.56	1.37	21.50
3,303.00	3.05	19.57	3,302.46	11.48	26.88	11.48	0.25	0.24	0.97
3,403.00	4.38	22.06	3,402.24	17.52	29.20	17.52	1.34	1.33	2.49
3,503.00	4.48	20.35	3,501.95	24.72	31.99	24.72	0.17	0.10	-1.71
3,603.00	6.19	24.01	3,601.51	33.31	35.55	33.31	1.74	1.71	3.66
3,703.00	7.84	29.94	3,700.76	44.15	41.14	44.15	1.80	1.65	5.93
3,803.00	9.32	31.05	3,799.64	57.00	48.73	57.00	1.49	1.48	1.11
3,903.00	10.93	26.03	3,898.08	72.45	57.06	72.45	1.83	1.61	-5.02
4,003.00	12.12	20.67	3,996.06	90.80	64.93	90.80	1.60	1.19	-5.36
4,103.00	11.33	20.53	4,093.98	109.82	72.08	109.82	0.79	-0.79	-0.14
4,203.00	11.08	20.95	4,192.07	127.99	78.96	127.99	0.26	-0.25	0.42
4,303.00	11.40	19.47	4,290.15	146.28	85.69	146.28	0.43	0.32	-1.48
4,403.00	10.73	20.45	4,388.29	164.32	92.24	164.32	0.70	-0.67	0.98
4,503.00	9.41	28.99	4,486.75	180.20	99.45	180.20	1.99	-1.32	8.54
4,603.00	10.24	29.83	4,585.29	195.06	107.84	195.06	0.84	0.83	0.84
4,703.00	10.43	26.53	4,683.67	210.87	116.30	210.87	0.62	0.19	-3.30
4,803.00	10.77	32.52	4,781.96	226.85	125.37	226.85	1.15	0.34	5.99

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 17H - Slot MW3#17H
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 17H	**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)
4,903.00	11.61	34.13	4,880.06	243.05	136.04	243.05	0.90	0.84	1.61
5,003.00	11.58	30.86	4,978.02	260.00	146.83	260.00	0.66	-0.03	-3.27
5,103.00	11.60	27.80	5,075.98	277.51	156.67	277.51	0.62	0.02	-3.06
5,203.00	11.84	25.18	5,173.90	295.69	165.72	295.69	0.58	0.24	-2.62
5,303.00	11.03	24.67	5,271.91	313.66	174.08	313.66	0.82	-0.81	-0.51
5,403.00	9.74	32.88	5,370.28	329.46	182.66	329.46	1.96	-1.29	8.21
5,503.00	9.31	34.70	5,468.90	343.22	191.86	343.22	0.52	-0.43	1.82
5,603.00	9.82	34.59	5,567.51	356.89	201.31	356.89	0.51	0.51	-0.11
5,703.00	9.81	33.28	5,666.04	371.03	210.82	371.03	0.22	-0.01	-1.31
5,803.00	10.66	32.45	5,764.45	385.96	220.46	385.96	0.86	0.85	-0.83
5,916.21	10.75	28.11	5,875.70	404.11	231.05	404.11	0.72	0.08	-3.83
Last SDI Gyro Survey									
5,916.26	10.75	28.11	5,875.74	404.11	231.06	404.11	0.72	0.11	-3.80
5,942.00	10.77	26.35	5,901.03	408.39	233.26	408.39	1.28	0.08	-6.84
First SDI MWD Survey									
6,006.00	11.42	31.38	5,963.84	419.15	239.21	419.15	1.82	1.02	7.86
6,069.00	9.90	31.48	6,025.75	429.10	245.29	429.10	2.41	-2.41	0.16
6,133.00	9.25	31.93	6,088.86	438.16	250.88	438.16	1.02	-1.02	0.70
6,196.00	9.60	30.28	6,151.01	446.99	256.21	446.99	0.70	0.56	-2.62
6,260.00	10.21	29.17	6,214.05	456.55	261.66	456.55	1.00	0.95	-1.73
6,323.00	10.90	27.03	6,275.99	466.73	267.09	466.73	1.26	1.10	-3.40
6,387.00	11.33	25.90	6,338.79	477.78	272.59	477.78	0.75	0.67	-1.77
6,417.00	11.01	25.53	6,368.22	483.01	275.11	483.01	1.09	-1.07	-1.23
6,448.00	11.35	25.87	6,398.63	488.43	277.72	488.43	1.12	1.10	1.10
6,478.00	12.51	25.72	6,427.98	494.01	280.41	494.01	3.87	3.87	-0.50
6,507.00	14.18	25.55	6,456.20	500.05	283.31	500.05	5.76	5.76	-0.59
6,538.00	16.04	25.82	6,486.12	507.33	286.81	507.33	6.00	6.00	0.87
6,568.00	18.05	26.34	6,514.80	515.23	290.68	515.23	6.72	6.70	1.73
6,598.00	19.76	26.88	6,543.19	523.92	295.04	523.92	5.73	5.70	1.80
6,629.00	21.59	26.17	6,572.19	533.71	299.92	533.71	5.96	5.90	-2.29
6,659.00	23.77	26.78	6,599.87	544.06	305.08	544.06	7.31	7.27	2.03
6,689.00	25.42	27.39	6,627.14	555.18	310.77	555.18	5.56	5.50	2.03
6,720.00	27.26	28.03	6,654.92	567.35	317.16	567.35	6.01	5.94	2.06
6,751.00	29.26	28.17	6,682.23	580.30	324.08	580.30	6.46	6.45	0.45
6,781.00	30.77	27.99	6,708.20	593.54	331.14	593.54	5.04	5.03	-0.60
6,812.00	32.60	28.67	6,734.58	607.87	338.87	607.87	6.01	5.90	2.19
6,842.00	34.22	28.62	6,759.62	622.37	346.79	622.37	5.40	5.40	-0.17
6,873.00	36.14	28.87	6,784.96	638.02	355.38	638.02	6.21	6.19	0.81
6,904.00	38.39	28.66	6,809.63	654.48	364.41	654.48	7.27	7.26	-0.68
6,934.00	40.99	28.38	6,832.71	671.31	373.56	671.31	8.69	8.67	-0.93
6,964.00	42.80	27.92	6,855.04	688.97	383.00	688.97	6.12	6.03	-1.53
6,995.00	44.57	27.35	6,877.46	707.94	392.93	707.94	5.85	5.71	-1.84
7,026.00	45.69	26.67	6,899.33	727.52	402.91	727.52	3.93	3.61	-2.19
7,056.00	46.50	26.38	6,920.13	746.86	412.56	746.86	2.79	2.70	-0.97

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 17H - Slot MW3#17H
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 17H	**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)
7,086.00	47.00	25.36	6,940.69	766.52	422.10	766.52	2.99	1.67	-3.40
7,117.00	48.11	21.78	6,961.61	787.48	431.23	787.48	9.24	3.58	-11.55
7,147.00	48.77	18.65	6,981.52	808.54	438.99	808.54	8.11	2.20	-10.43
7,177.00	49.69	15.53	7,001.11	830.25	445.66	830.25	8.45	3.07	-10.40
7,208.00	50.92	12.84	7,020.91	853.38	451.50	853.38	7.77	3.97	-8.68
7,238.00	52.15	10.34	7,039.58	876.39	456.21	876.39	7.71	4.10	-8.33
7,268.00	53.15	8.08	7,057.78	899.92	460.02	899.92	6.85	3.33	-7.53
7,299.00	54.60	5.19	7,076.06	924.79	462.91	924.79	8.86	4.68	-9.32
7,329.00	56.11	2.54	7,093.11	949.41	464.57	949.41	8.84	5.03	-8.83
7,360.00	57.45	0.63	7,110.10	975.33	465.28	975.33	6.73	4.32	-6.16
7,390.00	58.75	358.34	7,125.95	1,000.80	465.05	1,000.80	7.80	4.33	-7.63
7,421.00	60.10	355.92	7,141.72	1,027.45	463.71	1,027.45	8.01	4.35	-7.81
7,452.00	61.58	353.65	7,156.83	1,054.41	461.25	1,054.41	7.98	4.77	-7.32
7,484.00	62.88	352.01	7,171.74	1,082.50	457.71	1,082.50	6.09	4.06	-5.13
7,516.00	63.77	350.27	7,186.10	1,110.75	453.31	1,110.75	5.60	2.78	-5.44
7,547.00	65.34	348.20	7,199.42	1,138.24	448.07	1,138.24	7.87	5.06	-6.68
7,579.00	66.39	346.54	7,212.51	1,166.74	441.69	1,166.74	5.76	3.28	-5.19
7,611.00	67.83	345.21	7,224.96	1,195.33	434.49	1,195.33	5.91	4.50	-4.16
7,643.00	69.34	343.69	7,236.64	1,224.02	426.50	1,224.02	6.47	4.72	-4.75
7,675.00	71.75	341.62	7,247.30	1,252.82	417.51	1,252.82	9.69	7.53	-6.47
7,707.00	73.57	340.61	7,256.84	1,281.72	407.62	1,281.72	6.44	5.69	-3.16
7,738.00	76.05	339.23	7,264.96	1,309.81	397.35	1,309.81	9.08	8.00	-4.45
7,770.00	78.05	337.95	7,272.13	1,338.84	385.96	1,338.84	7.37	6.25	-4.00
7,802.00	80.16	336.79	7,278.18	1,367.85	373.87	1,367.85	7.49	6.59	-3.63
7,833.00	82.05	335.72	7,282.97	1,395.88	361.54	1,395.88	6.99	6.10	-3.45
7,865.00	83.57	334.36	7,286.98	1,424.66	348.14	1,424.66	6.35	4.75	-4.25
7,897.00	85.63	332.63	7,289.99	1,453.17	333.92	1,453.17	8.39	6.44	-5.41
7,929.00	88.02	331.65	7,291.76	1,481.41	318.99	1,481.41	8.07	7.47	-3.06
7,960.00	90.07	329.30	7,292.28	1,508.38	303.72	1,508.38	10.06	6.61	-7.58
7,991.00	90.70	328.02	7,292.07	1,534.85	287.60	1,534.85	4.60	2.03	-4.13
8,054.00	91.31	328.49	7,290.96	1,588.42	254.46	1,588.42	1.22	0.97	0.75
8,118.00	90.81	328.03	7,289.78	1,642.84	220.79	1,642.84	1.06	-0.78	-0.72
8,181.00	90.81	327.74	7,288.89	1,696.19	187.31	1,696.19	0.46	0.00	-0.46
8,245.00	90.34	326.94	7,288.25	1,750.07	152.77	1,750.07	1.45	-0.73	-1.25
8,308.00	89.93	326.46	7,288.10	1,802.73	118.18	1,802.73	1.00	-0.65	-0.76
8,372.00	90.87	326.28	7,287.65	1,856.01	82.74	1,856.01	1.50	1.47	-0.28
8,435.00	90.71	326.06	7,286.78	1,908.34	47.67	1,908.34	0.43	-0.25	-0.35
8,498.00	90.17	325.95	7,286.30	1,960.57	12.44	1,960.57	0.87	-0.86	-0.17
8,562.00	90.70	325.55	7,285.81	2,013.47	-23.57	2,013.47	1.04	0.83	-0.66
8,625.00	89.56	325.25	7,285.67	2,065.33	-59.35	2,065.33	1.87	-1.81	-0.48
8,688.00	88.82	325.24	7,286.56	2,117.08	-95.26	2,117.08	1.17	-1.17	0.02
8,752.00	89.09	325.10	7,287.73	2,169.61	-131.80	2,169.61	0.48	0.42	-0.22
8,815.00	89.80	325.37	7,288.34	2,221.36	-167.73	2,221.36	1.21	1.13	0.43

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 17H - Slot MW3#17H
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 17H	**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)
8,877.00	90.50	325.08	7,288.17	2,272.29	-203.09	2,272.29	1.22	1.13	-0.47
8,940.00	90.81	325.20	7,287.45	2,323.98	-239.09	2,323.98	0.53	0.49	0.19
9,004.00	90.44	324.56	7,286.76	2,376.32	-275.91	2,376.32	1.16	-0.58	-1.00
9,067.00	90.67	323.98	7,286.15	2,427.46	-312.70	2,427.46	0.99	0.37	-0.92
9,130.00	91.61	324.06	7,284.89	2,478.43	-349.70	2,478.43	1.50	1.49	0.13
9,194.00	91.61	323.89	7,283.09	2,530.17	-387.33	2,530.17	0.27	0.00	-0.27
9,257.00	90.40	324.72	7,281.99	2,581.33	-424.08	2,581.33	2.33	-1.92	1.32
9,320.00	89.93	325.20	7,281.81	2,632.91	-460.25	2,632.91	1.07	-0.75	0.76
9,384.00	90.70	324.59	7,281.46	2,685.27	-497.06	2,685.27	1.53	1.20	-0.95
9,447.00	89.97	325.09	7,281.09	2,736.77	-533.33	2,736.77	1.40	-1.16	0.79
9,511.00	90.10	325.68	7,281.05	2,789.44	-569.69	2,789.44	0.94	0.20	0.92
9,575.00	90.64	325.35	7,280.64	2,842.19	-605.93	2,842.19	0.99	0.84	-0.52
9,638.00	90.84	325.13	7,279.82	2,893.95	-641.84	2,893.95	0.47	0.32	-0.35
9,702.00	89.60	324.49	7,279.58	2,946.25	-678.72	2,946.25	2.18	-1.94	-1.00
9,766.00	88.66	324.49	7,280.55	2,998.34	-715.89	2,998.34	1.47	-1.47	0.00
9,829.00	89.16	324.47	7,281.75	3,049.61	-752.49	3,049.61	0.79	0.79	-0.03
9,893.00	89.77	324.39	7,282.34	3,101.66	-789.71	3,101.66	0.96	0.95	-0.13
9,956.00	90.87	324.71	7,281.99	3,152.98	-826.25	3,152.98	1.82	1.75	0.51
10,020.00	90.70	324.82	7,281.12	3,205.25	-863.17	3,205.25	0.32	-0.27	0.17
10,083.00	90.60	325.28	7,280.40	3,256.89	-899.26	3,256.89	0.75	-0.16	0.73
10,147.00	90.27	326.00	7,279.91	3,309.72	-935.38	3,309.72	1.24	-0.52	1.13
10,210.00	90.17	326.67	7,279.67	3,362.15	-970.30	3,362.15	1.08	-0.16	1.06
10,274.00	91.17	327.13	7,278.92	3,415.76	-1,005.25	3,415.76	1.72	1.56	0.72
10,337.00	90.34	327.11	7,278.09	3,468.66	-1,039.45	3,468.66	1.32	-1.32	-0.03
10,401.00	89.87	326.82	7,277.98	3,522.32	-1,074.34	3,522.32	0.86	-0.73	-0.45
10,465.00	90.20	326.65	7,277.94	3,575.83	-1,109.44	3,575.83	0.58	0.52	-0.27
10,528.00	91.07	326.99	7,277.24	3,628.55	-1,143.92	3,628.55	1.48	1.38	0.54
10,591.00	91.48	327.07	7,275.84	3,681.39	-1,178.19	3,681.39	0.66	0.65	0.13
10,655.00	91.64	326.49	7,274.10	3,734.91	-1,213.24	3,734.91	0.94	0.25	-0.91
10,718.00	91.41	326.79	7,272.42	3,787.52	-1,247.88	3,787.52	0.60	-0.37	0.48
10,780.00	91.51	326.51	7,270.84	3,839.29	-1,281.95	3,839.29	0.48	0.16	-0.45
10,842.00	90.60	325.83	7,269.70	3,890.78	-1,316.46	3,890.78	1.83	-1.47	-1.10
10,906.00	87.82	325.97	7,270.58	3,943.77	-1,352.33	3,943.77	4.35	-4.34	0.22
10,969.00	88.76	326.03	7,272.46	3,995.97	-1,387.55	3,995.97	1.50	1.49	0.10
11,033.00	89.26	325.38	7,273.57	4,048.84	-1,423.60	4,048.84	1.28	0.78	-1.02
11,096.00	89.30	324.98	7,274.36	4,100.55	-1,459.57	4,100.55	0.64	0.06	-0.63
11,160.00	89.80	324.93	7,274.86	4,152.95	-1,496.32	4,152.95	0.79	[illegible]	-1.08
11,224.00	90.27	324.25	7,274.82	4,205.11	-1,533.40	4,205.11	1.29	0.73	-1.06
11,287.00	91.04	323.89	7,274.10	4,256.12	-1,570.37	4,256.12	1.35	1.22	-0.57
11,350.00	91.34	323.37	7,272.79	4,306.84	-1,607.72	4,306.84	0.95	0.48	-0.83
11,414.00	91.98	323.43	7,270.94	4,358.20	-1,645.86	4,358.20	1.00	1.00	0.09
11,477.00	92.01	323.96	7,268.75	4,408.93	-1,683.14	4,408.93	0.84	0.05	0.84
11,541.00	91.61	325.43	7,266.72	4,461.14	-1,720.11	4,461.14	2.38	-0.63	2.30
11,605.00	91.85	325.94	7,264.79	4,513.97	-1,756.17	4,513.97	0.88	0.38	0.80

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Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 17H - Slot MW3#17H
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 17H	**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)
11,668.00	91.14	326.60	7,263.15	4,566.35	-1,791.14	4,566.35	1.54	-1.13	1.05
11,731.00	89.83	326.52	7,262.61	4,618.92	-1,825.86	4,618.92	2.08	-2.08	-0.13
11,794.00	90.17	326.70	7,262.61	4,671.52	-1,860.53	4,671.52	0.61	0.54	0.29
11,858.00	89.63	326.43	7,262.73	4,724.93	-1,895.79	4,724.93	0.94	-0.84	-0.42
11,921.00	89.53	326.40	7,263.19	4,777.41	-1,930.64	4,777.41	0.17	-0.16	-0.05
11,984.00	90.24	326.55	7,263.31	4,829.93	-1,965.43	4,829.93	1.15	1.13	0.24
12,048.00	90.97	326.44	7,262.64	4,883.29	-2,000.76	4,883.29	1.15	1.14	-0.17
12,111.00	91.75	326.33	7,261.14	4,935.74	-2,035.63	4,935.74	1.25	1.24	-0.17
12,175.00	91.04	325.88	7,259.59	4,988.85	-2,071.31	4,988.85	1.31	-1.11	-0.70
12,238.00	91.38	325.57	7,258.26	5,040.90	-2,106.78	5,040.90	0.73	0.54	-0.49
12,301.00	90.47	324.66	7,257.24	5,092.57	-2,142.81	5,092.57	2.04	-1.44	-1.44
12,365.00	91.11	324.99	7,256.36	5,144.88	-2,179.67	5,144.88	1.13	1.00	0.52
12,428.00	90.17	325.47	7,255.65	5,196.62	-2,215.60	5,196.62	1.68	-1.49	0.76
12,492.00	90.57	325.75	7,255.24	5,249.43	-2,251.74	5,249.43	0.76	0.63	0.44
12,556.00	89.16	325.33	7,255.39	5,302.20	-2,287.96	5,302.20	2.30	-2.20	-0.66
12,619.00	90.00	325.37	7,255.85	5,354.03	-2,323.77	5,354.03	1.33	1.33	0.06
12,683.00	90.91	325.28	7,255.34	5,406.66	-2,360.18	5,406.66	1.43	1.42	-0.14
12,746.00	91.14	325.36	7,254.22	5,458.46	-2,396.02	5,458.46	0.39	0.37	0.13
12,810.00	91.85	325.74	7,252.55	5,511.21	-2,432.22	5,511.21	1.26	1.11	0.59
12,873.00	92.12	326.17	7,250.36	5,563.38	-2,467.46	5,563.38	0.81	0.43	0.68
12,937.00	93.43	326.40	7,247.27	5,616.56	-2,502.95	5,616.56	2.08	2.05	0.36
13,000.00	93.60	327.71	7,243.40	5,669.33	-2,537.14	5,669.33	2.09	0.27	2.08
Last SDI MWD Survey									
13,070.00	93.60	327.71	7,239.01	5,728.38	-2,574.46	5,728.38	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	-0.06	0.06	First SDI Gyro Survey
5,916.21	5,875.70	404.11	231.05	Last SDI Gyro Survey
5,942.00	5,901.03	408.39	233.26	First SDI MWD Survey
13,000.00	7,243.40	5,669.33	-2,537.14	Last SDI MWD Survey
13,070.00	7,239.01	5,728.38	-2,574.46	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

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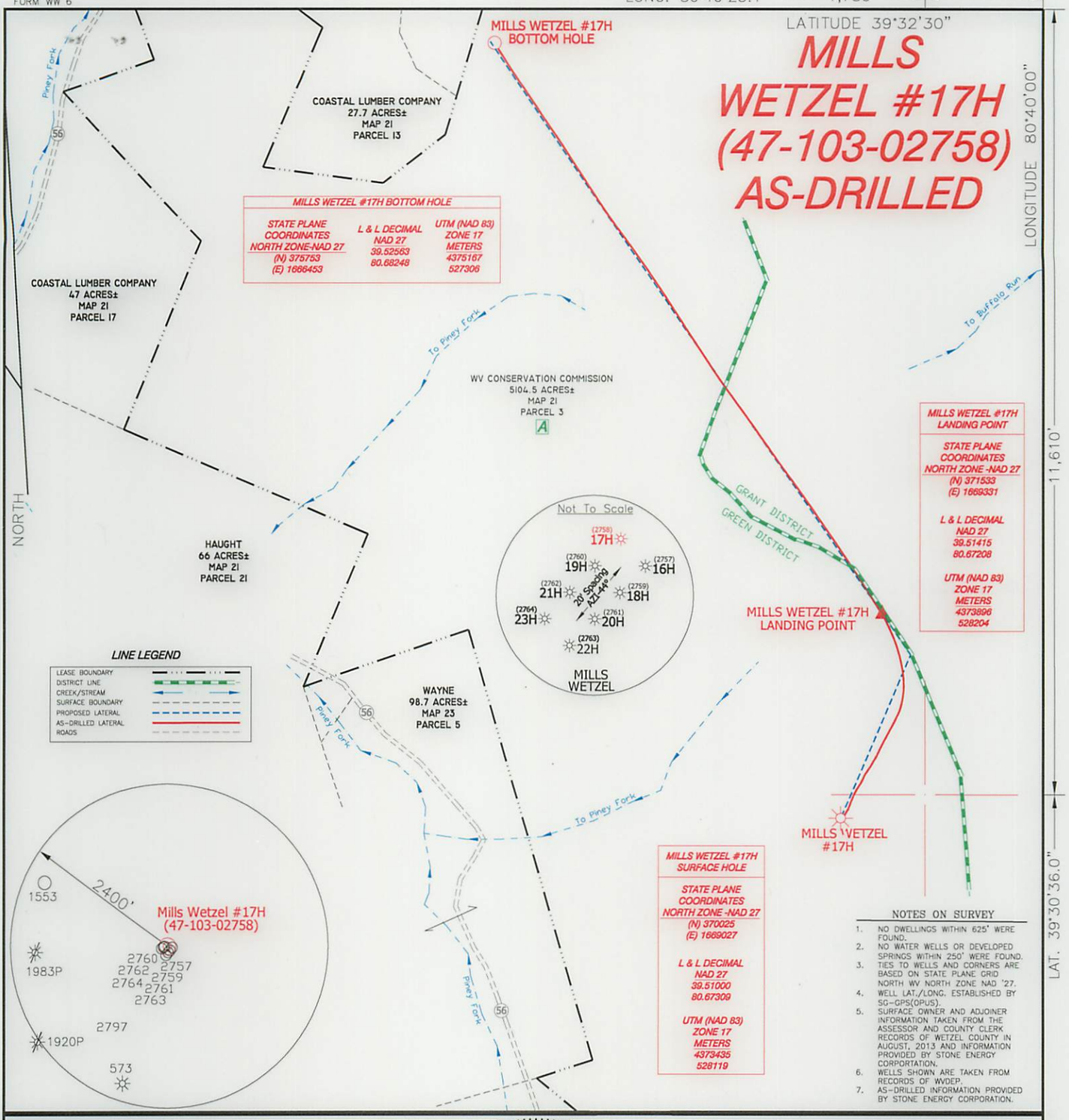
FORM WW 6



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 DECEMBER 15, 20 14

OPERATORS WELL NO. MILLS WETZEL #17H

API WELL NO. 47 — 103 — 02758
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 7,240' TVD 13,070' 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 - 02759 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #18H
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 528,119
Landing Point of Curve	Northing 4,373,154	Easting 528,300
Bottom Hole	Northing 4,371,557	Easting 529,413

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 10/18/2012 Date drilling ceased 5/23/2013
Date completion activities began 9/6/2013 Date completion activities ceased 1/31/2014
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 65 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,600 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

WR-35
Rev. 8/23/13

API 47- 103 - 02759 Farm name WV Conservation Commission Well number #18H

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"	1,169'	New	J55	88' & 173'	Y - CTS
Coal	17.5"	13.375"	1,169'	New	J55		Y - CTS
Intermediate 1	12.25"	9.625"	2,797'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	14,101'	New	P110		Y
Tubing	N/A	2.375"	7,621'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 36 bbls cement to surface, 9.625" casing cement to surface. 5.5" casing string circulated 1 bbl cement to surface.

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"	980	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-FlexSeal Tail-Class "A"	Lead-758 Tail-2,136	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.20	Lead-955 Tail-2,463	Surface	7.0
Tubing							

Drillers TD (ft) 14,113 MD / 7,365 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 6,508 MD/ 6,496 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 3,6, 9, 12, 15, 18, 21 and 24. Intermediate casing had bow spring centralizers placed on joints #'s 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59, 62 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 #177. From there bow spring centralizers were placed beginning on joint #181 and then every third joint to joint #274. A total of 45 rigid left/right centralizers were used and 32 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 - 02759 Farm name WV Conservation Commission Well number #18H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	12/9/13	9,583	9,782	72	Marcellus Shale
18	12/10/13	9,315	9,508	72	Marcellus Shale
19	12/11/13	9,030	9,246	72	Marcellus Shale
20	12/12/13	8,756	8,958	72	Marcellus Shale
21	12/12/13	8,492	8,684	72	Marcellus Shale
22	12/13/13	8,756	8,958	72	Marcellus Shale
23	12/14/13	7,960	8,157	72	Marcellus Shale
24	12/16/13	7,673	7,891	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	12/10/13	80.4	7,320	6,373	4,631	409,500	8,267	
18	12/11/13	80.6	7,155	6,114	4,488	412,040	8,267	
19	12/12/13	75.7	7,979	7,379	5,888	96,260	5,522	
20	12/12/13	80.2	7,416	6,662	5,244	413,380	8,436	
21	12/13/13	80.0	7,394	6,424	5,470	409,660	8,360	
22	12/14/13	80.2	7,236	6,419	5,017	409,360	8,412	
23	12/16/13	80.2	7,296	7,241	4,676	410,940	8,139	
24	12/16/13	79.3	7,266	7,517	4,641	410,260	9,370	

Please insert additional pages as applicable.

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API 47- 103 - 02759 Farm name WV Conservation Commission Well number #18H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	9/9/13	13,820	14,011	72	Marcellus Shale
2	11/21/13	13,555	13,749	72	Marcellus Shale
3	11/22/13	13,290	13,483	72	Marcellus Shale
4	11/23/13	13,025	13,221	72	Marcellus Shale
5	11/26/13	12,755	12,957	72	Marcellus Shale
6	11/28/13	12,480	12,683	72	Marcellus Shale
7	11/30/13	12,217	12,417	72	Marcellus Shale
8	12/1/13	11,967	12,146	72	Marcellus Shale
9	12/2/13	11,692	11,886	72	Marcellus Shale
10	12/3/13	11,424	11,622	72	Marcellus Shale
11	12/4/13	11,158	11,356	72	Marcellus Shale
12	12/5/13	10,906	11,092	72	Marcellus Shale
13	12/6/13	10,645	10,836	72	Marcellus Shale
14	12/7/13	10,374	10,576	72	Marcellus Shale
15	12/8/13	10,115	10,306	72	Marcellus Shale
16	12/9/13	9,845	10,043	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)
1	11/21/13	84.9	7,991	6,529	4,117	359,340	8,336	
2	11/22/13	84.7	8,379	7,339	4,035	322,020	9,365	
3	11/23/13	82.1	8,204	7,602	4,450	409,903	8,384	
4	11/26/13	85.5	8,170	8,146	3,968	410,840	10,357	
5	11/28/13	85.5	8,015	8,009	3,885	406,880	8,382	
6	11/30/13	85.1	8,362	8,059	4,791	413,780	8,426	
7	12/1/13	84.8	8,132	6,586	4,488	248,000	7,011	
8	12/2/13	85.4	7,885	6,616	4,338	400,220	8,385	
9	12/3/13	80.8	7,592	6,527	4,376	406,820	8,300	
10	12/4/13	80.6	7,534	6,861	4,829	406,700	8,299	
11	12/5/13	78.1	7,905	7,409	4,488	402,780	8,329	
12	12/6/13	79.8	7,485	7,042	4,376	405,860	8,553	
13	12/7/13	79.8	7,558	6,445	5,205	411,000	8,275	
14	12/8/13	79.1	7,869	6,127	4,414	412,640	10,619	
15	12/9/13	84.3	7,615	6,834	4,602	406,440	9,597	
16	12/9/13	80.4	7,553	6,881	4,223	409,300	8,23[illegible]	

Please insert additional pages as applicable.

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API 47- 103 - 02759 Farm name WV Conservation Commission Well number #18H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	6,847' to 7,366' TVD	6,881' to14,011' MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 1,809 psi Bottom Hole 4,067 calculated psi DURATION OF TEST 245 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3,499 mcfpd	bpd	9.5 bpd	305.5 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
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston / Jane Lew 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 #18H
API 47-103-02759
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,025		FW @ 65'
Coal	1,020		*	1,025		
Sandstone & Shale	1,025		*	2,190		SW @ 1,600'
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		~	6,495	6,508	
Rhinestreet	6,595	6,508		6,789	6,817	
Undiff Devonian Shale	6,789	6,817		6,988	7,046	
Cashaqua	6,988	7,046		7,014	7,108	
Middlesex	7,014	7,108		7,077	7,158	
West River	7,077	7,158		7,165	7,293	
Geneseo	7,165	7,293		7,192	7,332	
Tully Limestone	7,192	7,332		7,216	7,374	
Hamilton Shale	7,216	7,374		7,279	7,551	
Marcellus	7,279	7,551		7,365	14,133	
TD				7,365	14,133	

* 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:	12/16/2013
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02759
Operator Name:	Stone Energy
Well Name and Number:	Mills-Wetzel #18H
Longitude:	528,119
Latitude:	4,373,426
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	8552101

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, Sapphire VF105	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Rheology Modifier, Iron Control Agent, Clay Control Agent, Accelerator, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		88.44464%	
			Crystalline silica	14808-60-7	98.21064%	11.34859%	
			Hydrochloric acid	7647-01-0	0.84075%	0.09715%	
			Carbohydrate polymer	Proprietary	0.43414%	0.05017%	
			Ammonium sulfate	Proprietary	0.19226%	0.02222%	
			Calcium chloride	10043-52-4	0.15663%	0.01810%	
			Fatty acid amidoalkyl betaine	Proprietary	0.13790%	0.01594%	
			Propan-2-ol	67-63-0	0.10254%	0.01185%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.06948%	0.00803%	
			Glutaraldehyde	111-30-8	0.05474%	0.00633%	
			Diammonium peroxidisulphate	7727-54-0	0.01934%	0.00223%	
			Polyethoxylated alkanol	Proprietary	0.01683%	0.00194%	
			2-butoxyethanol	111-76-2	0.00841%	0.00097%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00534%	0.00062%	
			Butan-1-ol	71-36-3	0.00365%	0.00042%	
			Methanol	67-56-1	0.00339%	0.00039%	
			Ethane-1,2-diol	107-21-1	0.00338%	0.00039%	
			Trisodium ortho phosphate	7601-54-9	0.00338%	0.00039%	
			Sulfonated polystyrene	Proprietary	0.00334%	0.00039%	
			Polyethoxylated alkanol	Proprietary	0.00280%	0.00032%	
			Sodium erythorbate	6381-77-7	0.00271%	0.00031%	
			Aliphatic acids	Proprietary	0.00255%	0.00029%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00255%	0.00029%	
			Prop-2-yn-1-ol	107-19-7	0.00085%	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%

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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.

Project: Heather Prospect (NAD 27)
Site: Mills-Wetzel Pad 3
Well: Mills-Wetzel 18H
Wellbore: OH
Design: As Drilled

Scientific Drilling

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WELL DETAILS: Mills-Wetzel 18H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	369989.93	1669027.30	39° 30' 35.664 N	80° 40' 23.105 W	MW3#18H

ANNOTATIONS

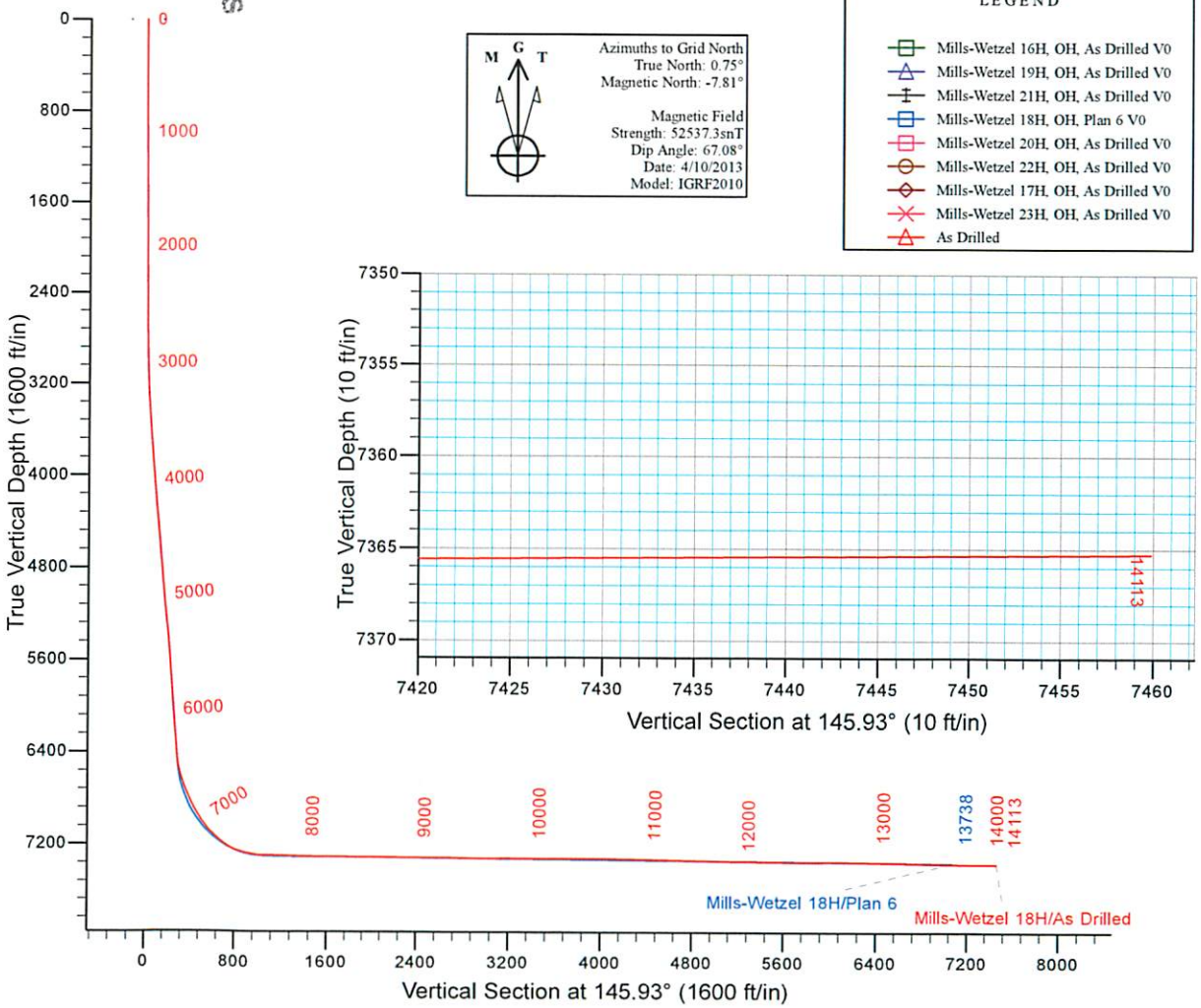
TVD	MD	Inc	Azi	+N/-S	+E/-W	VSect	Departure	Annotation
18.00	18.00	0.00	0.00	0.00	0.00	0.00	0.00	Ground Level
103.00	103.00	0.13	276.14	0.01	-0.10	-0.06	0.10	First SDI Gyro Survey
6209.71	6221.01	5.08	145.14	-234.10	138.84	271.70	284.94	Last SDI Gyro Survey
6209.72	6221.01	5.08	145.14	-234.10	138.84	271.70	284.94	First SDI MWD Survey
7365.76	14048.00	90.44	148.35	-6147.82	4109.83	7394.92	7411.63	Last SDI MWD Survey
7365.26	14113.00	90.44	148.35	-6203.15	4143.93	7459.86	7476.63	Projection to Bit

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

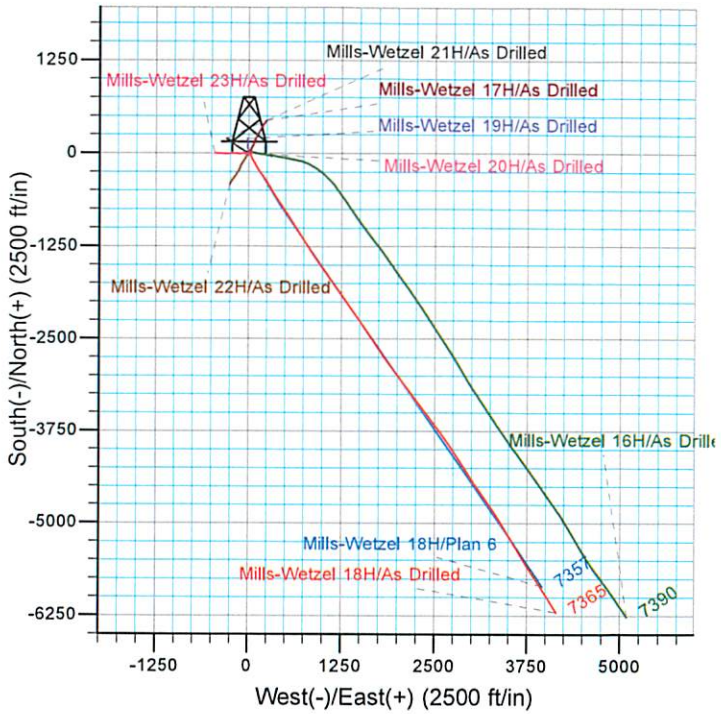
REFERENCE INFORMATION

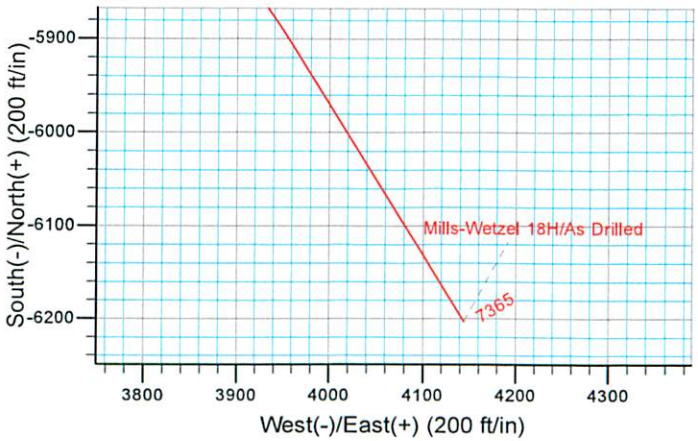
Co-ordinate (N/E) Reference: Well Mills-Wetzel 18H - Slot MW3#18H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#18H(0.00N, 0.00E)
Measured Depth Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Calculation Method: Minimum Curvature



LEGEND

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





Stone Energy

Heather Prospect (NAD 27)
Mills-Wetzel Pad 3
Mills-Wetzel 18H - Slot MW3#18H

OH

Design: As Drilled

Standard Survey Report

21 May, 2013

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Office of Oil & Gas
FEB 26 2015

Scientific Drilling

Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 18H - Slot MW3#18H
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 18H	**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 18H - Slot MW3#18H

Well Position	**+N/-S**	0.00 ft	**Northing:**	369,989.93 usft	**Latitude:**	39° 30' 35.664 N
	+E/-W	0.00 ft	**Easting:**	1,669,027.30 usft	**Longitude:**	80° 40' 23.105 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	4/10/2013	-8.55	67.08	52,537

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	145.93

Survey Program **Date** 5/21/2013

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.00	6,221.01	SDI Keeper Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
6,287.00	14,113.00	Survey 3 - 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									
103.00	0.13	276.14	103.00	0.01	-0.10	-0.06	0.15	0.15	0.00
First SDI Gyro Survey									
203.00	0.17	327.59	203.00	0.15	-0.29	-0.28	0.14	0.04	51.45
303.00	0.11	113.32	303.00	0.23	-0.28	-0.35	0.27	-0.06	145.73
403.00	0.13	146.14	403.00	0.10	-0.13	-0.16	0.07	0.02	32.82

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Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 18H - Slot MW3#18H
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 18H	**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)
503.00	0.08	140.17	503.00	-0.05	-0.02	0.03	0.05	-0.05	-5.97
603.00	0.09	138.03	603.00	-0.16	0.08	0.17	0.01	0.01	-2.14
703.00	0.13	89.67	703.00	-0.21	0.24	0.31	0.10	0.04	-48.36
803.00	0.11	107.67	803.00	-0.24	0.45	0.45	0.04	-0.02	18.00
903.00	0.19	156.74	903.00	-0.42	0.60	0.69	0.14	0.08	49.07
1,003.00	0.25	101.74	1,003.00	-0.62	0.88	1.01	0.21	0.06	-55.00
1,103.00	0.27	122.90	1,103.00	-0.79	1.30	1.38	0.10	0.02	21.16
1,203.00	0.13	95.34	1,203.00	-0.93	1.61	1.67	0.17	-0.14	-27.56
1,303.00	0.40	118.99	1,302.99	-1.11	2.02	2.06	0.29	0.27	23.65
1,403.00	0.46	127.71	1,402.99	-1.53	2.65	2.75	0.09	0.06	8.72
1,503.00	0.48	98.40	1,502.99	-1.83	3.38	3.41	0.24	0.02	-29.31
1,603.00	0.47	102.03	1,602.99	-1.98	4.19	3.99	0.03	-0.01	3.63
1,703.00	0.48	108.82	1,702.98	-2.20	4.99	4.62	0.06	0.01	6.79
1,803.00	0.45	114.28	1,802.98	-2.50	5.75	5.29	0.05	-0.03	5.46
1,903.00	0.38	109.69	1,902.98	-2.77	6.42	5.89	0.08	-0.07	-4.59
2,003.00	0.13	353.94	2,002.98	-2.77	6.72	6.06	0.45	-0.25	-115.75
2,103.00	0.25	355.44	2,102.98	-2.44	6.69	5.77	0.12	0.12	1.50
2,203.00	0.67	95.95	2,202.97	-2.28	7.25	5.95	0.76	0.42	100.51
2,303.00	1.02	89.59	2,302.96	-2.34	8.72	6.82	0.36	0.35	-6.36
2,403.00	1.12	86.94	2,402.95	-2.28	10.59	7.82	0.11	0.10	-2.65
2,503.00	0.96	88.33	2,502.93	-2.20	12.40	8.77	0.16	-0.16	1.39
2,603.00	0.91	76.77	2,602.92	-2.00	14.01	9.50	0.19	-0.05	-11.56
2,703.00	0.85	77.99	2,702.91	-1.66	15.51	10.06	0.06	-0.06	1.22
2,803.00	0.94	92.75	2,802.89	-1.54	17.06	10.83	0.25	0.09	14.76
2,886.00	0.59	86.74	2,885.89	-1.55	18.16	11.46	0.43	-0.42	-7.24
2,978.00	0.66	174.87	2,977.88	-2.05	18.68	12.17	0.95	0.08	95.79
3,069.00	2.02	170.35	3,068.86	-4.16	19.00	14.09	1.50	1.49	-4.97
3,163.00	2.24	158.55	3,162.79	-7.50	19.95	17.39	0.52	0.23	-12.55
3,256.00	2.95	162.96	3,255.70	-11.48	21.31	21.45	0.79	0.76	4.74
3,347.00	4.38	165.85	3,346.51	-17.09	22.85	26.96	1.58	1.57	3.18
3,439.00	4.40	162.63	3,438.24	-23.86	24.76	33.64	0.27	0.02	-3.50
3,531.00	4.51	156.28	3,529.96	-30.54	27.27	40.58	0.55	0.12	-6.90
3,621.00	4.39	162.94	3,619.69	-37.08	29.71	47.35	0.59	-0.13	7.40
3,716.00	4.20	166.94	3,714.42	-43.94	31.56	54.08	0.37	-0.20	4.21
3,808.01	4.31	161.71	3,806.17	-50.50	33.40	60.55	0.44	0.12	-5.68
3,900.01	4.36	157.32	3,897.91	-57.01	35.84	67.30	0.36	0.05	-4.77
3,992.01	4.13	157.79	3,989.66	-63.31	38.44	73.97	0.25	-0.25	0.51
4,085.01	5.13	153.66	4,082.35	-70.13	41.55	81.37	1.13	1.08	-4.44
4,178.01	5.61	156.36	4,174.94	-78.02	45.22	89.96	0.58	0.52	2.90
4,270.01	5.38	153.29	4,266.52	-86.00	48.96	98.66	0.41	-0.25	-3.34
4,364.01	5.60	151.04	4,360.09	-93.95	53.16	107.60	0.33	0.23	-2.39
4,457.01	5.45	147.96	4,452.66	-101.66	57.70	116.53	0.36	-0.16	-3.31
4,549.01	5.25	143.83	4,544.26	-108.76	62.50	125.11	0.47	-0.22	-4.49
4,640.01	5.29	144.59	4,634.87	-115.54	67.39	133.46	0.09	0.04	0.84

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 18H - Slot MW3#18H
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 18H	**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)
4,730.01	5.24	143.65	4,724.49	-122.23	72.23	141.72	0.11	-0.06	-1.04
4,820.01	5.15	140.90	4,814.12	-128.68	77.21	149.85	0.29	-0.10	-3.06
4,916.01	5.39	153.27	4,909.72	-136.05	81.96	158.61	1.21	0.25	12.89
5,008.01	5.34	151.56	5,001.32	-143.67	85.94	167.16	0.18	-0.05	-1.86
5,101.01	5.42	151.18	5,093.91	-151.33	90.12	175.84	0.09	0.09	-0.41
5,195.01	5.45	151.86	5,187.49	-159.15	94.36	184.70	0.08	0.03	0.72
5,289.01	5.67	147.34	5,281.05	-167.00	98.98	193.78	0.52	0.23	-4.81
5,383.01	6.01	148.59	5,374.56	-175.11	104.05	203.34	0.39	0.36	1.33
5,476.01	5.13	152.61	5,467.12	-182.95	108.50	212.33	1.03	-0.95	4.32
5,567.01	5.42	154.66	5,557.73	-190.45	112.21	220.62	0.38	0.32	2.25
5,665.01	4.39	149.63	5,655.37	-197.87	116.09	228.94	1.14	-1.05	-5.13
5,760.01	4.06	152.31	5,750.12	-203.98	119.49	235.91	0.40	-0.35	2.82
5,853.01	4.16	146.89	5,842.88	-209.72	122.86	242.55	0.43	0.11	-5.83
5,945.01	4.10	148.10	5,934.64	-215.31	126.42	249.18	0.11	-0.07	1.32
6,038.01	4.61	146.24	6,027.37	-221.24	130.25	256.24	0.57	0.55	-2.00
6,130.01	4.85	146.84	6,119.06	-227.57	134.44	263.82	0.27	0.26	0.65
6,221.01	5.08	145.14	6,209.72	-234.10	138.84	271.70	0.30	0.25	-1.87
Last SDI Gyro Survey - First SDI MWD Survey									
6,287.00	5.69	144.16	6,275.41	-239.15	142.43	277.89	0.93	0.92	-1.49
6,350.00	5.27	145.50	6,338.13	-244.06	145.90	283.90	0.70	-0.67	2.13
6,414.00	5.51	142.52	6,401.84	-248.92	149.43	289.91	0.58	0.38	-4.66
6,445.00	6.48	139.18	6,432.67	-251.43	151.48	293.13	3.32	3.13	-10.77
6,477.00	6.19	138.67	6,464.48	-254.09	153.80	296.64	0.92	-0.91	-1.59
6,509.00	7.08	139.81	6,496.26	-256.89	156.21	300.31	2.81	2.78	3.56
6,541.00	10.63	142.59	6,527.88	-260.74	159.28	305.22	11.17	11.09	8.69
6,573.00	14.09	144.47	6,559.13	-266.26	163.33	312.06	10.88	10.81	5.88
6,605.00	16.99	144.82	6,589.96	-273.25	168.29	320.63	9.07	9.06	1.09
6,636.00	18.09	145.40	6,619.52	-280.92	173.64	329.97	3.59	3.55	1.87
6,668.00	19.21	144.90	6,649.83	-289.31	179.48	340.20	3.54	3.50	-1.56
6,698.00	20.02	145.10	6,678.09	-297.56	185.26	350.27	2.71	2.70	0.67
6,729.00	20.84	145.20	6,707.14	-306.44	191.44	361.09	2.65	2.65	0.32
6,761.00	21.90	144.86	6,736.94	-316.00	198.13	372.75	3.34	3.31	-1.06
6,792.00	23.76	144.49	6,765.51	-325.81	205.08	384.78	6.02	6.00	-1.19
6,824.00	25.38	144.51	6,794.61	-336.64	212.81	398.08	5.06	5.06	0.06
6,856.00	25.45	144.57	6,823.52	-347.83	220.78	411.81	0.23	0.22	0.19
6,888.00	26.15	145.02	6,852.33	-359.21	228.81	425.73	2.27	2.19	1.41
6,920.00	28.48	147.18	6,880.76	-371.40	236.98	440.41	7.91	7.28	6.75
6,951.00	31.12	149.08	6,907.66	-384.49	245.11	455.80	9.04	8.52	6.13
6,983.00	31.97	150.28	6,934.93	-398.94	253.56	472.51	3.30	2.66	3.75
7,015.00	31.82	150.64	6,962.10	-413.65	261.89	489.36	0.76	-0.47	1.13
7,046.00	32.84	150.77	6,988.29	-428.11	270.01	505.88	3.30	3.29	0.42
7,078.00	35.48	150.31	7,014.77	-443.75	278.84	523.79	8.29	8.25	-1.44
7,110.00	37.98	149.34	7,040.41	-460.29	288.47	542.88	8.02	7.81	-3.03

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 18H - Slot MW3#18H
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 18H	**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)
7,142.00	40.79	148.02	7,065.14	-477.63	299.03	563.16	9.16	8.78	-4.13
7,173.00	43.31	147.07	7,088.16	-495.15	310.17	583.92	8.38	8.13	-3.06
7,204.00	46.63	147.08	7,110.09	-513.53	322.08	605.82	10.71	10.71	0.03
7,236.00	49.10	146.61	7,131.56	-533.40	335.06	629.54	7.80	7.72	-1.47
7,267.00	50.63	147.84	7,151.54	-553.32	347.88	653.23	5.79	4.94	3.97
7,297.00	51.55	147.32	7,170.38	-573.03	360.40	676.57	3.35	3.07	-1.73
7,327.00	52.64	147.38	7,188.81	-592.96	373.17	700.23	3.64	3.63	0.20
7,357.00	55.29	146.72	7,206.46	-613.31	386.36	724.48	9.01	8.83	-2.20
7,388.00	59.64	146.32	7,223.13	-635.11	400.78	750.61	14.07	14.03	-1.29
7,418.00	65.37	145.96	7,236.97	-657.19	415.60	777.21	19.13	19.10	-1.20
7,448.00	69.65	145.69	7,248.45	-680.12	431.17	804.92	14.29	14.27	-0.90
7,479.00	72.55	145.60	7,258.49	-704.33	447.72	834.25	9.36	9.35	-0.29
7,509.00	74.13	146.74	7,267.09	-728.20	463.72	862.99	6.40	5.27	3.80
7,540.00	76.35	146.52	7,274.98	-753.24	480.20	892.96	7.19	7.16	-0.71
7,570.00	77.04	146.69	7,281.89	-777.61	496.27	922.15	2.37	2.30	0.57
7,601.00	78.19	146.92	7,288.54	-802.95	512.85	952.43	3.78	3.71	0.74
7,632.00	81.12	146.75	7,294.10	-828.47	529.53	982.92	9.47	9.45	-0.55
7,662.00	86.34	146.96	7,297.38	-853.43	545.83	1,012.72	17.41	17.40	0.70
7,723.00	90.30	147.22	7,299.17	-904.61	578.95	1,073.67	6.51	6.49	0.43
7,784.00	89.87	146.95	7,299.08	-955.82	612.10	1,134.66	0.83	-0.70	-0.44
7,845.00	88.22	147.89	7,300.09	-1,007.21	644.94	1,195.63	3.11	-2.70	1.54
7,906.00	87.82	147.63	7,302.20	-1,058.78	677.46	1,256.56	0.78	-0.66	-0.43
7,966.00	88.66	147.52	7,304.04	-1,109.40	709.62	1,316.51	1.41	1.40	-0.18
8,027.00	88.39	147.25	7,305.61	-1,160.76	742.49	1,377.47	0.63	-0.44	-0.44
8,088.00	89.06	146.80	7,306.97	-1,211.92	775.68	1,438.44	1.32	1.10	-0.74
8,149.00	89.80	147.28	7,307.58	-1,263.10	808.86	1,499.43	1.45	1.21	0.79
8,210.00	89.60	146.43	7,307.90	-1,314.17	842.22	1,560.42	1.43	-0.33	-1.39
8,271.00	89.36	145.34	7,308.45	-1,364.67	876.43	1,621.41	1.83	-0.39	-1.79
8,333.00	89.63	145.61	7,309.00	-1,415.75	911.56	1,683.41	0.62	0.44	0.44
8,397.00	88.89	145.56	7,309.82	-1,468.55	947.73	1,747.40	1.16	-1.16	-0.08
8,460.00	89.56	145.48	7,310.67	-1,520.47	983.39	1,810.39	1.07	1.06	-0.13
8,524.00	89.80	145.32	7,311.03	-1,573.15	1,019.74	1,874.39	0.45	0.38	-0.25
8,587.00	88.29	144.97	7,312.08	-1,624.84	1,055.73	1,937.37	2.46	-2.40	-0.56
8,651.00	89.09	144.93	7,313.55	-1,677.22	1,092.48	2,001.35	1.25	1.25	-0.06
8,714.00	90.13	146.32	7,313.97	-1,729.22	1,128.05	2,064.34	2.76	1.65	2.21
8,778.00	90.87	146.22	7,313.42	-1,782.44	1,163.58	2,128.34	1.17	1.16	-0.16
8,841.00	90.00	144.97	7,312.94	-1,834.42	1,199.18	2,191.33	2.42	-1.38	-1.98
8,904.00	90.60	145.03	7,312.61	-1,886.02	1,235.31	2,254.32	0.96	0.95	0.10
8,967.00	89.73	145.38	7,312.43	-1,937.76	1,271.26	2,317.32	1.49	-1.38	0.56
9,030.00	88.45	145.13	7,313.43	-1,989.52	1,307.16	2,380.30	2.07	-2.03	-0.40
9,094.00	89.56	145.67	7,314.54	-2,042.19	1,343.50	2,444.29	1.93	1.73	0.84
9,157.00	90.74	146.26	7,314.37	-2,094.39	1,378.76	2,507.29	2.09	1.87	0.94
9,219.00	90.00	145.77	7,313.97	-2,145.80	1,413.41	2,569.29	1.43	-1.19	-0.79

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Office of Oil & Gas
FEB 26 2015

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 18H - Slot MW3#18H
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 18H	**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)
9,282.00	89.33	145.27	7,314.34	-2,197.73	1,449.08	2,632.28	1.33	-1.06	-0.79
9,345.00	88.15	145.21	7,315.73	-2,249.48	1,484.99	2,695.26	1.88	-1.87	-0.10
9,409.00	89.19	145.67	7,317.21	-2,302.17	1,521.28	2,759.24	1.78	1.63	0.72
9,473.00	89.76	146.95	7,317.80	-2,355.42	1,556.78	2,823.24	2.19	0.89	2.00
9,537.00	88.79	147.48	7,318.61	-2,409.22	1,591.43	2,887.21	1.73	-1.52	0.83
9,600.00	89.56	147.39	7,319.52	-2,462.31	1,625.34	2,950.18	1.23	1.22	-0.14
9,663.00	90.47	147.08	7,319.50	-2,515.28	1,659.43	3,013.17	1.53	1.44	-0.49
9,727.00	90.24	146.37	7,319.10	-2,568.79	1,694.55	3,077.16	1.17	-0.36	-1.11
9,790.00	91.01	146.31	7,318.42	-2,621.22	1,729.46	3,140.15	1.23	1.22	-0.10
9,854.00	89.70	145.42	7,318.02	-2,674.19	1,765.38	3,204.15	2.47	-2.05	-1.39
9,917.00	88.79	145.03	7,318.85	-2,725.93	1,801.30	3,267.14	1.57	-1.44	-0.62
9,980.00	89.80	145.29	7,319.62	-2,777.64	1,837.29	3,330.13	1.66	1.60	0.41
10,044.00	89.90	146.28	7,319.79	-2,830.56	1,873.28	3,394.13	1.55	0.16	1.55
10,107.00	88.92	144.42	7,320.44	-2,882.38	1,909.09	3,457.12	3.34	-1.56	-2.95
10,171.00	89.87	144.65	7,321.12	-2,934.50	1,946.22	3,521.09	1.53	1.48	0.36
10,235.00	90.24	144.31	7,321.05	-2,986.59	1,983.41	3,585.07	0.79	0.58	-0.53
10,298.00	89.09	143.88	7,321.42	-3,037.62	2,020.35	3,648.04	1.95	-1.83	-0.68
10,362.00	89.90	143.96	7,321.99	-3,089.34	2,058.04	3,712.00	1.27	1.27	0.13
10,425.00	90.67	143.79	7,321.67	-3,140.23	2,095.18	3,774.95	1.25	1.22	-0.27
10,487.00	89.56	142.59	7,321.55	-3,189.87	2,132.33	3,836.88	2.64	-1.79	-1.94
10,551.00	89.90	142.38	7,321.85	-3,240.63	2,171.30	3,900.76	0.62	0.53	-0.33
10,615.00	89.39	142.86	7,322.25	-3,291.49	2,210.16	3,964.66	1.09	-0.80	0.75
10,678.00	89.60	143.09	7,322.80	-3,341.78	2,248.09	4,027.57	0.49	0.33	0.37
10,742.00	89.73	143.05	7,323.18	-3,392.94	2,286.54	4,091.49	0.21	0.20	-0.06
10,805.00	88.52	143.07	7,324.14	-3,443.29	2,324.40	4,154.40	1.92	-1.92	0.03
10,868.00	88.99	143.00	7,325.51	-3,493.61	2,362.27	4,217.30	0.75	0.75	-0.11
10,931.00	89.23	142.72	7,326.49	-3,543.83	2,400.31	4,280.21	0.59	0.38	-0.44
10,994.00	88.29	143.10	7,327.85	-3,594.07	2,438.29	4,343.10	1.61	-1.49	0.60
11,058.00	88.82	141.78	7,329.46	-3,644.78	2,477.29	4,406.96	2.22	0.83	-2.06
11,121.00	89.29	141.76	7,330.50	-3,694.27	2,516.27	4,469.79	0.75	0.75	-0.03
11,184.00	89.50	144.13	7,331.17	-3,744.54	2,554.23	4,532.69	3.78	0.33	3.76
11,247.00	88.86	145.53	7,332.07	-3,796.03	2,590.51	4,595.67	2.44	-1.02	2.22
11,311.00	89.46	145.91	7,333.01	-3,848.91	2,626.56	4,659.67	1.11	0.94	0.59
11,374.00	89.02	145.82	7,333.84	-3,901.05	2,661.90	4,722.66	0.71	-0.70	-0.14
11,437.00	89.56	146.80	7,334.62	-3,953.46	2,696.85	4,785.65	1.78	0.86	1.56
11,501.00	87.68	147.32	7,336.17	-4,007.16	2,731.64	4,849.62	3.05	-2.94	0.81
11,565.00	88.55	147.89	7,338.27	-4,061.17	2,765.91	4,913.56	1.62	1.36	0.89
11,628.00	89.19	147.63	7,339.51	-4,114.44	2,799.51	4,976.51	1.10	1.02	-0.41
11,692.00	88.45	147.50	7,340.83	-4,168.45	2,833.83	5,040.47	1.17	-1.16	-0.20
11,755.00	89.09	146.85	7,342.18	-4,221.37	2,867.97	5,103.44	1.45	[illegible]	-1.03
11,819.00	89.87	146.60	7,342.76	-4,274.88	2,903.08	5,167.43	1.28	1.22	[illegible]
11,882.00	90.47	146.94	7,342.58	-4,327.58	2,937.60	5,230.43	1.09	0.95	0.54
11,945.00	89.80	146.67	7,342.43	-4,380.29	2,972.10	5,293.42	1.15	[illegible]	-0.43
12,009.00	90.20	146.72	7,342.43	-4,433.78	3,007.24	5,357.41	0.63	0.63	0.08

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 18H - Slot MW3#18H
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 18H	**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)
12,072.00	88.69	145.63	7,343.04	-4,486.12	3,042.30	5,420.41	2.96	-2.40	-1.73
12,136.00	89.29	145.42	7,344.17	-4,538.87	3,078.53	5,484.39	0.99	0.94	-0.33
12,199.00	89.66	145.14	7,344.74	-4,590.65	3,114.41	5,547.39	0.74	0.59	-0.44
12,263.00	88.02	144.99	7,346.04	-4,643.10	3,151.05	5,611.36	2.57	-2.56	-0.23
12,326.00	88.82	145.69	7,347.78	-4,694.90	3,186.86	5,674.34	1.69	1.27	1.11
12,390.00	89.60	145.83	7,348.66	-4,747.80	3,222.87	5,738.33	1.24	1.22	0.22
12,453.00	90.24	146.22	7,348.75	-4,800.05	3,258.07	5,801.33	1.19	1.02	0.62
12,517.00	90.00	146.80	7,348.61	-4,853.42	3,293.39	5,865.32	0.98	-0.38	0.91
12,580.00	91.21	146.38	7,347.95	-4,906.01	3,328.08	5,928.32	2.03	1.92	-0.67
12,644.00	89.50	147.96	7,347.55	-4,959.78	3,362.77	5,992.29	3.64	-2.67	2.47
12,708.00	90.17	147.80	7,347.74	-5,013.98	3,396.80	6,056.26	1.08	1.05	-0.25
12,771.00	89.63	147.84	7,347.85	-5,067.31	3,430.35	6,119.22	0.86	-0.86	0.06
12,834.00	88.82	149.26	7,348.70	-5,121.04	3,463.22	6,182.15	2.59	-1.29	2.25
12,897.00	89.33	149.50	7,349.72	-5,175.25	3,495.30	6,245.03	0.89	0.81	0.38
12,960.00	90.40	149.39	7,349.86	-5,229.50	3,527.33	6,307.91	1.71	1.70	-0.17
13,024.00	88.76	149.54	7,350.33	-5,284.63	3,559.84	6,371.78	2.57	-2.56	0.23
13,087.00	88.25	149.14	7,351.98	-5,338.80	3,591.96	6,434.65	1.03	-0.81	-0.63
13,150.00	88.96	149.32	7,353.51	-5,392.91	3,624.18	6,497.53	1.16	1.13	0.29
13,214.00	89.87	149.48	7,354.16	-5,448.00	3,656.75	6,561.40	1.44	1.42	0.25
13,278.00	88.05	147.67	7,355.33	-5,502.60	3,690.11	6,625.32	4.01	-2.84	-2.83
13,341.00	88.76	147.74	7,357.08	-5,555.83	3,723.76	6,688.27	1.13	1.13	0.11
13,405.00	88.08	146.87	7,358.84	-5,609.67	3,758.32	6,752.22	1.72	-1.06	-1.36
13,468.00	88.96	146.98	7,360.47	-5,662.44	3,792.69	6,815.19	1.41	1.40	0.17
13,531.00	89.19	145.84	7,361.49	-5,714.92	3,827.54	6,878.18	1.85	0.37	-1.81
13,595.00	90.34	145.53	7,361.75	-5,767.77	3,863.61	6,942.18	1.86	1.80	-0.48
13,659.00	88.49	144.88	7,362.40	-5,820.33	3,900.13	7,006.17	3.06	-2.89	-1.02
13,722.00	89.66	145.22	7,363.42	-5,871.96	3,936.22	7,069.15	1.93	1.86	0.54
13,785.00	88.59	147.61	7,364.38	-5,924.43	3,971.06	7,132.13	4.16	-1.70	3.79
13,849.00	89.36	148.11	7,365.53	-5,978.61	4,005.10	7,196.09	1.43	1.20	0.78
13,912.00	90.40	148.00	7,365.66	-6,032.07	4,038.43	7,259.04	1.66	1.65	-0.17
13,976.00	89.56	148.47	7,365.68	-6,086.48	4,072.13	7,322.99	1.50	-1.31	0.73
14,039.00	90.20	148.39	7,365.81	-6,140.16	4,105.11	7,385.93	1.02	1.02	-0.13
14,048.00	90.44	148.35	7,365.76	-6,147.82	4,109.83	7,394.92	2.70	2.67	-0.44
Last SDI MWD Survey									
14,113.00	90.44	148.35	7,365.26	-6,203.15	4,143.93	7,459.86	0.00	0.00	0.00
Projection to Bit									

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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 18H	**North Reference:**	Grid
Wellbore:	OH	**Survey Calculation Method:**	Minimum Curvature
Design:	As Drilled	**Database:**	Northeast District

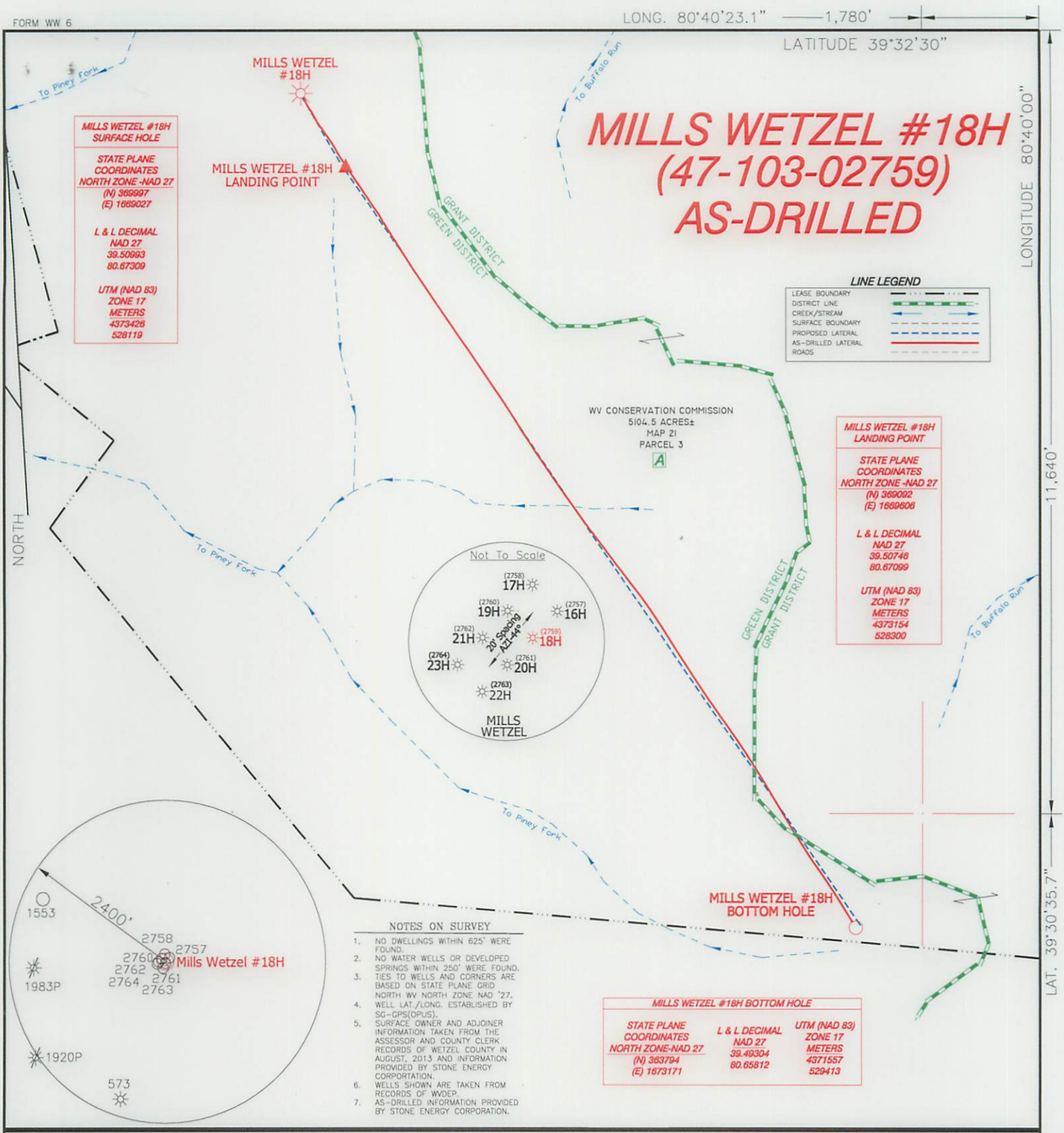
Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
18.00	18.00	0.00	0.00	Ground Level
103.00	103.00	0.01	-0.10	First SDI Gyro Survey
6,221.01	6,209.71	-234.10	138.84	Last SDI Gyro Survey
6,221.01	6,209.72	-234.10	138.84	First SDI MWD Survey
14,048.00	7,365.76	-6,147.82	4,109.83	Last SDI MWD Survey
14,113.00	7,365.26	-6,203.15	4,143.93	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____

Received
Office of Oil & Gas
FEB 26 2015

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 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 16, 20 14

OPERATORS WELL NO. MILLS WETZEL #18H

API WELL NO. 47 — 103 — 02759
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 7,365' TVD 14,113' 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

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

API 47 - 103 - 02760 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #19H
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 4,373,430	Easting 528,115
Landing Point of Curve	Northing 4,373,771	Easting 528,017
Bottom Hole	Northing 4,374,915	Easting 527,199

Elevation (ft) 1,291 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 12/11/2012 Date drilling ceased 7/16/2013
Date completion activities began 1/17/2014 Date completion activities ceased 7/12/2014
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 75 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 821 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Received
Office of Oil & Gas
FEB 26 2015

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

WR-35
Rev. 8/23/13

API 47- 103 - 02760 Farm name WV Conservation Commission Well number #19H

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"	60'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,290'	New	J55	126' & 204'	Y - CTS
Coal	17.5"	13.375"	1,290'	New	J55		Y - CTS
Intermediate 1	12.25"	9.625"	2,757'	New	J55		Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,468'	New	P110		N
Tubing	N/A	2.375"	7,642'	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 40 bbls cement to surface. TOC from the CBL on 5.5" casing is @ 350'.

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"	976	15.6	1.19	1,161	Surface	8.0
Coal	Class "A"	976	15.6	1.19	1,161	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-Class "A"	Lead-865 Tail-1,568	Lead-15.0 Tail-15.6	Lead-1.26 Tail-1.20	Lead-1,453 Tail-1,882	350	7.0
Tubing							

Drillers TD (ft) 12,476 MD / 7,254 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft)
Plug back procedure

Kick off depth (ft) 6,227 MD/ 6,219 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, 26, 28, 30 and 32. 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, 59, 62 and 65. 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 third joint to joint #280 (TOC). A total of 37 rigid left/right centralizers were used and 45 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 - 02760 Farm name WV Conservation Commission Well number #19H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	1/19/14	12,154	12,360	72	Marcellus Shale
2	4/3/14	11,881	12,073	72	Marcellus Shale
3	4/4/14	11,617	11,791	72	Marcellus Shale
4	4/11/14	11,357	11,552	72	Marcellus Shale
5	4/12/14	11,077	11,288	72	Marcellus Shale
6	4/13/14	10,811	11,003	72	Marcellus Shale
7	4/15/14	10,552	10,741	72	Marcellus Shale
8	4/16/14	10,291	10,483	72	Marcellus Shale
9	4/23/14	10,030	10,219	72	Marcellus Shale
10	4/24/14	9,771	9,963	72	Marcellus Shale
11	4/25/14	9,511	9,700	72	Marcellus Shale
12	4/26/14	9,260	9,443	72	Marcellus Shale
13	4/27/14	8,990	9,193	72	Marcellus Shale
14	4/28/14	8,736	8,923	72	Marcellus Shale
15	4/29/14	8,471	8,663	72	Marcellus Shale
16	4/30/14	8,211	8,403	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	4/3/14	80.8	8,188	6,650	4,253	363,160	8,065	
2	4/4/14	82.0	7,962	6,977	4,253	411,900	8,133	
3	4/8/14	84.4	7,950	6,683	6,000	308,500	10,695	
4	4/12/14	85.0	7,721	6,369	4,782	405,500	8,358	
5	4/13/14	82.8	7,950	6,700	4,416	409,340	8,077	
6	4/15/14	77.1	7,693	6,957	4,820	194,861	8,401	
7	4/16/14	77.0	7,375	6,606	4,286	412,725	8,203	
8	4/17/14	79.6	7,516	6,672	Screened	314,761	7,062	
9	4/24/14	84.9	7,291	6,069	4,477	410,240	8,104	
10	4/25/14	83.2	7,197	6,163	4,416	413,020	7,947	
11	4/26/14	83.1	7,580	6,871	Screened	414,020	7,893	
12	4/27/14	85.2	7,476	6,401	4,293	414,680	7,834	
13	4/28/14	85.0	7,349	6,776	4,841	413.460	7,894	
14	4/29/14	84.1	7,554	6,675	4,477	409,720	8,284	
15	4/30/14	85.1	7,263	6,557	5,087	407,560	7,916	
16	5/1/14	83.6	7,318	6,425	4,841	408,869	7,800	

Please insert additional pages as applicable.

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API 47- 103 - 02760 Farm name WV Conservation Commission Well number #19H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	5/1/14	7,945	8,141	72	Marcellus Shale
18	5/2/14	7,754	7,870	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	5/2/14	83.9	7,399	6,398	4,782	414,040	7,888	
18	5/4/14	83.6	7,264	8,794	4,946	374,540	7,358	

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WR-35
Rev. 8/23/13

API 47- 103 - 02760 Farm name WV Conservation Commission Well number #19H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,287' to 7,255' TVD	7,754' to 12,360' MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 1,608 psi Bottom Hole 3,769 calculated psi DURATION OF TEST 67 hrs

OPEN FLOW Gas 3,536 mcfpd Oil ____ bpd NGL 48.0 bpd Water 432.0 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 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 and Halliburton
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston / Jane Lew 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 #19H
API 47-103-02760
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	821		FW @ 75'
Coal	821		*	826		
Sandstone & Shale	826		*	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		~	6,422	6,431	
Rhinestreet	6,422	6,431		3,830	6,873	
Cashaqua	6,830	6,873		6,900	6,958	
Middlesex	6,900	6,958		7,043	7,152	
West River	7,043	7,152		7,149	7,322	
Geneseo	7,149	7,322		7,182	7,385	
Tully Limestone	7,182	7,385		7,204	7,432	
Hamilton Shale	7,204	7,432		7,269	7,640	
Marcellus	7,269	7,640		7,254	12,476	
TD				7,254	12,476	

* 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:	47-103-02760
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #19H
Longitude:	528,115
Latitude:	4,373,430
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	6128300

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, Rheology Modifier, Iron Control Agent, Clay Control Agent, Propping Agent, Fluid Loss	Water (Including Mix Water Supplied by Client)*	NA		87.96688%	
			Crystalline silica	14808-60-7	98.51058%	11.85390%	
			Hydrochloric acid	7647-01-0	0.83335%	0.10028%	
			Carbohydrate polymer	Proprietary	0.33737%	0.04060%	
			Fatty acid amidoalkyl betaine	Proprietary	0.32753%	0.03941%	
			Ammonium sulfate	7783-20-2	0.24441%	0.02941%	
			Isopropanol	67-63-0	0.22523%	0.02710%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.05890%	0.00709%	
			Glutaraldehyde	111-30-8	0.04608%	0.00555%	
			Urea	57-13-6	0.04073%	0.00490%	
			Calcium chloride	10043-52-4	0.01071%	0.00129%	
			Diammonium peroxidisulphate	7727-54-0	0.00804%	0.00097%	
			Sulfonated polystyrene	Proprietary	0.00643%	0.00077%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.00453%	0.00055%	
			Trisodium ortho phosphate	7601-54-9	0.00423%	0.00051%	
			Ethane-1,2-diol	107-21-1	0.00423%	0.00051%	
			Sodium erythorbate	6381-77-7	0.00370%	0.00045%	
			Methanol	67-56-1	0.00319%	0.00038%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00239%	0.00029%	
			Aliphatic acids	Proprietary	0.00239%	0.00029%	
			Prop-2-yn-1-ol	107-19-7	0.00080%	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-27146 (Generated on 5/14/2014 4:55 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 19H
Wellbore: OH
Design: As Drilled

WELL DETAILS: Mills-Wetzel 19H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	370004.53	1669013.64	39° 30' 35.807 N	80° 40' 23.282 W	MW3#19H

REFERENCE INFORMATION

Co-ordinate (N/E) Reference: Well Mills-Wetzel 19H - Slot MW3#19H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#19H(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)

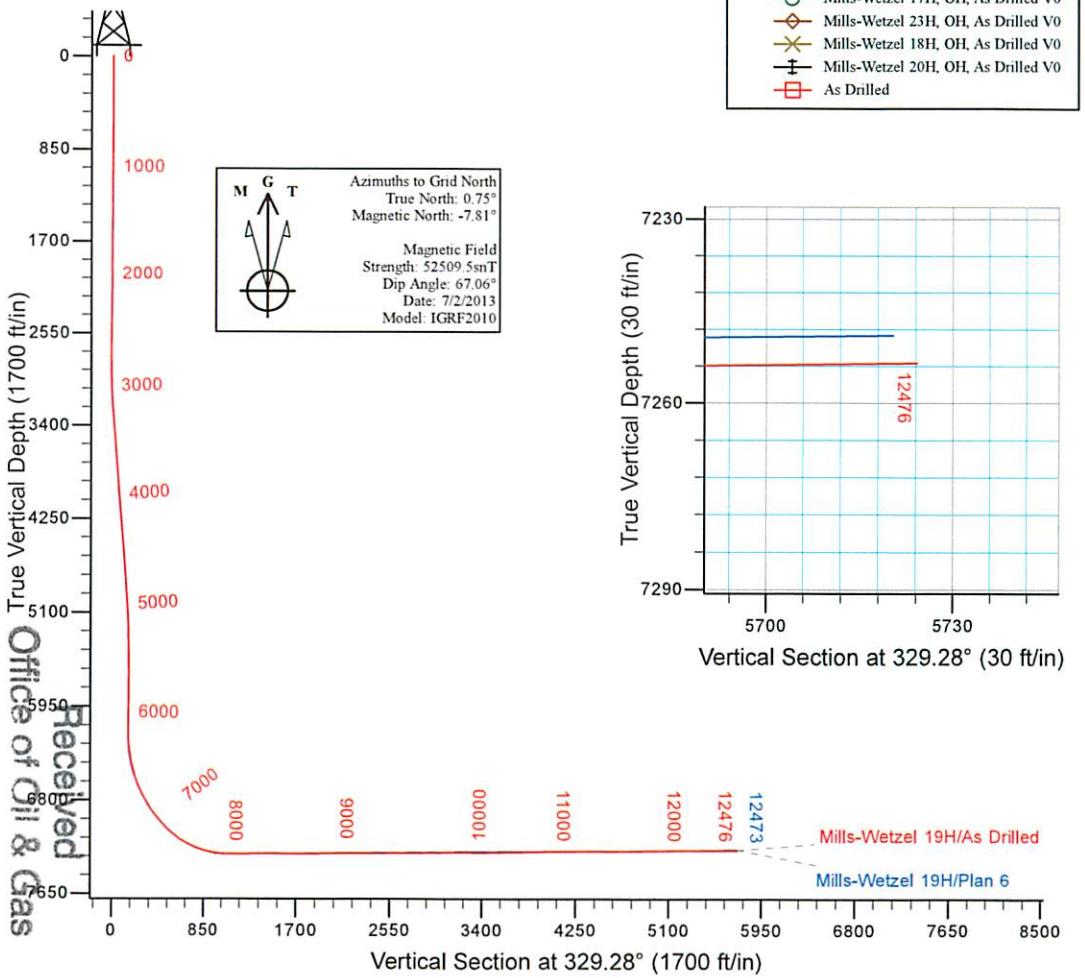
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: West Virginia North 4701
System Datum: Mean Sea Level

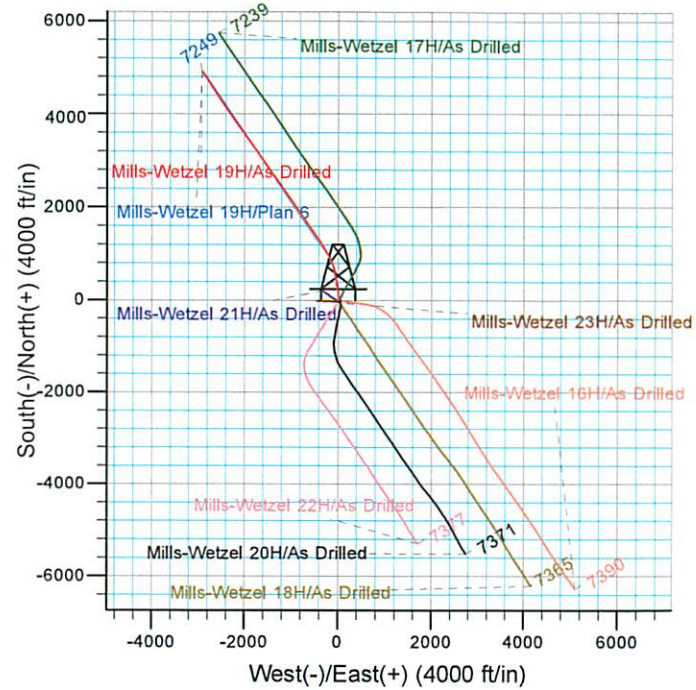
SECTION DETAILS

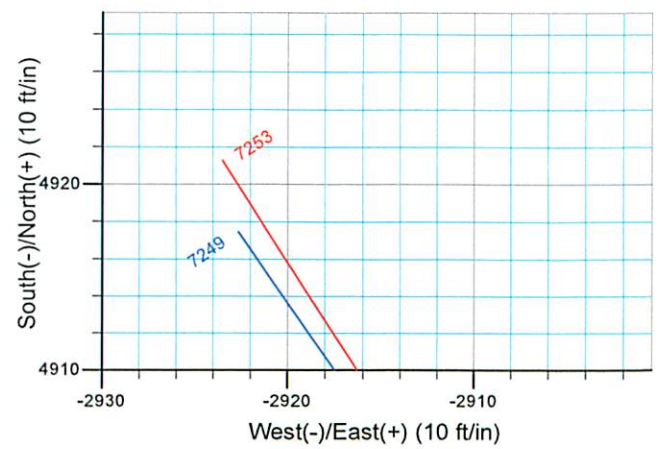
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	6127.18	0.79	139.99	6119.15	177.43	2.68	0.00	0.00	151.16	
2	6227.18	0.00	0.00	6219.15	176.90	3.12	0.79	180.00	150.48	
3	7285.78	54.00	349.29	7127.84	631.84	-82.90	5.10	349.29	585.50	
4	7819.74	90.50	325.45	7290.00	1085.14	-283.83	8.00	-36.58	1077.84	MW19H_LP3
5	12472.89	90.50	325.45	7249.00	4917.48	-2922.65	0.00	0.00	5720.44	MW19H_BHL3

LEGEND

- Mills-Wetzel 16H, OH, As Drilled V0
- Mills-Wetzel 19H, OH, Plan 6 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, 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 19H - Slot MW3#19H

OH

Design: As Drilled

Standard Survey Report

22 July, 2013

Scientific Drilling

www.scientificdrilling.com

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Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 19H - Slot MW3#19H
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 19H	**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 19H - Slot MW3#19H

Well Position	**+N/-S**	0.00 ft	**Northing:**	370,004.53 usft	**Latitude:**	39° 30' 35.807 N
	+E/-W	0.00 ft	**Easting:**	1,669,013.64 usft	**Longitude:**	80° 40' 23.282 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	7/2/2013	-8.56	67.06	52,510

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	329.28

Survey Program **Date** 7/22/2013

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
18.00	6,127.18	Survey #4 - Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
6,174.00	12,476.00	Survey 5 - 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	0.24	148.87	103.00	-0.15	0.09	-0.18	0.28	0.28	0.00
First SDI Gyro Survey									
203.00	0.11	142.11	203.00	-0.41	0.26	-0.48	0.13	-0.11	-6.76
303.00	0.08	161.15	303.00	-0.55	0.34	-0.65	0.04	-0.03	19.04
403.00	0.24	127.90	403.00	-0.74	0.53	-0.91	0.18	0.16	-33.25

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 19H - Slot MW3#19H
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 19H	**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)
503.00	0.24	136.19	503.00	-1.02	0.84	-1.31	0.03	0.00	8.29
603.00	0.11	153.97	603.00	-1.26	1.03	-1.61	0.14	-0.13	17.78
703.00	0.25	129.06	703.00	-1.48	1.24	-1.91	0.16	0.14	-24.91
803.00	0.19	144.43	803.00	-1.76	1.50	-2.28	0.08	-0.06	15.37
903.00	0.23	156.68	903.00	-2.08	1.68	-2.64	0.06	0.04	12.25
1,003.00	0.33	127.11	1,002.99	-2.43	1.99	-3.11	0.17	0.10	-29.57
1,103.00	0.27	127.82	1,102.99	-2.75	2.40	-3.59	0.06	-0.06	0.71
1,203.00	0.44	136.22	1,202.99	-3.17	2.86	-4.19	0.18	0.17	8.40
1,303.00	0.37	65.51	1,302.99	-3.32	3.42	-4.60	0.47	-0.07	-70.71
1,403.00	0.50	121.10	1,402.99	-3.41	4.08	-5.02	0.42	0.13	55.59
1,503.00	0.57	121.61	1,502.98	-3.90	4.88	-5.84	0.07	0.07	0.51
1,603.00	0.57	116.72	1,602.98	-4.38	5.75	-6.70	0.05	0.00	-4.89
1,703.00	0.46	158.42	1,702.97	-4.98	6.34	-7.52	0.38	-0.11	41.70
1,803.00	0.47	159.53	1,802.97	-5.73	6.63	-8.32	0.01	0.01	1.11
1,903.00	0.39	172.55	1,902.97	-6.46	6.82	-9.03	0.13	-0.08	13.02
2,003.00	0.22	246.73	2,002.97	-6.87	6.69	-9.32	0.39	-0.17	74.18
2,103.00	0.28	211.63	2,102.97	-7.15	6.38	-9.41	0.16	0.06	-35.10
2,203.00	0.83	97.53	2,202.96	-7.46	6.97	-9.97	0.98	0.55	-114.10
2,303.00	0.88	91.30	2,302.95	-7.57	8.46	-10.83	0.11	0.05	-6.23
2,403.00	1.05	93.15	2,402.94	-7.64	10.14	-11.75	0.17	0.17	1.85
2,503.00	1.05	88.55	2,502.92	-7.66	11.97	-12.70	0.08	0.00	-4.60
2,603.00	0.92	86.01	2,602.91	-7.58	13.69	-13.51	0.14	-0.13	-2.54
2,703.00	1.01	78.06	2,702.89	-7.35	15.35	-14.16	0.16	0.09	-7.95
2,803.00	0.96	56.22	2,802.88	-6.70	16.91	-14.40	0.38	-0.05	-21.84
2,903.00	1.31	13.01	2,902.86	-5.12	17.86	-13.53	0.90	0.35	-43.21
3,003.00	1.64	4.43	3,002.83	-2.58	18.23	-11.53	0.40	0.33	-8.58
3,103.00	2.72	348.67	3,102.75	1.18	17.88	-8.12	1.23	1.08	-15.76
3,203.00	4.17	344.24	3,202.57	7.00	16.42	-2.37	1.47	1.45	-4.43
3,303.00	4.39	341.45	3,302.29	14.13	14.22	4.88	0.30	0.22	-2.79
3,403.00	4.76	339.05	3,401.97	21.63	11.52	12.71	0.42	0.37	-2.40
3,503.00	5.18	341.26	3,501.60	29.78	8.58	21.22	0.46	0.42	2.21
3,603.00	5.40	340.86	3,601.17	38.50	5.59	30.24	0.22	0.22	-0.40
3,703.00	4.59	333.57	3,700.79	46.53	2.26	38.84	1.03	-0.81	-7.29
3,803.00	4.29	346.06	3,800.49	53.74	-0.42	46.41	1.01	-0.30	12.49
3,903.00	4.21	5.01	3,900.22	61.03	-1.00	52.97	1.40	-0.08	18.95
4,003.00	5.08	5.09	3,999.89	69.10	-0.28	59.54	0.87	0.87	0.08
4,103.00	5.78	5.56	4,099.44	78.52	0.60	67.19	0.70	0.70	0.47
4,203.00	5.75	3.15	4,198.94	88.53	1.36	75.41	0.24	-0.03	-2.41
4,303.00	5.78	359.45	4,298.43	98.57	1.59	83.92	0.37	0.03	-3.70
4,403.00	5.80	357.57	4,397.92	108.65	1.32	92.73	0.19	0.02	-1.88
4,503.00	5.47	354.44	4,497.44	118.45	0.65	101.49	0.45	-0.33	-3.13
4,603.00	5.01	4.23	4,597.02	127.54	0.51	109.38	1.00	0.46	9.79
4,703.00	5.08	3.03	4,696.64	136.32	1.06	116.64	0.13	0.07	-1.20
4,803.00	5.58	4.26	4,796.20	145.59	1.66	124.31	0.51	0.50	1.23

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 19H - Slot MW3#19H
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 19H	**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)
4,903.00	5.65	3.79	4,895.72	155.35	2.35	132.35	0.08	0.07	-0.47
5,003.00	4.16	359.85	4,995.35	163.89	2.66	139.52	1.53	-1.49	-3.94
5,103.00	3.42	352.37	5,095.14	170.47	2.26	145.39	0.89	-0.74	-7.48
5,203.00	1.81	351.82	5,195.03	174.99	1.64	149.59	1.61	-1.61	-0.55
5,303.00	0.69	352.29	5,295.00	177.15	1.33	151.61	1.12	-1.12	0.47
5,403.00	0.67	358.30	5,395.00	178.33	1.23	152.67	0.07	-0.02	6.01
5,503.00	0.53	357.59	5,494.99	179.38	1.19	153.59	0.14	-0.14	-0.71
5,603.00	0.18	358.88	5,594.99	180.00	1.17	154.13	0.35	-0.35	1.29
5,703.00	0.02	90.49	5,694.99	180.16	1.19	154.26	0.18	-0.16	91.61
5,803.00	0.23	129.95	5,794.99	180.03	1.36	154.06	0.21	0.21	39.46
5,903.00	0.20	125.25	5,894.99	179.80	1.65	153.71	0.03	-0.03	-4.70
6,003.00	0.67	158.87	5,994.98	179.15	2.01	152.98	0.52	0.47	33.62
6,103.00	1.02	161.52	6,094.97	177.76	2.50	151.53	0.35	0.35	2.65
6,127.18	0.79	139.99	6,119.15	177.43	2.68	151.16	1.68	-0.95	-89.04
Last SDI Gyro Survey									
6,174.00	1.07	157.46	6,165.96	176.78	3.05	150.41	0.84	0.60	37.31
First SDI MWD Survey									
6,205.00	0.95	155.70	6,196.96	176.28	3.27	149.86	0.40	-0.39	-5.68
6,235.00	0.27	1.07	6,226.96	176.12	3.37	149.68	4.00	-2.27	-515.43
6,266.00	2.29	345.99	6,257.95	176.80	3.22	150.33	6.55	6.52	-48.65
6,296.00	4.49	342.26	6,287.89	178.50	2.72	152.05	7.37	7.33	-12.43
6,327.00	6.68	341.38	6,318.75	181.36	1.77	155.00	7.07	7.06	-2.84
6,357.00	8.25	343.14	6,348.49	185.07	0.59	158.79	5.29	5.23	5.87
6,387.00	9.38	345.86	6,378.14	189.50	-0.63	163.23	4.01	3.77	9.07
6,417.00	10.39	346.84	6,407.69	194.51	-1.84	168.15	3.41	3.37	3.27
6,447.00	11.65	346.22	6,437.14	200.09	-3.18	173.62	4.22	4.20	-2.07
6,478.00	13.17	346.19	6,467.41	206.56	-4.77	180.00	4.90	4.90	-0.10
6,508.00	14.07	347.40	6,496.57	213.43	-6.38	186.73	3.15	3.00	4.03
6,538.00	14.89	347.98	6,525.61	220.76	-7.98	193.85	2.78	2.73	1.93
6,568.00	15.99	347.99	6,554.53	228.57	-9.64	201.41	3.67	3.67	0.03
6,598.00	17.49	346.80	6,583.26	237.01	-11.53	209.63	5.13	5.00	-3.97
6,628.00	19.27	346.09	6,611.73	246.20	-13.75	218.67	5.98	5.93	-2.37
6,657.00	21.47	346.73	6,638.91	256.01	-16.12	228.31	7.62	7.59	2.21
6,689.00	23.77	347.40	6,668.45	268.01	-18.87	240.03	7.23	7.19	2.09
6,721.00	25.85	347.66	6,697.49	281.12	-21.77	252.78	6.51	6.50	0.81
6,752.00	26.90	347.31	6,725.27	294.56	-24.75	265.86	3.42	3.39	-1.13
6,784.00	28.14	347.17	6,753.64	308.98	-28.02	279.93	3.88	3.88	-0.44
6,816.00	29.86	348.20	6,781.63	324.14	-31.32	294.64	5.60	5.38	3.22
6,847.00	31.87	349.62	6,808.24	339.74	-34.38	309.62	6.90	6.48	4.58
6,879.00	33.80	350.52	6,835.13	356.83	-37.36	325.84	6.22	6.03	2.81
6,910.00	35.36	350.53	6,860.65	374.19	-40.26	342.23	5.03	5.03	0.03
6,942.00	36.79	351.06	6,886.51	392.79	-43.27	359.76	4.57	4.47	1.66
6,974.00	38.35	351.22	6,911.88	412.07	-46.28	377.87	4.88	4.88	0.50

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 19H - Slot MW3#19H
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 19H	**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)
7,006.00	39.57	351.39	6,936.76	431.96	-49.32	396.52	3.83	3.81	0.53
7,037.00	41.09	350.74	6,960.39	451.77	-52.44	415.15	5.09	4.90	-2.10
7,069.00	42.63	350.33	6,984.22	472.84	-55.95	435.05	4.89	4.81	-1.28
7,101.00	44.63	350.23	7,007.38	494.60	-59.68	455.66	6.25	6.25	-0.31
7,133.00	45.83	349.93	7,029.92	516.98	-63.59	476.90	3.81	3.75	-0.94
7,164.00	47.81	349.75	7,051.13	539.23	-67.58	498.06	6.40	6.39	-0.58
7,196.00	49.91	349.69	7,072.18	562.94	-71.88	520.64	6.56	6.56	-0.19
7,228.00	51.82	349.84	7,092.38	587.36	-76.29	543.89	5.98	5.97	0.47
7,260.00	52.76	349.34	7,111.95	612.26	-80.87	567.63	3.19	2.94	-1.56
7,291.00	54.03	348.82	7,130.44	636.69	-85.58	591.05	4.31	4.10	-1.68
7,322.00	56.25	346.76	7,148.15	661.55	-90.97	615.17	9.00	7.16	-6.65
7,354.00	58.51	344.61	7,165.40	687.66	-97.63	641.02	9.05	7.06	-6.72
7,385.00	60.17	343.08	7,181.21	713.27	-105.06	666.83	6.83	5.35	-4.94
7,417.00	62.45	341.54	7,196.58	740.01	-113.59	694.17	8.28	7.13	-4.81
7,449.00	65.05	340.47	7,210.73	767.14	-122.93	722.27	8.66	8.13	-3.34
7,480.00	67.42	339.23	7,223.22	793.78	-132.71	750.16	8.48	7.65	-4.00
7,511.00	69.74	338.20	7,234.54	820.66	-143.18	778.62	8.10	7.48	-3.32
7,542.00	71.79	337.45	7,244.75	847.77	-154.23	807.57	7.00	6.61	-2.42
7,573.00	73.52	336.36	7,253.99	874.98	-165.84	836.89	6.51	5.58	-3.52
7,605.00	75.60	334.97	7,262.51	903.08	-178.55	867.54	7.73	6.50	-4.34
7,636.00	78.23	333.03	7,269.53	930.22	-191.79	897.63	10.45	8.48	-6.26
7,668.00	79.94	332.08	7,275.59	958.10	-206.27	929.00	6.09	5.34	-2.97
7,700.00	81.46	331.69	7,280.76	985.95	-221.15	960.55	4.90	4.75	-1.22
7,732.00	83.46	330.72	7,284.96	1,013.75	-236.43	992.25	6.93	6.25	-3.03
7,763.00	85.83	329.15	7,287.85	1,040.46	-251.89	1,023.11	9.16	7.65	-5.06
7,795.00	87.01	328.30	7,289.85	1,067.76	-268.47	1,055.04	4.54	3.69	-2.66
7,827.00	88.35	328.69	7,291.15	1,095.02	-285.18	1,087.01	4.36	4.19	1.22
7,859.00	90.71	328.10	7,291.41	1,122.27	-301.95	1,119.01	7.60	7.38	-1.84
7,890.00	91.11	326.99	7,290.92	1,148.42	-318.58	1,149.99	3.81	1.29	-3.58
7,922.00	92.52	328.15	7,289.90	1,175.42	-335.73	1,181.96	5.70	4.41	3.63
7,985.00	91.38	326.92	7,287.76	1,228.54	-369.53	1,244.89	2.66	-1.81	-1.95
8,048.00	91.18	326.73	7,286.35	1,281.26	-404.00	1,307.82	0.44	-0.32	-0.30
8,111.00	91.01	326.36	7,285.15	1,333.81	-438.72	1,370.73	0.65	-0.27	-0.59
8,174.00	89.56	325.58	7,284.84	1,386.02	-473.98	1,433.63	2.61	-2.30	-1.24
8,238.00	88.86	325.06	7,285.72	1,438.64	-510.39	1,497.47	1.36	-1.09	-0.81
8,301.00	90.13	325.01	7,286.27	1,490.27	-546.49	1,560.29	2.02	2.02	-0.08
8,365.00	90.57	325.26	7,285.88	1,542.78	-583.07	1,624.12	0.79	0.69	0.39
8,428.00	90.34	325.48	7,285.38	1,594.62	-618.87	1,686.97	0.51	-0.37	0.35
8,492.00	90.13	325.44	7,285.12	1,647.33	-655.16	1,750.83	0.33	-0.33	-0.06
8,555.00	90.57	325.22	7,284.74	1,699.15	-691.00	1,813.68	0.78	0.70	-0.35
8,618.00	91.01	325.86	7,283.87	1,751.09	-726.64	1,876.54	1.23	0.70	1.02
8,682.00	90.87	326.32	7,282.82	1,804.19	-762.34	1,940.43	0.75	-0.22	0.72
8,745.00	89.53	326.23	7,282.60	1,856.59	-797.32	2,003.34	2.13	-2.13	-0.14
8,808.00	88.82	325.26	7,283.50	1,908.65	-832.77	2,066.22	1.91	-1.13	-1.54

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 19H - Slot MW3#19H
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 19H	**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)
8,871.00	89.66	325.57	7,284.34	1,960.52	-868.53	2,129.07	1.42	1.33	0.49
8,935.00	90.47	325.30	7,284.27	2,013.22	-904.84	2,192.92	1.33	1.27	-0.42
8,998.00	90.44	325.06	7,283.77	2,064.94	-940.81	2,255.76	0.38	-0.05	-0.38
9,062.00	90.34	325.26	7,283.33	2,117.46	-977.37	2,319.59	0.35	-0.16	0.31
9,125.00	90.27	325.16	7,283.00	2,169.20	-1,013.32	2,382.43	0.19	-0.11	-0.16
9,189.00	89.97	325.69	7,282.86	2,221.90	-1,049.64	2,446.29	0.95	-0.47	0.83
9,252.00	91.11	325.34	7,282.27	2,273.82	-1,085.31	2,509.15	1.89	1.81	-0.56
9,315.00	91.01	325.26	7,281.10	2,325.61	-1,121.16	2,571.99	0.20	-0.16	-0.13
9,379.00	90.10	325.04	7,280.48	2,378.13	-1,157.73	2,635.82	1.46	-1.42	-0.34
9,442.00	90.17	325.10	7,280.33	2,429.78	-1,193.81	2,698.65	0.15	0.11	0.10
9,506.00	90.54	325.18	7,279.94	2,482.29	-1,230.39	2,762.48	0.59	0.58	0.13
9,569.00	91.58	325.23	7,278.77	2,534.02	-1,266.33	2,825.31	1.65	1.65	0.08
9,633.00	89.90	324.65	7,277.95	2,586.40	-1,303.09	2,889.12	2.78	-2.63	-0.91
9,696.00	90.71	324.21	7,277.61	2,637.64	-1,339.73	2,951.89	1.46	1.29	-0.70
9,759.00	91.44	324.55	7,276.43	2,688.85	-1,376.42	3,014.65	1.28	1.16	0.54
9,822.00	90.98	324.53	7,275.10	2,740.15	-1,412.96	3,077.42	0.73	-0.73	-0.03
9,885.00	88.52	324.66	7,275.37	2,791.50	-1,449.46	3,140.21	3.91	-3.90	0.21
9,949.00	89.06	324.88	7,276.72	2,843.76	-1,486.37	3,203.99	0.91	0.84	0.34
10,012.00	89.53	325.18	7,277.50	2,895.38	-1,522.47	3,266.82	0.89	0.75	0.48
10,076.00	89.80	324.29	7,277.87	2,947.64	-1,559.42	3,330.61	1.45	0.42	-1.39
10,108.00	90.67	324.23	7,277.74	2,973.61	-1,578.11	3,362.49	2.73	2.72	-0.19
10,140.00	90.30	323.86	7,277.47	2,999.51	-1,596.90	3,394.36	1.64	-1.16	-1.16
10,172.00	91.34	324.13	7,277.01	3,025.40	-1,615.71	3,426.22	3.36	3.25	0.84
10,203.00	91.78	324.06	7,276.17	3,050.50	-1,633.88	3,457.08	1.44	1.42	-0.23
10,235.00	91.88	323.75	7,275.15	3,076.34	-1,652.73	3,488.92	1.02	0.31	-0.97
10,267.00	90.64	323.22	7,274.44	3,102.05	-1,671.76	3,520.75	4.21	-3.88	-1.66
10,330.00	90.47	323.61	7,273.83	3,152.64	-1,709.31	3,583.42	0.68	-0.27	0.62
10,362.00	91.01	324.02	7,273.42	3,178.46	-1,728.20	3,615.27	2.12	1.69	1.28
10,393.00	91.61	324.01	7,272.71	3,203.54	-1,746.41	3,646.13	1.94	1.94	-0.03
10,425.00	92.15	323.92	7,271.66	3,229.40	-1,765.22	3,677.98	1.71	1.69	-0.28
10,457.00	91.38	324.14	7,270.68	3,255.29	-1,784.01	3,709.83	2.50	-2.41	0.69
10,520.00	90.64	325.18	7,269.57	3,306.67	-1,820.45	3,772.61	2.03	-1.17	1.65
10,583.00	91.18	325.10	7,268.57	3,358.36	-1,856.45	3,835.44	0.87	0.86	-0.13
10,647.00	91.11	325.30	7,267.29	3,410.90	-1,892.97	3,899.26	0.33	-0.11	0.31
10,711.00	90.34	325.49	7,266.48	3,463.58	-1,929.31	3,963.11	1.24	-1.20	0.30
10,774.00	90.24	325.46	7,266.16	3,515.48	-1,965.02	4,025.97	0.17	-0.16	-0.05
10,838.00	90.61	324.58	7,265.68	3,567.92	-2,001.71	4,089.79	1.49	0.58	-1.38
10,901.00	90.50	323.82	7,265.07	3,619.01	-2,038.56	4,152.54	1.22	-0.17	-1.21
10,964.00	90.61	323.51	7,264.46	3,669.76	-2,075.88	4,215.24	0.52	0.17	-0.49
11,026.00	90.87	323.37	7,263.66	3,719.55	-2,112.81	4,276.91	0.48	0.42	-0.23
11,090.00	89.80	324.39	7,263.29	3,771.25	-2,150.54	4,340.63	2.31	1.67	1.59
11,153.00	90.07	323.78	7,263.36	3,822.27	-2,187.49	4,403.37	1.06	0.43	-0.97
11,215.00	88.82	324.70	7,263.96	3,872.58	-2,223.72	4,465.12	2.50	-2.02	1.48

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 19H - Slot MW3#19H
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 19H	**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)
11,278.00	89.66	325.03	7,264.80	3,924.10	-2,259.97	4,527.93	1.43	1.33	0.52
11,340.00	90.77	325.37	7,264.56	3,975.01	-2,295.36	4,589.77	1.87	1.79	0.55
11,403.00	91.51	324.88	7,263.31	4,026.68	-2,331.37	4,652.59	1.41	1.17	-0.78
11,467.00	90.94	325.99	7,261.94	4,079.37	-2,367.67	4,716.43	1.95	-0.89	1.73
11,531.00	92.05	326.00	7,260.27	4,132.41	-2,403.45	4,780.31	1.73	1.73	0.02
11,594.00	90.47	325.42	7,258.89	4,184.44	-2,438.94	4,843.17	2.67	-2.51	-0.92
11,657.00	90.97	325.16	7,258.09	4,236.23	-2,474.81	4,906.01	0.89	0.79	-0.41
11,721.00	89.40	326.16	7,257.89	4,289.07	-2,510.91	4,969.88	2.91	-2.45	1.56
11,784.00	90.71	326.25	7,257.83	4,341.42	-2,545.95	5,032.79	2.08	2.08	0.14
11,847.00	90.71	326.05	7,257.05	4,393.74	-2,581.04	5,095.69	0.32	0.00	-0.32
11,910.00	90.37	326.35	7,256.45	4,446.09	-2,616.08	5,158.59	0.72	-0.54	0.48
11,973.00	90.10	325.98	7,256.19	4,498.42	-2,651.16	5,221.50	0.73	-0.43	-0.59
12,036.00	89.97	326.72	7,256.16	4,550.86	-2,686.07	5,284.42	1.19	-0.21	1.17
12,100.00	90.94	327.14	7,255.65	4,604.49	-2,720.99	5,348.36	1.65	1.52	0.66
12,163.00	90.40	327.24	7,254.91	4,657.44	-2,755.13	5,411.32	0.87	-0.86	0.16
12,227.00	90.17	327.19	7,254.59	4,711.24	-2,789.78	5,475.27	0.37	-0.36	-0.08
12,291.00	90.10	327.50	7,254.44	4,765.13	-2,824.31	5,539.24	0.50	-0.11	0.48
12,354.00	89.87	327.85	7,254.46	4,818.36	-2,858.00	5,602.21	0.66	-0.37	0.56
12,414.00	90.63	327.42	7,254.20	4,869.04	-2,890.12	5,662.19	1.46	1.27	-0.71
Last SDI MWD Survey									
12,417.00	90.67	327.40	7,254.16	4,871.57	-2,891.73	5,665.18	1.46	1.27	-0.71
12,476.00	90.67	327.40	7,253.47	4,921.27	-2,923.52	5,724.15	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	-0.15	0.09	First SDI Gyro Survey
6,127.18	6,119.15	177.43	2.68	Last SDI Gyro Survey
6,174.00	6,165.96	176.78	3.05	First SDI MWD Survey
12,414.00	7,254.20	4,869.04	-2,890.12	Last SDI MWD Survey
12,476.00	7,253.47	4,921.27	-2,923.52	Projection To Bit

Checked By: _____ Approved By: _____ Date: _____

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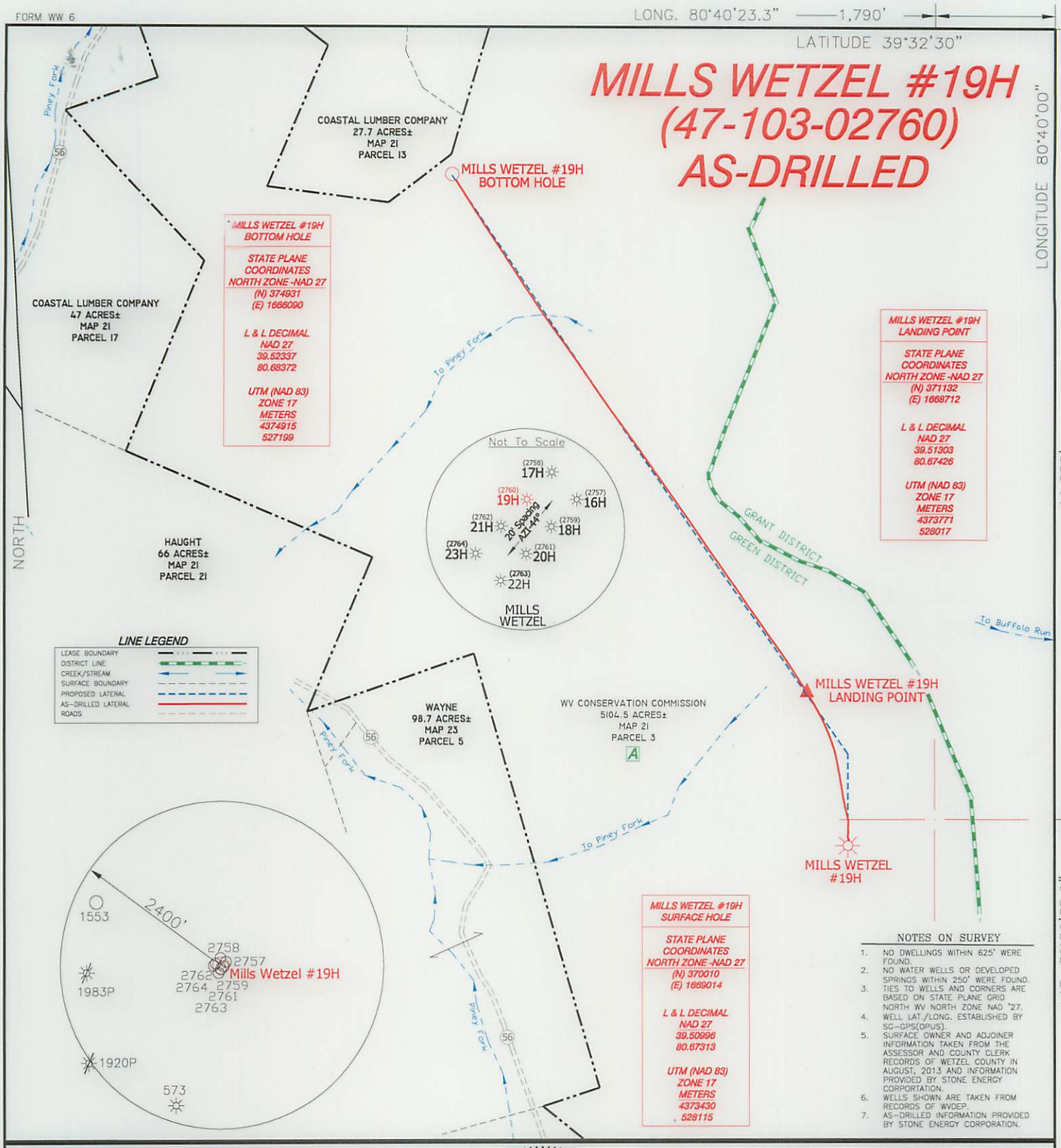
Office of Oil & Gas
FEB 26 2015

FORM WW 6

MILLS WETZEL #19H (47-103-02760) 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 16, 20 14

OPERATORS WELL NO. MILLS WETZEL #19H

API WELL NO. 47 — 103 — 02760
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 12,476' 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 - 02761 County Wetzel District Green
Quad Pine Grove Pad Name Mills-Wetzel Field/Pool Name Heather
Farm name WV Conservation Commission Well Number #20H
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	4,373,422	Easting	528,115
Landing Point of Curve	Northing	4,373,166	Easting	528,166
Bottom Hole	Northing	4,371,760	Easting	528,980

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 10/28/2012 Date drilling ceased 6/23/2013
Date completion activities began 9/5/2013 Date completion activities ceased 1/24/2014
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 65 Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1,500 Void(s) encountered (Y/N) depths N
Coal depth(s) ft 1,033 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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FEB 26 2015

Reviewed by:
A.L. 5/19/15
W.S. 6/02/15

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API 47- 103 - 02761 Farm name WV Conservation Commission Well number #20H

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"	60'	New	LS		Y - GTS
Surface	17.5"	13.375"	1,265'	New	J55	128' & 256'	Y - CTS
Coal	17.5"	13.375"	1,265'	New	J55	128' & 256'	Y - CTS
Intermediate 1	12.25"	9.625"	2,747'	New	J55	136'	Y - CTS
Intermediate 2							
Intermediate 3							
Production	8.75"	5.5"	12,930'	New	P110		Y
Tubing	N/A	2.375"	7,896'	New	N80		N/A
Packer type and depth set							

Comment Details 13.375" casing string circulated 47 bbls cement to surface, 9.625" casing string circulated 33 bbls cement to surface. 5.5" casing string TOC @ 859'.

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"	995	15.6	1.19	1,184	Surface	8.0
Coal	Class "A"	995	15.6	1.19	1,184	Surface	8.0
Intermediate 1	Lead-FlexSeal Tail-Class "A"	Lead-540 Tail-430	Lead-15.0 Tail-15.5	Lead-1.26 Tail-1.19	Lead-680 Tail-512	Surface	12.0
Intermediate 2							
Intermediate 3							
Production	Lead-FlexSeal Tail-Class "A"	Lead-652 Tail-1,951	Lead-15.0 Tail-15.6	Lead-1.25 Tail-1.22	Lead-815 Tail-2,380	859'	7.0
Tubing							

Drillers TD (ft) 12,932 MD / 7,370 TVD Loggers TD (ft) N/A
Deepest formation penetrated Marcellus Shale Plug back to (ft) _____
Plug back procedure _____

Kick off depth (ft) 5,942 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 4,6, 8, 10, 12, 16, 18, 20, 22 and 26. Intermediate casing had bow spring centralizers placed on joints #'s 5, 8, 11, 14, 17, 20, 23, 26, 29, 32, 35, 38, 41, 44, 47, 50, 53, 56, 59 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 #165. From there bow spring centralizers were placed beginning on joint #168 and then every third joint to joint #301. A total of 42 rigid left/right centralizers were used and 45 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 - 02761 Farm name WV Conservation Commission Well number #20H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	9/10/13	12,665	12,840	72	Marcellus Shale
2	10/4/13	12,388	12,582	72	Marcellus Shale
3	10/5/13	12,121	12,321	72	Marcellus Shale
4	10/6/13	11,855	12,047	72	Marcellus Shale
5	10/7/13	11,604	11,785	72	Marcellus Shale
6	10/7/13	11,345	11,528	72	Marcellus Shale
7	10/8/13	11,080	11,275	72	Marcellus Shale
8	10/8/13	10,820	11,012	72	Marcellus Shale
9	10/15/13	10,555	10,751	72	Marcellus Shale
10	10/16/13	10,285	10,484	72	Marcellus Shale
11	10/17/13	10,022	10,215	72	Marcellus Shale
12	10/19/13	9,760	9,995	72	Marcellus Shale
13	11/19/13	9,500	9,695	72	Marcellus Shale
14	11/20/13	9,325	9,435	72	Marcellus Shale
15	11/28/13	8,970	9,165	72	Marcellus Shale
16	12/1/13	8,705	8,901	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	10/4/13	85.1	7,918	5,998	4,028	377,120	8,314	
2	10/5/13	84.0	8,246	6,242	4,063	408,860	8,405	
3	10/6/13	84.6	8,173	7,594	4,168	412,720	8,411	
4	10/7/13	83.5	8,135	6,695	4,580	409,200	8,514	
5	10/7/13	84.9	7,924	6,129	4,476	411,280	8,436	
6	10/8/13	85.2	7,939	7,478	4,545	409,160	8,198	
7	10/8/13	85.3	7,842	6,428	4,234	414,260	9,085	
8	10/15/13	81.1	8,017	5,647	4,682	369,520	8,134	
9	10/16/13	80.4	7,524	5,957	4,650	411,860	8,381	
10	10/17/13	81.8	7,665	6,680	4,856	415,880	8,335	
11	10/19/13	80.4	7,337	6,911	4,409	411,360	8,377	
12	11/19/13	80.3	7,533	7,000	5,470	240,460	7,231	
13	11/20/13	79.2	7,488	6,683	4,470	414,130	8,266	
14	11/28/13	79.6	7,360	6,341	4,185	406,560	8,390	
15	12/1/13	81.0	7,588	7,298	4,676	413,900	8,303	
16	12/3/13	80.1	7,091	6,672	4,752	405,460	8,232	

Please insert additional pages as applicable.

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API 47- 103 - 02761 Farm name WV Conservation Commission Well number #20H

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
17	12/3/13	8,436	8,635	72	Marcellus Shale
18	12/4/13	8,182	8,372	72	Marcellus Shale
19	12/5/13	7,955	8,106	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	12/4/13	80.9	7,522	6,571	4,338	405,540	8,232	
18	12/5/13	80.4	7,186	7,016	4,714	410,400	8,294	
19	12/6/13	80.0	7,432	7,193	4,488	377,120	7,835	

Please insert additional pages as applicable.

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API 47- 103 - 02761 Farm name WV Conservation Commission Well number #20H

PRODUCING FORMATION(S)	DEPTHS	
Marcelllus Shale	7,291' to 7,365' TVD	7,955' to12,840' MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 1,809 psi Bottom Hole 3,834 calculated psi DURATION OF TEST 546 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	3,000 mcfpd	bpd	2.7 bpd	120.0 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
Address 1178 US HWY 33 East City Weston State WV Zip 26452

Stimulating Company Schlumberger
Address 1178 US HWY 33 East City Weston / Jane Lew 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 #20H
API 47-103-02761
Stone Energy Corporation

	Top (ft TVD)	Horizontal Top (ft MD)		Bottom (ft TVD)	Bottom (ft MD)	
Sandstone & Shale	Surface		*	1,033		FW @ 65'
Coal	1,033		*	1,036		
Sandstone & Shale	1,036		*	2,190		SW @ 1,500'
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		~	6,536	6,605	
Rhinestreet	3,536	6,605		6,739	6,914	
Cashaqua	6,739	6,914		6,906	7,174	
Middlesex	6,906	7,174		7,081	7,441	
West River	7,081	7,441		7,171	7,602	
Geneseo	7,171	7,602		7,196	7,652	
Tully Limestone	7,196	7,652		7,219	7,708	
Hamilton Shale	7,219	7,708		7,283	7,910	
Marcellus	7,283	7,910		7,370	12,932	
TD				7,370	12,932	

* 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:	12/6/2013
State:	West Virginia
County/Parish:	Wetzel County
API Number:	47-103-02761
Operator Name:	Stone Energy
Well Name and Number:	Mills Wetzel #20H
Longitude:	528,115
Latitude:	4,373,422
Long/Lat Projection:	
Production Type:	
True Vertical Depth (TVD):	0
Total Water Volume (gal)*:	6609661

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, Sapphire VF105	Schlumberger	Corrosion Inhibitor, Bactericide (Myacide GA25), Scale Inhibitor, Surfactant , Acid, Breaker, Gelling Agent, Friction Reducer, Iron Control Agent, Clay Control Agent, Fluid Loss Additive , Propping	Water (Including Mix Water Supplied by Client)*	NA		94.27901%	
			Crystalline silica	14808-60-7	96.18298%	5.50262%	
			Hydrochloric acid	7647-01-0	1.97786%	0.11315%	
			Carbohydrate polymer	Proprietary	1.22160%	0.06989%	
			Ammonium sulfate	Proprietary	0.41392%	0.02368%	
			Polyethylene glycol monohexyl ether	31726-34-8	0.15736%	0.00900%	
			Glutaraldehyde	111-30-8	0.11500%	0.00658%	
			Diammonium peroxidisulphate	7727-54-0	0.05806%	0.00332%	
			Calcium chloride	10043-52-4	0.02716%	0.00155%	
			Dicoco dimethyl quaternary ammonium chloride	61789-77-3	0.01210%	0.00069%	
			Trisodium ortho phosphate	7601-54-9	0.00784%	0.00045%	
			Ethane-1,2-diol	107-21-1	0.00784%	0.00045%	
			Methanol	67-56-1	0.00733%	0.00042%	
			Sodium erythorbate	6381-77-7	0.00573%	0.00033%	
			Aliphatic alcohols, ethoxylated #2	Proprietary	0.00549%	0.00031%	
			Aliphatic acids	Proprietary	0.00549%	0.00031%	
			Prop-2-yn-1-ol	107-19-7	0.00183%	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-23461 (Generated on 1/23/2014 4:09 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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FEB 26 2015

Project: Heather Prospect (NAD 27)
Site: Mills-Wetzel Pad 3
Well: Mills-Wetzel 20H
Wellbore: OH
Design: As Drilled

Scientific Drilling

WELL DETAILS: Mills-Wetzel 20H

Ground Level: 1291.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	369975.47	1669013.48	39° 30' 35.519 N	80° 40' 23.279 W	MW3#20H

ANNOTATIONS

TVD	MD	Inc	Azi	+N/-S	+E/-W	VSec	Departure	Annotation
103.00	103.00	0.34	265.83	-0.02	-0.30	-0.12	0.31	First SDI Gyro Survey
5487.71	5489.87	3.98	183.70	6.59	52.80	18.92	123.15	Last SDI Gyro Survey
5533.72	5536.00	4.40	182.67	3.23	52.62	21.81	126.52	First SDI MWD Survey
7366.80	12875.00	85.93	147.05	-5450.91	2718.11	6089.10	6427.87	Last SDI MWD Survey
7370.90	12932.00	85.93	147.05	-5498.62	2749.04	6145.74	6484.72	Projection to Bit

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 20H - Slot MW3#20H, Grid North
Vertical (TVD) Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Section (VS) Reference: Slot - MW3#20H(0.00N, 0.00E)
Measured Depth Reference: GL 1291' & KB 18' @ 1309.00ft (Saxon 141)
Calculation Method: Minimum Curvature

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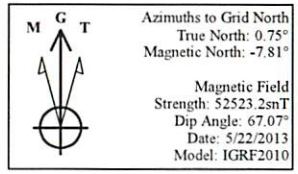
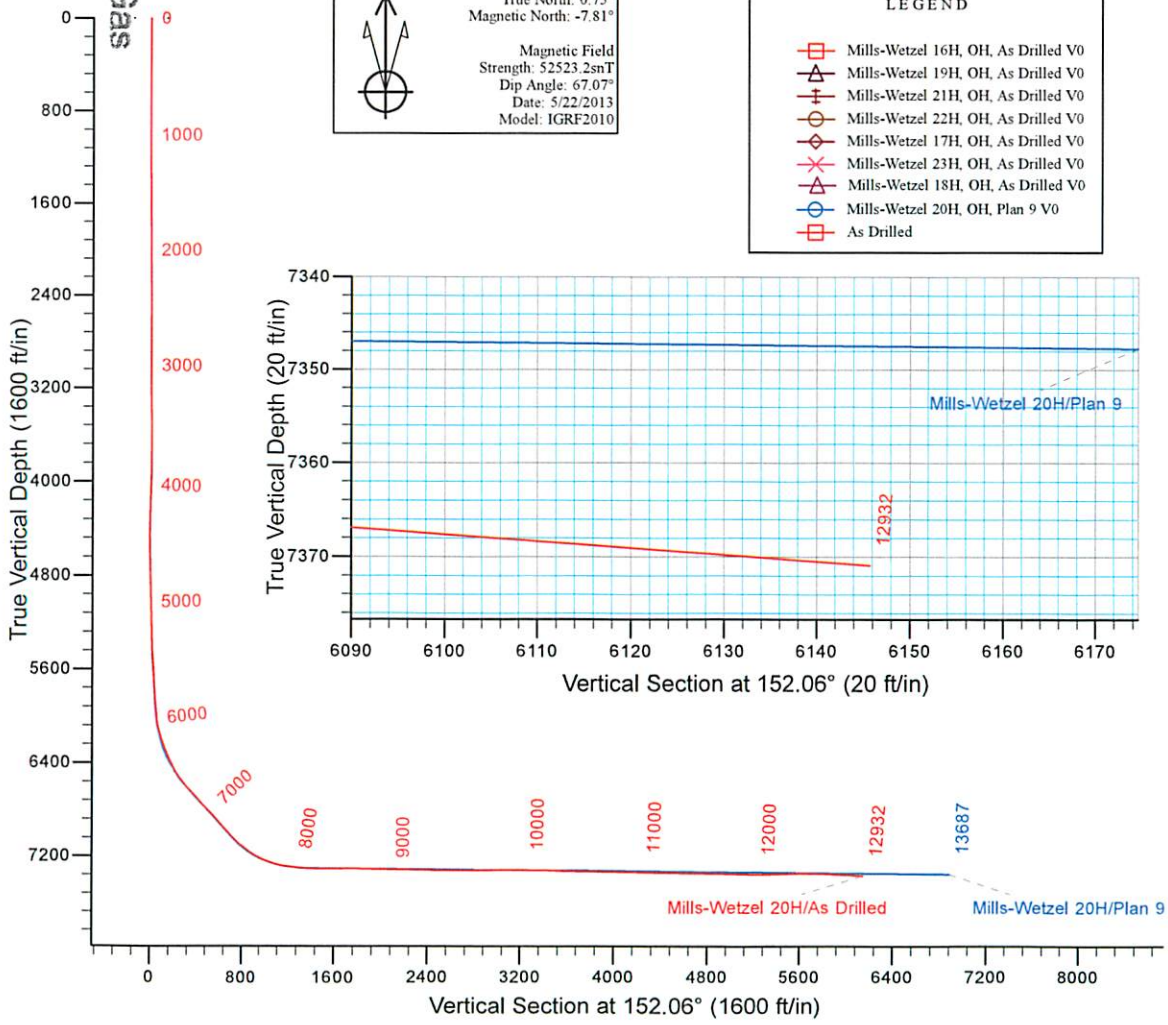


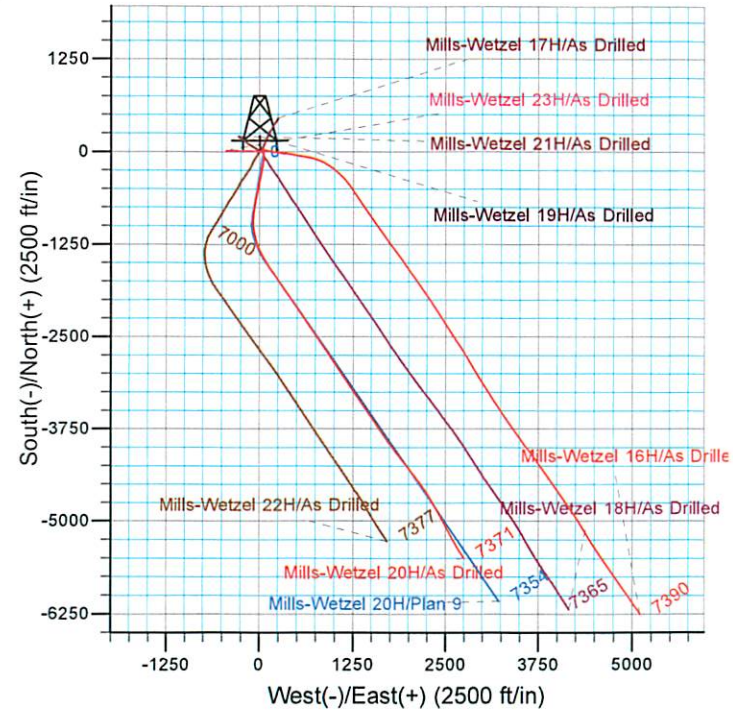
Azimuths to Grid North
True North: 0.75°
Magnetic North: -7.81°

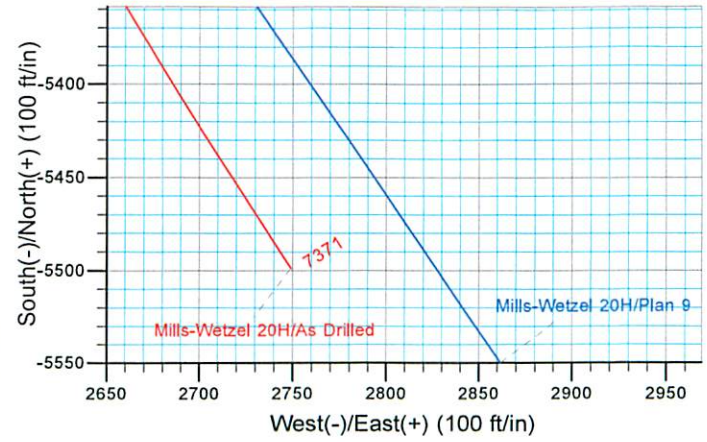
Magnetic Field
Strength: 52523.2snT
Dip Angle: 67.07°
Date: 5/22/2013
Model: IGRF2010

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, As Drilled V0
- Mills-Wetzel 18H, OH, As Drilled V0
- Mills-Wetzel 20H, OH, Plan 9 V0
- As Drilled







Stone Energy

Heather Prospect (NAD 27)
Mills-Wetzel Pad 3
Mills-Wetzel 20H - Slot MW3#20H

OH

Design: As Drilled

Standard Survey Report

24 June, 2013

Scientific Drilling

www.scientificdrilling.com

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Scientific Drilling International

Survey Report

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 20H - Slot MW3#20H
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 20H	**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 20H - Slot MW3#20H

Well Position	**+N/-S**	0.00 ft	**Northing:**	369,975.47 usft	**Latitude:**	39° 30' 35.519 N
	+E/-W	0.00 ft	**Easting:**	1,669,013.48 usft	**Longitude:**	80° 40' 23.279 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	5/22/2013	-8.56	67.07	52,523

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	152.06

Survey Program **Date** 6/24/2013

From (ft)	**To (ft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
103.00	5,489.87	SDI Keeper Gyro (OH)	SDI Standard Keeper 103	SDI Standard Wireline Keeper ver 1.0.3
5,536.00	12,932.00	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
103.00	0.34	265.83	103.00	-0.02	-0.30	-0.12	0.33	0.33	0.00
First SDI Gyro Survey									
203.00	0.32	269.32	203.00	-0.05	-0.88	-0.37	0.03	-0.02	3.49
303.00	0.24	248.79	302.99	-0.13	-1.35	-0.52	0.13	-0.08	-20.53
403.00	0.13	181.56	402.99	-0.32	-1.55	-0.45	0.22	0.11	-67.23
503.00	0.19	119.41	502.99	-0.51	-1.41	-0.21	0.17	0.06	-62.15
603.00	0.27	78.99	602.99	-0.55	-1.04	0.00	0.18	0.08	-40.42

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Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 20H - Slot MW3#20H
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 20H	**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	0.27	67.63	702.99	-0.41	-0.59	0.09	0.05	0.00	-11.36
803.00	0.26	74.61	802.99	-0.26	-0.15	0.16	0.03	-0.01	6.98
903.00	0.23	85.12	902.99	-0.18	0.27	0.29	0.05	-0.03	10.51
1,003.00	0.37	127.87	1,002.99	-0.37	0.72	0.66	0.25	0.14	42.75
1,103.00	0.34	73.25	1,102.99	-0.48	1.26	1.01	0.33	-0.03	-54.62
1,203.00	0.21	68.88	1,202.99	-0.33	1.72	1.09	0.13	-0.13	-4.37
1,303.00	0.40	95.75	1,302.99	-0.30	2.24	1.31	0.23	0.19	26.87
1,403.00	0.82	93.78	1,402.98	-0.38	3.30	1.88	0.42	0.42	-1.97
1,503.00	0.82	80.37	1,502.97	-0.31	4.72	2.48	0.19	0.00	-13.41
1,603.00	0.86	85.94	1,602.96	-0.13	6.17	3.01	0.09	0.04	5.57
1,703.00	0.82	101.56	1,702.95	-0.22	7.62	3.77	0.23	-0.04	15.62
1,803.00	0.85	120.17	1,802.94	-0.74	8.96	4.85	0.27	0.03	18.61
1,903.00	0.83	137.34	1,902.93	-1.64	10.09	6.18	0.25	-0.02	17.17
2,003.00	0.64	209.07	2,002.92	-2.67	10.31	7.19	0.87	-0.19	71.73
2,103.00	0.19	188.36	2,102.92	-3.32	10.02	7.63	0.47	-0.45	-20.71
2,203.00	0.98	73.46	2,202.92	-3.24	10.81	7.93	1.07	0.79	-114.90
2,303.00	1.26	71.39	2,302.90	-2.64	12.68	8.28	0.28	0.28	-2.07
2,403.00	1.72	68.73	2,402.86	-1.75	15.12	8.63	0.47	0.46	-2.66
2,503.00	2.21	64.27	2,502.80	-0.37	18.25	8.88	0.51	0.49	-4.46
2,603.00	2.49	61.19	2,602.72	1.52	21.89	8.92	0.31	0.28	-3.08
2,703.00	2.60	58.85	2,702.62	3.74	25.74	8.76	0.15	0.11	-2.34
2,803.00	2.80	58.14	2,802.51	6.20	29.75	8.47	0.20	0.20	-0.71
2,903.00	4.41	58.42	2,902.31	9.50	35.10	8.06	1.61	1.61	0.28
3,003.00	4.81	56.49	3,001.99	13.83	41.87	7.40	0.43	0.40	-1.93
3,103.00	3.03	52.35	3,101.75	17.76	47.46	6.55	1.80	-1.78	-4.14
3,203.00	1.50	77.94	3,201.67	19.65	50.84	6.47	1.80	-1.53	25.59
3,303.00	0.87	173.03	3,301.66	19.17	52.21	7.53	1.80	-0.63	95.09
3,403.00	1.00	179.26	3,401.64	17.54	52.31	9.02	0.16	0.13	6.23
3,503.00	1.07	178.59	3,501.63	15.74	52.35	10.63	0.07	0.07	-0.67
3,603.00	0.93	183.91	3,601.61	13.99	52.31	12.15	0.17	-0.14	5.32
3,703.00	1.23	259.44	3,701.60	12.99	51.20	12.52	1.34	0.30	75.53
3,803.01	1.09	259.78	3,801.58	12.62	49.21	11.91	0.14	-0.14	0.34
3,903.01	1.48	311.11	3,901.56	13.30	47.30	10.42	1.17	0.39	51.33
4,003.01	1.97	320.82	4,001.51	15.48	45.24	7.52	0.57	0.49	9.71
4,103.01	2.03	320.85	4,101.45	18.19	43.04	4.10	0.06	0.06	0.03
4,203.01	2.09	313.91	4,201.39	20.83	40.61	0.63	0.26	0.06	-6.94
4,303.01	2.10	315.65	4,301.32	23.40	38.01	-2.86	0.06	0.01	1.74
4,403.01	1.27	8.43	4,401.28	25.81	36.89	-5.51	1.67	-0.83	52.78
4,503.01	1.53	108.93	4,501.26	26.47	38.32	-5.43	2.16	0.26	100.50
4,603.01	1.57	108.41	4,601.23	25.61	40.88	-3.46	0.04	0.04	-0.52
4,703.01	1.39	113.32	4,701.19	24.69	43.30	-1.52	0.22	-0.18	4.91
4,803.01	1.37	118.26	4,801.16	23.65	45.46	0.42	0.12	[illegible]	4.94
4,903.01	1.10	140.97	4,901.14	22.33	47.12	2.35	0.55	-0.27	22.71

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Office of Oil & Gas
FEB 26 2015

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 20H - Slot MW3#20H
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 20H	**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)
5,003.01	1.19	146.17	5,001.12	20.73	48.30	4.33	0.14	0.09	5.20
5,103.01	1.19	159.71	5,101.10	18.89	49.24	6.39	0.28	0.00	13.54
5,203.01	1.52	151.92	5,201.07	16.75	50.23	8.74	0.38	0.33	-7.79
5,303.01	1.62	155.90	5,301.04	14.29	51.43	11.48	0.15	0.10	3.98
5,403.01	2.17	163.72	5,400.98	11.18	52.54	14.74	0.61	0.55	7.82
5,489.87	3.98	183.70	5,487.71	6.59	52.80	18.92	2.39	2.08	23.00
Last SDI Gyro Survey									
5,536.00	4.40	182.67	5,533.72	3.23	52.62	21.81	0.92	0.91	-2.23
First SDI MWD Survey									
5,599.00	4.05	184.25	5,596.55	-1.41	52.34	25.77	0.59	-0.56	2.51
5,663.00	3.98	184.85	5,660.39	-5.87	51.98	29.55	0.13	-0.11	0.94
5,726.00	4.00	184.26	5,723.24	-10.24	51.64	33.25	0.07	0.03	-0.94
5,789.00	4.45	181.85	5,786.07	-14.88	51.39	37.23	0.77	0.71	-3.83
5,853.00	4.42	182.91	5,849.88	-19.82	51.19	41.50	0.14	-0.05	1.66
5,885.00	4.29	186.67	5,881.79	-22.24	50.99	43.54	0.98	-0.41	11.75
5,916.00	4.28	190.59	5,912.70	-24.53	50.64	45.40	0.95	-0.03	12.65
5,947.00	4.88	186.64	5,943.60	-26.98	50.27	47.39	2.19	1.94	-12.74
5,978.00	6.08	180.34	5,974.46	-29.93	50.11	49.92	4.32	3.87	-20.32
6,010.00	7.64	177.35	6,006.23	-33.75	50.20	53.34	5.00	4.88	-9.34
6,041.00	9.30	175.86	6,036.89	-38.31	50.48	57.49	5.40	5.35	-4.81
6,073.00	11.69	175.10	6,068.35	-44.12	50.94	62.84	7.48	7.47	-2.38
6,105.00	13.65	175.94	6,099.57	-51.11	51.48	69.28	6.15	6.13	2.63
6,136.00	15.50	176.54	6,129.57	-58.90	51.99	76.40	5.99	5.97	1.94
6,168.00	16.95	176.61	6,160.30	-67.82	52.53	84.53	4.53	4.53	0.22
6,200.00	18.96	178.80	6,190.74	-77.68	52.91	93.42	6.63	6.28	6.84
6,231.00	20.87	180.70	6,219.88	-88.24	52.95	102.76	6.50	6.16	6.13
6,263.00	23.61	182.06	6,249.50	-100.34	52.65	113.31	8.71	8.56	4.25
6,295.00	25.08	184.73	6,278.65	-113.51	51.86	124.57	5.74	4.59	8.34
6,327.00	26.16	187.04	6,307.51	-127.27	50.44	136.06	4.60	3.38	7.22
6,359.00	27.49	189.58	6,336.07	-141.55	48.34	147.70	5.49	4.16	7.94
6,391.00	28.82	191.27	6,364.28	-156.40	45.61	159.53	4.85	4.16	5.28
6,422.00	31.16	192.30	6,391.13	-171.56	42.44	171.45	7.73	7.55	3.32
6,454.00	32.72	192.59	6,418.28	-188.09	38.79	184.34	4.90	4.88	0.91
6,486.00	35.60	192.32	6,444.76	-205.64	34.91	198.02	9.01	9.00	-0.84
6,518.00	37.22	191.93	6,470.51	-224.21	30.93	212.56	5.11	5.06	-1.22
6,550.00	40.40	190.21	6,495.44	-243.89	27.09	228.14	10.49	9.94	-5.38
6,581.00	42.56	190.84	6,518.67	-264.07	23.33	244.22	7.10	6.97	2.03
6,613.00	45.25	191.33	6,541.72	-285.85	19.06	261.45	8.47	8.41	1.53
6,645.00	46.11	192.60	6,564.08	-308.24	14.32	279.01	3.91	2.69	3.97
6,677.00	48.00	193.04	6,585.88	-331.08	9.12	296.75	5.99	[illegible]	1.38
6,708.00	50.09	192.75	6,606.20	-353.90	3.89	314.46	6.78	6.74	-0.94
6,738.00	50.13	192.56	6,625.44	-376.36	-1.15	331.94	0.50	0.13	-0.63
6,801.00	50.10	191.70	6,665.83	-423.62	-11.31	368.93	1.05	-0.05	-1.37
6,865.00	49.78	191.95	6,707.02	-471.57	-21.34	406.58	0.58	-0.50	0.39

Received
Office of Oil & Gas

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 20H - Slot MW3#20H
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 20H	**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)
6,928.00	50.06	190.59	6,747.59	-518.84	-30.76	443.93	1.71	0.44	-2.16
6,991.00	50.11	189.46	6,788.01	-566.42	-39.17	482.02	1.38	0.08	-1.79
7,055.00	50.03	189.43	6,829.09	-614.83	-47.23	521.02	0.13	-0.13	-0.05
7,118.00	49.72	189.22	6,869.69	-662.37	-55.03	559.35	0.55	-0.49	-0.33
7,182.00	49.58	189.49	6,911.13	-710.50	-62.96	598.15	0.39	-0.22	0.42
7,245.00	49.40	188.09	6,952.05	-757.83	-70.28	636.53	1.71	-0.29	-2.22
7,305.00	48.98	188.17	6,991.27	-802.79	-76.70	673.24	0.71	-0.70	0.13
7,336.00	48.81	188.22	7,011.65	-825.91	-80.03	692.10	0.56	-0.55	0.16
7,366.00	48.38	188.34	7,031.49	-848.17	-83.27	710.26	1.46	-1.43	0.40
7,396.00	48.55	187.66	7,051.38	-870.41	-86.40	728.44	1.79	0.57	-2.27
7,427.00	50.01	184.56	7,071.61	-893.77	-88.89	747.90	8.92	4.71	-10.00
7,457.00	51.85	181.36	7,090.52	-917.02	-90.09	767.88	10.30	6.13	-10.67
7,487.00	54.21	177.85	7,108.56	-940.98	-89.91	789.13	12.22	7.87	-11.70
7,518.00	55.88	176.06	7,126.32	-966.35	-88.56	812.18	7.17	5.39	-5.77
7,548.00	57.14	174.78	7,142.88	-991.29	-86.56	835.15	5.50	4.20	-4.27
7,579.00	58.14	173.66	7,159.47	-1,017.34	-83.92	859.40	4.44	3.23	-3.61
7,610.00	60.56	172.11	7,175.27	-1,043.80	-80.61	884.32	8.91	7.81	-5.00
7,640.00	62.08	171.20	7,189.67	-1,069.84	-76.79	909.12	5.72	5.07	-3.03
7,671.00	64.02	170.48	7,203.72	-1,097.12	-72.39	935.28	6.59	6.26	-2.32
7,702.00	65.92	168.11	7,216.84	-1,124.71	-67.17	962.10	9.25	6.13	-7.65
7,732.00	67.45	166.56	7,228.71	-1,151.59	-61.13	988.68	6.97	5.10	-5.17
7,763.00	68.61	164.94	7,240.31	-1,179.45	-54.05	1,016.61	6.12	3.74	-5.23
7,793.00	69.50	164.18	7,251.03	-1,206.46	-46.59	1,043.96	3.79	2.97	-2.53
7,823.00	71.59	161.87	7,261.02	-1,233.51	-38.33	1,071.73	10.06	6.97	-7.70
7,854.00	74.32	159.80	7,270.11	-1,261.50	-28.60	1,101.01	10.88	8.81	-6.68
7,884.00	77.04	158.68	7,277.53	-1,288.68	-18.29	1,129.85	9.76	9.07	-3.73
7,915.00	78.83	156.62	7,284.01	-1,316.71	-6.76	1,160.02	8.69	5.77	-6.65
7,945.00	80.47	154.83	7,289.40	-1,343.61	5.37	1,189.47	8.02	5.47	-5.97
7,975.00	81.34	152.60	7,294.14	-1,370.17	18.49	1,219.08	7.89	2.90	-7.43
8,006.00	82.29	150.83	7,298.56	-1,397.19	33.03	1,249.76	6.43	3.06	-5.71
8,036.00	83.71	149.91	7,302.21	-1,423.07	47.75	1,279.52	5.63	4.73	-3.07
8,066.00	85.64	148.98	7,305.00	-1,448.79	62.93	1,309.36	7.14	6.43	-3.10
8,097.00	87.14	148.15	7,306.95	-1,475.19	79.07	1,340.24	5.53	4.84	-2.68
8,158.00	87.88	148.14	7,309.60	-1,526.95	111.23	1,401.04	1.21	1.21	-0.02
8,218.00	89.16	148.23	7,311.15	-1,577.92	142.85	1,460.88	2.14	2.13	0.15
8,280.00	90.00	147.25	7,311.60	-1,630.34	175.94	1,522.70	2.08	1.35	-1.58
8,343.00	90.27	145.56	7,311.46	-1,682.82	210.80	1,585.39	2.72	0.43	-2.68
8,407.00	91.01	145.91	7,310.74	-1,735.71	246.83	1,649.00	1.28	1.16	0.55
8,470.00	90.91	145.64	7,309.69	-1,787.79	282.26	1,711.61	0.46	-0.16	-0.43
8,533.00	88.62	145.56	7,309.94	-1,839.77	317.85	1,774.21	3.64	-3.63	-0.13
8,596.00	88.42	145.39	7,311.57	-1,891.66	353.54	1,836.77	0.42	-0.32	-0.27
8,659.00	89.16	145.38	7,312.90	-1,943.49	389.32	1,899.33	1.17	1.17	-0.02
8,723.00	88.96	145.91	7,313.95	-1,996.32	425.43	1,962.92	0.89	-0.31	0.83

Received
Office of Oil & Gas

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 20H - Slot MW3#20H
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 20H	**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)
8,786.00	88.59	147.07	7,315.30	-2,048.84	460.21	2,025.61	1.93	-0.59	1.84
8,850.00	88.56	146.28	7,316.89	-2,102.30	495.36	2,089.31	1.23	-0.05	-1.23
8,913.00	89.83	146.40	7,317.77	-2,154.73	530.27	2,151.99	2.02	2.02	0.19
8,976.00	90.64	146.37	7,317.52	-2,207.19	565.15	2,214.68	1.29	1.29	-0.05
9,039.00	89.73	146.19	7,317.31	-2,259.59	600.12	2,277.36	1.47	-1.44	-0.29
9,103.00	88.89	146.04	7,318.08	-2,312.72	635.80	2,341.01	1.33	-1.31	-0.23
9,166.00	88.86	145.61	7,319.32	-2,364.83	671.18	2,403.62	0.68	-0.05	-0.68
9,229.00	89.23	145.71	7,320.37	-2,416.84	706.72	2,466.22	0.61	0.59	0.16
9,293.00	89.16	146.37	7,321.27	-2,469.92	742.46	2,529.86	1.04	-0.11	1.03
9,354.00	89.46	146.48	7,322.00	-2,520.74	776.20	2,590.56	0.52	0.49	0.18
9,418.00	90.37	146.75	7,322.10	-2,574.18	811.41	2,654.27	1.48	1.42	0.42
9,482.00	90.13	146.80	7,321.82	-2,627.71	846.48	2,718.00	0.38	-0.38	0.08
9,545.00	89.40	146.97	7,322.08	-2,680.48	880.90	2,780.74	1.19	-1.16	0.27
9,608.00	90.03	146.75	7,322.39	-2,733.23	915.34	2,843.48	1.06	1.00	-0.35
9,672.00	90.27	146.26	7,322.22	-2,786.60	950.66	2,907.18	0.85	0.38	-0.77
9,736.00	91.01	147.03	7,321.51	-2,840.06	985.84	2,970.89	1.67	1.16	1.20
9,799.00	91.51	147.97	7,320.12	-2,893.18	1,019.68	3,033.68	1.69	0.79	1.49
9,863.00	90.17	146.38	7,319.19	-2,946.95	1,054.37	3,097.44	3.25	-2.09	-2.48
9,926.00	89.06	145.93	7,319.61	-2,999.27	1,089.46	3,160.10	1.90	-1.76	-0.71
9,989.00	88.86	146.08	7,320.75	-3,051.49	1,124.68	3,222.74	0.40	-0.32	0.24
10,021.00	89.83	146.10	7,321.12	-3,078.05	1,142.53	3,254.56	3.03	3.03	0.06
10,053.00	89.93	145.35	7,321.19	-3,104.49	1,160.55	3,286.37	2.36	0.31	-2.34
10,085.00	88.69	145.59	7,321.57	-3,130.85	1,178.68	3,318.15	3.95	-3.88	0.75
10,117.00	87.85	145.71	7,322.54	-3,157.26	1,196.73	3,349.94	2.65	-2.63	0.38
10,148.00	88.05	145.77	7,323.65	-3,182.86	1,214.17	3,380.73	0.67	0.65	0.19
10,180.00	88.72	145.67	7,324.55	-3,209.30	1,232.19	3,412.52	2.12	2.09	-0.31
10,212.00	88.62	146.17	7,325.29	-3,235.79	1,250.12	3,444.33	1.59	-0.31	1.56
10,244.00	87.52	146.22	7,326.37	-3,262.37	1,267.91	3,476.15	3.44	-3.44	0.16
10,276.00	87.24	146.07	7,327.83	-3,288.91	1,285.72	3,507.94	0.99	-0.88	-0.47
10,307.00	87.62	145.91	7,329.22	-3,314.58	1,303.04	3,538.74	1.33	1.23	-0.52
10,370.00	87.85	145.56	7,331.71	-3,366.61	1,338.48	3,601.30	0.66	0.37	-0.56
10,433.00	88.52	144.77	7,333.71	-3,418.29	1,374.45	3,663.82	1.64	1.06	-1.25
10,497.00	88.62	144.98	7,335.30	-3,470.62	1,411.26	3,727.30	0.36	0.16	0.33
10,560.00	89.13	145.61	7,336.54	-3,522.40	1,447.12	3,789.85	1.29	0.81	1.00
10,623.00	89.50	145.80	7,337.29	-3,574.45	1,482.62	3,852.45	0.66	0.59	0.30
10,687.00	89.23	146.15	7,338.00	-3,627.49	1,518.43	3,916.09	0.69	-0.42	0.55
10,750.00	89.77	146.43	7,338.55	-3,679.89	1,553.39	3,978.77	0.97	0.86	0.44
10,814.00	89.76	146.64	7,338.81	-3,733.28	1,588.68	4,042.47	0.33	-0.02	0.33
10,877.00	90.47	146.10	7,338.69	-3,785.74	1,623.57	4,105.16	1.42	1.13	-0.86
10,941.00	87.45	145.55	7,339.85	-3,838.67	1,659.51	4,168.76	4.80	[illegible]	-0.86
11,004.00	88.22	145.17	7,342.23	-3,890.47	1,695.30	4,231.29	1.36	1.22	-0.60
11,067.00	88.66	144.51	7,343.94	-3,941.95	1,731.56	4,293.77	1.26	0.70	-1.05
11,130.00	88.66	143.73	7,345.42	-3,992.98	1,768.48	4,356.15	1.24	0.00	-1.24
11,194.00	88.22	142.62	7,347.16	-4,044.19	1,806.82	4,419.35	1.87	-0.69	-1.73

Received
Office of Oil & Gas

Company:	Stone Energy	**Local Co-ordinate Reference:**	Well Mills-Wetzel 20H - Slot MW3#20H
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 20H	**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)
11,258.00	88.89	142.12	7,348.77	-4,094.86	1,845.88	4,482.42	1.31	1.05	-0.78
11,321.00	89.73	141.67	7,349.53	-4,144.43	1,884.76	4,544.43	1.51	1.33	-0.71
11,384.00	90.47	140.96	7,349.42	-4,193.61	1,924.13	4,606.32	1.63	1.17	-1.13
11,447.00	91.07	141.11	7,348.58	-4,242.59	1,963.75	4,668.16	0.98	0.95	0.24
11,511.00	90.50	142.04	7,347.70	-4,292.72	2,003.52	4,731.08	1.70	-0.89	1.45
11,574.00	89.19	142.36	7,347.87	-4,342.50	2,042.13	4,793.15	2.14	-2.08	0.51
11,638.00	88.69	142.82	7,349.05	-4,393.33	2,081.01	4,856.27	1.06	-0.78	0.72
11,701.00	89.43	142.88	7,350.09	-4,443.53	2,119.05	4,918.45	1.18	1.17	0.10
11,765.00	88.89	144.68	7,351.03	-4,495.16	2,156.86	4,981.77	2.94	-0.84	2.81
11,828.00	88.22	146.62	7,352.61	-4,547.15	2,192.39	5,044.35	3.26	-1.06	3.08
11,891.00	88.39	146.98	7,354.48	-4,599.85	2,226.87	5,107.06	0.63	0.27	0.57
11,955.00	87.38	147.08	7,356.84	-4,653.50	2,261.68	5,170.77	1.59	-1.58	0.16
12,018.00	88.19	147.47	7,359.28	-4,706.46	2,295.71	5,233.50	1.43	1.29	0.62
12,081.00	91.68	148.35	7,359.35	-4,759.83	2,329.17	5,296.33	5.71	5.54	1.40
12,145.00	92.45	148.81	7,357.04	-4,814.41	2,362.51	5,360.17	1.40	1.20	0.72
12,208.00	91.95	150.89	7,354.62	-4,868.84	2,394.13	5,423.07	3.39	-0.79	3.30
12,272.00	92.05	151.81	7,352.39	-4,924.97	2,424.80	5,487.03	1.45	0.16	1.44
12,335.00	92.18	151.98	7,350.06	-4,980.50	2,454.46	5,549.98	0.34	0.21	0.27
12,399.00	90.47	153.19	7,348.58	-5,037.30	2,483.91	5,613.96	3.27	-2.67	1.89
12,463.00	88.39	152.55	7,349.22	-5,094.25	2,513.10	5,677.95	3.40	-3.25	-1.00
12,526.00	88.12	152.10	7,351.14	-5,150.02	2,542.34	5,740.92	0.83	-0.43	-0.71
12,590.00	88.32	151.16	7,353.13	-5,206.30	2,572.74	5,804.88	1.50	0.31	-1.47
12,653.00	87.95	151.25	7,355.18	-5,261.48	2,603.07	5,867.84	0.60	-0.59	0.14
12,717.00	87.41	149.23	7,357.77	-5,316.99	2,634.81	5,931.76	3.26	-0.84	-3.16
12,780.00	87.32	148.51	7,360.66	-5,370.86	2,667.34	5,994.59	1.15	-0.14	-1.14
12,843.00	85.67	147.21	7,364.52	-5,424.11	2,700.79	6,057.30	3.33	-2.62	-2.06
12,875.00	85.93	147.05	7,366.86	-5,450.91	2,718.11	6,089.10	0.95	0.81	-0.50
Last SDI MWD Survey									
12,932.00	85.93	147.05	7,370.90	-5,498.62	2,749.04	6,145.74	0.00	0.00	0.00
Projection to Bit									

Design Annotations

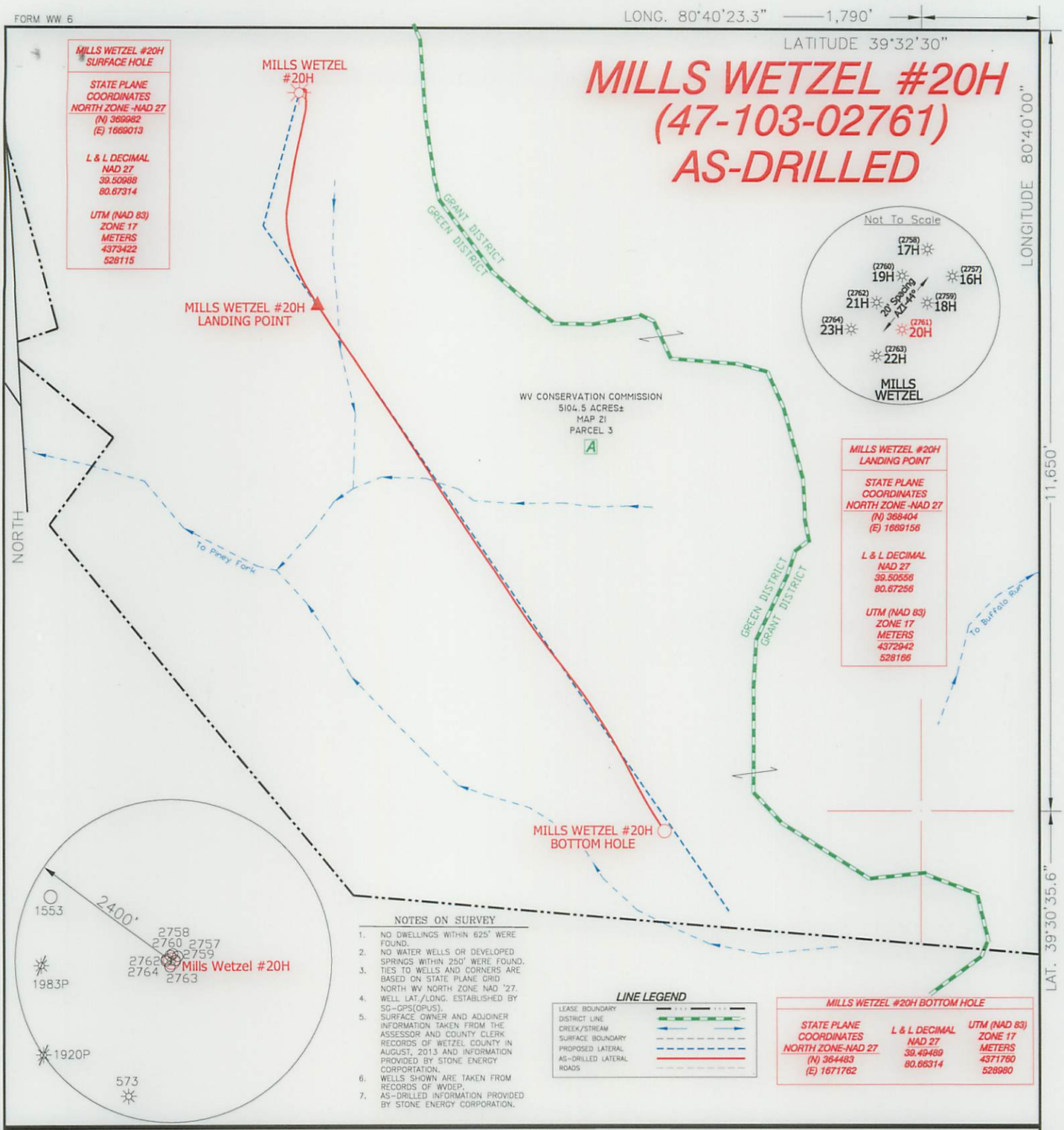
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
103.00	103.00	-0.02	-0.30	First SDI Gyro Survey
5,489.87	5,487.71	6.59	52.80	Last SDI Gyro Survey
5,536.00	5,533.72	3.23	52.62	First SDI MWD Survey
12,875.00	7,366.86	-5,450.91	2,718.11	Last SDI MWD Survey
12,932.00	7,370.90	-5,498.62	2,749.04	Projection to Bit

Received
Office of Oil & Gas
FEB 26 2015

Checked By: _____ Approved By: _____ Date: _____

FORM WW 6

MILLS WETZEL #20H (47-103-02761) AS-DRILLED



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 16, 20 14

OPERATORS WELL NO. MILLS WETZEL #20H

API WELL NO. 47 — 103 — 02761
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 7,370' TVD 12,932' 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