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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 - 017 - 6460 County DODDRIDGE District WEST UNION
Quad OXFORD 7.5' Pad Name OXFORD 157 Field/Pool Name
Farm name JUSTIN L. HENDERSON ET AL Well Number 513146
Operator (as registered with the OOG) EQT Production Company
Address 625 Liberty Ave. EQT Plaza, Suite 1700 City Pittsburgh State PA Zip 15222

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

Top hole	Northing	4,343,004	Easting	520,175
Landing Point of Curve	Northing	4,343,082	Easting	520,345
Bottom Hole	Northing	4,344,918	Easting	519,452

Elevation (ft) 970 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)
Water base Mud 13.0 ppg barium sulfate, sodium chloride, xanthan gum, polyanionic cellulose, modified starch, sodium hydroxide, phosphonates and alkyl phophates, glutaraldehyde solution, calcium hydroxide,
partially hydrolyzed polyacrylamide/polyacrylate, potassium chloride, sodium carbonate, ground walnut shells, alcohol and modified fatty acid, ferrochrome lignosulfonate, calcium carbonate, fibrous cellulose

Date permit issued 04/18/2014 Date drilling commenced 08/18/2014 Date drilling ceased 12/24/2014
Date completion activities began 4/18/2015 Date completion activities ceased 4/24/2015
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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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 144 Open mine(s) (Y/N) depths N
Salt water depth(s) ft - Void(s) encountered (Y/N) depths N
Coal depth(s) ft 337 Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
JK

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API 47- 017 - 6460 Farm name JUSTIN L. HENDERSON ET AL Well number 513146

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"	63'	NEW	A-500 40LB/FT	NONE	Y
Surface	17.5"	13.375"	950'	NEW	J-55 54.5LB/FT	236'	Y
Coal							
Intermediate 1	12.375"	9.625"	5020'	NEW	P-110 40LB/FT	1221',2938',4020'	Y
Intermediate 2							
Intermediate 3							
Production	8.5"	5.5"	13,031'	NEW	P-110 20LB/FT	NONE	N
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	CLASS A	61	15.6	1.18	71.98	0	8
Surface	CLASS A	790	15.6	1.19	940.1	0	8
Coal							
Intermediate 1	CLASS A / CLASS A	360 / 340	14.2 / 15.6	1.28 /1.18	862	0	8
Intermediate 2							
Intermediate 3							
Production	Class A / Class H	325 / 815	14.2 / 15.2	1.26 / 1.97	2016	5100	72
Tubing							

Drillers TD (ft) 13,054' Loggers TD (ft) _____
Deepest formation penetrated Marcellus Plug back to (ft) _____
Plug back procedure _____

Kick off depth (ft) 5,089'

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
CONDUCTOR- NONE
SURFACE- JOINTS: 1,12,21
INTERMEDIATE- RAN AT LEAST EVERY 500' FEET JOINTS: 1,12,24,36,48,60,72,84,96,109,124
PRODUCTION- Composite body centralizers every joint from 5,800' to 5,000'

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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- 017 - 6460 Farm name JUSTIN L. HENDERSON ET AL Well number 513146

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
					Please See Attached

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)
						Please	See	Attached

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Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
Marcellus	6,366' TVD	13,054 MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 2,447 psi Bottom Hole N/A psi DURATION OF TEST 95.0 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	13,288 mcfpd	N/A bpd	62.0 bpd	556 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		

Please insert additional pages as applicable.

Drilling Contractor ALPHA HUNTER DRILLING (RIG 4)
Address P.O. BOX 430 City RENO State OH Zip 45773

Logging Company HOSSCO SERVICES, LLC
Address 614 TROTTERS LANE City CHARLESTON State WV Zip 25312

Cementing Company NABORS CEMENTING SERVICES
Address 2504 SMITH CREEK ROAD City WAYNESBURG State PA Zip 15370

Stimulating Company KEANE
Address 2121 SAGE ROAD City HOUSTON State TX Zip 77056

Please insert additional pages as applicable.

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Completed by Jim Helmick Telephone 412-395-5518
Signature _____ Title VP Completions Date 8/17/2015

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

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API 47- 017 - 6460 Farm name JUSTIN L. HENDERSON ET AL Well number 513146

Drilling Contractor Patterson UTI (Rig 252)
Address 207 Carlton Drive City Eighty Four State PA Zip 15330

Logging Company GYRODATA
Address 601 MAYER ST City BRIDGEVILLE State PA Zip 15017

Logging Company _____
Address _____ City _____ State _____ Zip _____

Cementing Company _____
Address _____ City _____ State _____ Zip _____

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Formation	Top (ftGL TVD)	Bottom (ftGL TVD)
FRESH WATER ZONE	1	154
SAND/SHALE	1	347
PITTSBURGH COAL SEAM	347	351
SAND/SHALE	351	1,599.00
BIG LIME	1,599.00	1,884.00
WEIR	1,884.00	2,089.00
BEREA	2,089.00	2,093.00
GANTZ	2,093.00	2,204.00
50F	2,204.00	2,294.00
30F	2,294.00	2,349.00
GORDON	2,349.00	2,438.00
4TH	2,438.00	2,660.00
BAYARD	2,660.00	2,933.00
WARREN	2,933.00	3,010.00
SPEECHLEY	3,010.00	3,499.00
BALLTOWN A	3,499.00	4,146.00
RILEY	4,146.00	4,596.00
BENSON	4,596.00	4,849.00
ALEXANDER	4,849.00	6,008.60
SONYEA	6,008.60	6,179.60
MIDDLESEX	6,179.60	6,202.00
GENESEE	6,202.00	6,268.30
GENESEO	6,268.30	6,315.00
TULLY	6,315.00	6,339.30
HAMILTON	6,339.30	6,366.30
MARCELLUS	6,366.30	

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EQT Production - Marcellus

Doddridge County, WV Grid
Doddridge County 513146
Well #513146

Main Wellbore

Design: 513146 As Drilled Surveys

Standard Survey Report

26 December, 2014

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Survey Report

17-06460

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513146
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 991.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 991.0usft
Site:	Doddridge County 513146	**North Reference:**	Grid
Well:	Well #513146	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513146 As Drilled Surveys		

Project Doddridge County, WV Grid

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		Using geodetic scale factor

Site Doddridge County 513146

Site Position:		**Northing:**	270,601.00 usft	**Latitude:**	39.24
From:	Map	**Easting:**	1,641,295.00 usft	**Longitude:**	-80.77
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	-0.81 °

Well Well #513146

Well Position	**+N/-S**	0.0 usft	**Northing:**	270,601.00 usft	**Latitude:**	39° 14' 9.665 N
	+E/-W	0.0 usft	**Easting:**	1,641,295.00 usft	**Longitude:**	80° 45' 59.039 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	usft	**Ground Level:**	968.0 usft

Wellbore Main Wellbore

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010_14	12/15/2014	-8.49	66.72	52,205

Design 513146 As Drilled Surveys

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	340.24

Survey Program Date 12/26/2014

From ()	To (usft)	Survey (Wellbore)	Tool Name	Description
0.00	5,040.0	513146 Gyrodata Gyros (Main Wellbore)	GYD_DP_MS	Gyrodata gyro-compassing and drop
0.00	13,054.0	513146 PHX MWD (Main Wellbore)	MWD+IGRF	MWD+IGRF v3:standard declination

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	-991.0	0.0	0.0	0.0	0.00	0.00	0.00
110.0	0.19	157.49	110.0	-881.0	-0.2	0.1	-0.2	0.17	0.17	31.21
210.0	0.33	188.70	210.0	-781.0	-0.6	0.1	-0.6	0.19	0.14	21.99
310.0	0.29	210.69	310.0	-681.0	-1.1	-0.1	-1.0	0.12	-0.04	6.18
410.0	0.32	219.87	410.0	-581.0	-1.5	-0.4	-1.3	0.06	0.03	
510.0	0.24	219.69	510.0	-481.0	-1.9	-0.7	-1.6	0.08	-0.08	-0.18
610.0	0.22	226.31	610.0	-381.0	-2.2	-1.0	-1.7	0.03	-0.02	6.62
710.0	0.28	238.90	710.0	-281.0	-2.5	-1.3	-1.9	0.08	0.06	12.59

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Phoenix Technologies

Survey Report

17-06460

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Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 991.0usft
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Site:	Doddridge County 513146	**North Reference:**	Grid
Well:	Well #513146	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513146 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
810.0	0.30	246.16	810.0	-181.0	-2.7	-1.8	-1.9	0.04	0.02	7.26
910.0	0.27	254.50	910.0	-81.0	-2.9	-2.2	-1.9	0.05	-0.03	8.34
1,010.0	0.60	249.03	1,010.0	19.0	-3.1	-3.0	-1.9	0.33	0.33	-5.47
1,110.0	0.81	255.46	1,110.0	119.0	-3.5	-4.1	-1.9	0.22	0.21	6.43
1,210.0	0.85	251.78	1,210.0	219.0	-3.9	-5.5	-1.8	0.07	0.04	-3.68
1,310.0	0.91	254.65	1,310.0	319.0	-4.3	-7.0	-1.7	0.07	0.06	2.87
1,410.0	0.92	255.60	1,409.9	418.9	-4.7	-8.5	-1.6	0.02	0.01	0.95
1,510.0	0.89	261.56	1,509.9	518.9	-5.1	-10.1	-1.4	0.10	-0.03	5.96
1,610.0	0.83	263.39	1,609.9	618.9	-5.3	-11.6	-1.0	0.07	-0.06	1.83
1,710.0	0.88	258.97	1,709.9	718.9	-5.5	-13.0	-0.8	0.08	0.05	-4.42
1,810.0	0.77	257.82	1,809.9	818.9	-5.8	-14.4	-0.6	0.11	-0.11	-1.15
1,910.0	0.68	253.97	1,909.9	918.9	-6.1	-15.7	-0.4	0.10	-0.09	-3.85
2,010.0	0.64	255.70	2,009.9	1,018.9	-6.4	-16.8	-0.3	0.04	-0.04	1.73
2,110.0	0.60	252.43	2,109.9	1,118.9	-6.7	-17.8	-0.3	0.05	-0.04	-3.27
2,210.0	0.53	235.78	2,209.9	1,218.9	-7.1	-18.7	-0.4	0.18	-0.07	-16.65
2,310.0	0.51	225.28	2,309.9	1,318.9	-7.7	-19.4	-0.7	0.10	-0.02	-10.50
2,410.0	0.48	222.35	2,409.9	1,418.9	-8.3	-20.0	-1.0	0.04	-0.03	-2.93
2,510.0	0.53	210.33	2,509.9	1,518.9	-9.0	-20.5	-1.5	0.12	0.05	-12.02
2,610.0	0.54	207.74	2,609.9	1,618.9	-9.8	-21.0	-2.1	0.03	0.01	-2.59
2,710.0	0.54	201.30	2,709.9	1,718.9	-10.7	-21.4	-2.8	0.06	0.00	-6.44
2,810.0	0.58	189.27	2,809.8	1,818.8	-11.6	-21.6	-3.6	0.12	0.04	-12.03
2,910.0	0.65	176.52	2,909.8	1,918.8	-12.7	-21.7	-4.6	0.15	0.07	-12.75
3,010.0	0.64	177.74	3,009.8	2,018.8	-13.8	-21.6	-5.7	0.02	-0.01	1.22
3,110.0	0.63	176.12	3,109.8	2,118.8	-14.9	-21.5	-6.7	0.02	-0.01	-1.62
3,210.0	0.68	178.27	3,209.8	2,218.8	-16.1	-21.5	-7.8	0.06	0.05	2.15
3,310.0	0.68	178.46	3,309.8	2,318.8	-17.2	-21.5	-9.0	0.00	0.00	0.19
3,410.0	0.71	178.17	3,409.8	2,418.8	-18.5	-21.4	-10.1	0.03	0.03	-0.29
3,510.0	0.79	180.92	3,509.8	2,518.8	-19.8	-21.4	-11.4	0.09	0.08	2.75
3,610.0	0.90	195.74	3,609.8	2,618.8	-21.2	-21.6	-12.6	0.24	0.11	14.82
3,710.0	0.93	206.26	3,709.8	2,718.8	-22.7	-22.2	-13.8	0.17	0.03	10.52
3,810.0	0.99	224.11	3,809.8	2,818.8	-24.0	-23.2	-14.8	0.30	0.06	17.85
3,910.0	1.08	244.47	3,909.7	2,918.7	-25.1	-24.6	-15.3	0.38	0.09	20.36
4,010.0	1.17	260.24	4,009.7	3,018.7	-25.6	-26.5	-15.2	0.32	0.09	15.77
4,110.0	1.41	270.99	4,109.7	3,118.7	-25.8	-28.7	-14.6	0.34	0.24	10.75
4,210.0	1.54	278.00	4,209.7	3,218.7	-25.6	-31.3	-13.5	0.22	0.13	7.01
4,310.0	1.75	289.72	4,309.6	3,318.6	-24.9	-34.0	-11.9	0.40	0.21	[illegible]
4,410.0	1.96	298.23	4,409.6	3,418.6	-23.6	-37.0	-9.7	0.35	0.21	8.51
4,510.0	2.25	304.68	4,509.5	3,518.5	-21.6	-40.1	-6.8	0.37	0.29	6.45
4,610.0	2.52	309.99	4,609.4	3,618.4	-19.1	-43.4	-3.3	0.35	0.27	5.31
4,710.0	2.74	313.54	4,709.3	3,718.3	-16.0	-46.8	0.7	0.27	0.22	3.55
4,810.0	3.32	317.16	4,809.2	3,818.2	-12.3	-50.5	5.5	0.61	0.58	3.62
4,910.0	3.96	319.98	4,909.0	3,918.0	-7.5	-54.7	11.4	0.66	0.64	2.82

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Survey Report

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Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513146
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 991.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 991.0usft
Site:	Doddridge County 513146	**North Reference:**	Grid
Well:	Well #513146	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513146 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,010.0	4.19	323.19	5,008.7	4,017.7	-1.9	-59.1	18.2	0.32	0.23	3.21
Gyro Tie IN=5040' MD										
5,040.0	4.37	322.67	5,038.6	4,047.6	-0.2	-60.5	20.3	0.61	0.60	-1.73
5,080.0	4.70	316.00	5,078.5	4,087.5	2.2	-62.5	23.3	1.55	0.83	-16.68
5,112.0	7.80	296.90	5,110.3	4,119.3	4.2	-65.4	26.0	11.54	9.69	-59.69
5,144.0	12.00	294.00	5,141.8	4,150.8	6.5	-70.4	29.9	13.21	13.13	-9.06
5,175.0	13.40	295.20	5,172.1	4,181.1	9.3	-76.6	34.7	4.60	4.52	3.87
5,206.0	12.40	292.00	5,202.3	4,211.3	12.1	-82.9	39.4	3.96	-3.23	-10.32
5,238.0	11.70	289.70	5,233.6	4,242.6	14.5	-89.1	43.8	2.65	-2.19	-7.19
5,270.0	11.30	286.80	5,265.0	4,274.0	16.5	-95.2	47.7	2.20	-1.25	-9.06
5,301.0	10.40	292.60	5,295.4	4,304.4	18.5	-100.7	51.4	4.56	-2.90	18.71
5,333.0	8.80	308.10	5,327.0	4,336.0	21.1	-105.3	55.4	9.46	-5.00	48.44
5,365.0	7.60	321.30	5,358.6	4,367.6	24.2	-108.5	59.5	6.95	-3.75	41.25
5,396.0	8.30	343.30	5,389.3	4,398.3	28.0	-110.5	63.7	10.01	2.26	70.97
5,428.0	9.10	3.50	5,421.0	4,430.0	32.7	-111.0	68.3	9.81	2.50	63.13
5,459.0	9.30	21.60	5,451.6	4,460.6	37.5	-109.9	72.4	9.32	0.65	58.39
5,491.0	9.20	42.90	5,483.2	4,492.2	41.8	-107.2	75.6	10.64	-0.31	66.56
5,523.0	10.30	61.00	5,514.7	4,523.7	45.0	-103.0	77.2	10.13	3.44	56.56
5,554.0	11.30	67.70	5,545.2	4,554.2	47.5	-97.7	77.8	5.17	3.23	21.61
5,585.0	13.60	67.10	5,575.4	4,584.4	50.1	-91.5	78.1	7.43	7.42	-1.94
5,617.0	16.60	66.10	5,606.3	4,615.3	53.4	-83.9	78.6	9.41	9.38	-3.13
5,648.0	19.60	66.80	5,635.8	4,644.8	57.3	-75.1	79.3	9.70	9.68	2.26
5,680.0	23.20	68.60	5,665.6	4,674.6	61.7	-64.3	79.8	11.43	11.25	5.63
5,712.0	25.50	69.80	5,694.7	4,703.7	66.4	-51.9	80.0	7.35	7.19	3.75
5,743.0	28.60	69.60	5,722.3	4,731.3	71.3	-38.7	80.1	10.00	10.00	-0.65
5,774.0	31.60	67.30	5,749.2	4,758.2	77.0	-24.3	80.6	10.37	9.68	-7.42
5,806.0	35.20	68.30	5,775.9	4,784.9	83.6	-8.0	81.4	11.38	11.25	3.13
5,838.0	38.50	69.90	5,801.5	4,810.5	90.5	10.0	81.8	10.74	10.31	5.00
5,869.0	42.70	71.50	5,825.0	4,834.0	97.1	29.0	81.6	13.96	13.55	5.16
5,901.0	45.10	74.10	5,848.1	4,857.1	103.7	50.2	80.6	9.38	7.50	8.13
5,932.0	44.80	74.30	5,870.0	4,879.0	109.6	71.3	79.1	1.07	-0.97	0.65
5,964.0	44.70	73.90	5,892.7	4,901.7	115.8	92.9	77.6	0.93	-0.31	-1.25
5,995.0	43.90	73.40	5,914.9	4,923.9	121.9	113.7	76.3	2.82	-2.58	-1.61
6,027.0	43.20	72.80	5,938.1	4,947.1	128.3	134.8	75.2	2.54	-2.19	-1.88
6,058.0	42.90	69.10	5,960.8	4,969.8	135.2	154.8	74.9	8.20	-0.97	[illegible]
6,090.0	41.50	63.00	5,984.5	4,993.5	143.9	174.4	76.4	13.53	-4.38	-19.06
6,121.0	40.50	57.70	6,007.9	5,016.9	153.9	192.1	79.9	11.67	-3.23	-17.10
6,152.0	40.80	53.10	6,031.4	5,040.4	165.4	208.7	85.1	9.71	0.97	-14.84
6,184.0	40.70	49.70	6,055.7	5,064.7	178.4	225.0	91.8	6.94	-0.31	-10.63
6,215.0	41.30	46.40	6,079.1	5,088.1	192.0	240.2	99.5	7.25	1.94	-10.65
6,246.0	43.40	44.30	6,102.0	5,111.0	206.7	255.0	108.3	8.17	6.77	-6.77
6,278.0	46.30	40.90	6,124.7	5,133.7	223.3	270.3	118.8	11.76	9.06	-10.63
6,309.0	48.50	36.90	6,145.6	5,154.6	241.1	284.6	130.7	11.85	7.10	-12.90

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Phoenix Technologies

Survey Report

17-06460

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513146
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 991.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 991.0usft
Site:	Doddridge County 513146	**North Reference:**	Grid
Well:	Well #513146	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513146 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
6,341.0	50.60	32.80	6,166.4	5,175.4	261.1	298.5	144.8	11.75	6.56	-12.81
6,372.0	51.40	28.80	6,185.9	5,194.9	281.8	310.8	160.1	10.35	2.58	-12.90
6,404.0	52.10	25.20	6,205.7	5,214.7	304.1	322.2	177.3	9.10	2.19	-11.25
6,436.0	53.50	21.40	6,225.1	5,234.1	327.6	332.3	195.9	10.42	4.38	-11.88
6,467.0	55.00	17.70	6,243.2	5,252.2	351.3	340.7	215.4	10.83	4.84	-11.94
6,498.0	56.50	13.90	6,260.7	5,269.7	375.9	347.7	236.2	11.23	4.84	-12.26
6,530.0	57.80	9.50	6,278.0	5,287.0	402.2	353.1	259.2	12.24	4.06	-13.75
6,561.0	59.80	5.70	6,294.1	5,303.1	428.5	356.6	282.7	12.31	6.45	-12.26
6,593.0	61.20	3.40	6,309.8	5,318.8	456.3	358.8	308.1	7.63	4.38	-7.19
6,624.0	64.20	0.40	6,324.1	5,333.1	483.8	359.7	333.7	12.94	9.68	-9.68
6,655.0	66.40	358.20	6,337.0	5,346.0	511.9	359.4	360.3	9.59	7.10	-7.10
6,687.0	69.00	355.70	6,349.2	5,358.2	541.5	357.8	388.6	10.87	8.13	-7.81
6,718.0	71.50	352.60	6,359.6	5,368.6	570.5	354.8	417.0	12.39	8.06	-10.00
6,750.0	73.90	350.60	6,369.1	5,378.1	600.7	350.3	446.9	9.58	7.50	-6.25
6,782.0	76.20	348.80	6,377.4	5,386.4	631.1	344.8	477.4	9.01	7.19	-5.63
6,813.0	77.80	346.90	6,384.4	5,393.4	660.7	338.4	507.3	7.89	5.16	-6.13
6,844.0	79.60	344.60	6,390.4	5,399.4	690.1	331.0	537.6	9.31	5.81	-7.42
6,876.0	81.50	342.70	6,395.7	5,404.7	720.4	322.1	569.1	8.34	5.94	-5.94
6,907.0	83.30	341.00	6,399.8	5,408.8	749.6	312.5	599.8	7.95	5.81	-5.48
6,939.0	84.40	339.00	6,403.2	5,412.2	779.5	301.6	631.6	7.10	3.44	-6.25
6,970.0	86.80	337.50	6,405.6	5,414.6	808.2	290.2	662.5	9.12	7.74	-4.84
LP= 7076' MD/6409' TVD										
7,076.0	89.70	335.50	6,408.8	5,417.8	905.4	247.9	768.2	3.32	2.74	-1.89
7,171.0	89.80	337.20	6,409.3	5,418.3	992.4	209.8	863.0	1.79	0.11	1.79
7,265.0	90.10	338.60	6,409.3	5,418.3	1,079.5	174.4	956.9	1.52	0.32	1.49
7,360.0	88.50	335.50	6,410.5	5,419.5	1,166.9	137.4	1,051.8	3.67	-1.68	-3.26
7,454.0	89.50	335.80	6,412.1	5,421.1	1,252.6	98.7	1,145.4	1.11	1.06	0.32
7,548.0	89.50	336.50	6,413.0	5,422.0	1,338.5	60.7	1,239.2	0.74	0.00	0.74
7,642.0	89.50	337.60	6,413.8	5,422.8	1,425.1	24.0	1,333.0	1.17	0.00	1.17
7,736.0	89.50	337.20	6,414.6	5,423.6	1,511.9	-12.1	1,426.9	0.43	0.00	-0.43
7,831.0	90.30	334.20	6,414.8	5,423.8	1,598.4	-51.2	1,521.6	3.27	0.84	-3.16
7,926.0	88.90	331.10	6,415.4	5,424.4	1,682.8	-94.8	1,615.8	3.58	-1.47	-3.26
8,020.0	89.50	331.00	6,416.7	5,425.7	1,765.0	-140.3	1,708.6	0.65	0.64	-0.11
8,114.0	89.80	329.30	6,417.3	5,426.3	1,846.6	-187.1	1,801.1	1.84	0.32	-1.81
8,209.0	89.70	329.70	6,417.7	5,426.7	1,928.4	-235.3	1,894.4	0.43	-0.11	0.42
8,303.0	90.30	335.00	6,417.7	5,426.7	2,011.7	-278.9	1,987.5	5.67	0.64	[illegible]
8,397.0	90.30	334.00	6,417.2	5,426.2	2,096.5	-319.4	2,081.0	1.06	0.00	-1.06
8,491.0	89.60	336.10	6,417.3	5,426.3	2,181.7	-359.1	2,174.6	2.35	-0.74	2.2[illegible]
8,585.0	86.80	334.60	6,420.3	5,429.3	2,267.1	-398.2	2,268.2	3.38	-2.98	-1.60
8,680.0	87.20	333.90	6,425.3	5,434.3	2,352.5	-439.5	2,362.6	0.85	0.42	-0.74
8,774.0	88.00	336.30	6,429.2	5,438.2	2,437.7	-479.0	2,456.1	2.69	0.85	2.55
8,869.0	90.20	339.50	6,430.7	5,439.7	2,525.7	-514.7	2,551.0	4.09	2.32	3.37
8,963.0	90.60	338.70	6,430.0	5,439.0	2,613.5	-548.3	2,645.0	0.95	0.43	-0.85

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Phoenix Technologies

Survey Report

17-06460

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513146
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 991.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 991.0usft
Site:	Doddridge County 513146	**North Reference:**	Grid
Well:	Well #513146	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513146 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,057.0	90.90	337.50	6,428.8	5,437.8	2,700.7	-583.3	2,738.9	1.32	0.32	-1.28
9,151.0	88.20	334.90	6,429.5	5,438.5	2,786.7	-621.2	2,832.7	3.99	-2.87	-2.77
9,246.0	88.90	335.30	6,431.9	5,440.9	2,872.9	-661.2	2,927.3	0.85	0.74	0.42
9,341.0	87.00	334.50	6,435.3	5,444.3	2,958.8	-701.5	3,021.8	2.17	-2.00	-0.84
9,435.0	87.30	333.90	6,440.0	5,449.0	3,043.4	-742.4	3,115.1	0.71	0.32	-0.64
9,530.0	88.50	334.60	6,443.5	5,452.5	3,128.9	-783.6	3,209.6	1.46	1.26	0.74
9,624.0	88.50	333.30	6,445.9	5,454.9	3,213.3	-824.9	3,303.0	1.38	0.00	-1.38
9,717.0	88.60	335.60	6,448.3	5,457.3	3,297.2	-865.0	3,395.4	2.47	0.11	2.47
9,812.0	89.80	333.90	6,449.6	5,458.6	3,383.1	-905.5	3,490.0	2.19	1.26	-1.79
9,906.0	88.40	334.00	6,451.1	5,460.1	3,467.5	-946.8	3,583.4	1.49	-1.49	0.11
10,001.0	88.70	334.40	6,453.5	5,462.5	3,553.0	-988.1	3,677.9	0.53	0.32	0.42
10,095.0	88.50	332.90	6,455.8	5,464.8	3,637.2	-1,029.8	3,771.2	1.61	-0.21	-1.60
10,190.0	91.20	335.20	6,456.1	5,465.1	3,722.6	-1,071.4	3,865.6	3.73	2.84	2.42
10,285.0	91.80	335.10	6,453.6	5,462.6	3,808.8	-1,111.3	3,960.2	0.64	0.63	-0.11
10,379.0	91.40	335.90	6,450.9	5,459.9	3,894.3	-1,150.2	4,053.9	0.95	-0.43	0.85
10,474.0	88.90	336.50	6,450.7	5,459.7	3,981.2	-1,188.6	4,148.6	2.71	-2.63	0.63
10,568.0	88.70	337.20	6,452.7	5,461.7	4,067.6	-1,225.5	4,242.4	0.77	-0.21	0.74
10,662.0	86.50	337.30	6,456.6	5,465.6	4,154.2	-1,261.8	4,336.2	2.34	-2.34	0.11
10,757.0	86.50	336.80	6,462.4	5,471.4	4,241.6	-1,298.8	4,430.9	0.53	0.00	-0.53
10,851.0	88.10	335.80	6,466.8	5,475.8	4,327.5	-1,336.5	4,524.6	2.01	1.70	-1.06
10,946.0	89.50	335.50	6,468.8	5,477.8	4,414.1	-1,375.7	4,619.2	1.51	1.47	-0.32
11,040.0	89.10	333.60	6,470.0	5,479.0	4,498.9	-1,416.1	4,712.8	2.07	-0.43	-2.02
11,135.0	88.40	332.80	6,472.0	5,481.0	4,583.7	-1,458.9	4,807.0	1.12	-0.74	-0.84
11,230.0	88.10	333.20	6,474.9	5,483.9	4,668.3	-1,502.0	4,901.2	0.53	-0.32	0.42
11,324.0	89.80	334.30	6,476.7	5,485.7	4,752.6	-1,543.6	4,994.6	2.15	1.81	1.17
11,419.0	90.40	334.70	6,476.5	5,485.5	4,838.3	-1,584.5	5,089.1	0.76	0.63	0.42
11,514.0	91.00	334.70	6,475.3	5,484.3	4,924.2	-1,625.1	5,183.7	0.63	0.63	0.00
11,608.0	91.50	334.50	6,473.3	5,482.3	5,009.1	-1,665.4	5,277.2	0.57	0.53	-0.21
11,703.0	88.70	334.00	6,473.1	5,482.1	5,094.7	-1,706.7	5,371.7	2.99	-2.95	-0.53
11,797.0	87.60	334.10	6,476.2	5,485.2	5,179.1	-1,747.8	5,465.1	1.18	-1.17	0.11
11,892.0	89.00	339.00	6,479.0	5,488.0	5,266.2	-1,785.5	5,559.8	5.36	1.47	5.16
11,987.0	87.70	339.20	6,481.7	5,490.7	5,354.9	-1,819.4	5,654.7	1.38	-1.37	0.21
12,081.0	88.70	339.80	6,484.7	5,493.7	5,442.9	-1,852.3	5,748.7	1.24	1.06	0.64
12,176.0	89.80	340.80	6,485.9	5,494.9	5,532.4	-1,884.3	5,843.7	1.56	1.16	1.05
12,270.0	88.10	338.30	6,487.6	5,496.6	5,620.4	-1,917.2	5,937.6	3.22	-1.81	-2.66
12,365.0	88.10	337.20	6,490.8	5,499.8	5,708.3	-1,953.1	6,032.5	1.16	0.00	-1.16
12,460.0	89.60	335.50	6,492.7	5,501.7	5,795.3	-1,991.2	6,127.3	2.39	1.58	-1.79
12,555.0	89.90	335.60	6,493.1	5,502.1	5,881.8	-2,030.5	6,221.9	0.33	0.32	0.11
12,649.0	90.10	334.00	6,493.1	5,502.1	5,966.8	-2,070.6	6,315.5	1.72	0.21	-1.70
12,743.0	89.30	331.70	6,493.6	5,502.6	6,050.5	-2,113.5	6,408.7	2.59	-0.85	-2.45
Deepest Point of Well= 12838' MD/6495' TVD										
12,838.0	89.60	331.00	6,494.5	5,503.5	6,133.8	-2,159.0	6,502.6	0.80	0.32	-0.74

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Phoenix Technologies

Survey Report

17-06460

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Site Doddridge County 513146
Company:	EQT Production - Marcellus	**TVD Reference:**	KB @ 991.0usft
Project:	Doddridge County, WV Grid	**MD Reference:**	KB @ 991.0usft
Site:	Doddridge County 513146	**North Reference:**	Grid
Well:	Well #513146	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Main Wellbore		
Design:	513146 As Drilled Surveys		

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Subsea Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
12,932.0	90.40	330.70	6,494.5	5,503.5	6,215.9	-2,204.8	6,595.3	0.91	0.85	-0.32
Final Survey= 13000' MD/6494' TVD										
13,000.0	90.60	329.20	6,493.9	5,502.9	6,274.8	-2,238.8	6,662.2	2.23	0.29	-2.21
Projection to TD= 13054' MD/6493' TVD										
13,054.0	90.60	329.20	6,493.3	5,502.3	6,321.2	-2,266.5	6,715.2	0.00	0.00	0.00

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
5,040.0	5,038.6	-0.2	-60.5	Gyro Tie IN=5040' MD
7,076.0	6,408.8	905.4	247.9	LP= 7076' MD/6409' TVD
12,838.0	6,494.5	6,133.8	-2,159.0	Deepest Point of Well= 12838' MD/6495' TVD
13,000.0	6,493.9	6,274.8	-2,238.8	Final Survey= 13000' MD/6494' TVD
13,054.0	6,493.3	6,321.2	-2,266.5	Projection to TD= 13054' MD/6493' TVD

Checked By: _____ Approved By: _____ Date: _____

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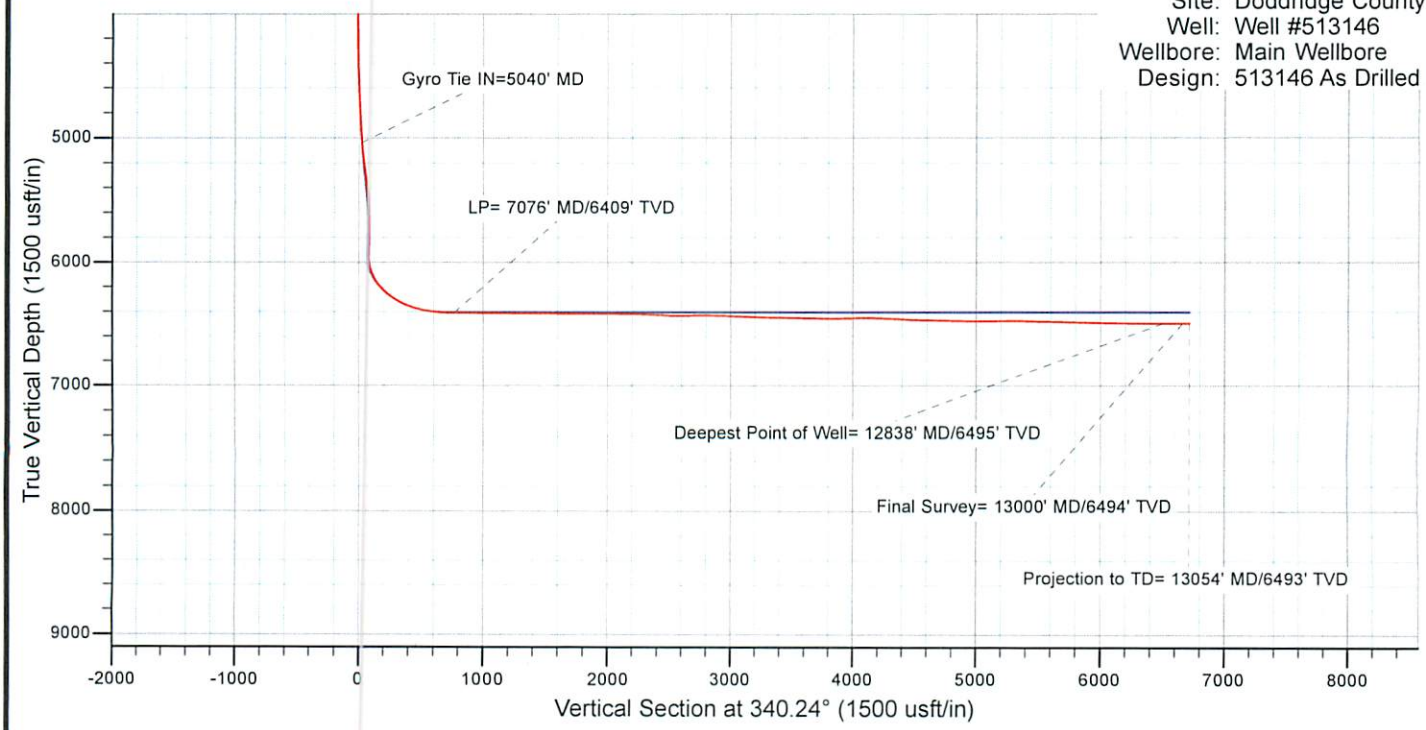
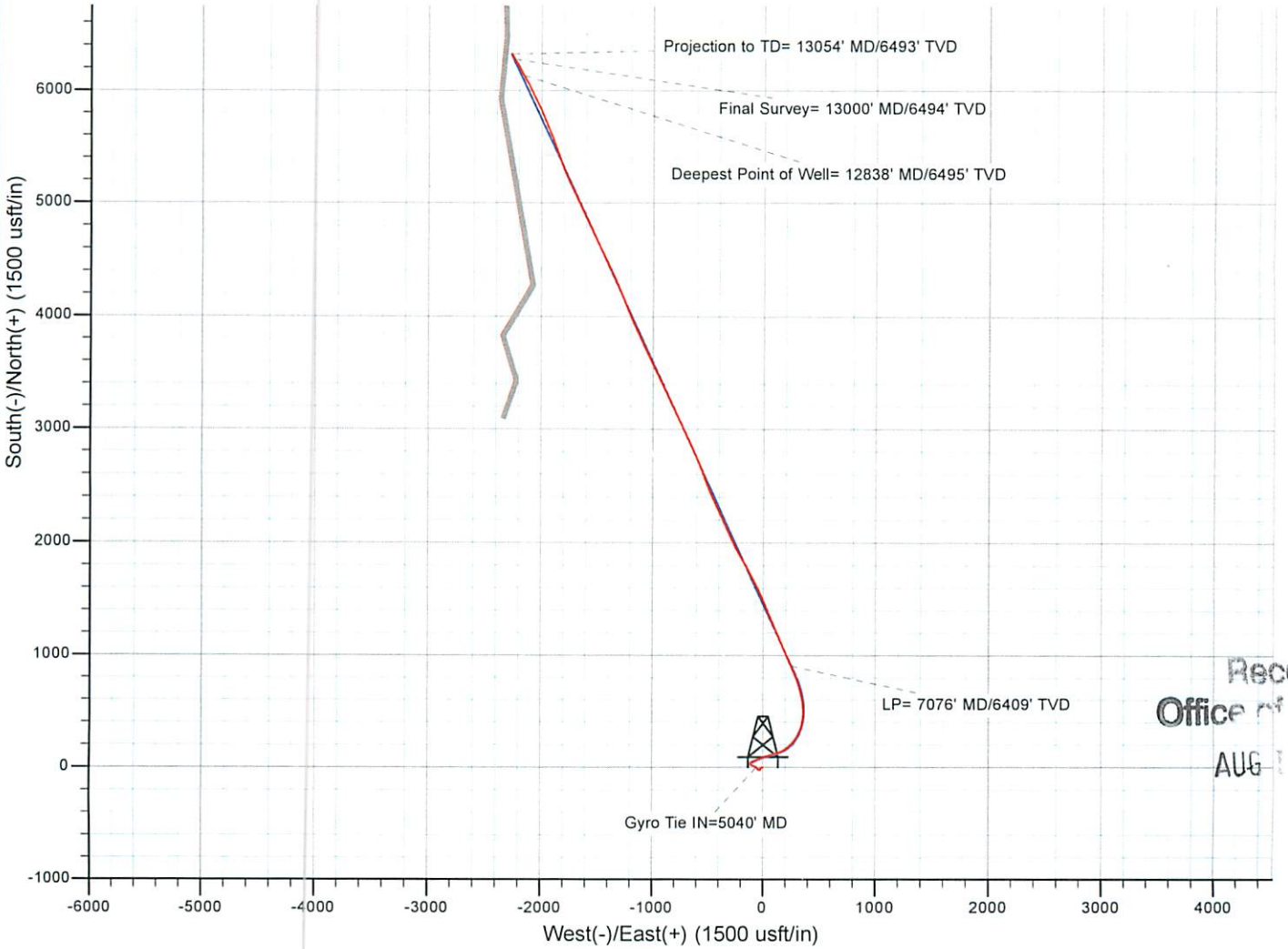
Office of Oil & Gas
AUG 19 2015

17-06460

EQT Production - Marcellus

Project: Doddridge County, WV Grid
Site: Doddridge County 513146
Well: Well #513146
Wellbore: Main Wellbore
Design: 513146 As Drilled Surveys





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513146 - 47-017-06460-0000- Perforations					
Stage Number	Perforation Date	Top Perf Depth (ftKB)	Bottom Perf Depth (ftKB)	Number of Shots	Formation
Initiation Sleeve	3/28/2015	13,029.00	13,031.00	10	MARCELLUS
1	4/19/2015	12,823.00	12,960.00	32	MARCELLUS
2	4/19/2015	12,599.00	12,781.00	40	MARCELLUS
3	4/19/2015	12,374.00	12,556.00	40	MARCELLUS
4	4/19/2015	12,149.00	12,331.00	40	MARCELLUS
5	4/19/2015	11,924.00	12,106.00	40	MARCELLUS
6	4/20/2015	11,699.00	11,881.00	40	MARCELLUS
7	4/20/2015	11,474.00	11,656.00	40	MARCELLUS
8	4/20/2015	11,249.00	11,431.00	40	MARCELLUS
9	4/20/2015	11,024.00	11,206.00	40	MARCELLUS
10	4/21/2015	10,799.00	10,981.00	40	MARCELLUS
11	4/21/2015	10,574.00	10,752.00	40	MARCELLUS
12	4/21/2015	10,349.00	10,531.00	40	MARCELLUS
13	4/21/2015	10,124.00	10,306.00	40	MARCELLUS
14	4/21/2015	9,899.00	10,081.00	40	MARCELLUS
15	4/22/2015	9,674.00	9,856.00	40	MARCELLUS
16	4/22/2015	9,449.00	9,627.00	40	MARCELLUS
17	4/22/2015	9,224.00	9,406.00	40	MARCELLUS
18	4/22/2015	8,999.00	9,181.00	40	MARCELLUS
19	4/22/2015	8,774.00	8,956.00	40	MARCELLUS
20	4/22/2015	8,549.00	8,727.00	40	MARCELLUS
21	4/23/2015	8,324.00	8,506.00	40	MARCELLUS
22	4/23/2015	8,099.00	8,281.00	40	MARCELLUS
23	4/23/2015	7,874.00	8,058.00	40	MARCELLUS
24	4/23/2015	7,649.00	7,831.00	40	MARCELLUS
25	4/23/2015	7,424.00	7,606.00	40	MARCELLUS
26	4/24/2015	7,199.00	7,381.00	40	MARCELLUS
27	4/24/2015	6,974.00	7,152.00	40	MARCELLUS

17-06460

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513146 - 47-017-06460-0000 - Stimulated Stages

Stage Number	Stimulation 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)
Initiation Sleeve	4/18/2015	23.7	6,469.00	8,511.00	4,929.00	0	929	0
1	4/19/2015	100	8,293.00	8,767.00	4,939.00	368,160	9601	0
2	4/19/2015	99.4	8,076.00	8,435.00	4,221.00	364,460	9711	0
3	4/19/2015	101.1	7,930.00	8,110.00	4,817.00	357,280	9275	0
4	4/19/2015	100.4	7,932.00	8,203.00	5,105.00	367,320	9762	0
5	4/20/2015	100.6	7,807.00	8,179.00	5,366.00	369,220	9366	0
6	4/20/2015	98.3	7,768.00	8,171.00	5,267.00	365,320	9301	0
7	4/20/2015	100.5	7,706.00	8,004.00	5,095.00	359,920	9132	0
8	4/20/2015	100.5	7,731.00	8,009.00	5,212.00	358,140	11352	0
9	4/20/2015	100.4	7,596.00	7,967.00	5,057.00	361,900	9110	0
10	4/21/2015	100.6	7,373.00	7,561.00	5,039.00	362,020	9040	0
11	4/21/2015	100.7	7,530.00	7,750.00	4,912.00	364,460	8997	0
12	4/21/2015	101.2	7,402.00	7,625.00	4,897.00	363,780	9098	0
13	4/21/2015	100	7,531.00	8,294.00	5,019.00	362,640	9013	0
14	4/21/2015	100.5	7,342.00	7,550.00	4,809.00	363,420	9060	0
15	4/22/2015	100.5	7,429.00	7,834.00	4,947.00	364,740	9349	0
16	4/22/2015	100.2	7,408.00	8,351.00	5,128.00	365,520	8852	0
17	4/22/2015	100.4	7,912.00	8,974.00	4,692.00	358,160	8926	0
18	4/22/2015	100.6	7,966.00	8,678.00	4,863.00	358,040	8926	0
19	4/22/2015	99.9	8,042.00	8,417.00	4,994.00	359,840	8981	0
20	4/23/2015	100.3	6,965.00	7,664.00	4,932.00	360,940	9482	0
21	4/23/2015	100.5	7,079.00	7,331.00	4,808.00	362,220	8830	0
22	4/23/2015	100.6	7,128.00	7,395.00	5,180.00	361,360	8767	0
23	4/23/2015	100.4	7,056.00	7,806.00	5,479.00	360,500	8609	0
24	4/23/2015	100.9	7,079.00	7,860.00	5,194.00	365,560	8858	0
25	4/23/2015	100.4	6,907.00	7,414.00	5,258.00	361,740	8655	0
26	4/24/2015	100.2	7,212.00	7,527.00	5,253.00	361,060	8606	0
27	4/24/2015	100.2	7,903.00	9,382.00	5,037.00	361,580	8652	0

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47-06460

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	4/18/2015
Job End Date:	4/24/2015
State:	West Virginia
County:	Doddridge
API Number:	47-017-06460-00-00
Operator Name:	EQT Production
Well Name and Number:	513146
Longitude:	-80.76640000
Latitude:	39.23601800
Datum:	NAD83
Federal/Tribal Well:	NO
True Vertical Depth:	6,366
Total Base Water Volume (gal):	10,426,080
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

INTERSTATE Oil & Gas COMPACT COMMISSION

17-06460

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	Keane Group	Carrier/Base Fluid					
			Water	7732-18-5	100.00000	89.60395	None
Sand (Proppant)	Keane Group	Proppant					
			Silica Substrate	14808-60-7	100.00000	10.08165	None
MC MX 437-5	Multi-Chem	Calcium nitrate solution					
			Calcium nitrate	10124-37-5	60.00000	0.05548	None
Hydrochloric Acid (15%)	Keane Group	Acidizing					
			Hydrochloric Acid	7647-01-0	15.00000	0.01932	None
FFR760	Keane Group	Friction Reducer					
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.00596	None
			Alkyl Alcohol	Proprietary	10.00000	0.00199	None
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00099	None
FFR730	Keane Group	Friction Reducer					
			Oxyalkylated alcohol A	Proprietary	5.00000	0.00249	None
EC6330A	Keane Group	Scale Inhibitor					
			Sodium Phosphate, Tribasic	7601-54-9	5.00000	0.00115	None
AI 600	Keane Group	Corrosion Inhibitor					
			Ethylene Glycol	107-21-1	40.00000	0.00013	None

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			N, N-Dimethyiformamide	68-12-2	20.00000	0.00007	None
			2-Butoxyenthanol	111-76-2	15.00000	0.00005	None
			Cinnamiaidehyde	104-55-2	15.00000	0.00005	None
			Tar bases, quinoline derivs, benzyl chloride-quatemized	72480-70-7	15.00000	0.00005	None
			1-Decanol	112-30-1	5.00000	0.00002	None
			Poly (oxy-1,2-ethanediyl), .alpha.-(4-nonylphenyl)-.omega.-hydroxy-,branched	127087-87-0	5.00000	0.00002	None
			1-Octanol	111-87-5	2.50000	0.00001	None
			Triethyl Phosphate	78-40-0	2.50000	0.00001	None
			Isopropyl alcohol	67-63-0	2.50000	0.00001	None

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.

* 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)

17-06460

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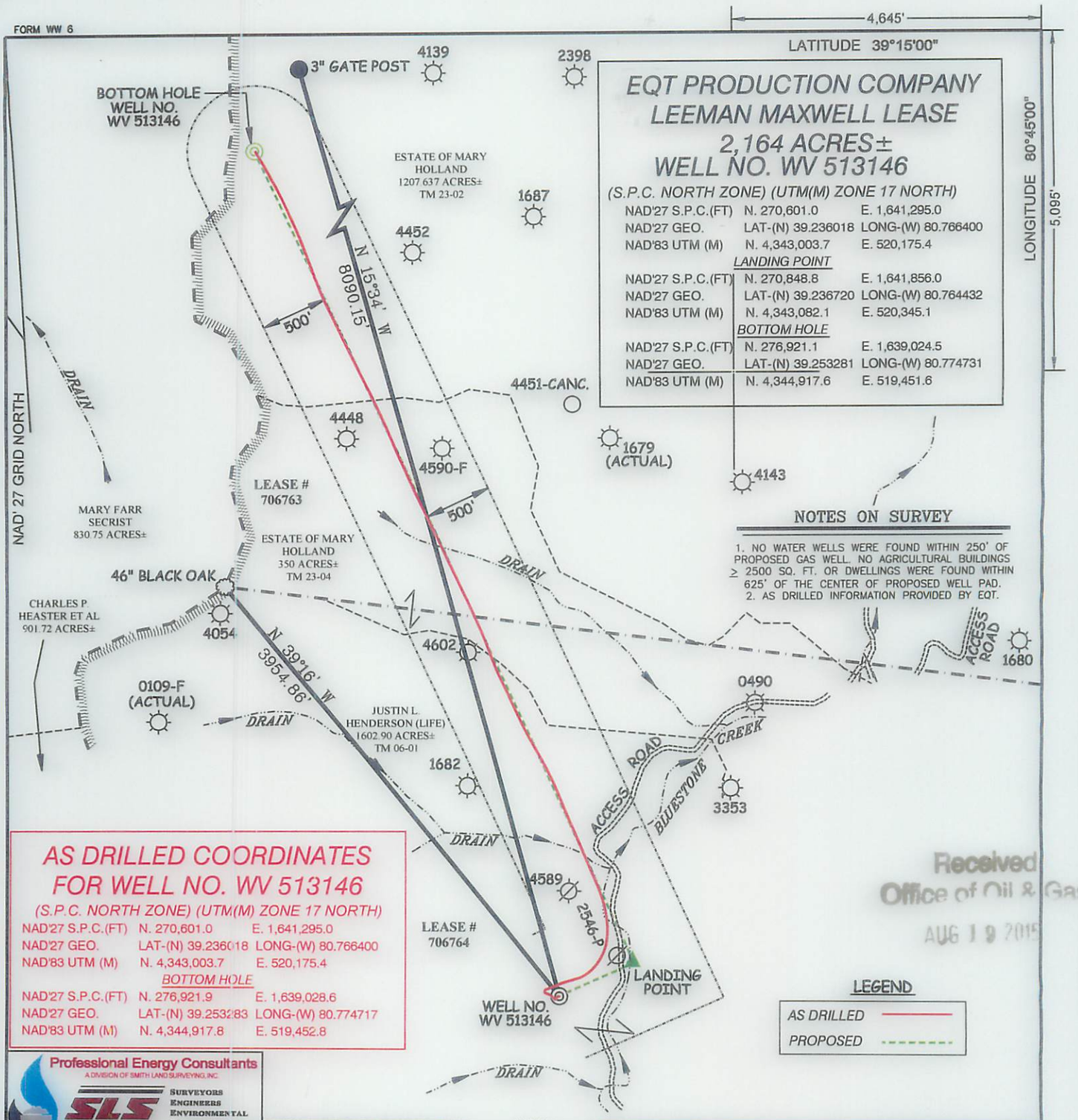
FORM WW 6



EQT PRODUCTION COMPANY
LEEMAN MAXWELL LEASE
2,164 ACRES±
WELL NO. WV 513146

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 270,601.0	E. 1,641,295.0
NAD'27 GEO.	LAT-(N) 39.236018	LONG-(W) 80.766400
NAD'83 UTM (M)	N. 4,343,003.7	E. 520,175.4
	LANDING POINT	
NAD'27 S.P.C.(FT)	N. 270,848.8	E. 1,641,856.0
NAD'27 GEO.	LAT-(N) 39.236720	LONG-(W) 80.764432
NAD'83 UTM (M)	N. 4,343,082.1	E. 520,345.1
	BOTTOM HOLE	
NAD'27 S.P.C.(FT)	N. 276,921.1	E. 1,639,024.5
NAD'27 GEO.	LAT-(N) 39.253281	LONG-(W) 80.774731
NAD'83 UTM (M)	N. 4,344,917.6	E. 519,451.6

NOTES ON SURVEY

1. NO WATER WELLS WERE FOUND WITHIN 250' OF PROPOSED GAS WELL. NO AGRICULTURAL BUILDINGS ≥ 2500 SQ. FT. OR DWELLINGS WERE FOUND WITHIN 625' OF THE CENTER OF PROPOSED WELL PAD.
2. AS DRILLED INFORMATION PROVIDED BY EQT.

AS DRILLED COORDINATES FOR WELL NO. WV 513146

(S.P.C. NORTH ZONE) (UTM(M) ZONE 17 NORTH)

NAD'27 S.P.C.(FT)	N. 270,601.0	E. 1,641,295.0
NAD'27 GEO.	LAT-(N) 39.236018	LONG-(W) 80.766400
NAD'83 UTM (M)	N. 4,343,003.7	E. 520,175.4
	BOTTOM HOLE	
NAD'27 S.P.C.(FT)	N. 276,921.9	E. 1,639,028.6
NAD'27 GEO.	LAT-(N) 39.253283	LONG-(W) 80.774717
NAD'83 UTM (M)	N. 4,344,917.8	E. 519,452.8

LEGEND

AS DRILLED
PROPOSED

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AUG 19 2015

Professional Energy Consultants
A DIVISION OF SMITH LAND SURVEYING, INC.
SLS SURVEYORS ENGINEERS ENVIRONMENTAL PROJECT MGMT.
(304) 462-5634 WWW.SLSSURVEYS.COM

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. 677 Gregory A. Smith

GREGORY A. SMITH LICENSED No. 677 STATE OF WEST VIRGINIA PROFESSIONAL SURVEYOR

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

DATE APRIL 16 , 20 13

REVISED 03/06/14 & 01/13/15

OPERATORS WELL NO. WV 513146

API WELL NO. 47 — 017 — 06460
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 7889ASDRILLED513146

SCALE 1" = 1000'

HORIZONTAL & VERTICAL CONTROL DETERMINED BY DGPS (SURVEY GRADE TIE TO CORS NETWORK)

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 969'(GROUND) 968'(PROPOSED) WATERSHED BLUESTONE CREEK

DISTRICT WEST UNION COUNTY DODDRIDGE QUADRANGLE OXFORD 7.5'

SURFACE OWNER JUSTIN L. HENDERSON (LIFE) ACREAGE 1,602.90±

ROYALTY OWNER LEEMAN MAXWELL HRS ACREAGE (2,164±) (1,000±)

PROPOSED WORK: LEASE NO. 706764 / 706763

DRILL X CONVERT ____ DRILL DEEPER ____ REDRILL ____ FRACTURE OR STIMULATE X 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 6399'

WELL OPERATOR EQT PRODUCTION COMPANY DESIGNATED AGENT REX C. RAY

ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280 ADDRESS 115 PROFESSIONAL PLACE P.O. BOX 280

BRIDGEPORT, WV 26330 BRIDGEPORT, WV 26330

COUNTY NAME

PERMIT

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 - 069 - 00161 County 69-Ohio District 7-Tridelphia
Quad 648- Valley Grove Pad Name CHARLE FRYE-OHI-PAD1 Field/Pool Name Panhandle Field
Farm name CHARLE FRYE-OHI Well Number 1
Operator (as registered with the OOG) SWN Production Company LLC
Address 10000 Energy Drive City Spring State TX Zip 77389

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

Top hole	Northing	4433736.673	Easting	536069.973
Landing Point of Curve	Northing	4433710.018	Easting	535785.237
Bottom Hole	Northing	4434994.878	Easting	535047.974

Elevation (ft) 1267.5' 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)
SOBM

Date permit issued 4/15/13 Date drilling commenced 2/15/15 Date drilling ceased 4/12/15
Date completion activities began 5/9/15 Date completion activities ceased 6/21/15
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 564' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1135' Void(s) encountered (Y/N) depths 5626-646'
Coal depth(s) ft 627' Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) N

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Reviewed by:
JR

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Rev. 8/23/13

API 47- 069 - 00161 Farm name CHARLE FRYE-OHI Well number 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	30	24	100	N	J-55/94 ppf		Y
Surface	17.5	13.375	727	N	J-55/54.5 ppf	602,612	Y
Coal	12.25	9.625	2227	N	J-55/40 ppf	Shoe @ 2253	Y
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	8.75 to 8.5	5.5	11,948	N	HCP-110	Shoe @ 11974	Y
Tubing		2.375	6790	N	L-80		N
Packer type and depth set		10K Arrowset AS1-X size 5.5 @ approximately 6,197'					

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	Class A	Grout	119.3	1.19	245	Surface	24
Surface	Class A	608	15.6	1.18	717.44	Surface	8
Coal	Class A	1314	15.6	1.19	1563.66	Surface	8
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	Class A	2551	15.6	1.19	3035.69	4674'	10
Tubing	NA	NA	NA	NA	NA	NA	NA

Drillers TD (ft) 11948' Loggers TD (ft) 11948'
Deepest formation penetrated Marcellus Plug back to (ft) NA
Plug back procedure NA

Kick off depth (ft) 5784'

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: 1 bow spring centralizer every third joint TD to Surface Intermediate: 1 bow spring centralizer every third joint TD to Surface Production: 1 solid body centralizer from TD to 30 degrees in the curve, 1 bow spring every third joint from 30 degrees to 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- 069 - 00161 Farm name CHARLE FRYE-OHI Well number 1

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
	SEE ATTACH				

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)
	SEE	ATTACH						

Please insert additional pages as applicable.

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API 47- 069 - 00161 Farm name CHARLE FRYE-OHI Well number 1

PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	6797' TVD	11,948' 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)
	0		0		
	SEE	ATTACHED			

Please insert additional pages as applicable.

Drilling Contractor SWN Drilling Company
Address 10000 Energy Dr. City Spring State TX Zip 77389

Logging Company Baker Hughes
Address 9110 Grogans Mill Rd. City The Woodlands State TX Zip 77380

Cementing Company CalFrac Well Services
Address 1450 Lake Robbins Dr. City The Woodlands State TX Zip 77380

Stimulating Company Baker Hughes
Address 9110 Grogans Mill Rd. City The Woodlands State TX Zip 77380

Please insert additional pages as applicable.

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Completed by Cody Magby Telephone 832/796/6215
Signature _____ Title Sr. Staff Regulatory Analyst Date 9/3/15

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

69-00161

swn Southwestern Energy®

Field:			
Map Units:		usFt	
Vertical Reference Datum (VRD):		Mean Sea Level	
Projected Coordinate System:		Zone 17N (84 W to 78 W)	
Section:			
Company Name:		Southwestern Energy Company	
Units:		Feet	
TVD Reference:		Rotary Table	
Position:			
		Northing:	14,546,367.140
		Easting:	1,758,769.009
North Reference:		Grid	Grid Cor
Comment :			
Slot:			
Position (Relative to SW Corner Of Section)			
N/S	-15.609	Northing:	14,546,351.531
E/W	-12.535	Easting:	1,758,756.474
Ground Level Elevation (usft):		Ground Level:	
Comment :			
Well:			
Type:		Main well	
KB Elevation		RKB @ 1294.00usft (SDC 40)	
Closure Distance:		5318.15	Closure Azimut
Comment:			
Vertical Section:			
Position of Origin (Relative to Slot centre)		N/S	0
Vertical Section Azimuth:		320.91	

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69-00161

Survey

Name	Definitive Survey	Company	SWN

Magnetic Parameters:

Model:	BGGM2014	Field Strength:	52,524	Declination:	-8.76	Dip:

Survey Tool Ranges:

Survey Tool	Start MD (ft)	End MD (ft)	
VES	100.00	608.00	
VES	608.00	1016.00	
MWD	1075.00	6044.00	
MWD	6091.00	6648.00	
MWD	6694.00	11974.00	

Survey Points: (Relative to Slot Centre, TVD Relative to Slot TVD Reference)

MD (Ft)	Inc	Az	TVD (Ft)	+N/-S (Ft)	+E/-W (Ft)	V Sec (Ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.45	276.86	100.00	0.05	-0.39	0.28
200.00	0.20	284.53	200.00	0.14	-0.95	0.71
300.00	0.30	278.18	300.00	0.22	-1.38	1.04
400.00	0.08	285.27	400.00	0.27	-1.70	1.29
500.00	0.19	297.49	500.00	0.37	-1.92	1.50
600.00	0.25	275.18	599.99	0.47	-2.28	1.80
608.00	0.26	276.42	607.99	0.47	-2.32	1.83
655.00	0.17	286.56	654.99	0.50	-2.49	1.96
737.00	0.25	280.51	736.99	0.57	-2.78	2.20
829.00	1.67	207.37	828.98	-0.59	-3.60	1.81
920.00	3.58	223.74	919.88	-3.82	-6.17	0.93
1016.00	5.12	223.12	1015.60	-9.11	-11.17	-0.03
1075.00	5.99	216.99	1074.32	-13.49	-14.82	-1.12
1168.00	6.07	207.82	1166.81	-21.71	-20.04	-4.22
1260.00	4.74	208.46	1258.40	-29.36	-24.12	-7.58
1353.00	5.32	208.54	1351.04	-36.52	-28.01	-10.69
1446.00	5.90	211.45	1443.60	-44.39	-32.56	-13.92
1539.00	5.56	202.82	1536.13	-52.62	-36.81	-17.63
1632.00	6.35	206.11	1628.63	-61.39	-40.82	-21.91
1724.00	6.84	208.82	1720.02	-70.76	-45.70	-26.11
1817.00	6.09	208.47	1812.43	-79.95	-50.72	-30.07
1910.00	5.62	212.74	1904.95	-88.12	-55.53	-33.38
2002.00	6.10	215.00	1996.46	-95.91	-60.77	-36.12
2095.00	6.31	207.29	2088.92	-104.50	-65.95	-39.62
2166.00	5.75	200.13	2159.53	-111.31	-68.96	-42.91
2282.00	4.40	191.77	2275.07	-121.12	-71.87	-48.69
2375.00	7.72	208.03	2367.55	-130.13	-75.53	-53.37

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2467.00	9.47	212.87	2458.51	-141.94	-82.55	-58.12
2560.00	10.24	207.79	2550.14	-155.68	-90.55	-63.73
2653.00	10.07	203.43	2641.68	-170.45	-97.64	-70.73
2746.00	10.70	204.22	2733.16	-185.79	-104.42	-78.36
2839.00	9.52	211.12	2824.72	-200.24	-111.93	-84.84
2932.00	10.00	206.80	2916.37	-214.04	-119.55	-90.75
3024.00	9.77	207.07	3007.01	-228.12	-126.70	-97.16
3117.00	10.24	206.12	3098.59	-242.57	-133.93	-103.82
3210.00	10.17	207.26	3190.12	-257.29	-141.33	-110.58
3303.00	10.43	208.61	3281.62	-271.97	-149.12	-117.07
3396.00	10.83	209.05	3373.03	-287.00	-157.40	-123.51
3488.00	10.76	210.43	3463.40	-301.96	-165.94	-129.74
3581.00	10.62	207.62	3554.79	-317.04	-174.31	-136.16
3674.00	10.73	206.52	3646.18	-332.38	-182.15	-143.13
3767.00	10.80	209.15	3737.54	-347.74	-190.26	-149.93
3859.00	9.99	205.80	3828.03	-362.45	-197.93	-156.51
3952.00	9.91	203.96	3919.63	-377.03	-204.70	-163.56
4045.00	10.47	204.29	4011.16	-392.04	-211.42	-170.98
4138.00	10.53	205.47	4102.61	-407.42	-218.55	-178.41
4230.00	10.10	210.32	4193.12	-421.97	-226.24	-184.86
4323.00	10.28	214.31	4284.66	-435.86	-235.03	-190.10
4416.00	11.03	215.09	4376.05	-450.00	-244.83	-194.90
4509.00	10.47	214.07	4467.42	-464.28	-254.67	-199.77
4601.00	11.48	221.15	4557.74	-478.10	-265.38	-203.74
4694.00	11.60	212.42	4648.87	-492.96	-276.49	-208.28
4787.00	11.04	207.46	4740.06	-508.75	-285.60	-214.79
4880.00	10.40	201.98	4831.44	-524.44	-292.85	-222.39
4973.00	11.08	204.46	4922.81	-540.36	-299.69	-230.43
5065.00	10.93	200.72	5013.12	-556.56	-306.44	-238.76
5158.00	10.55	206.49	5104.49	-572.43	-313.36	-246.71
5251.00	11.28	211.38	5195.81	-587.82	-321.89	-253.27
5344.00	10.56	208.25	5287.13	-603.09	-330.66	-259.59
5437.00	10.83	206.66	5378.51	-618.40	-338.62	-266.47
5529.00	11.50	204.74	5468.77	-634.46	-346.33	-274.06
5622.00	13.60	208.50	5559.54	-652.49	-355.43	-282.32
5715.00	14.75	202.23	5649.72	-673.06	-365.13	-292.17
5812.00	15.21	204.51	5743.42	-696.07	-375.08	-303.75
5815.00	15.18	205.62	5746.32	-696.78	-375.41	-304.10
5859.00	15.30	222.04	5788.79	-706.29	-381.79	-307.45
5905.00	14.60	236.80	5833.25	-713.97	-390.71	-307.79
5915.00	14.38	239.40	5842.93	-715.29	-392.83	-307.48
5952.00	13.81	249.62	5878.82	-719.17	-400.93	-305.39
5998.00	14.77	267.48	5923.42	-721.34	-411.94	-300.13
6015.00	15.37	274.73	5939.84	-721.25	-416.35	-297.28

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6044.00	16.88	285.63	5967.70	-719.80	-424.24	-291.18
6091.00	18.29	294.03	6012.51	-714.96	-437.55	-279.03
6137.00	21.10	299.87	6055.82	-707.89	-451.32	-264.86
6184.00	25.24	305.01	6099.02	-697.92	-466.88	-247.31
6230.00	28.75	309.19	6140.01	-685.30	-483.49	-227.04
6276.00	32.18	311.20	6179.65	-670.24	-501.29	-204.13
6323.00	35.53	313.09	6218.68	-652.66	-520.68	-178.25
6369.00	39.31	315.91	6255.21	-633.05	-540.59	-150.48
6416.00	43.18	317.04	6290.54	-610.58	-561.92	-119.60
6462.00	47.92	318.26	6322.75	-586.31	-584.02	-86.82
6509.00	53.73	318.31	6352.42	-559.13	-608.25	-50.44
6555.00	57.60	318.90	6378.37	-530.63	-633.36	-12.49
6601.00	61.38	319.35	6401.71	-500.67	-659.29	27.11
6648.00	66.21	320.61	6422.46	-468.38	-686.39	69.26
6694.00	70.26	321.43	6439.52	-435.18	-713.26	111.97
6741.00	73.86	323.63	6453.99	-399.69	-740.44	156.66
6787.00	76.50	324.73	6465.76	-363.63	-766.46	201.05
6833.00	79.76	325.68	6475.22	-326.67	-792.15	245.93
6880.00	83.80	327.12	6481.94	-287.93	-817.88	292.23
6926.00	86.97	329.33	6485.64	-248.96	-842.02	337.70
6973.00	88.55	330.32	6487.48	-208.36	-865.62	384.09
7019.00	89.34	330.47	6488.32	-168.37	-888.34	429.45
7112.00	89.69	330.48	6489.11	-87.45	-934.17	521.16
7205.00	90.92	330.69	6488.62	-6.45	-979.85	612.83
7298.00	89.96	330.55	6487.90	74.59	-1025.47	704.49
7390.00	89.08	328.84	6488.67	154.01	-1071.89	795.41
7483.00	89.69	330.23	6489.67	234.17	-1119.04	887.35
7576.00	89.16	329.64	6490.60	314.65	-1165.63	979.19
7669.00	91.63	334.10	6489.96	396.63	-1209.46	1070.46
7762.00	90.40	332.15	6488.31	479.57	-1251.49	1161.34
7854.00	90.84	330.62	6487.32	560.33	-1295.55	1251.80
7947.00	91.80	329.32	6485.18	640.82	-1342.08	1343.61
8040.00	91.36	328.49	6482.61	720.42	-1390.09	1435.67
8133.00	91.89	327.59	6479.98	799.29	-1439.29	1527.91
8226.00	91.98	328.56	6476.83	878.18	-1488.44	1620.13
8318.00	91.63	328.13	6473.94	956.45	-1536.70	1711.31
8411.00	90.57	328.78	6472.15	1035.70	-1585.35	1803.49
8504.00	91.19	327.96	6470.72	1114.87	-1634.11	1895.69
8597.00	91.28	329.07	6468.72	1194.16	-1682.67	1987.85
8689.00	92.33	329.58	6465.82	1273.25	-1729.58	2078.81
8782.00	91.54	330.17	6462.68	1353.64	-1776.25	2170.62
8875.00	91.01	330.62	6460.61	1434.48	-1822.16	2262.33
8968.00	90.40	330.97	6459.47	1515.65	-1867.54	2353.94
9061.00	91.10	332.05	6458.25	1597.38	-1911.90	2445.34

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9153.00	90.66	332.06	6456.84	1678.64	-1955.00	2535.59
9246.00	90.22	331.69	6456.12	1760.65	-1998.84	2626.89
9339.00	91.19	332.50	6454.98	1842.83	-2042.36	2718.12
9432.00	91.19	331.16	6453.05	1924.80	-2086.26	2809.41
9525.00	90.04	328.43	6452.05	2005.16	-2133.04	2901.28
9617.00	89.87	328.05	6452.12	2083.38	-2181.46	2992.53
9710.00	90.84	328.23	6451.54	2162.37	-2230.55	3084.79
9803.00	91.19	328.92	6449.90	2241.71	-2279.03	3176.94
9896.00	90.75	329.19	6448.32	2321.46	-2326.85	3268.99
9988.00	89.34	329.33	6448.25	2400.54	-2373.87	3360.01
10081.00	89.87	329.13	6448.89	2480.44	-2421.45	3452.03
10174.00	91.01	330.47	6448.18	2560.81	-2468.22	3543.91
10267.00	90.04	330.01	6447.33	2641.54	-2514.38	3635.67
10359.00	90.31	329.87	6447.04	2721.17	-2560.47	3726.53
10452.00	91.10	330.11	6445.90	2801.69	-2606.98	3818.36
10545.00	91.01	330.51	6444.19	2882.47	-2653.03	3910.09
10638.00	89.87	329.66	6443.47	2963.08	-2699.41	4001.90
10731.00	90.66	329.16	6443.04	3043.13	-2746.74	4093.87
10823.00	90.66	329.68	6441.98	3122.33	-2793.54	4184.86
10916.00	90.13	329.59	6441.34	3202.57	-2840.55	4276.78
11009.00	90.04	330.00	6441.20	3282.94	-2887.34	4368.66
11102.00	90.31	330.04	6440.92	3363.50	-2933.81	4460.49
11195.00	90.40	331.68	6440.34	3444.73	-2979.09	4552.08
11287.00	91.10	332.79	6439.14	3526.12	-3021.94	4642.28
11380.00	90.34	331.88	6437.97	3608.48	-3065.12	4733.43
11473.00	90.31	330.92	6437.44	3690.13	-3109.64	4824.87
11566.00	90.48	330.19	6436.80	3771.12	-3155.35	4916.56
11658.00	89.78	329.93	6436.59	3850.84	-3201.27	5007.38
11751.00	90.75	330.86	6436.16	3931.70	-3247.21	5099.11
11844.00	90.84	331.82	6434.87	4013.29	-3291.81	5190.56
11923.00	91.19	331.95	6433.47	4082.96	-3329.03	5268.11
11974.00	91.19	331.95	6432.41	4127.96	-3353.01	5318.15

Wellpath created using minimum curvature

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CHARLES FRYE OHI 1H

Ohio Co. WV

PANHANDLE (CHARLES FRYE)

	Latitude:	40.0531456600
	Longitude:	-80.5770625600

ıvergence:	0.27

CHARLES FRYE OHI 1H

	Latitude:	40.0531029600
	Longitude:	-80.5771076200

CHARLES FRYE OHI 1H

		Rig Height (Drill Floor):	26

h:	320.914

.00	**E/W**	**0.00**	

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67.37	Date:	2/22/2015

Source Survey
Gyro/VES/SDC 40 (WB#1
GYRO+MWD/SLB/SDC 40 (W
MWD/SLB/SDC40 (WB#1
MWD/SLB/DMAG/SDC40 (W
MWD/SLB2/SDC 40 (WB#

DLS (deg/ 100ft)	Build Rate (deg/ 100ft)	Turn Rate (deg/ 100ft)	
0.00	0.00	0.00	
0.45	0.45	0.00	G
0.25	-0.25	7.67	G
0.10	0.10	-6.35	G
0.22	-0.22	7.09	G
0.11	0.11	12.22	G
0.10	0.06	-22.31	G
0.14	0.13	15.50	G
0.21	-0.19	21.57	GYRC
0.10	0.10	-7.38	GYRC
1.76	1.54	-79.50	GYRC
2.23	2.10	17.99	GYRC
1.60	1.60	-0.65	GYRC
1.78	1.47	-10.39	M
1.04	0.09	-9.86	M
1.45	-1.45	0.70	M
0.62	0.62	0.09	M
0.69	0.62	3.13	M
0.99	-0.37	-9.28	M
0.93	0.85	3.54	M
0.63	0.53	2.95	M
0.81	-0.81	-0.38	M
0.69	-0.51	4.59	M
0.58	0.52	2.46	M
0.92	0.23	-8.29	M
1.32	-0.79	-10.08	M
1.32	-1.16	-7.21	M
3.98	3.57	17.48	M

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2.06	1.90	5.26	N
1.25	0.83	-5.46	N
0.85	-0.18	-4.69	N
0.69	0.68	0.85	N
1.82	-1.27	7.42	N
0.94	0.52	-4.65	N
0.26	-0.25	0.29	N
0.54	0.51	-1.02	N
0.23	-0.08	1.23	N
0.38	0.28	1.45	N
0.44	0.43	0.47	N
0.29	-0.08	1.50	N
0.58	-0.15	-3.02	N
0.25	0.12	-1.18	N
0.53	0.08	2.83	N
1.10	-0.88	-3.64	N
0.35	-0.09	-1.98	N
0.61	0.60	0.35	N
0.24	0.06	1.27	N
1.05	-0.47	5.27	N
0.78	0.19	4.29	N
0.82	0.81	0.84	N
0.64	-0.60	-1.10	N
1.83	1.10	7.70	N
1.88	0.13	-9.39	N
1.21	-0.60	-5.33	N
1.29	-0.69	-5.89	N
0.88	0.73	2.67	N
0.79	-0.16	-4.07	N
1.23	-0.41	6.20	N
1.27	0.78	5.26	N
1.00	-0.77	-3.37	N
0.43	0.29	-1.71	N
0.83	0.73	-2.09	N
2.42	2.26	4.04	N
2.06	1.24	-6.74	N
0.77	0.47	2.35	N
9.78	-1.16	37.06	N
9.78	0.28	37.31	N
8.39	-1.52	32.09	N
6.89	-2.24	26.03	N
6.89	-1.53	27.61	N
9.77	2.09	38.83	N
11.64	3.54	42.67	N

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11.64	5.20	37.57	M
6.17	3.00	17.87	MWD
7.45	6.11	12.70	MWD
9.80	8.81	10.94	MWD
8.67	7.63	9.09	MWD
7.78	7.46	4.37	MWD
7.47	7.13	4.02	MWD
9.02	8.22	6.13	MWD
8.38	8.23	2.40	MWD
10.48	10.30	2.65	MWD
12.36	12.36	0.11	MWD
8.48	8.41	1.28	MWD
8.26	8.22	0.98	MWD
10.55	10.28	2.68	MWD
8.96	8.80	1.78	M'
8.86	7.66	4.68	M'
6.19	5.74	2.39	M'
7.37	7.09	2.07	M'
9.11	8.60	3.06	M'
8.39	6.89	4.80	M'
3.97	3.36	2.11	M'
1.75	1.72	0.33	M'
0.38	0.38	0.01	M'
1.34	1.32	0.23	M'
1.04	-1.03	-0.15	M'
2.09	-0.96	-1.86	M'
1.63	0.66	1.49	M'
0.85	-0.57	-0.63	M'
5.48	2.66	4.80	M'
2.48	-1.32	-2.10	M'
1.73	0.48	-1.66	M'
1.74	1.03	-1.40	M'
1.01	-0.47	-0.89	M'
1.12	0.57	-0.97	M'
1.05	0.10	1.04	M'
0.60	-0.38	-0.47	M'
1.34	-1.14	0.70	M'
1.11	0.67	-0.88	M'
1.20	0.10	1.19	M'
1.27	1.14	0.55	M'
1.06	-0.85	0.63	M'
0.75	-0.57	0.48	M'
0.76	-0.66	0.38	M'
1.38	0.75	1.16	M'

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0.48	-0.48	0.01	M'
0.62	-0.47	-0.40	M'
1.36	1.04	0.87	M'
1.44	0.00	-1.44	M'
3.19	-1.24	-2.94	M'
0.45	-0.18	-0.41	M'
1.06	1.04	0.19	M'
0.83	0.38	0.74	M'
0.56	-0.47	0.29	M'
1.54	-1.53	0.15	M'
0.61	0.57	-0.22	M'
1.89	1.23	1.44	M'
1.15	-1.04	-0.49	M'
0.33	0.29	-0.15	M'
0.89	0.85	0.26	M'
0.44	-0.10	0.43	M'
1.53	-1.23	-0.91	M'
1.01	0.85	-0.54	M'
0.57	0.00	0.57	M'
0.58	-0.57	-0.10	M'
0.45	-0.10	0.44	M'
0.29	0.29	0.04	M'
1.77	0.10	1.76	M'
1.43	0.76	1.21	M'
1.27	-0.82	-0.98	M'
1.03	-0.03	-1.03	M'
0.81	0.18	-0.78	M'
0.81	-0.76	-0.28	M'
1.44	1.04	1.00	M'
1.04	0.10	1.03	M'
0.47	0.44	0.16	M'
0.00	0.00	0.00	

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Survey Type	Survey Tool	Comment
Surface		
yro/VES/SDC 40 (WB#1)		
yro/VES/SDC 40 (WB#1)		
yro/VES/SDC 40 (WB#1)		
yro/VES/SDC 40 (WB#1)		
yro/VES/SDC 40 (WB#1)		
yro/VES/SDC 40 (WB#1)		
yro/VES/SDC 40 (WB#1)		
)+MWD/SLB/SDC 40 (WB#1)		
)+MWD/SLB/SDC 40 (WB#1)		
)+MWD/SLB/SDC 40 (WB#1)		
)+MWD/SLB/SDC 40 (WB#1)		
)+MWD/SLB/SDC 40 (WB#1)		
1WD/SLB/SDC40 (WB#1)		
1WD/SLB/SDC40 (WB#1)		
1WD/SLB/SDC40 (WB#1)		
1WD/SLB/SDC40 (WB#1)		
1WD/SLB/SDC40 (WB#1)		
1WD/SLB/SDC40 (WB#1)		
1WD/SLB/SDC40 (WB#1)		
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SL Projection to TD

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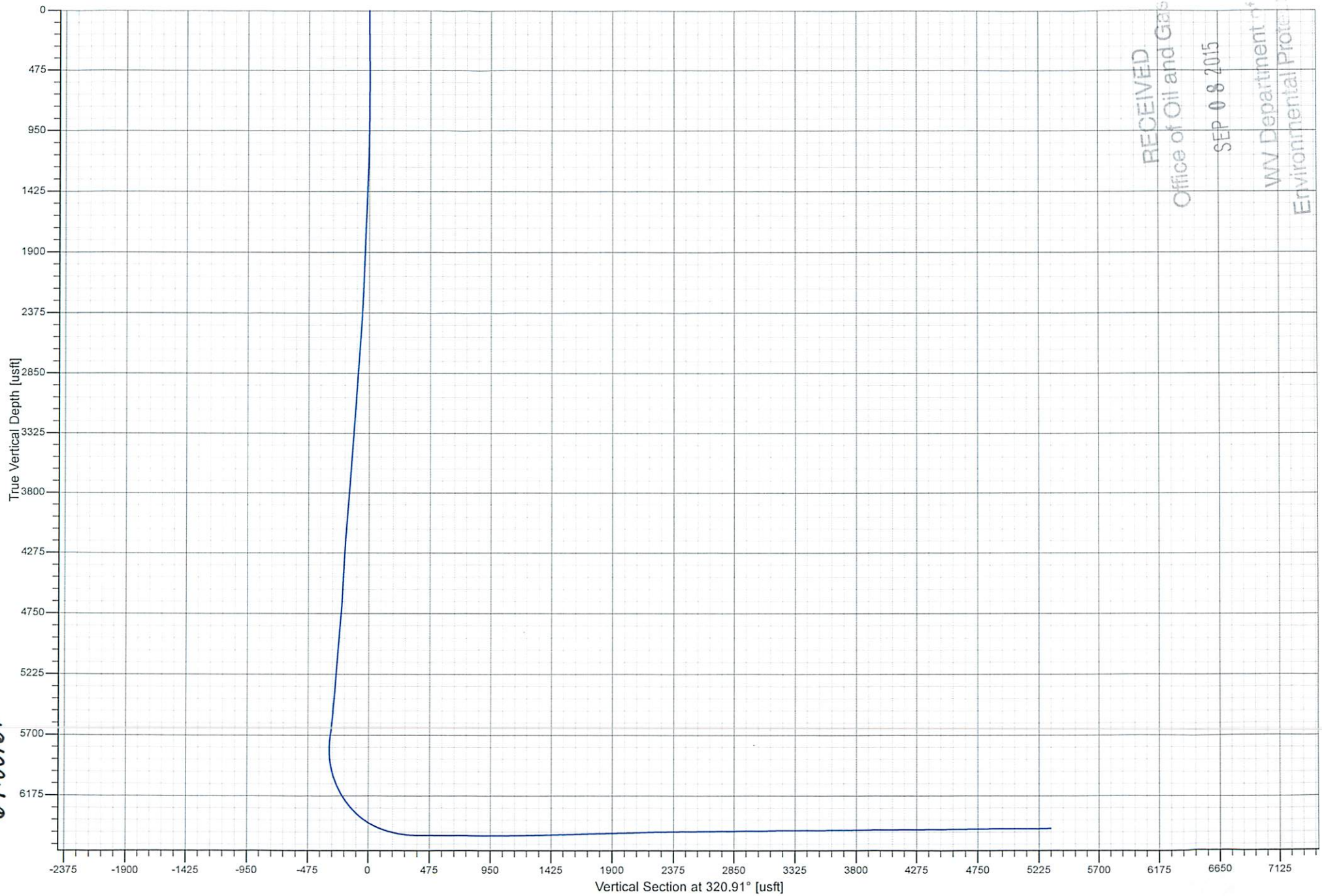
Actual: Actual (CHARLES FRYE OHI 1H/WB#1)



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COMPASS 5000.1 Build 73

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Actual: Actual (CHARLES FRYE OHI 1H/WB#1)

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API # 47069001610000			STIMULATION INFORMATION PER STAGE								
WELL NAME	STAGE NUM	Stim 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		
CHARLES FRYE OHI 1	1	5/12/2015	100	7,710	8,165	4,480	505,327	7,464			
CHARLES FRYE OHI 1	2	5/13/2015	103	7,648	7,895	4,468	504,939	7,313			
CHARLES FRYE OHI 1	3	5/13/2015	103	7,655	8,145	4,400	481,365	7,563			
CHARLES FRYE OHI 1	4	5/13/2015	103	7,581	7,996	4,348	401,165	6,459			
CHARLES FRYE OHI 1	5	5/14/2015	103	7,718	9,311	4,584	462,168	7,575			
CHARLES FRYE OHI 1	6	5/14/2015	103	7,460	7,838	4,841	507,775	7,232			
CHARLES FRYE OHI 1	7	5/14/2015	103	7,581	8,415	4,874	479,387	7,024			
CHARLES FRYE OHI 1	8	5/15/2015	103	7,449	7,853	4,783	506,162	7,087			
CHARLES FRYE OHI 1	9	5/15/2015	102	7,276	7,782	4,588	501,178	6,529			
CHARLES FRYE OHI 1	10	5/15/2015	97	7,785	8,626	5,126	500,249	9,167			
CHARLES FRYE OHI 1	11	5/16/2015	101	7,261	7,792	5,160	504,581	7,064			
CHARLES FRYE OHI 1	12	5/16/2015	100	7,000	7,621	5,539	503,914	7,799			
CHARLES FRYE OHI 1	13	5/16/2015	101	6,945	7,338	5,238	504,028	7,033			
CHARLES FRYE OHI 1	14	5/16/2015	102	6,973	7,221	5,197	505,966	7,278			
CHARLES FRYE OHI 1	15	5/17/2015	102	7,134	7,379	4,521	503,638	7,929			
CHARLES FRYE OHI 1	16	5/17/2015	102	7,396	8,573	5,067	500,313	7,150			
CHARLES FRYE OHI 1	17	5/17/2015	102	7,074	7,341	5,127	503,854	7,178			
CHARLES FRYE OHI 1	18	5/18/2015	102	7,009	7,765	5,676	499,695	7,224			
CHARLES FRYE OHI 1	19	5/18/2015	102	6,852	7,228	4,692	500,678	6,939			
CHARLES FRYE OHI 1	20	5/18/2015	100	6,724	7,254	4,600	504,375	6,980			
CHARLES FRYE OHI 1	21	5/18/2015	102	6,912	7,434	4,673	500,879	7,344			

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Well API #: 47069001610000		PERFORATION RECORDS				
WELL NAME	STAGE NUM	# SHOTS PER STG	Perf Top MD	Perf Bottom MD	Perf Date	FORMATION
CHARLES FRYE OHI 1	1	42	11,650	11,804	5/12/2015	Marcellus
CHARLES FRYE OHI 1	2	42	11,392	11,571	5/13/2015	Marcellus
CHARLES FRYE OHI 1	3	42	11,148	11,304	5/13/2015	Marcellus
CHARLES FRYE OHI 1	4	42	10,940	11,091	5/13/2015	Marcellus
CHARLES FRYE OHI 1	5	42	10,669	10,851	5/14/2015	Marcellus
CHARLES FRYE OHI 1	6	42	10,429	10,594	5/14/2015	Marcellus
CHARLES FRYE OHI 1	7	42	10,192	10,367	5/14/2015	Marcellus
CHARLES FRYE OHI 1	8	42	9,946	10,146	5/15/2015	Marcellus
CHARLES FRYE OHI 1	9	42	9,719	9,894	5/15/2015	Marcellus
CHARLES FRYE OHI 1	10	42	9,469	9,650	5/15/2015	Marcellus
CHARLES FRYE OHI 1	11	42	9,229	9,407	5/16/2015	Marcellus
CHARLES FRYE OHI 1	12	42	8,977	9,171	5/16/2015	Marcellus
CHARLES FRYE OHI 1	13	42	8,752	8,931	5/16/2015	Marcellus
CHARLES FRYE OHI 1	14	42	8,509	8,694	5/16/2015	Marcellus
CHARLES FRYE OHI 1	15	42	8,274	8,451	5/17/2015	Marcellus
CHARLES FRYE OHI 1	16	42	8,029	8,211	5/17/2015	Marcellus
CHARLES FRYE OHI 1	17	42	7,789	7,968	5/17/2015	Marcellus
CHARLES FRYE OHI 1	18	42	7,549	7,731	5/18/2015	Marcellus
CHARLES FRYE OHI 1	19	42	7,306	7,491	5/18/2015	Marcellus
CHARLES FRYE OHI 1	20	42	7,069	7,251	5/18/2015	Marcellus
CHARLES FRYE OHI 1	21	42	6,823	7,011	5/18/2015	Marcellus

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CHARLES FRYE 1H					
LITHOLOGY/FORMATION	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, TVD (FT)	TOP DEPTH, MD (FT)	BOTTOM DEPTH, MD (FT)	QUANTITY AND TYPE OF FLUID
Pittsburgh Coal	627	642	627	642	NA
Big Injun (ss)	1681	2006	1681	2006	100 bbl/hr water
Rhinestreet (shale)	5851	6145	5924	6236	NA
Cashaqua (shale)	6145	6218	6236	6321	NA
Middlesex (shale)	6218	6291	6321	6417	NA
Burket (shale)	6291	6323	6417	6462	NA
Tully (ls)	6323	6353	6462	6510	NA
Mahantango (shale)	6353	6476	6510	6851	NA
Marcellus (shale)	6476		6851		gas

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/12/2015
Job End Date:	5/19/2015
State:	West Virginia
County:	Ohio
API Number:	47-069-00161-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	OHI FRYE CHARLES 1H
Longitude:	-80.58922000
Latitude:	40.06442000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,432
Total Base Water Volume (gal):	6,439,902
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

69-00161

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	Operator	Carrier					
			Water	7732-18-5	100.00000	93.42152	
Sand, White, 40/70	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		3.61132	
Sand, White, 100 mesh	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		2.46529	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.45093	SmartCare Product
MaxPerm-20A, 265 gallon tote	Baker Hughes	Friction Reducer					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.02763	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00310	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00090	
GBW-5	Baker Hughes	Breaker					

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			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00045	SmartCare Product
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.							
Ingredients in Additive (s) (MSDS and non-MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	6.07539	
			Water	7732-18-5	85.00000	0.40142	
			Hydrochloric Acid	7647-01-0	15.00000	0.06763	
			1-Propanesulfonic acid, 2-methyl-2-[(1-oxo-2-propen-1-yl) amino]-, polymer with 2-propenamide, sodium salt	83446-68-8	60.00000	0.01658	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.00829	
			Citric Acid	77-92-9	60.00000	0.00186	
			Polyoxyethylene sorbitan monooleate	9005-65-6	5.00000	0.00138	
			Sorbitan, mono-(9Z)-9-octadecenoate	1338-43-8	5.00000	0.00138	
			Oxyalkylated alcohol	78330-21-9	5.00000	0.00138	
			Sodium Chloride	7647-14-5	5.00000	0.00138	
			Ammonium Persulphate	7727-54-0	100.00000	0.00045	
			Oxyalkylated Fatty Acid	61791-002	40.00000	0.00036	
			Formic Acid	64-18-6	30.00000	0.00027	
			Aldehyde	104-55-2	30.00000	0.00027	
			Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00027	
			Isopropanol	67-63-0	5.00000	0.00005	
			Sulfurized polyolefin	68037-13-8	5.00000	0.00005	
			Quaternary Ammonium Compound	100765-57-9	5.00000	0.00005	
			Potassium Iodide	7681-11-0	2.00000	0.00002	
			Polyaklylene	7756-94-7	1.00000	0.00001	
			Potassium Acetate	127-08-2	0.50000	0.00000	

* 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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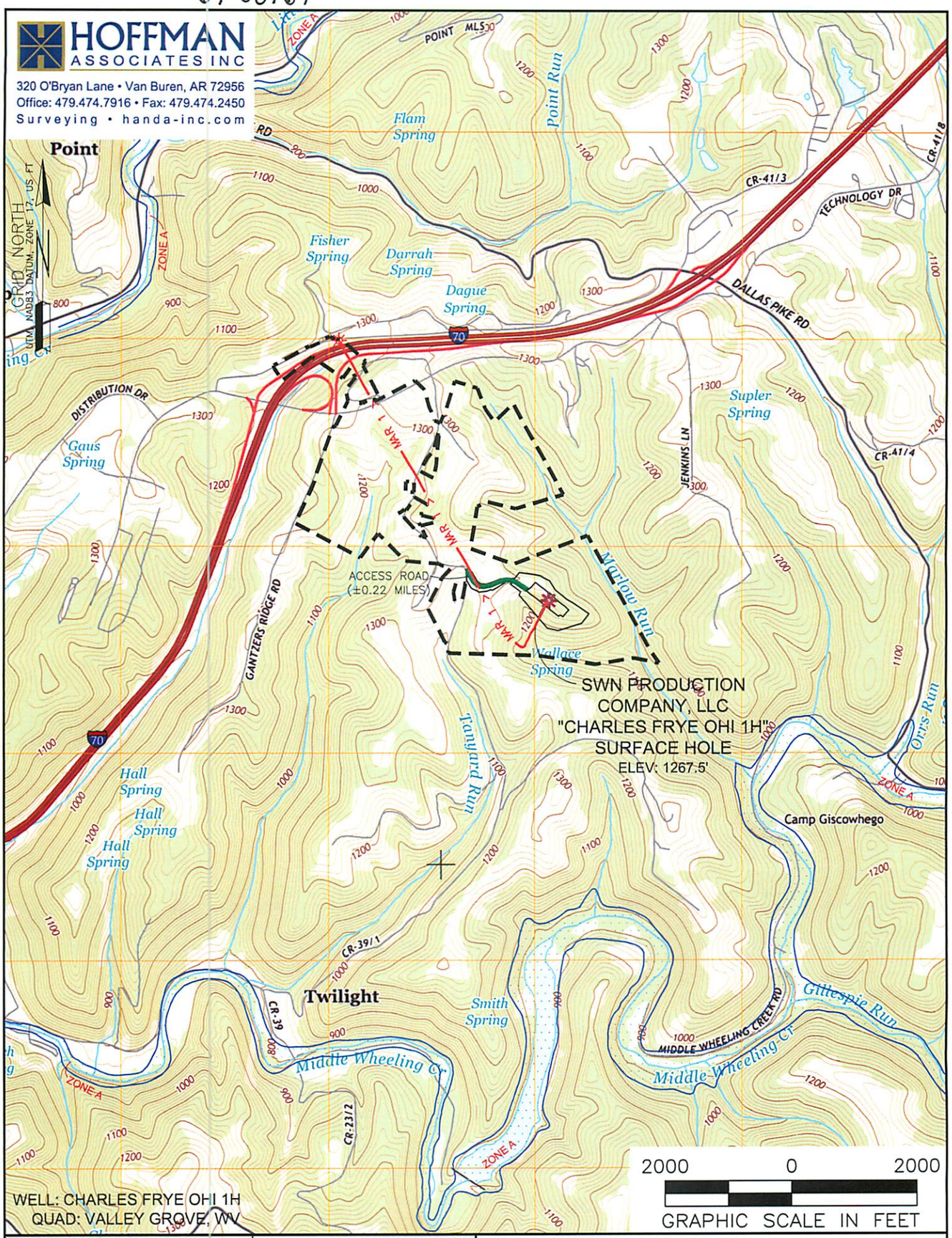
69-00161



WELL: CHARLES FRYE OHI 1H
QUAD: VALLEY GROVE, WV

NAME AND DISTANCE TO THE NEAREST STREAM:	STREAM CROSSING COORDINATES (NAD 83):
MARLOW RUN IS LOCATED ±0.18 MILES NORTHEAST OF THE CENTER OF THE DRILL PAD.	NO NEW CROSSINGS.

WELL RESTRICTIONS:

WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET
WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET
CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET
CENTER OF PAD TO AGRICULTURAL BUILDINGS LAGER THAN 2500 SQ FT: >625 FEET

FEMA FLOOD INFORMATION:

BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF OHIO COUNTY, WEST VIRGINIA; MAP NUMBER 54069C0078D, 54069C0090D, & 54069C0095D; EFFECTIVE DATE: JULY 17, 2006.

COMPANY: SWN Production Company, LLC — SWN Production Company™

OPERATOR'S WELL #: CHARLES FRYE OHI 1H

LOCATION: TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:
GEOGRAPHIC (NAD83):
LATITUDE: 40.053102°
LONGITUDE: -80.577108°

BOTTOM HOLE LOCATION:
GEOGRAPHIC (NAD83):
LATITUDE: 40.064481°
LONGITUDE: -80.589022°

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LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- EXISTING SPRING
- EXISTING WATER WELL
- ACCESS ROAD
- ACCESS ROAD TO PREV. SITE
- HIGHWAY/INTERSTATE
- COUNTY ROAD

REVISIONS:	DATE: 08-25-2015
	DRAWN BY: S. HUTSON
	SCALE: 1" = 2000'
	DRAWING NO: 59059
	TOPOGRAPHIC MAP

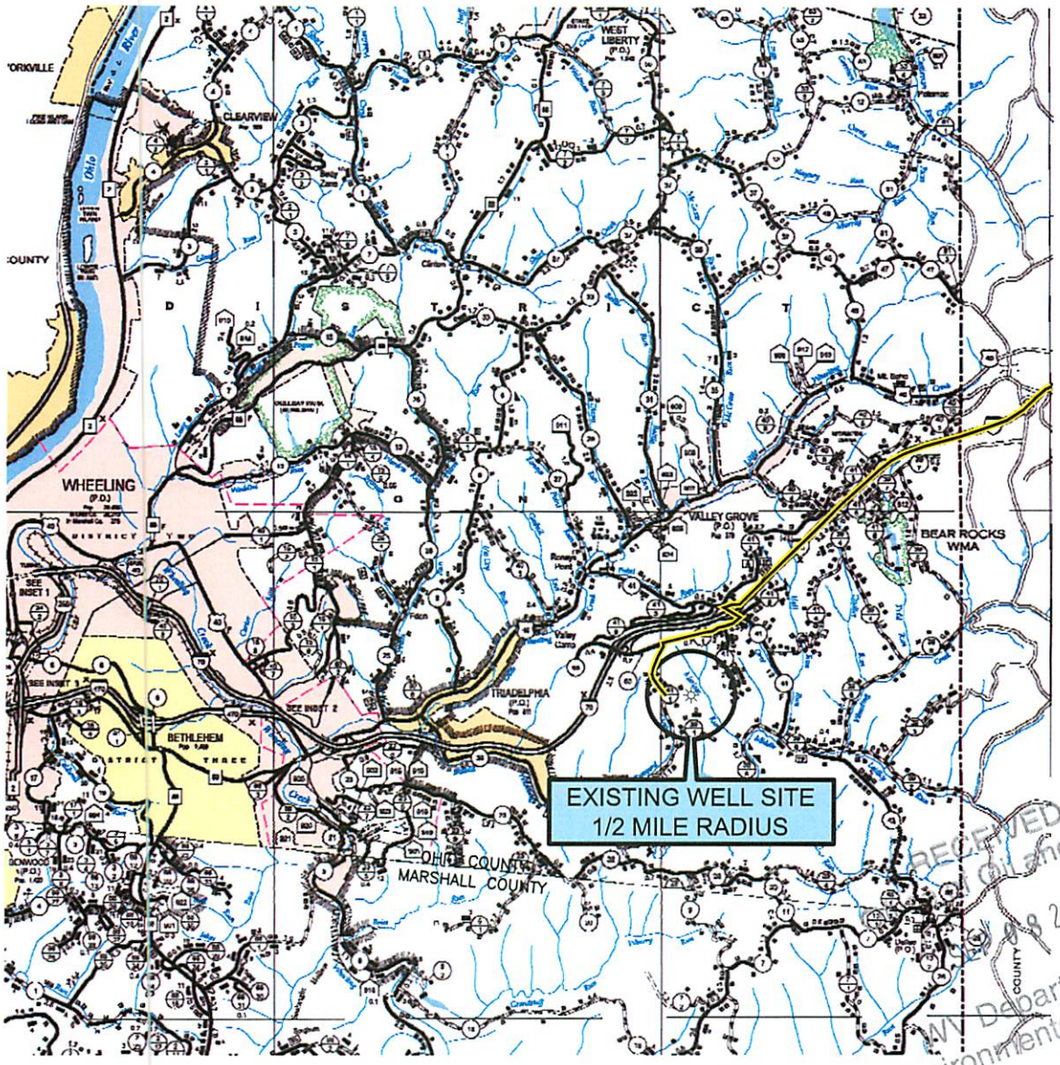
S:\WEST VIRGINIA\GAS WELLS\OHI - OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 1H\CHARLES FRYE OHI 1H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 08:48AM

PROPERTY NUMBER 2501162085
PAD ID 3001155647

69-00161

HOFFMAN ASSOCIATES INC
320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
Surveying • handa-inc.com

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT



ACCESS ROAD COORDINATES (NAD 83):

LEAVE PUBLIC ROAD	LAT: 40.054421°	LONG: -80.581823°
ENTER WELL SITE	LAT: 40.053584°	LONG: -80.578284°

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GENERAL HIGHWAY MAP
OHIO COUNTY
WEST VIRGINIA
PREPARED BY
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
IN COOPERATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

GENERAL HIGHWAY MAP
MARSHALL COUNTY
WEST VIRGINIA
PREPARED BY
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
IN COOPERATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

2 0 2
GRAPHIC SCALE IN MILES

DRIVING DIRECTIONS:

DRIVING DIRECTIONS:
FROM THE INTERSECTION OF HACKERS CREEK ROAD AND I-79N (EXIT 105) IN JANE LEW, WEST VIRGINIA; TRAVEL NORTH ON I-79 FOR ±92.4 MILES TO I-70W; BEAR LEFT ONTO I-70W AND TRAVEL ±20.9 MILES TO DALLAS PIKE (EXIT 11); TURN LEFT (EAST) ONTO DALLAS PIKE AND TRAVEL ±0.1 MILES TO MCCUTCHEON ROAD; TURN RIGHT (SOUTHWEST) ONTO MCCUTCHEON ROAD AND TRAVEL ±1.0 MILES; TURN LEFT (SOUTH) ONTO MCCUTCHEON ROAD AND TRAVEL ±0.7 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OHI" ACCESS ROAD; TURN LEFT (EAST) ONTO EXISTING ACCESS ROAD AND TRAVEL ±0.2 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OHI" GAS WELL PAD.

DRIVING PRECAUTIONS:
DRIVING DIRECTIONS NOT PROVIDED BY SWN.

DISTANCE / DIRECTION FROM NEAREST TOWN:

±1.7 MILES SOUTHEAST FROM VALLEY CAMP, WEST VIRGINIA 26059

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- DRIVING DIRECTION ROUTE

COMPANY: SWN Production Company, LLC — SWN Production Company™

OPERATOR'S WELL #: CHARLES FRYE OHI 1H

LOCATION: TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.053102°
LONGITUDE: -80.577108°

BOTTOM HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.064481°
LONGITUDE: -80.589022°

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Environmental Protection

REVISIONS:

DATE:	08-25-2015
DRAWN BY:	S. HUTSON
SCALE:	1" = 2 MILES
DRAWING NO:	59059
	DRIVING DIRECTION MAP

S:\WEST VIRGINIA\GAS WELLS\OHI - OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 1H\CHARLES FRYE OHI 1H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 08:48AM

PROPERTY NUMBER 2501162085
PAD ID 3001155647

9898'

HOFFMAN ASSOCIATES INC

320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
Surveying • handa-inc.com

Latitude: 40°05'00"

Longitude: 80°32'30"

11030'

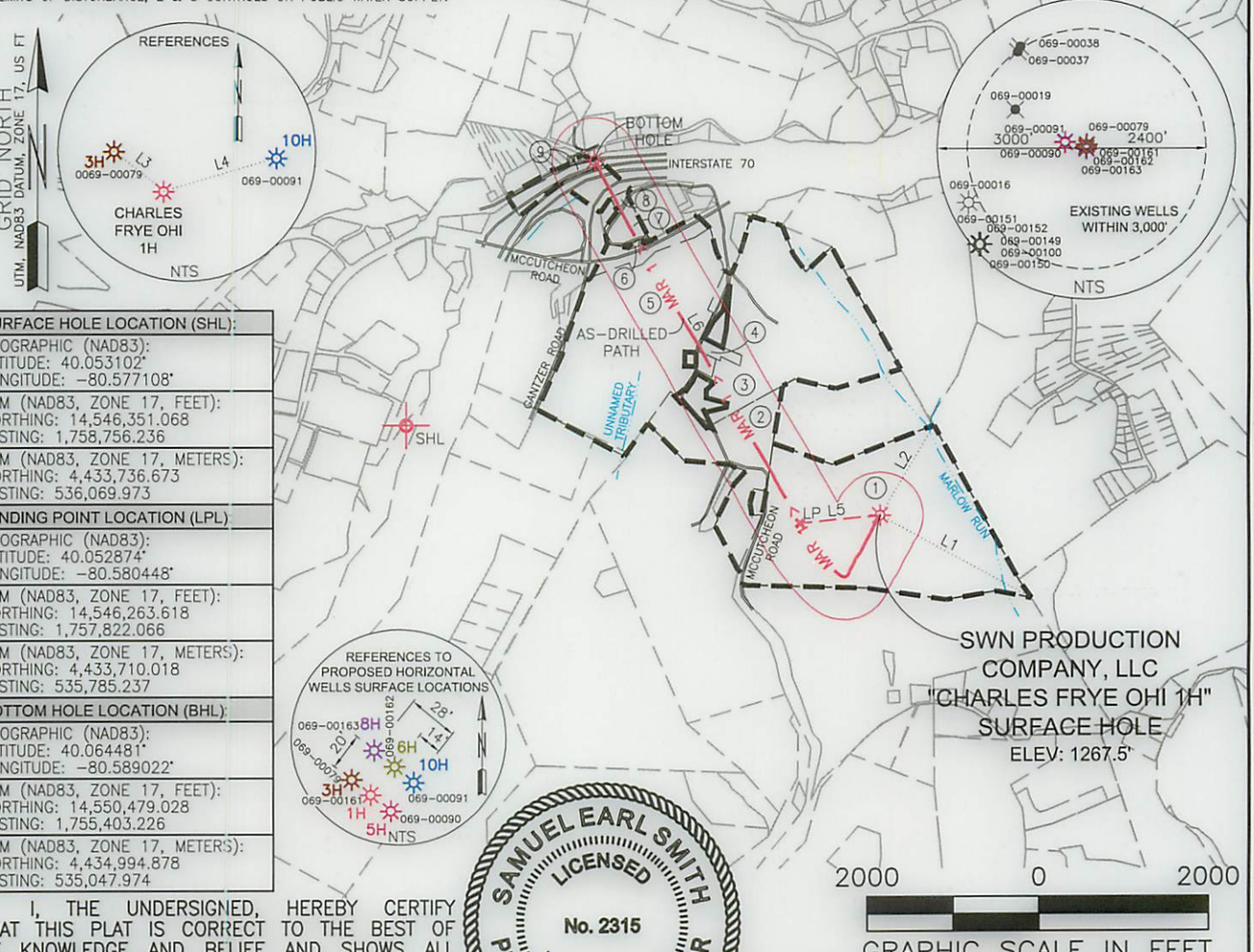
LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 28°59'07" E	1255'	SHL TO LANDMARK	PARCEL CORNER
L2	S 61°45'26" E	1922'	SHL TO LANDMARK	PARCEL CORNER
L3	N 51°36'06" W	13.29'	SHL TO REF. PNT.	CHARLES FRYE OHI 3H WELL HEAD (069-00079)
L4	N 73°33'31" E	24.44'	SHL TO REF. PNT.	CHARLES FRYE OHI 10H WELL HEAD (069-00091)

LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L5	S 84°39'07" W	938.25'		SHL TO LP
L6	N 29°50'51" W	4860.09'		LP TO BHL

TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	CHARLES FRYE & DOROTHY FRYE (S) DOROTHY V FRYE (R)	06-T14-01	105.00
2	KENNETH W CRAIG & LINDA CRAIG (S/R)	06-T8-53	57.89
3	REBECCA A JACK (S) LOIS J JACK (R)	06-T8-47	65.13
4	BEVERLY E KNIERIM (S) LOIS J JACK (R)	06-T8-47.8	1.00
5	JONATHAN P DUGGAN (S) JONATHAN P DUGGAN & JAMES P DUGGAN (R)	06-T8-46	73.95
6	OHIO COUNTY DEVELOPMENT (S) THE OHIO COUNTY DEVELOPMENT AUTHORITY (R)	06-T8-64	0.19
7	BERT LLC (S) THE OHIO COUNTY DEVELOPMENT AUTHORITY (R)	06-T8-46.11	3.94
8	OHIO COUNTY DEVELOPMENT (S) THE OHIO COUNTY DEVELOPMENT AUTHORITY (R)	06-T8-45.6	0.57
9	BETH ANN STEPHEN ET AL (S) VICTORIA T SEAMON (R)	06-T8-44	1.42

NOTES ON SURVEY

1. COORDINATE SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO OCCUPIED DWELLINGS AND AGRICULTURE BUILDINGS GREATER THAN 2500 SQ FT. WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
6. NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
7. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
8. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.



SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.053102° LONGITUDE: -80.577108°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,546,351.068 EASTING: 1,758,756.236
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,433,736.673 EASTING: 536,069.973
LANDING POINT LOCATION (LPL):
GEOGRAPHIC (NAD83): LATITUDE: 40.052874° LONGITUDE: -80.580448°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,546,263.618 EASTING: 1,757,822.066
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,433,710.018 EASTING: 535,785.237
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.064481° LONGITUDE: -80.589022°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,550,479.028 EASTING: 1,755,403.226
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,434,994.878 EASTING: 535,047.974

SWN PRODUCTION COMPANY, LLC
"CHARLES FRYE OHI 1H"
SURFACE HOLE
ELEV: 1267.5'

2000 0 2000
GRAPHIC SCALE IN FEET

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2315 Samuel Smith

SAMUEL EARL SMITH
LICENSED
No. 2315
WEST VIRGINIA
PROFESSIONAL SURVEYOR

COMPANY: SWN Production Company, LLC — SWN Production Company™

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

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

OPERATOR'S WELL #: CHARLES FRYE OHI 1H

API WELL #: 47 (STATE) 69 (COUNTY) 00161H6A (PERMIT)

WELL TYPE: OIL ☐ WASTE DISPOSAL ☐ PRODUCTION ☒ DEEP ☐ GAS ☒ LIQUID INJECTION ☐ STORAGE ☐ SHALLOW ☒

WATERSHED: MIDDLE WHEELING CREEK — ELEVATION: 1267.5'

DISTRICT: TRIDELPHIA — COUNTY: OHIO — QUADRANGLE: VALLEY GROVE

SURFACE OWNER: CHARLES FRYE & DOROTHY FRYE — ACREAGE: ±105.00

OIL & GAS ROYALTY OWNER: DOROTHY V FRYE — ACREAGE: ±105.00

DRILL ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒ PLUG OFF OLD FORMATION ☐ PERFORATE NEW FORMATION ☒

CONVERT ☐ PLUG & ABANDON ☐ CLEAN OUT & REPLUG ☐ OTHER CHANGE ☒ (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS — ESTIMATED DEPTH: 6,432' TVD 11,974' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC — DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300 — ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 — CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- LEASE BOUNDARY
- 500' DHP BUFFER
- MAR 1 > MARCELLUS DHP
- ABANDONED PATH

REVISIONS:	DATE: 08-25-2015
	DRAWN BY: S. HUTSON
	SCALE: 1" = 2000'
	DRAWING NO: 59059
	WELL LOCATION PLAT

S:\WEST VIRGINIA\GAS WELLS\OHI - OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 1H\CHARLES FRYE OHI 1H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 08:47AM

PROPERTY NUMBER 2501162085
PAD ID 3001155647

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 - 069 - 00162 County 69-Ohio District 7-Tridelphia
Quad 648- Valley Grove Pad Name CHARLE FRYE-OHI-PAD1 Field/Pool Name Panhandle Field
Farm name CHARLE FRYE-OHI Well Number 6
Operator (as registered with the OOG) SWN Production Company LLC
Address 10000 Energy Drive City Spring State TX Zip 77389

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4433741.389 Easting 536073.931
Landing Point of Curve Northing 4433198.042 Easting 535981.354
Bottom Hole Northing 4432018.957 Easting 536784.595

Elevation (ft) 1267.5' 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)
SOBM

Date permit issued 4/30/13 Date drilling commenced 2/13/15 Date drilling ceased 3/27/15
Date completion activities began 5/26/15 Date completion activities ceased 6/21/15
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 564' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1135' Void(s) encountered (Y/N) depths Y 626-646'
Coal depth(s) ft 627' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
JK

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API 47- 069 - 00162 Farm name CHARLE FRYE-OHI Well number 6

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	30	20	126	N	J-55/94 ppf		Y
Surface	17.5	13.375	735	N	J-55/54.5 ppf	615' & 595'	Y
Coal	12.25	9.625	2,226	N	J-55/40 ppf		Y
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	8.75 to 8.5	5.5	12,628	N	HCP-110		Y
Tubing		2.375	7165	N	P-110		N
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	Class A	Grout	19.3	1.19	241.42	Surface	24
Surface	Class A	370	15.6	1.18	436.6	Surface	8
Coal	Class A	824	15.6	1.19	998	Surface	8
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	Class A	2530	15.6	1.19	3010.7	Surface	24
Tubing	NA	NA	NA	NA	NA	NA	NA

Drillers TD (ft) 12,628 Loggers TD (ft) 12,628
Deepest formation penetrated Marcellus Plug back to (ft) NA
Plug back procedure NA

Kick off depth (ft) 5690 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: 1 bow spring centralizer every third joint TD to Surface Intermediate: 1 bow spring centralizer every third joint TD to Surface Production: 1 solid body centralizer from TD to 30 degrees in the curve, 1 bow spring every third joint from 30 degrees to surface

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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- 069 - 00162 Farm name CHARLE FRYE-OHI Well number 6

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		SEE	ATTACHED		

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)
		SEE	ATTACHED					

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Please insert additional pages as applicable.

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API 47- 069 - 00162 Farm name CHARLE FRYE-OHI Well number 6

PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	6585' TVD	12,628' 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)
	0		0		
BASE OF FRESH WATER					
					SEE ATTACHED

Please insert additional pages as applicable.

Drilling Contractor SWN Drilling Company
Address 10000 Energy Drive City Spring State TX Zip 77389

Logging Company Baker Hughes
Address 9110 Grogans Mill RD City The Woodlands State TX Zip 77380

Cementing Company CalFrac Well Services
Address 1450 Lake Robbins Dr. City The Woodlands State TX Zip 77380

Stimulating Company Baker Hughes
Address 9110 Grogans Mill Rd City The Woodlands State TX Zip 77380

Please insert additional pages as applicable.

Completed by Cody Magby Telephone 8327966215
Signature _____ Title Sr. Staff Regulatory Analyst Date 9/3/15

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

CHARLES FRYE 6H					
LITHOLOGY/FORMATION	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, TVD (FT)	TOP DEPTH, MD (FT)	BOTTOM DEPTH, MD (FT)	QUANTITY AND TYPE OF FLUID
Pittsburgh Coal	627	642	627	642	NA
Big Injun (ss)	1681	2006	1681	2006	100 bbl/hr water
Rhinestreet (shale)	5852	6138	5889	6284	NA
Cashaqua (shale)	6138	6213	6284	6423	NA
Middlesex (shale)	6213	6285	6423	6561	NA
Burket (shale)	6285	6317	6561	6623	NA
Tully (ls)	6317	6352	6623	6691	NA
Mahantango (shale)	6352	6484	6691	7098	NA
Marcellus (shale)	6484		7098		gas

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Well API #: 47069001620000			STIMULATION INFORMATION PER STAGE								
WELL NAME	STAGE NUM	Stim 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		
CHARLES FRYE OHI 6	1	5/26/2015	101	8,153	9,030	4,532	603,158	8,839			
CHARLES FRYE OHI 6	2	5/26/2015	100	7,877	9,070	4,624	600,600	8,459			
CHARLES FRYE OHI 6	3	5/27/2015	101	7,763	8,901	4,552	598,517	9,664			
CHARLES FRYE OHI 6	4	5/27/2015	100	7,255	8,964	4,435	600,052	8,514			
CHARLES FRYE OHI 6	5	5/28/2015	102	7,654	8,876	4,498	602,221	8,357			
CHARLES FRYE OHI 6	6	5/28/2015	100	7,590	9,011	4,580	599,579	8,668			
CHARLES FRYE OHI 6	7	5/28/2015	101	7,872	8,940	4,570	596,853	8,339			
CHARLES FRYE OHI 6	8	5/29/2015	100	7,495	8,538	4,604	605,826	8,605			
CHARLES FRYE OHI 6	9	5/29/2015	102	7,424	8,814	4,593	592,397	8,402			
CHARLES FRYE OHI 6	10	5/30/2015	100	7,470	9,057	4,558	599,001	8,553			
CHARLES FRYE OHI 6	11	5/30/2015	101	7,315	8,792	4,580	605,174	8,283			
CHARLES FRYE OHI 6	12	5/31/2015	84	7,977	9,208	4,456	601,311	11,014			
CHARLES FRYE OHI 6	13	5/31/2015	100	7,404	8,335	4,790	602,020	8,512			
CHARLES FRYE OHI 6	14	6/1/2015	101	7,531	8,926	4,686	597,119	8,340			
CHARLES FRYE OHI 6	15	6/1/2015	100	7,360	8,274	4,780	603,332	8,375			
CHARLES FRYE OHI 6	16	6/1/2015	101	7,624	9,133	4,556	599,032	8,379			
CHARLES FRYE OHI 6	17	6/2/2015	99	7,484	8,546	4,579	604,043	8,399			
CHARLES FRYE OHI 6	18	6/2/2015	101	7,069	8,724	4,733	603,686	8,218			
CHARLES FRYE OHI 6	19	6/3/2015	101	7,142	8,794	4,823	601,856	8,314			
CHARLES FRYE OHI 6	20	6/3/2015	98	7,030	7,973	4,658	604,012	8,176			
CHARLES FRYE OHI 6	21	6/3/2015	101	7,148	8,224	4,790	602,858	8,246			
CHARLES FRYE OHI 6	22	6/4/2015	101	7,047	9,030	4,786	593,882	8,233			

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Well API #: 47069001620000		PERFORATION RECORD				
WELL NAME	STAGE NUM	PERF DATE	PERF TOP MD	PERF BOTTOM MD	# SHOTS PER STG	FORMATION
CHARLES FRYE OHI 6	1	5/26/2015	12,302	12,468	42	Marcellus
CHARLES FRYE OHI 6	2	5/26/2015	12,046	12,246	42	Marcellus
CHARLES FRYE OHI 6	3	5/27/2015	11,829	12,008	42	Marcellus
CHARLES FRYE OHI 6	4	5/27/2015	11,581	11,775	42	Marcellus
CHARLES FRYE OHI 6	5	5/28/2015	11,327	11,504	42	Marcellus
CHARLES FRYE OHI 6	6	5/28/2015	11,077	11,275	42	Marcellus
CHARLES FRYE OHI 6	7	5/28/2015	10,846	11,029	42	Marcellus
CHARLES FRYE OHI 6	8	5/29/2015	10,598	10,781	42	Marcellus
CHARLES FRYE OHI 6	9	5/29/2015	10,375	10,556	42	Marcellus
CHARLES FRYE OHI 6	10	5/30/2015	10,117	10,308	42	Marcellus
CHARLES FRYE OHI 6	11	5/30/2015	9,892	10,075	42	Marcellus
CHARLES FRYE OHI 6	12	5/31/2015	9,615	9,846	75	Marcellus
CHARLES FRYE OHI 6	13	5/31/2015	9,402	9,575	42	Marcellus
CHARLES FRYE OHI 6	14	6/1/2015	9,173	9,348	42	Marcellus
CHARLES FRYE OHI 6	15	6/1/2015	8,942	9,094	42	Marcellus
CHARLES FRYE OHI 6	16	6/1/2015	8,692	8,846	42	Marcellus
CHARLES FRYE OHI 6	17	6/2/2015	8,442	8,633	42	Marcellus
CHARLES FRYE OHI 6	18	6/2/2015	8,217	8,398	42	Marcellus
CHARLES FRYE OHI 6	19	6/3/2015	7,992	8,148	42	Marcellus
CHARLES FRYE OHI 6	20	6/3/2015	7,731	7,908	42	Marcellus
CHARLES FRYE OHI 6	21	6/3/2015	7,502	7,671	42	Marcellus
CHARLES FRYE OHI 6	22	6/4/2015	7,252	7,429	42	Marcellus

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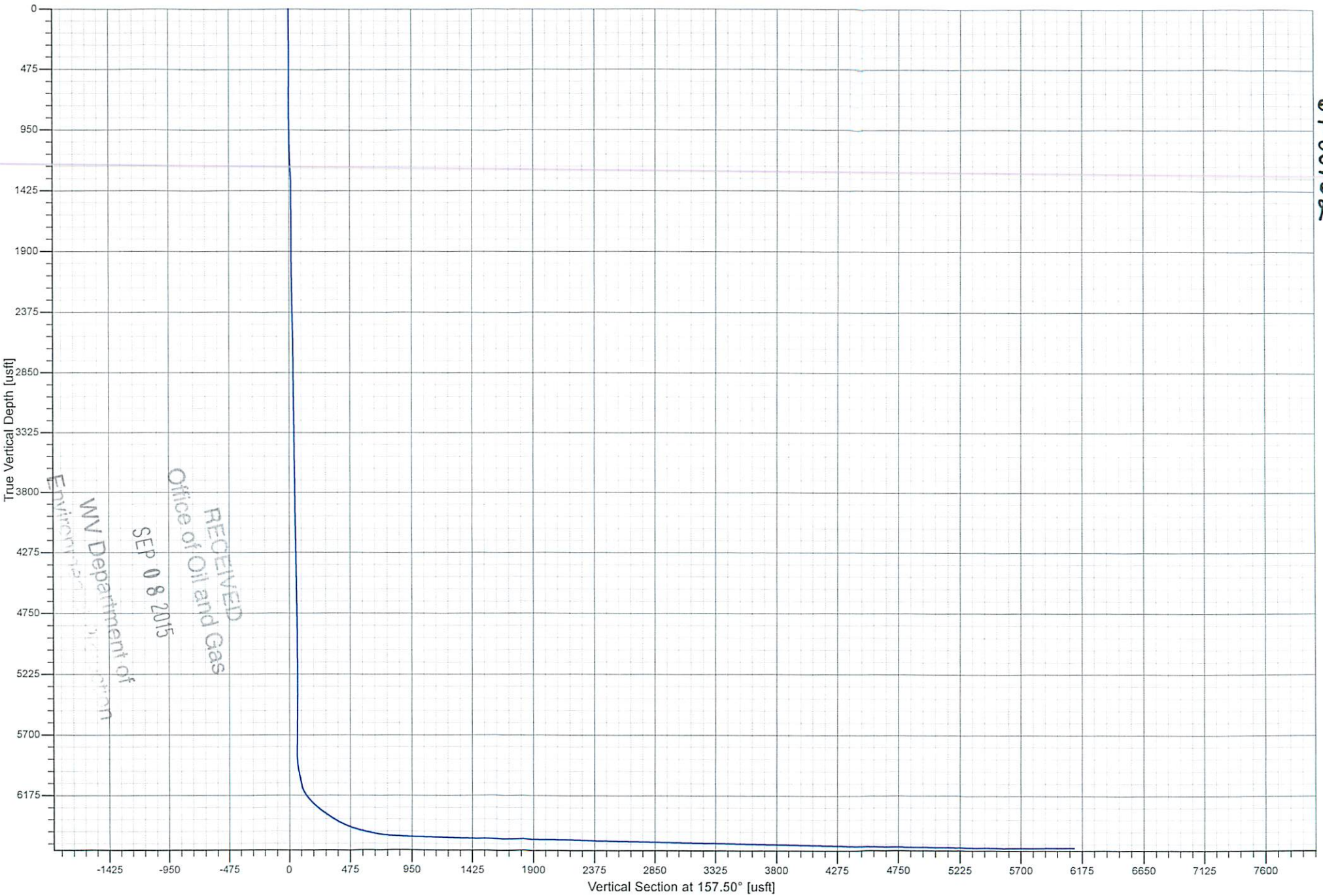
691008.69

Actual: Actual (CHARLES FRYE OHI 6H/WB#1)



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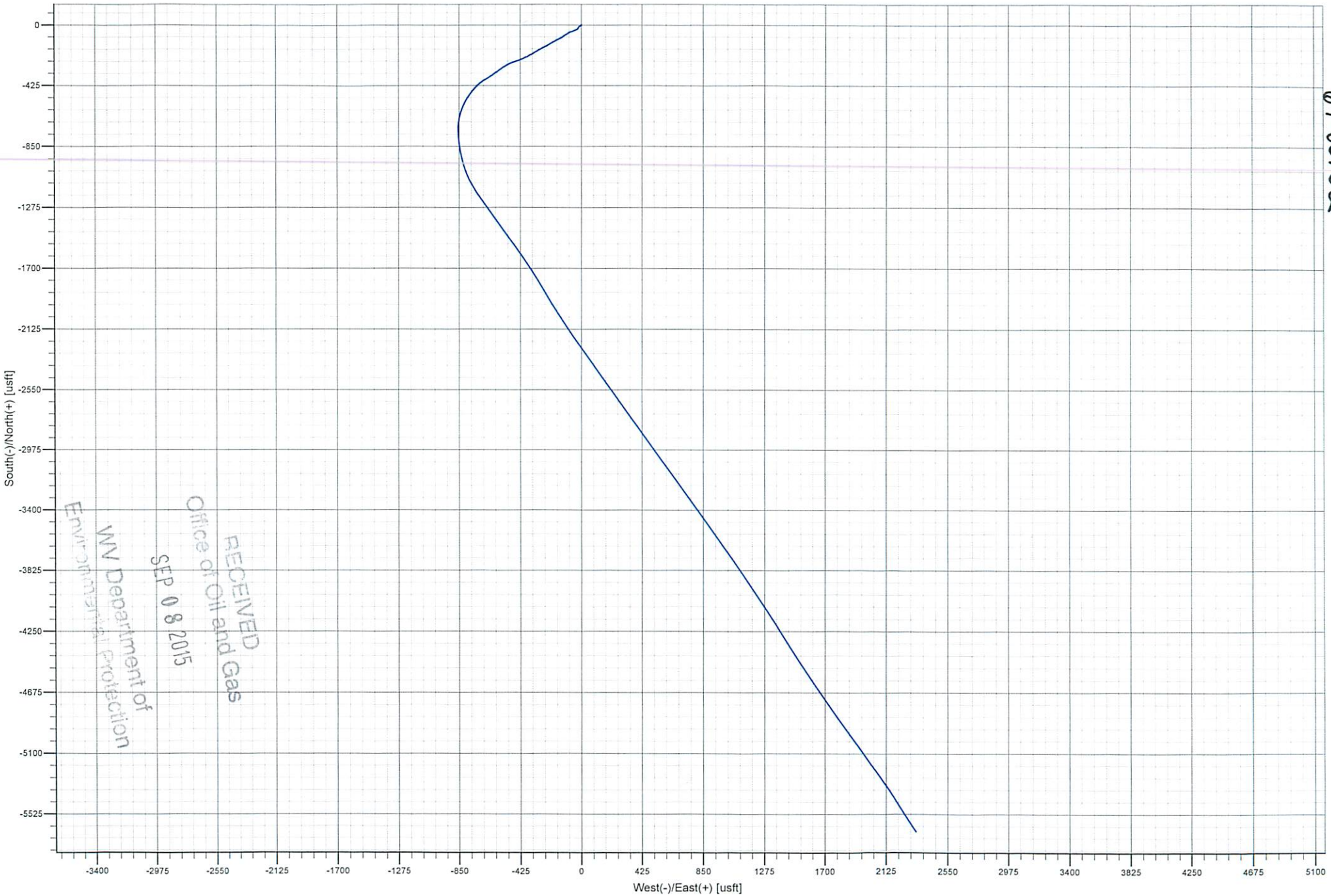
69-00162

COMPASS 5000.1 Build 73

8/3/2015 1:09 PM

Actual: Actual (CHARLES FRYE OHI 6H/WB#1)



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69-00162

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/26/2015
Job End Date:	6/4/2015
State:	West Virginia
County:	Ohio
API Number:	47-069-00162-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	OHI FRYE CHARLES 6H
Longitude:	-80.56872000
Latitude:	40.03719000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,586
Total Base Water Volume (gal):	7,933,212
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

69-00162

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	Operator	Carrier					
			Water	7732-18-5	100.00000	82.51860	
Sand, White, 40/70	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		8.26349	
Sand, White, 100 mesh	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		8.02663	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		1.03949	SmartCare Product
MaxPerm-20A, 265 gallon tote	Baker Hughes	Friction Reducer					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.08815	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00757	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00221	
GBW-5	Baker Hughes	Breaker					

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			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00128	SmartCare Product
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.							
Ingredients in Additive (s) (MSDS and non-MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	16.27975	
			Water	7732-18-5	85.00000	0.93982	
			Hydrochloric Acid	7647-01-0	15.00000	0.15582	
			1-Propanesulfonic acid, 2-methyl-2-[(1-oxo-2-propen-1-yl) amino]-, polymer with 2-propenamide, sodium salt	83446-68-8	60.00000	0.05285	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.02643	
			Citric Acid	77-92-9	60.00000	0.00454	
			Polyoxyethylene sorbitan monooleate	9005-65-6	5.00000	0.00440	
			Sorbitan, mono-(9Z)-9-octadecenoate	1338-43-8	5.00000	0.00440	
			Oxyalkylated alcohol	78330-21-9	5.00000	0.00440	
			Sodium Chloride	7647-14-5	5.00000	0.00440	
			Ammonium Persulphate	7727-54-0	100.00000	0.00128	
			Oxyalkylated Fatty Acid	61791-002	40.00000	0.00088	
			Aldehyde	104-55-2	30.00000	0.00066	
			Formic Acid	64-18-6	30.00000	0.00066	
			Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00066	
			Isopropanol	67-63-0	5.00000	0.00011	
			Quaternary Ammonium Compound	100765-57-9	5.00000	0.00011	
			Sulfurized polyolefin	68037-13-8	5.00000	0.00011	
			Potassium Iodide	7681-11-0	2.00000	0.00004	
			Polyaklylene	7756-94-7	1.00000	0.00002	
			Potassium Acetate	127-08-2	0.50000	0.00001	

* 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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swn Southwestern Energy®

Field:			
Map Units:		usFt	
Vertical Reference Datum (VRD):		Mean Sea Level	
Projected Coordinate System:		Zone 17N (84 W to 78 W)	
Section:			
Company Name:		Southwestern Energy Company	
Units:		Feet	
TVD Reference:		Rotary Table	
Position:			
		Northing:	14,546,367.140
		Easting:	1,758,769.009
North Reference:		Grid	**Grid Cor**
Comment :			
Slot:			
Position (Relative to SW Corner Of Section)			
N/S	0	**Northing:**	14,546,367.140
E/W	0	**Easting:**	1,758,769.009
Ground Level Elevation (usft):		Ground Level:	
Comment :			
Well:			
Type:		Main well	
KB Elevation		RKB @ 1294.00usft (SDC 40)	
Closure Distance:		6113.11	**Closure Azimut**
Comment:			
Vertical Section:			
Position of Origin (Relative to Slot centre)		**N/S**	0
Vertical Section Azimuth:		157.50	

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Survey

Name	Definitive Survey	Company	SWN

Magnetic Parameters:

Model:	BGGM2014	Field Strength:	52,524	Declination:	-8.76	Dip:

Survey Tool Ranges:

Survey Tool	Start MD (ft)	End MD (ft)	
MS-SRG-WLINE	100.00	2243.00	
MWD	2373.00	5620.00	
MWD	5671.00	5996.00	
MWD	6042.00	12628.00	

Survey Points: (Relative to Slot Centre, TVD Relative to Slot TVD Reference)

MD (Ft)	Inc	Az	TVD (Ft)	+N/-S (Ft)	+E/-W (Ft)	V Sec (Ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.23	103.54	100.00	-0.05	0.20	0.12
200.00	0.32	128.50	200.00	-0.27	0.61	0.48
300.00	0.30	116.96	300.00	-0.56	1.06	0.92
400.00	0.23	87.18	400.00	-0.67	1.49	1.19
500.00	0.22	58.41	500.00	-0.56	1.86	1.23
600.00	0.24	293.87	599.99	-0.37	1.83	1.05
700.00	0.21	97.58	699.99	-0.31	1.82	0.99
800.00	0.38	2.33	799.99	-0.01	2.02	0.78
900.00	2.15	223.18	899.97	-1.04	0.75	1.25
1000.00	3.91	233.68	999.83	-4.43	-3.29	2.84
1100.00	5.25	234.80	1099.51	-9.09	-9.77	4.66
1200.00	6.96	220.47	1198.94	-16.33	-17.44	8.41
1300.00	6.44	214.51	1298.26	-25.56	-24.55	14.22
1400.00	5.25	233.69	1397.75	-32.90	-31.42	18.37
1500.00	4.94	258.12	1497.36	-36.49	-39.32	18.67
1600.00	5.96	247.43	1596.91	-39.37	-48.33	17.88
1700.00	6.36	246.49	1696.34	-43.57	-58.20	17.98
1800.00	5.99	246.35	1795.76	-47.88	-68.06	18.18
1900.00	6.44	249.35	1895.17	-51.95	-78.09	18.11
2000.00	6.27	237.44	1994.56	-56.86	-87.94	18.88
2100.00	5.64	236.63	2094.02	-62.51	-96.64	20.76
2200.00	5.25	237.66	2193.57	-67.66	-104.61	22.47
2243.00	5.42	241.44	2236.38	-69.68	-108.06	23.02
2373.00	4.58	233.61	2365.89	-75.69	-117.63	24.91
2466.00	7.32	233.38	2458.38	-81.43	-125.37	27.25
2559.00	6.66	230.87	2550.69	-88.37	-134.31	30.24
2651.00	6.86	247.48	2642.05	-93.84	-143.53	31.77
2744.00	6.60	240.75	2734.41	-98.58	-153.32	32.40

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2837.00	5.62	240.90	2826.89	-103.41	-161.96	33.55
2904.00	6.01	246.41	2893.54	-106.40	-168.04	33.99
2930.00	6.17	248.36	2919.39	-107.46	-170.59	33.99
3023.00	6.05	233.11	3011.87	-112.25	-179.16	35.14
3115.00	6.20	241.04	3103.35	-117.56	-187.38	36.90
3208.00	5.82	238.06	3195.84	-122.49	-195.77	38.24
3301.00	5.87	246.02	3288.36	-126.92	-204.12	39.13
3394.00	6.09	239.24	3380.85	-131.37	-212.71	39.97
3487.00	5.83	237.44	3473.35	-136.44	-220.93	41.50
3579.00	6.14	237.66	3564.85	-141.59	-229.02	43.16
3672.00	7.37	236.23	3657.20	-147.56	-238.18	45.17
3765.00	7.26	246.37	3749.45	-153.23	-248.52	46.45
3858.00	7.22	245.81	3841.70	-157.98	-259.24	46.74
3950.00	6.23	241.10	3933.07	-162.77	-268.88	47.47
4043.00	5.84	236.02	4025.56	-167.85	-277.22	48.97
4136.00	6.36	243.78	4118.03	-172.77	-285.77	50.25
4228.00	6.25	237.54	4209.48	-177.71	-294.57	51.44
4321.00	7.01	241.29	4301.85	-183.15	-303.82	52.93
4414.00	6.65	240.03	4394.19	-188.57	-313.46	54.25
4507.00	6.45	238.43	4486.59	-193.99	-322.57	55.77
4600.00	6.54	233.12	4578.99	-199.91	-331.26	57.91
4692.00	5.36	236.59	4670.49	-205.42	-339.04	60.02
4785.00	5.54	247.98	4763.08	-209.49	-346.83	60.81
4878.00	5.57	241.39	4855.64	-213.34	-354.95	61.25
4971.00	5.34	241.09	4948.22	-217.59	-362.70	62.21
5064.00	5.41	235.57	5040.81	-222.16	-370.10	63.60
5156.00	5.03	250.34	5132.43	-225.97	-377.48	64.30
5249.00	5.57	247.84	5225.03	-229.04	-385.50	64.07
5342.00	5.50	239.51	5317.60	-233.01	-393.52	64.66
5435.00	5.23	244.39	5410.20	-237.10	-401.18	65.51
5528.00	5.51	247.85	5502.79	-240.62	-409.14	65.71
5620.00	6.12	252.55	5594.31	-243.75	-417.91	65.25
5671.00	6.77	249.07	5644.99	-245.64	-423.31	64.93
5717.00	9.41	247.91	5690.53	-248.02	-429.33	64.83
5764.00	15.04	249.70	5736.45	-251.59	-438.62	64.57
5810.00	20.93	249.64	5780.18	-256.52	-451.93	64.03
5857.00	24.80	250.73	5823.48	-262.70	-469.11	63.16
5903.00	27.17	248.19	5864.83	-269.78	-487.97	62.49
5950.00	30.69	239.93	5905.97	-279.79	-508.33	63.94
5996.00	37.46	238.34	5944.05	-293.03	-530.42	67.72
6042.00	41.50	235.21	5979.55	-309.07	-554.86	73.19
6089.00	42.03	234.74	6014.61	-327.04	-580.49	79.98
6135.00	47.75	234.54	6047.19	-345.82	-606.96	87.20
6182.00	51.18	238.23	6077.73	-365.57	-636.70	94.05

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6228.00	54.08	238.16	6105.65	-384.83	-667.77	99.96
6274.00	55.66	231.38	6132.14	-406.53	-698.46	108.27
6321.00	56.98	224.42	6158.23	-432.74	-727.43	121.39
6367.00	57.68	219.75	6183.07	-461.47	-753.37	138.00
6414.00	58.21	215.63	6208.02	-492.98	-777.71	157.80
6460.00	58.12	210.23	6232.29	-525.76	-798.95	179.96
6506.00	58.30	205.20	6256.54	-560.36	-817.12	204.97
6553.00	58.48	200.12	6281.19	-597.28	-832.53	233.18
6599.00	59.18	194.17	6305.01	-634.86	-844.12	263.47
6646.00	59.71	189.12	6328.91	-674.49	-852.28	296.95
6692.00	59.79	183.74	6352.10	-713.95	-856.73	331.71
6739.00	61.38	177.78	6375.20	-754.86	-857.25	369.30
6785.00	65.07	173.67	6395.92	-795.79	-854.17	408.30
6831.00	67.53	172.07	6414.41	-837.58	-848.94	448.91
6878.00	70.08	170.55	6431.41	-880.89	-842.31	491.46
6924.00	72.46	167.47	6446.18	-923.65	-834.00	534.14
6971.00	75.27	164.38	6459.24	-967.43	-823.01	578.79
7017.00	77.56	161.42	6470.05	-1010.15	-809.86	623.30
7063.00	80.37	157.18	6478.86	-1052.37	-793.90	668.41
7110.00	81.60	151.44	6486.23	-1094.18	-773.79	714.73
7156.00	83.27	148.83	6492.28	-1133.72	-751.08	759.95
7203.00	86.09	147.01	6496.64	-1173.37	-726.23	806.09
7295.00	87.41	144.71	6501.86	-1249.38	-674.68	896.05
7388.00	90.22	144.58	6503.78	-1325.21	-620.89	986.69
7481.00	88.99	144.39	6504.42	-1400.90	-566.86	1077.30
7574.00	88.29	143.37	6506.63	-1476.00	-512.06	1167.65
7667.00	88.20	144.60	6509.48	-1551.19	-457.40	1258.03
7760.00	88.20	145.79	6512.40	-1627.51	-404.35	1348.85
7852.00	88.37	146.12	6515.15	-1703.71	-352.86	1438.95
7945.00	89.69	150.07	6516.73	-1782.63	-303.73	1530.67
8038.00	89.96	150.20	6517.01	-1863.28	-257.42	1622.90
8131.00	89.87	148.53	6517.15	-1943.30	-210.03	1714.96
8224.00	88.20	146.28	6518.71	-2021.63	-159.95	1806.50
8316.00	87.67	146.59	6522.03	-2098.24	-109.11	1896.73
8409.00	90.40	145.53	6523.60	-2175.38	-57.20	1987.86
8502.00	89.08	144.55	6524.02	-2251.59	-3.92	2078.67
8595.00	89.34	144.70	6525.30	-2327.42	49.92	2169.32
8687.00	88.72	145.31	6526.86	-2402.77	102.67	2259.13
8780.00	87.41	144.81	6530.00	-2478.96	155.90	2349.89
8873.00	87.93	145.13	6533.78	-2555.05	209.24	2440.60
8966.00	88.02	144.39	6537.07	-2630.96	262.87	2531.26
9059.00	90.31	144.68	6538.42	-2706.69	316.82	2621.87
9151.00	88.99	143.61	6538.98	-2781.26	370.70	2711.38
9244.00	89.43	144.50	6540.26	-2856.54	425.29	2801.82

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9337.00	88.99	144.36	6541.55	-2932.18	479.38	2892.41
9430.00	88.55	144.43	6543.54	-3007.77	533.51	2982.96
9523.00	88.81	144.61	6545.69	-3083.49	587.48	3073.56
9615.00	89.43	145.11	6547.10	-3158.71	640.43	3163.32
9708.00	89.16	145.46	6548.24	-3235.15	693.38	3254.21
9801.00	88.11	144.77	6550.46	-3311.41	746.56	3345.02
9894.00	88.72	144.50	6553.03	-3387.22	800.36	3435.65
9986.00	88.90	144.88	6554.94	-3462.28	853.53	3525.34
10079.00	88.46	145.24	6557.08	-3538.50	906.78	3616.14
10172.00	89.16	145.37	6559.02	-3614.95	959.70	3707.02
10265.00	89.34	145.41	6560.23	-3691.48	1012.52	3797.94
10357.00	89.08	145.74	6561.50	-3767.36	1064.52	3887.95
10450.00	88.72	146.06	6563.29	-3844.36	1116.65	3979.03
10543.00	89.25	145.89	6564.93	-3921.42	1168.68	4070.14
10636.00	88.55	145.79	6566.72	-3998.36	1220.89	4161.21
10729.00	88.99	146.70	6568.72	-4075.67	1272.56	4252.40
10821.00	87.93	146.79	6571.19	-4152.57	1322.99	4342.75
10914.00	87.85	147.71	6574.61	-4230.73	1373.26	4434.20
11007.00	88.72	147.47	6577.40	-4309.21	1423.09	4525.77
11100.00	89.96	147.81	6578.47	-4387.76	1472.86	4617.39
11192.00	89.60	145.79	6578.82	-4464.74	1523.23	4707.79
11285.00	89.08	146.06	6579.89	-4541.77	1575.33	4798.89
11378.00	89.16	145.45	6581.32	-4618.64	1627.66	4889.93
11471.00	89.87	145.79	6582.11	-4695.39	1680.17	4980.94
11564.00	89.43	144.62	6582.67	-4771.75	1733.24	5071.80
11656.00	89.08	144.08	6583.87	-4846.51	1786.86	5161.38
11749.00	89.52	144.99	6585.01	-4922.25	1840.81	5252.00
11842.00	89.78	143.88	6585.58	-4997.89	1894.90	5342.59
11935.00	89.16	145.27	6586.44	-5073.67	1948.80	5433.23
12027.00	89.78	144.18	6587.29	-5148.78	2001.93	5522.95
12120.00	89.60	144.78	6587.79	-5224.47	2055.96	5613.56
12213.00	89.60	144.99	6588.44	-5300.54	2109.46	5704.31
12306.00	91.80	148.52	6587.30	-5378.30	2160.43	5795.65
12399.00	90.66	147.93	6585.31	-5457.34	2209.39	5887.42
12491.00	89.43	148.20	6585.23	-5535.41	2258.05	5978.17
12577.00	90.04	147.24	6585.63	-5608.12	2303.88	6062.92
12628.00	90.04	147.24	6585.60	-5651.01	2331.57	6113.10

Wellpath created using minimum curvature

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CHARLES FRYE OHI 6H

Ohio Co. WV

PANHANDLE (CHARLES FRYE)

)	**Latitude:**	40.0531456600
	Longitude:	-80.5770625600

ıvergence:	0.27

CHARLES FRYE OHI 6H

)	**Latitude:**	40.0531456600
	Longitude:	-80.5770625600

CHARLES FRYE OHI 6H

		Rig Height (Drill Floor):	26

h:	157.579

.00	**E/W**	**0.00**	

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67.37	Date:	2/22/2015

Source Survey
Gyro /MS Survey/SDC40 (W
MWD/SLB/SDC40/spudder (V
MWD/SLB/SDC 40 Reentry (V
MWD/SLB/SDC40/Reentry/DMA

DLS (deg/ 100ft)	Build Rate (deg/ 100ft)	Turn Rate (deg/ 100ft)	
0.00	0.00	0.00	
0.23	0.23	0.00	Gyro
0.15	0.09	24.96	Gyro
0.07	-0.02	-11.54	Gyro
0.15	-0.07	-29.78	Gyro
0.11	-0.01	-28.77	Gyro
0.41	0.02	-124.54	Gyro
0.45	-0.03	163.71	Gyro
0.45	0.17	-95.25	Gyro
2.45	1.77	-139.15	Gyro
1.84	1.76	10.50	Gyro
1.34	1.34	1.12	Gyro
2.28	1.71	-14.33	Gyro
0.87	-0.52	-5.96	Gyro
2.27	-1.19	19.18	Gyro
2.17	-0.31	24.43	Gyro
1.44	1.02	-10.69	Gyro
0.41	0.40	-0.94	Gyro
0.37	-0.37	-0.14	Gyro
0.55	0.45	3.00	Gyro
1.33	-0.17	-11.91	Gyro
0.64	-0.63	-0.81	Gyro
0.40	-0.39	1.03	Gyro
0.91	0.40	8.79	Gyro
0.83	-0.65	-6.02	MWD,
2.95	2.95	-0.25	MWD,
0.78	-0.71	-2.70	MWD,
2.13	0.22	18.05	MWD,
0.89	-0.28	-7.24	MWD,

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1.05	-1.05	0.16	MWD,
1.01	0.58	8.23	MWD,
1.01	0.63	7.49	MWD,
1.74	-0.13	-16.40	MWD,
0.93	0.16	8.62	MWD,
0.53	-0.41	-3.20	MWD,
0.87	0.05	8.56	MWD,
0.79	0.24	-7.29	MWD,
0.34	-0.28	-1.94	MWD,
0.34	0.34	0.24	MWD,
1.33	1.32	-1.54	MWD,
1.39	-0.12	10.90	MWD,
0.09	-0.04	-0.60	MWD,
1.23	-1.08	-5.12	MWD,
0.71	-0.42	-5.46	MWD,
1.05	0.56	8.34	MWD,
0.75	-0.12	-6.78	MWD,
0.94	0.82	4.03	MWD,
0.42	-0.39	-1.35	MWD,
0.29	-0.22	-1.72	MWD,
0.65	0.10	-5.71	MWD,
1.34	-1.28	3.77	MWD,
1.18	0.19	12.25	MWD,
0.69	0.03	-7.09	MWD,
0.25	-0.25	-0.32	MWD,
0.56	0.08	-5.94	MWD,
1.51	-0.41	16.05	MWD,
0.63	0.58	-2.69	MWD,
0.87	-0.08	-8.96	MWD,
0.57	-0.29	5.25	MWD,
0.46	0.30	3.72	MWD,
0.84	0.66	5.11	MWD,
1.49	1.27	-6.82	MWD,
5.75	5.74	-2.52	MWD,
12.00	11.98	3.81	MWD,
12.80	12.80	-0.13	MWD,
8.28	8.23	2.32	MWD,
5.69	5.15	-5.52	MWD,
11.31	7.49	-17.57	MWD,
14.84	14.72	-3.46	MWD,
9.79	8.78	-6.80	MWD/SLI
1.31	1.13	-1.00	MWD/SLI
12.44	12.43	-0.43	MWD/SLI
9.42	7.30	7.85	MWD/SLI

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6.31	6.30	-0.15	MWD/SLI
12.53	3.43	-14.74	MWD/SLI
12.64	2.81	-14.81	MWD/SLI
8.68	1.52	-10.15	MWD/SLI
7.51	1.13	-8.77	MWD/SLI
9.97	-0.20	-11.74	MWD/SLI
9.30	0.39	-10.93	MWD/SLI
9.21	0.38	-10.81	MWD/SLI
11.17	1.52	-12.93	MWD/SLI
9.32	1.13	-10.74	MWD/SLI
10.10	0.17	-11.70	MWD/SLI
11.55	3.38	-12.68	MWD/SLI
11.31	8.02	-8.93	MWD/SLI
6.22	5.35	-3.48	MWD/SLI
6.21	5.43	-3.23	MWD/SLI
8.18	5.17	-6.70	MWD/SLI
8.70	5.98	-6.57	MWD/SLI
7.99	4.98	-6.43	MWD/SLI
10.92	6.11	-9.22	MWD/SLI
12.34	2.62	-12.21	MWD/SLI
6.69	3.63	-5.67	MWD/SLI
7.13	6.00	-3.87	MWD/SLI
2.88	1.43	-2.50	MWD/SLI
3.02	3.02	-0.14	MWD/SLI
1.34	-1.32	-0.20	MWD/SLI
1.33	-0.75	-1.10	MWD/SLI
1.33	-0.10	1.32	MWD/SLI
1.28	0.00	1.28	MWD/SLI
0.40	0.18	0.36	MWD/SLI
4.48	1.42	4.25	MWD/SLI
0.32	0.29	0.14	MWD/SLI
1.80	-0.10	-1.80	MWD/SLI
3.01	-1.80	-2.42	MWD/SLI
0.67	-0.58	0.34	MWD/SLI
3.15	2.94	-1.14	MWD/SLI
1.77	-1.42	-1.05	MWD/SLI
0.32	0.28	0.16	MWD/SLI
0.95	-0.67	0.66	MWD/SLI
1.51	-1.41	-0.54	MWD/SLI
0.66	0.56	0.34	MWD/SLI
0.80	0.10	-0.80	MWD/SLI
2.48	2.46	0.31	MWD/SLI
1.85	-1.43	-1.16	MWD/SLI
1.07	0.47	0.96	MWD/SLI

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0.50	-0.47	-0.15	MWD/SLI
0.48	-0.47	0.08	MWD/SLI
0.34	0.28	0.19	MWD/SLI
0.87	0.67	0.54	MWD/SLI
0.48	-0.29	0.38	MWD/SLI
1.35	-1.13	-0.74	MWD/SLI
0.72	0.66	-0.29	MWD/SLI
0.46	0.20	0.41	MWD/SLI
0.61	-0.47	0.39	MWD/SLI
0.77	0.75	0.14	MWD/SLI
0.20	0.19	0.04	MWD/SLI
0.46	-0.28	0.36	MWD/SLI
0.52	-0.39	0.34	MWD/SLI
0.60	0.57	-0.18	MWD/SLI
0.76	-0.75	-0.11	MWD/SLI
1.09	0.47	0.98	MWD/SLI
1.16	-1.15	0.10	MWD/SLI
0.99	-0.09	0.99	MWD/SLI
0.97	0.94	-0.26	MWD/SLI
1.38	1.33	0.37	MWD/SLI
2.23	-0.39	-2.20	MWD/SLI
0.63	-0.56	0.29	MWD/SLI
0.66	0.09	-0.66	MWD/SLI
0.85	0.76	0.37	MWD/SLI
1.34	-0.47	-1.26	MWD/SLI
0.70	-0.38	-0.59	MWD/SLI
1.09	0.47	0.98	MWD/SLI
1.23	0.28	-1.19	MWD/SLI
1.64	-0.67	1.49	MWD/SLI
1.36	0.67	-1.18	MWD/SLI
0.67	-0.19	0.65	MWD/SLI
0.23	0.00	0.23	MWD/SLI
4.47	2.37	3.80	MWD/SLI
1.38	-1.23	-0.63	MWD/SLI
1.37	-1.34	0.29	MWD/SLI
1.32	0.71	-1.12	MWD/SLI
0.00	0.00	0.00	

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Survey Type	Survey Tool	Comment
Surface		
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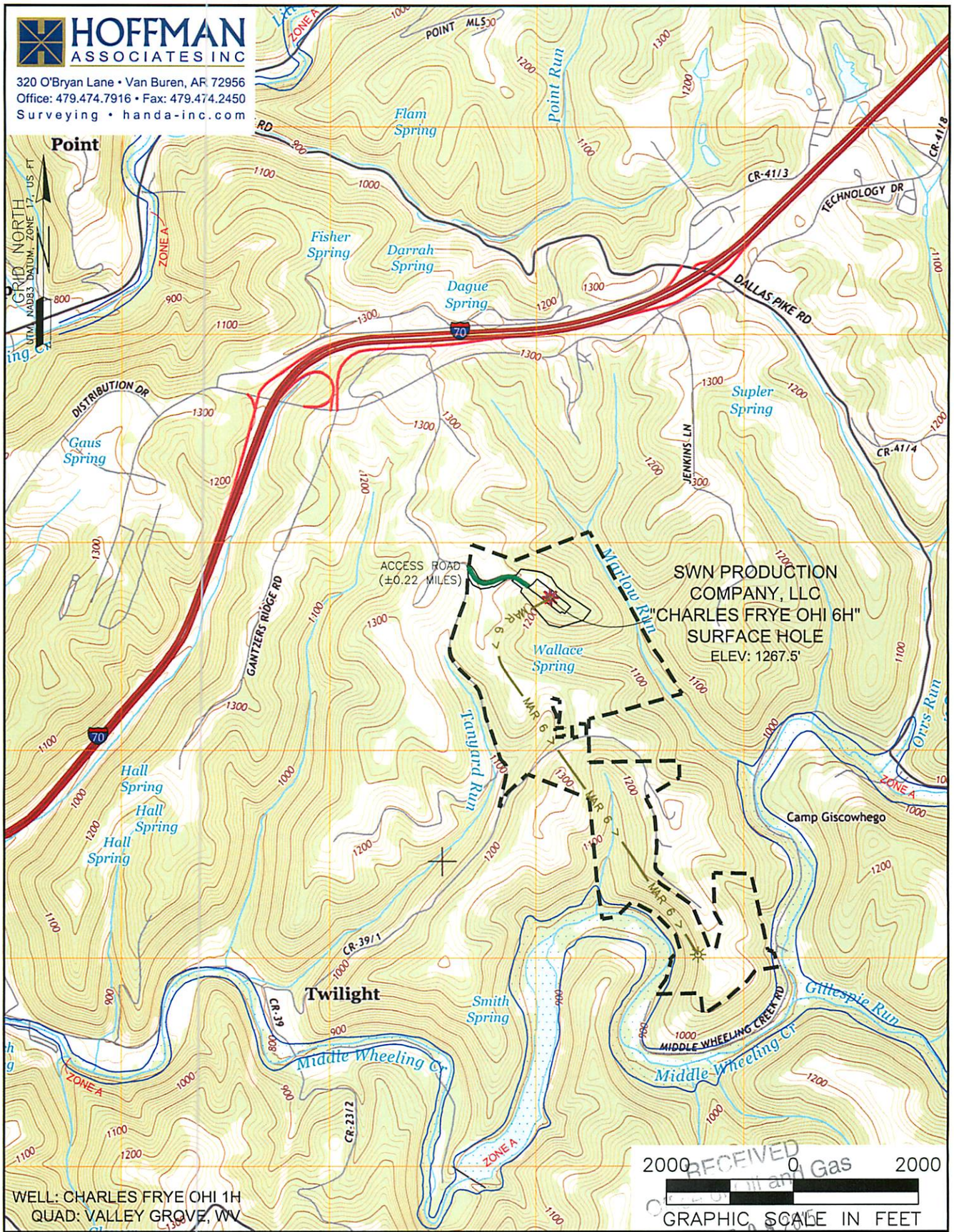

NAME AND DISTANCE TO THE NEAREST STREAM:	STREAM CROSSING COORDINATES (NAD 83):
MARLOW RUN IS LOCATED ±0.18 MILES NORTHEAST OF THE CENTER OF THE DRILL PAD.	NO NEW CROSSINGS.

WELL RESTRICTIONS:

WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET
WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET
CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET
CENTER OF PAD TO AGRICULTURAL BUILDINGS LAGER THAN 2500 SQ FT: >625 FEET

FEMA FLOOD INFORMATION:

BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF OHIO COUNTY, WEST VIRGINIA; MAP NUMBER 54069C0078D, 54069C0090D, & 54069C0095D; EFFECTIVE DATE: JULY 17, 2006.

COMPANY: SWN Production Company, LLC

OPERATOR'S WELL #: CHARLES FRYE OHI 6H

LOCATION: TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.053144°
LONGITUDE: -80.577062°

BOTTOM HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.037595°
LONGITUDE: -80.568828°

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- (S) EXISTING SPRING
- (W) EXISTING WATER WELL
- ACCESS ROAD
- ACCESS ROAD TO PREV. SITE
- HIGHWAY/INTERSTATE
- COUNTY ROAD

REVISIONS:	DATE: 08-25-2015
	DRAWN BY: S. HUTSON
	SCALE: 1" = 2000'
	DRAWING NO: 59060
	TOPOGRAPHIC MAP

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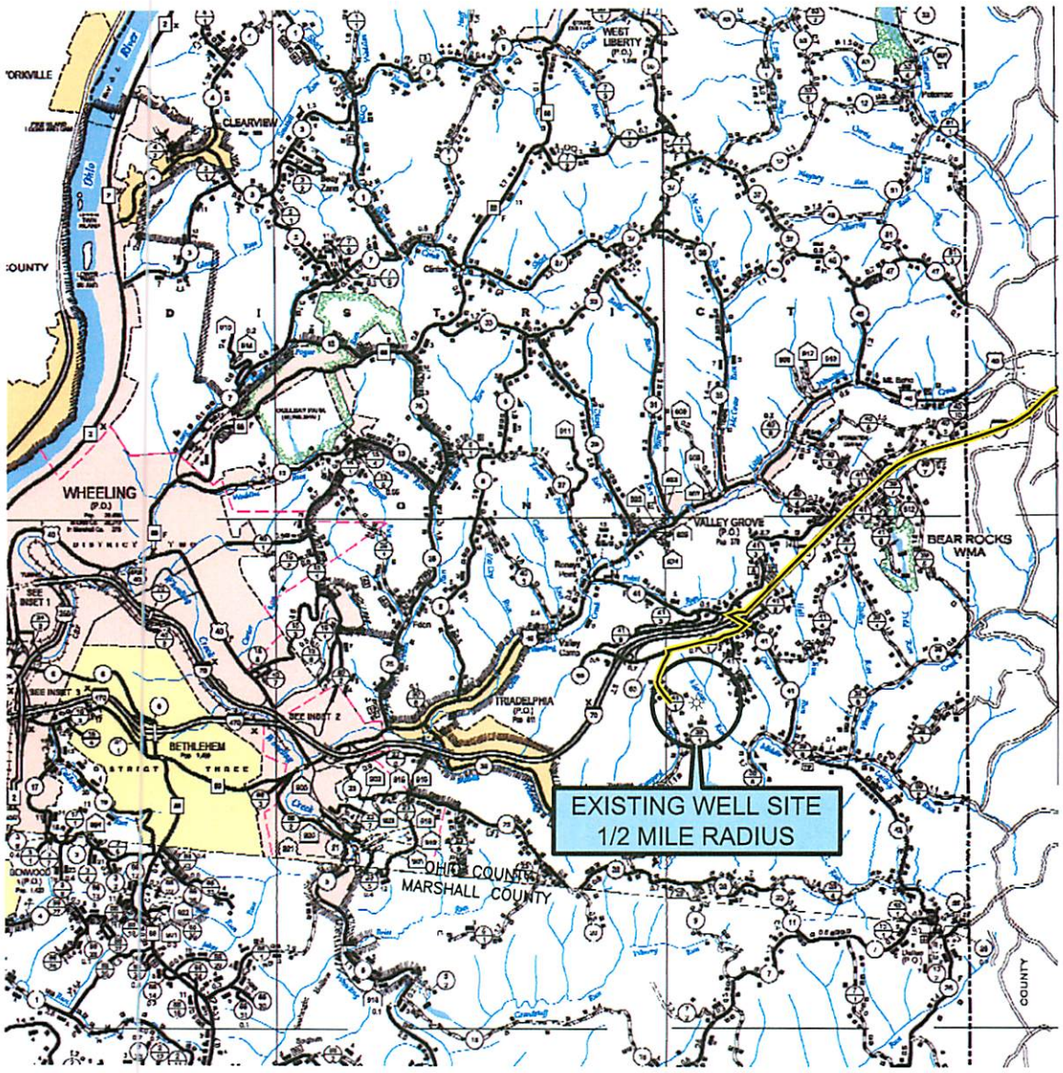
TUESDAY SEPTEMBER 01 2015 08:53AM

PROPERTY NUMBER 2501162094
PAD ID 3001155647

69-00162

HOFFMAN ASSOCIATES INC
320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
Surveying • handa-inc.com

GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT



ACCESS ROAD COORDINATES (NAD 83):

LEAVE PUBLIC ROAD	LAT: 40.054421°	LONG: -80.581823°
ENTER WELL SITE	LAT: 40.053584°	LONG: -80.578284°

GENERAL HIGHWAY MAP
OHIO COUNTY
WEST VIRGINIA
PREPARED BY
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
IN COOPERATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

GENERAL HIGHWAY MAP
MARSHALL COUNTY
WEST VIRGINIA
PREPARED BY
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
IN COOPERATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

2 0 2
GRAPHIC SCALE IN MILES

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DRIVING DIRECTIONS:

DRIVING DIRECTIONS:
FROM THE INTERSECTION OF HACKERS CREEK ROAD AND I-79N (EXIT 105) IN JANE LEW, WEST VIRGINIA; TRAVEL NORTH ON I-79 FOR ±92.4 MILES TO I-70W; BEAR LEFT ONTO I-70W AND TRAVEL ±20.9 MILES TO DALLAS PIKE (EXIT 11); TURN LEFT (EAST) ONTO DALLAS PIKE AND TRAVEL ±0.1 MILES TO MCCUTCHEON ROAD; TURN RIGHT (SOUTHWEST) ONTO MCCUTCHEON ROAD AND TRAVEL ±1.0 MILES; TURN LEFT (SOUTH) ONTO MCCUTCHEON ROAD AND TRAVEL ±0.7 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OHI" ACCESS ROAD; TURN LEFT (EAST) ONTO EXISTING ACCESS ROAD AND TRAVEL ±0.2 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OHI" GAS WELL PAD.

DRIVING PRECAUTIONS:
DRIVING DIRECTIONS NOT PROVIDED BY SWN.

DISTANCE / DIRECTION FROM NEAREST TOWN:

±1.7 MILES SOUTHEAST FROM VALLEY CAMP, WEST VIRGINIA 26059

LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- DRIVING DIRECTION ROUTE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR

COMPANY: SWN Production Company, LLC

OPERATOR'S WELL #: CHARLES FRYE OHI 6H

LOCATION: TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:
GEOGRAPHIC (NAD83):
LATITUDE: 40.053144°
LONGITUDE: -80.577062°

BOTTOM HOLE LOCATION:
GEOGRAPHIC (NAD83):
LATITUDE: 40.037595°
LONGITUDE: -80.568828°

REVISIONS:	DATE: 08-25-2015
	DRAWN BY: S. HUTSON
	SCALE: 1" = 2 MILES
	DRAWING NO: 59060
	DRIVING DIRECTION MAP

S:\WEST VIRGINIA\GAS WELLS\OHI - OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 6H\CHARLES FRYE OHI 6H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 08:53AM

PROPERTY NUMBER 2501162094
PAD ID 3001155647

HOFFMAN ASSOCIATES INC
320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
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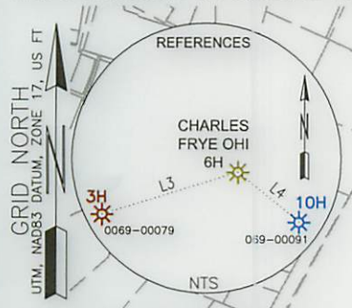
LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 28°48'20" E	1235'	SHL TO LANDMARK	PARCEL CORNER
L2	S 61°10'01" E	1918'	SHL TO LANDMARK	PARCEL CORNER
L3	S 72°51'37" W	24.49'	SHL TO REF. PNT.	CHARLES FRYE OHI 3H WELL HEAD (069-00079)
L4	S 50°43'21" E	13.51'	SHL TO REF. PNT.	CHARLES FRYE OHI 10H WELL HEAD (069-00091)

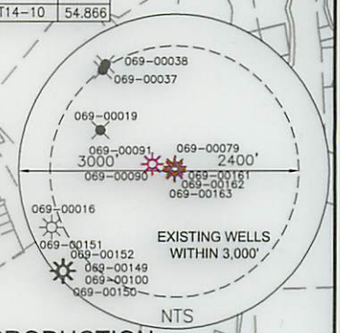
LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L5	S 09°40'10" W	1808.32'		SHL TO LP
L6	S 34°15'51" E	4680.72'		LP TO BHL

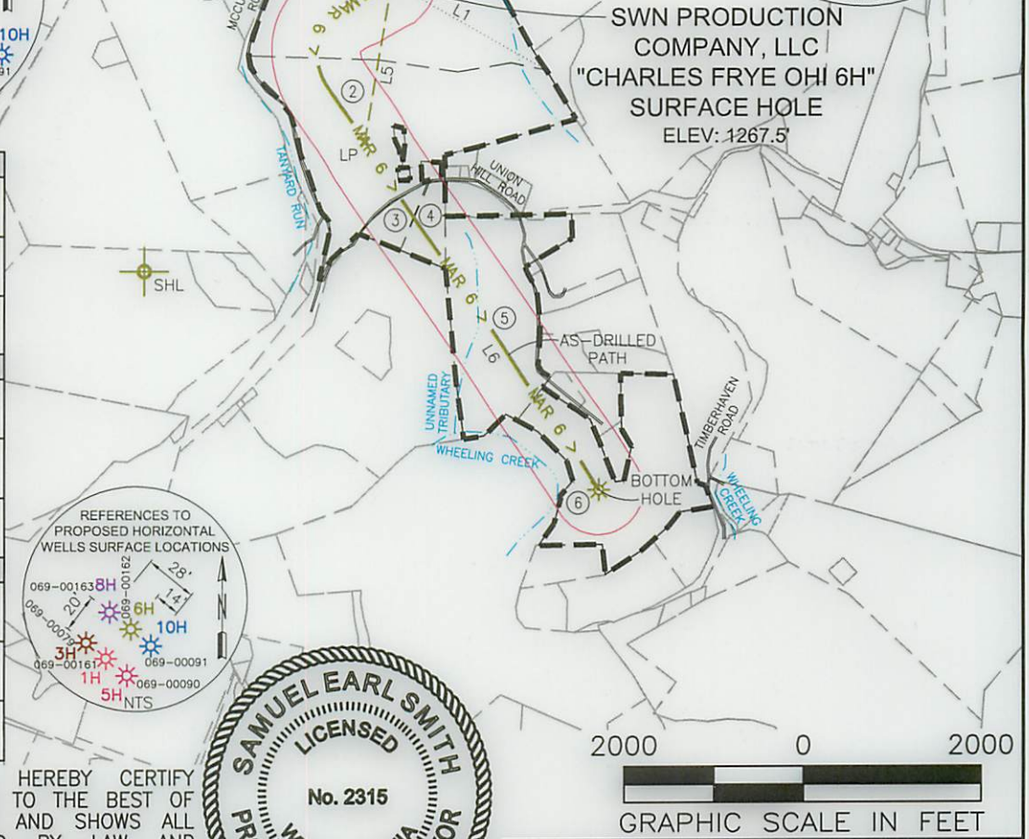
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	CHARLES FRYE & DOROTHY FRYE (S) DOROTHY V FRYE (R)	06-T14-01	105.00
2	ZACHARY ALLAN MEYER (S) ZACHARY MEYER & JENNIFER MEYER (R)	06-T14-02	91.58
3	ROBERT F LEECH (S) ROBERT F LEECH & DEBORAH A LEECH (R)	06-T14-04	5.62
4	ROBERT F LEECH (S) ROBERT F LEECH & DEBORAH A LEECH (R)	06-T14-04.1	7.10
5	JUSTUS LUZADER JR, LIFE ESTATE (S) JUSTUS LUZADER JR (R)	06-T14-11	57.513
6	CHRISTY M BOPP (S/R)	06-T14-10	54.866

NOTES ON SURVEY

1. COORDINATE SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO OCCUPIED DWELLINGS AND AGRICULTURE BUILDINGS GREATER THAN 2500 SQ FT. WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
6. NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
7. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
8. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.







SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.053144° LONGITUDE: -80.577062°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,546,366.538 EASTING: 1,758,769.222
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,433,741.389 EASTING: 536,073.931
LANDING POINT LOCATION (LPL)
GEOGRAPHIC (NAD83): LATITUDE: 40.048253° LONGITUDE: -80.578177°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,544,583.908 EASTING: 1,758,465.492
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,433,198.042 EASTING: 535,981.354
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.037595° LONGITUDE: -80.568828°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,540,715.528 EASTING: 1,761,100.792
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,432,018.957 EASTING: 536,784.595

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2315

SAMUEL EARL SMITH LICENSED No. 2315 WEST VIRGINIA PROFESSIONAL SURVEYOR

COMPANY: SWN Production Company, LLC — SWN Production Company™

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

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

OPERATOR'S WELL #: CHARLES FRYE OHI 6H

API WELL #: 47 (STATE) 69 (COUNTY) 00162H6A (PERMIT)

WELL TYPE: OIL ☐ WASTE DISPOSAL ☐ PRODUCTION ☒ DEEP ☐ GAS ☒ LIQUID INJECTION ☐ STORAGE ☐ SHALLOW ☒

WATERSHED: MIDDLE WHEELING CREEK — ELEVATION: 1267.5'

DISTRICT: TRIDELPHIA — COUNTY: OHIO — QUADRANGLE: VALLEY GROVE

SURFACE OWNER: CHARLES FRYE & DOROTHY FRYE — ACREAGE: ±105.00

OIL & GAS ROYALTY OWNER: DOROTHY V FRYE — ACREAGE: ±105.00

DRILL ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒ PLUG OFF OLD FORMATION ☐ PERFORATE NEW FORMATION ☒

CONVERT ☐ PLUG & ABANDON ☐ CLEAN OUT & REPLUG ☐ OTHER CHANGE ☒ (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS — ESTIMATED DEPTH: 6,586' TVD 12,628' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC — DESIGNATED AGENT: DEE SOUTHALL

ADDRESS: P.O. BOX 1300 — ADDRESS: P.O. BOX 1300

CITY: JANE LEW STATE: WV ZIP CODE: 26378 — CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- LEASE BOUNDARY
- 500' DHP BUFFER
- MAR 1 > MARCELLUS DHP
- ABANDONED PATH

REVISIONS:

DATE: 08-25-2015
DRAWN BY: S. HUTSON
SCALE: 1" = 2000'
DRAWING NO: 59060
WELL LOCATION PLAT

S:\WEST VIRGINIA\GAS WELLS\OHI - OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 6H\CHARLES FRYE OHI 6H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 08:52AM

PROPERTY NUMBER 2501162094
PAD ID 3001155647

SWN Production Company, LLC
P O Box 12359
Spring, Texas 77391-2359
www.swn.com

VIA FEDEREAL EXPRESS OVERNIGHT

September 03, 2015

West Virginia Department of Environmental Protection- Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
RE: Charles Frye 1H, 6H, and 8H

Dear Sir and/or Madam,
Enclosed please find the original Well Operator's Report of Well Work and the frac focus report for the above referenced well. We are not able to provide the production related data at this time due to the wells not being on sales yet. We will update the forms as soon as the information is available.
If there are any errors or questions feel free to contact me either by phone or email.

Regards,

Cody D. Magby
Sr. Staff Regulatory Analyst
Cody_magby@swn.com
832-796-6215

Enclosure; Charles Frye 1H, 6H, and 8H completion reports, and corresponding Frac Focus Reports

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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 - 069 - ~~00162~~ 00163 County 69-Ohio District 7-Tridelphia
Quad 648- Valley Grove Pad Name CHARLE FRYE-OHI-PAD1 Field/Pool Name Panhandle Field
Farm name CHARLE FRYE-OHI Well Number 8
Operator (as registered with the OOG) SWN Production Company LLC
Address 10000 Energy Drive City Spring State TX Zip 77389

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4433744.153 Easting 536070.563
Landing Point of Curve Northing 4433612.514 Easting 536051.256
Bottom Hole Northing 4432141.534 Easting 537056.452

Elevation (ft) 1267.5' 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)
SOBM

Date permit issued 4/30/13 Date drilling commenced 2/14/15 Date drilling ceased 3/27/15
Date completion activities began 5/26/15 Date completion activities ceased 6/21/15
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 564' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1135' Void(s) encountered (Y/N) depths 626-646'
Coal depth(s) ft 627' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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API 47- 069 - ~~00162~~ 00163 Farm name CHARLE FRYE-OHI Well number 8

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	30	20	126	N	F-25/94 ppf		Y
Surface	17.5	13.375	750	N	J-55/54.5 ppf		Y
Coal	12.25	9.625	2,339.70	N	J-55/40 ppf		Y
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	8.75 to 8.5	5.5	12,865	N	HCP-110		Y
Tubing		2.375	6934	N	P-110		N
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	Class A	Grout	19.3	1.19	241.42	Surface	24
Surface	Class A	706	15.6	1.18	833.08	Surface	8
Coal	Class A	844	15.6	1.19	1004.36	Surface	8
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	Class A	2530	15.6	1.19	3010.7	Surface	24
Tubing	NA	NA	NA	NA	NA	NA	NA

Drillers TD (ft) 12,865' Loggers TD (ft) 12,865'
Deepest formation penetrated Marcellus Plug back to (ft) NA
Plug back procedure NA

Kick off depth (ft) 5770 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: 1 bow spring centralizer every third joint TD to Surface Intermediate: 1 bow spring centralizer every third joint TD to Surface Production: 1 solid body centralizer from TD to 30 degrees in the curve, 1 bow spring every third joint from 30 degrees to 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- 069 - ~~00102~~ 00163 Farm name CHARLE FRYE-OHI Well number 8

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
		SEE	ATTACHED		

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)
		SEE	ATTACHED					

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
MARCELLUS	6614' TVD	12,865' 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)
	0		0		
BASE OF FRESH WATER					
					SEE ATTACHED

Please insert additional pages as applicable.

Drilling Contractor SWN Drilling Company
Address 10000 Energy Drive City Spring State TX Zip 77389

Logging Company Baker Hughes
Address 9110 Grogans Mill RD City The Woodlands State TX Zip 77380

Cementing Company CalFrac Well Services
Address 1450 Lake Robbins Dr. City The Woodlands State TX Zip 77380

Stimulating Company Baker Hughes
Address 9110 Grogans Mill Rd City The Woodlands State TX Zip 77380

Please insert additional pages as applicable.

Completed by Cody Magby Telephone 8327966215
Signature _____ Title Sr. Staff Regulatory Analyst Date 9/3/15

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

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Southwestern Energy®

Field:			
Map Units:		usFt	
Vertical Reference Datum (VRD):		Mean Sea Level	
Projected Coordinate System:		Zone 17N (84 W to 78 W)	
Section:			
Company Name:		Southwestern Energy Company	
Units:		Feet	
TVD Reference:		Rotary Table	
Position:			
		Northing:	14,546,367.140
		Easting:	1,758,769.009
North Reference:		Grid	Grid Cor
Comment :			
Slot:			
Position (Relative to SW Corner Of Section)			
N/S	8.447999999	Northing:	14,546,375.588
E/W	-10.797	Easting:	1,758,758.212
Ground Level Elevation (usft):		Ground Level:	
Comment :			
Well:			
Type:		Main well	
KB Elevation		RKB @ 1294.00usft (SDC 40)	
Closure Distance:		6173.11	Closure Azimut
Comment:			
Vertical Section:			
Position of Origin (Relative to Slot centre)		N/S	0
Vertical Section Azimuth:		148.37	

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Survey

Name	Definitive Survey	Company	SWN

Magnetic Parameters:

Model:	BGGM2014	Field Strength:	52,524	Declination:	-8.76	Dip:

Survey Tool Ranges:

Survey Tool	Start MD (ft)	End MD (ft)	
MS-SRG-WLINE	100.00	725.00	
MWD	887.00	12865.00	

Survey Points: (Relative to Slot Centre, TVD Relative to Slot TVD Reference)

MD (Ft)	Inc	Az	TVD (Ft)	+N/-S (Ft)	+E/-W (Ft)	V Sec (Ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.07	191.52	100.00	-0.06	-0.01	0.04
200.00	0.05	39.96	200.00	-0.09	0.00	0.08
300.00	0.07	135.34	300.00	-0.10	0.07	0.12
400.00	0.06	6.74	400.00	-0.09	0.12	0.14
500.00	0.19	177.83	500.00	-0.20	0.14	0.24
600.00	0.20	279.84	600.00	-0.34	-0.03	0.27
700.00	0.12	194.73	700.00	-0.41	-0.23	0.23
725.00	0.44	274.93	725.00	-0.43	-0.33	0.19
887.00	0.60	313.02	886.99	0.21	-1.57	-1.00
980.00	1.58	330.03	979.97	1.65	-2.57	-2.75
1073.00	3.09	335.10	1072.89	5.03	-4.26	-6.52
1166.00	4.63	342.18	1165.68	10.88	-6.47	-12.66
1258.00	6.08	339.61	1257.28	18.98	-9.30	-21.04
1351.00	6.66	326.94	1349.71	28.12	-13.96	-31.26
1444.00	7.62	311.91	1441.99	36.76	-21.49	-42.57
1537.00	8.00	303.70	1534.13	44.47	-31.46	-54.36
1629.00	7.54	296.97	1625.29	50.76	-42.17	-65.33
1722.00	6.64	293.21	1717.58	55.65	-52.55	-74.94
1815.00	6.11	298.10	1810.00	60.10	-61.86	-83.61
1908.00	6.20	302.93	1902.47	65.16	-70.44	-92.42
2000.00	6.10	300.28	1993.94	70.32	-78.83	-101.22
2093.00	5.17	296.03	2086.49	74.65	-86.86	-109.12
2177.00	4.84	301.14	2170.17	78.15	-93.30	-115.47
2279.00	4.84	307.12	2271.81	82.97	-100.41	-123.30
2372.00	5.25	285.89	2364.45	86.50	-107.63	-130.10
2464.00	5.23	299.14	2456.07	89.70	-115.34	-136.86
2557.00	5.98	302.79	2548.63	94.38	-123.12	-144.93
2650.00	6.09	298.99	2641.11	99.40	-131.50	-153.60
2743.00	5.64	310.74	2733.63	104.77	-139.28	-162.25
2836.00	6.48	306.33	2826.11	110.86	-146.97	-171.47

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2929.00	6.38	297.93	2918.53	116.39	-155.77	-180.79
3021.00	6.25	304.95	3009.97	121.66	-164.39	-189.79
3114.00	5.88	303.12	3102.45	127.16	-172.53	-198.75
3207.00	5.35	297.06	3195.00	131.73	-180.38	-206.76
3300.00	5.80	305.29	3287.56	136.42	-188.07	-214.79
3393.00	5.71	303.50	3380.10	141.69	-195.77	-223.31
3485.00	5.55	302.48	3471.65	146.60	-203.34	-231.46
3578.00	5.25	296.30	3564.24	150.90	-210.95	-239.11
3671.00	5.55	310.94	3656.83	155.74	-218.16	-247.01
3764.00	5.17	311.64	3749.42	161.47	-224.69	-255.32
3856.00	5.61	306.67	3841.02	166.91	-231.39	-263.46
3949.00	5.34	305.78	3933.59	172.15	-238.55	-271.68
4042.00	6.59	304.69	4026.09	177.72	-246.45	-280.57
4135.00	6.41	303.39	4118.49	183.61	-255.17	-290.16
4227.00	6.23	304.56	4209.93	189.27	-263.57	-299.38
4320.00	6.03	296.11	4302.40	194.29	-272.11	-308.13
4413.00	5.93	295.64	4394.90	198.51	-280.83	-316.30
4506.00	5.38	290.90	4487.44	202.15	-289.23	-323.80
4598.00	6.33	295.04	4578.96	205.83	-297.86	-331.46
4691.00	6.47	298.70	4671.38	210.52	-307.10	-340.30
4784.00	6.63	296.86	4763.78	215.46	-316.48	-349.43
4877.00	7.05	297.97	4856.11	220.56	-326.31	-358.93
4970.00	6.17	296.77	4948.49	225.49	-335.82	-368.11
5062.00	5.83	295.66	5039.99	229.74	-344.44	-376.25
5155.00	6.09	296.20	5132.49	233.97	-353.13	-384.40
5248.00	6.13	293.51	5224.96	238.12	-362.11	-392.65
5341.00	6.40	299.46	5317.41	242.65	-371.17	-401.26
5434.00	6.29	299.08	5409.84	247.68	-380.14	-410.24
5526.00	6.56	299.51	5501.26	252.72	-389.12	-419.24
5619.00	7.36	297.08	5593.57	258.05	-399.04	-428.98
5712.00	7.22	294.50	5685.82	263.18	-409.66	-438.93
5805.00	8.85	257.94	5777.96	264.11	-421.99	-446.18
5851.00	10.29	248.36	5823.32	261.86	-429.27	-448.08
5903.00	11.26	242.96	5874.41	257.84	-438.11	-449.29
5949.00	13.28	220.19	5919.38	251.75	-445.52	-448.00
5996.00	15.92	192.98	5964.91	241.33	-450.46	-441.72
6042.00	20.05	170.30	6008.71	227.39	-450.55	-429.89
6088.00	24.53	165.27	6051.26	210.37	-446.79	-413.43
6135.00	28.31	162.45	6093.35	190.30	-440.95	-393.28
6181.00	32.71	159.87	6132.97	168.22	-433.37	-370.51
6228.00	37.46	156.83	6171.42	143.14	-423.37	-345.91
6232.00	37.75	156.66	6174.59	140.90	-422.41	-341.50
6274.00	40.80	155.05	6207.10	116.65	-411.53	-315.14
6321.00	43.79	153.51	6241.87	88.16	-397.79	-283.98

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6367.00	47.31	150.01	6274.08	59.26	-382.24	-250.91
6413.00	48.80	148.58	6304.83	29.85	-364.76	-216.71
6460.00	52.50	147.98	6334.62	-1.06	-345.65	-180.37
6506.00	54.78	147.32	6361.89	-32.35	-325.83	-143.33
6553.00	57.42	147.96	6388.10	-65.30	-304.95	-104.33
6599.00	60.41	147.72	6411.85	-98.65	-283.99	-64.94
6645.00	63.14	147.41	6433.60	-132.85	-262.25	-24.42
6692.00	66.57	146.14	6453.57	-168.43	-238.94	18.11
6738.00	70.08	145.96	6470.56	-203.88	-215.07	60.81
6785.00	72.81	146.55	6485.51	-240.93	-190.32	105.33
6831.00	77.56	146.40	6497.27	-277.99	-165.76	149.77
6877.00	81.16	147.32	6505.77	-315.84	-141.05	194.95
6924.00	86.00	146.75	6511.02	-355.02	-115.65	241.63
6970.00	88.20	145.79	6513.35	-393.22	-90.14	287.54
7017.00	89.60	144.66	6514.25	-431.82	-63.34	334.46
7109.00	90.57	144.95	6514.11	-507.00	-10.31	426.28
7202.00	89.87	144.72	6513.76	-583.03	43.25	519.10
7295.00	86.88	146.12	6516.39	-659.55	96.00	611.93
7388.00	89.78	145.85	6519.10	-736.60	148.00	704.80
7481.00	89.25	145.57	6519.89	-813.43	200.39	797.69
7574.00	89.43	145.43	6520.96	-890.07	253.06	890.57
7666.00	89.16	146.81	6522.09	-966.44	304.35	982.49
7759.00	89.34	147.04	6523.31	-1044.37	355.09	1075.45
7852.00	89.69	146.60	6524.10	-1122.20	405.99	1168.41
7945.00	88.72	146.41	6525.39	-1199.75	457.31	1261.35
8038.00	89.60	145.52	6526.75	-1276.81	509.35	1354.26
8130.00	87.05	144.22	6529.44	-1352.01	562.26	1446.04
8223.00	87.85	144.55	6533.58	-1427.54	616.37	1538.72
8316.00	89.08	144.70	6536.07	-1503.34	670.19	1631.49
8409.00	88.37	144.98	6538.14	-1579.35	723.73	1724.29
8502.00	89.16	145.55	6540.14	-1655.76	776.70	1817.13
8594.00	89.25	149.19	6541.42	-1733.22	826.30	1909.09
8687.00	89.69	149.30	6542.28	-1813.14	873.85	2002.08
8780.00	88.20	147.50	6543.99	-1892.33	922.57	2095.05
8873.00	88.37	145.80	6546.78	-1969.98	973.67	2187.97
8965.00	88.81	145.31	6549.04	-2045.82	1025.69	2279.83
9058.00	88.99	143.86	6550.83	-2121.60	1079.58	2372.60
9151.00	88.46	142.95	6552.89	-2196.25	1135.00	2465.23
9244.00	89.43	143.46	6554.61	-2270.70	1190.70	2557.84
9337.00	89.34	143.89	6555.61	-2345.63	1245.78	2650.52
9429.00	89.16	145.11	6556.81	-2420.52	1299.20	2742.30
9522.00	89.16	146.08	6558.17	-2497.24	1351.74	2835.18
9615.00	88.55	146.19	6560.03	-2574.45	1403.56	2928.09
9708.00	88.46	145.85	6562.46	-2651.54	1455.52	3020.98

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9800.00	88.46	145.39	6564.93	-2727.44	1507.45	3112.84
9893.00	88.37	146.79	6567.50	-2804.59	1559.31	3205.73
9986.00	87.76	147.38	6570.64	-2882.62	1609.82	3298.65
10079.00	89.16	147.64	6573.14	-2961.03	1659.75	3391.60
10172.00	89.52	146.48	6574.21	-3039.07	1710.32	3484.57
10264.00	89.96	145.18	6574.63	-3115.19	1761.99	3576.48
10357.00	89.08	143.30	6575.41	-3190.65	1816.33	3669.23
10450.00	88.81	142.04	6577.12	-3264.58	1872.72	3761.75
10543.00	88.90	142.62	6578.98	-3338.18	1929.54	3854.22
10636.00	88.29	143.61	6581.26	-3412.54	1985.34	3946.80
10728.00	88.90	144.20	6583.52	-3486.86	2039.52	4038.49
10821.00	88.99	144.09	6585.23	-3562.23	2093.99	4131.22
10914.00	89.25	145.71	6586.66	-3638.30	2147.46	4224.04
11007.00	89.69	146.33	6587.52	-3715.42	2199.43	4316.95
11099.00	89.69	146.72	6588.02	-3792.16	2250.18	4408.90
11192.00	89.69	146.43	6588.52	-3869.77	2301.40	4501.86
11285.00	89.87	145.93	6588.88	-3947.04	2353.16	4594.79
11378.00	89.87	145.77	6589.09	-4024.00	2405.37	4687.70
11470.00	88.72	144.66	6590.22	-4099.55	2457.85	4779.55
11563.00	89.16	145.16	6591.94	-4175.63	2511.30	4872.36
11656.00	88.81	146.38	6593.59	-4252.51	2563.61	4965.25
11749.00	89.25	146.41	6595.16	-4329.96	2615.07	5058.18
11841.00	90.22	146.92	6595.59	-4406.82	2665.63	5150.14
11934.00	90.04	146.84	6595.38	-4484.71	2716.44	5243.11
12027.00	89.25	146.54	6595.95	-4562.43	2767.51	5336.06
12120.00	88.90	146.52	6597.45	-4640.00	2818.80	5429.00
12213.00	88.37	146.26	6599.67	-4717.43	2870.26	5521.92
12305.00	87.93	147.52	6602.64	-4794.45	2920.49	5613.84
12398.00	88.46	145.78	6605.57	-4872.09	2971.59	5706.75
12491.00	88.46	144.65	6608.07	-4948.44	3024.63	5799.57
12584.00	88.90	145.67	6610.21	-5024.75	3077.74	5892.40
12677.00	88.81	145.67	6612.07	-5101.53	3130.18	5985.28
12769.00	88.90	145.34	6613.91	-5177.34	3182.27	6077.14
12814.00	90.13	147.52	6614.29	-5214.83	3207.15	6122.11
12865.00	90.13	147.52	6614.17	-5257.86	3234.54	6173.11

Wellpath created using minimum curvature

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CHARLES FRYE OHI 8H

Ohio Co. WV

PANHANDLE (CHARLES FRYE)

	Latitude:	40.0531456600
	Longitude:	-80.5770625600

ıvergence:	0.27

CHARLES FRYE OHI 8H

	Latitude:	40.0531690000
	Longitude:	-80.5771010000

CHARLES FRYE OHI 8H

		Rig Height (Drill Floor):	26

h:	148.401

.00	**E/W**	**0.00**	

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67.37	Date:	2/21/2015

Source Survey
GYRO/MS/SDC40 (WB#1
MWD/SLB/SDC40 (WB#1

DLS (deg/ 100ft)	Build Rate (deg/ 100ft)	Turn Rate (deg/ 100ft)	
0.00	0.00	0.00	
0.07	0.07	0.00	G
0.12	-0.02	-151.56	G
0.09	0.02	95.38	G
0.12	-0.01	-128.60	G
0.25	0.13	171.09	G
0.30	0.01	102.01	G
0.22	-0.08	-85.11	G
1.74	1.28	320.80	G
0.23	0.10	23.51	M
1.10	1.05	18.29	M
1.64	1.62	5.45	M
1.73	1.66	7.61	M
1.60	1.58	-2.79	M
1.63	0.62	-13.62	M
2.25	1.03	-16.16	M
1.27	0.41	-8.83	M
1.11	-0.50	-7.32	M
1.09	-0.97	-4.04	M
0.82	-0.57	5.26	M
0.57	0.10	5.19	M
0.33	-0.11	-2.88	M
1.10	-1.00	-4.57	M
0.66	-0.39	6.08	M
0.49	0.00	5.86	M
2.04	0.44	-22.83	M
1.31	-0.02	14.40	M
0.89	0.81	3.92	M
0.45	0.12	-4.09	M
1.38	-0.48	12.63	M
1.03	0.90	-4.74	M

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1.02	-0.11	-9.03	N
0.85	-0.14	7.63	N
0.45	-0.40	-1.97	N
0.85	-0.57	-6.52	N
0.99	0.48	8.85	N
0.22	-0.10	-1.92	N
0.21	-0.17	-1.11	N
0.70	-0.32	-6.65	N
1.51	0.32	15.74	N
0.41	-0.41	0.75	N
0.70	0.48	-5.40	N
0.30	-0.29	-0.96	N
1.35	1.34	-1.17	N
0.25	-0.19	-1.40	N
0.24	-0.20	1.27	N
0.99	-0.22	-9.09	N
0.12	-0.11	-0.51	N
0.78	-0.59	-5.10	N
1.13	1.03	4.50	N
0.46	0.15	3.94	N
0.28	0.17	-1.98	N
0.47	0.45	1.19	N
0.96	-0.95	-1.29	N
0.39	-0.37	-1.21	N
0.29	0.28	0.58	N
0.31	0.04	-2.89	N
0.76	0.29	6.40	N
0.13	-0.12	-0.41	N
0.30	0.29	0.47	N
0.92	0.86	-2.61	N
0.38	-0.15	-2.77	N
5.65	1.75	-39.31	N
4.66	3.13	-20.83	N
2.69	1.87	-10.38	N
11.31	4.39	-49.50	N
15.46	5.62	-57.89	N
17.51	8.98	-49.30	N
10.58	9.74	-10.93	N
8.47	8.04	-6.00	N
9.98	9.57	-5.61	N
10.77	10.11	-6.47	N
7.66	7.23	-4.13	N
7.66	7.26	-3.84	N
6.73	6.36	-3.28	N

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9.38	7.65	-7.61	N
3.98	3.24	-3.11	N
7.93	7.87	-1.28	N
5.09	4.96	-1.43	N
5.73	5.62	1.36	N
6.52	6.50	-0.52	N
5.96	5.93	-0.67	N
7.70	7.30	-2.70	N
7.64	7.63	-0.39	N
5.93	5.81	1.26	N
10.33	10.33	-0.33	N
8.07	7.83	2.00	N
10.37	10.30	-1.21	N
5.22	4.78	-2.09	N
3.83	2.98	-2.40	N
1.10	1.05	0.32	N
0.79	-0.75	-0.25	N
3.55	-3.22	1.51	N
3.13	3.12	-0.29	N
0.64	-0.57	-0.30	N
0.25	0.19	-0.15	N
1.53	-0.29	1.50	N
0.31	0.19	0.25	N
0.60	0.38	-0.47	N
1.06	-1.04	-0.20	N
1.35	0.95	-0.96	N
3.11	-2.77	-1.41	N
0.93	0.86	0.35	N
1.33	1.32	0.16	N
0.82	-0.76	0.30	N
1.05	0.85	0.61	N
3.96	0.10	3.96	N
0.49	0.47	0.12	N
2.51	-1.60	-1.94	N
1.84	0.18	-1.83	N
0.72	0.48	-0.53	N
1.57	0.19	-1.56	N
1.13	-0.57	-0.98	N
1.18	1.04	0.55	N
0.47	-0.10	0.46	N
1.34	-0.20	1.33	N
1.04	0.00	1.04	N
0.67	-0.66	0.12	N
0.38	-0.10	-0.37	N

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0.50	0.00	-0.50	N
1.51	-0.10	1.51	N
0.91	-0.66	0.63	N
1.53	1.51	0.28	N
1.31	0.39	-1.25	N
1.49	0.48	-1.41	N
2.23	-0.95	-2.02	N
1.39	-0.29	-1.35	N
0.63	0.10	0.62	N
1.25	-0.66	1.06	N
0.92	0.66	0.64	N
0.15	0.10	-0.12	N
1.76	0.28	1.74	N
0.82	0.47	0.67	N
0.42	0.00	0.42	N
0.31	0.00	-0.31	N
0.57	0.19	-0.54	N
0.17	0.00	-0.17	N
1.74	-1.25	-1.21	N
0.72	0.47	0.54	N
1.36	-0.38	1.31	N
0.47	0.47	0.03	N
1.19	1.05	0.55	N
0.21	-0.19	-0.09	N
0.91	-0.85	-0.32	N
0.38	-0.38	-0.02	N
0.63	-0.57	-0.28	N
1.45	-0.48	1.37	N
1.95	0.57	-1.87	N
1.21	0.00	-1.22	N
1.19	0.47	1.10	N
0.10	-0.10	0.00	N
0.37	0.10	-0.36	N
5.56	2.73	4.84	N
0.00	0.00	0.00	

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Survey Type	Survey Tool	Comment
Surface		
iYRO/MS/SDC40 (WB#1)		
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SL Projection to TD

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SEP 0 8 2015

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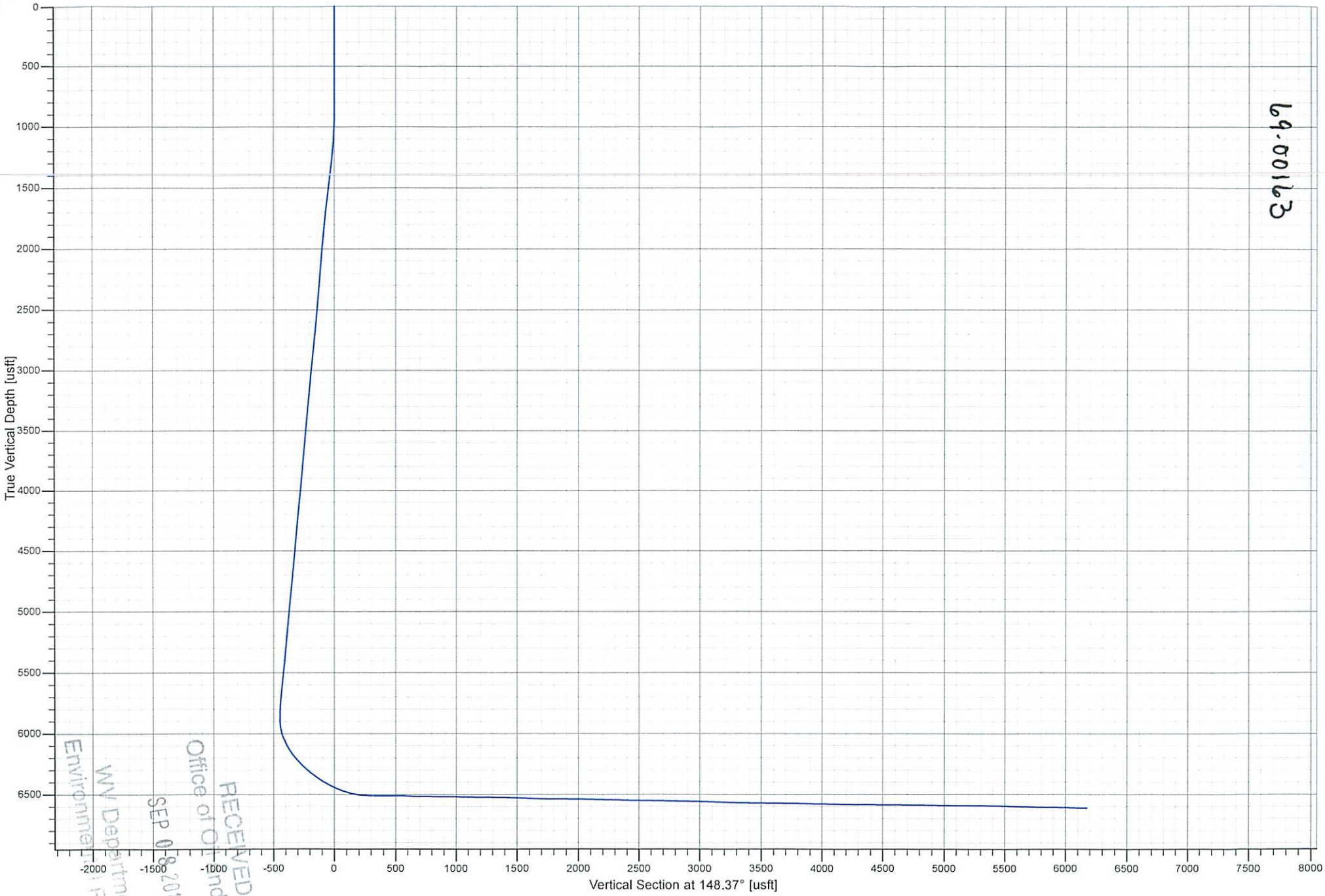
Actual: Actual (CHARLES FRYE OHI 8H/WB#1)



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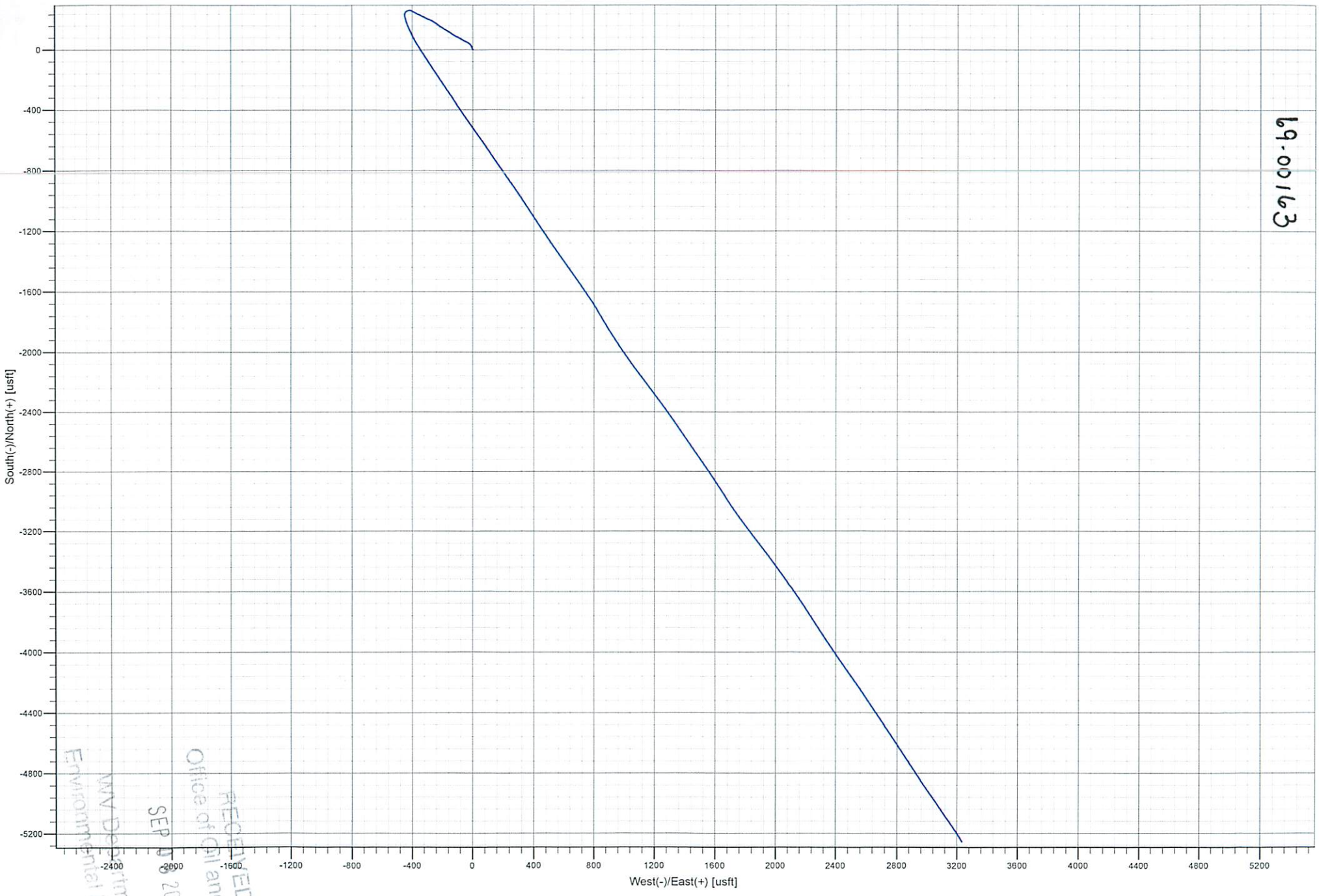
Actual: Actual (CHARLES FRYE OHI 8H/WB#1)



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Well API #: 47069001630000		PERFORATION RECORDS					
WELL NAME	STAGE NUMBER	Perf Date	Perf Top MD	Perf Bottom MD	# SHOTS PER STG		FORMATION
CHARLES FRYE OHI 8	1	5/19/2015	12,491	12,688	42		MARCELLUS
CHARLES FRYE OHI 8	2	5/20/2015	12,231	12,428	42		MARCELLUS
CHARLES FRYE OHI 8	3	5/20/2015	11,971	12,168	42		MARCELLUS
CHARLES FRYE OHI 8	4	5/20/2015	11,711	11,908	42		MARCELLUS
CHARLES FRYE OHI 8	5	5/21/2015	11,451	11,648	42		MARCELLUS
CHARLES FRYE OHI 8	6	5/21/2015	11,191	11,388	42		MARCELLUS
CHARLES FRYE OHI 8	7	5/21/2015	10,931	11,128	42		MARCELLUS
CHARLES FRYE OHI 8	8	5/22/2015	10,671	10,868	42		MARCELLUS
CHARLES FRYE OHI 8	9	5/22/2015	10,411	10,608	42		MARCELLUS
CHARLES FRYE OHI 8	10	5/22/2015	10,151	10,348	42		MARCELLUS
CHARLES FRYE OHI 8	11	5/23/2015	9,891	10,088	42		MARCELLUS
CHARLES FRYE OHI 8	12	5/23/2015	9,635	9,828	42		MARCELLUS
CHARLES FRYE OHI 8	13	5/23/2015	9,371	9,568	42		MARCELLUS
CHARLES FRYE OHI 8	14	5/23/2015	9,111	9,308	42		MARCELLUS
CHARLES FRYE OHI 8	15	5/24/2015	8,851	9,048	42		MARCELLUS
CHARLES FRYE OHI 8	16	5/24/2015	8,591	8,789	42		MARCELLUS
CHARLES FRYE OHI 8	17	5/24/2015	8,331	8,528	42		MARCELLUS
CHARLES FRYE OHI 8	18	5/24/2015	8,071	8,268	42		MARCELLUS
CHARLES FRYE OHI 8	19	5/25/2015	7,811	8,008	42		MARCELLUS
CHARLES FRYE OHI 8	20	5/25/2015	7,551	7,748	42		MARCELLUS
CHARLES FRYE OHI 8	21	5/25/2015	7,291	7,488	42		MARCELLUS
CHARLES FRYE OHI 8	22	5/25/2015	7,031	7,228	42		MARCELLUS

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WV Department of Environmental Protection

69-00163

CHARLES FRYE 8H					
LITHOLOGY/FORMATION	TOP DEPTH, TVD (FT)	BOTTOM DEPTH, TVD (FT)	TOP DEPTH, MD (FT)	BOTTOM DEPTH, MD (FT)	QUANTITY AND TYPE OF FLUID
Pittsburgh Coal	627	642	627	642	NA
Big Injun (ss)	1681	2006	1681	2006	100 bbl/hr water
Rhinestreet (shale)	5851	6141	5880	6191	NA
Cashaqua (shale)	6141	6219	6191	6290	NA
Middlesex (shale)	6219	6288	6290	6387	NA
Burket (shale)	6288	6320	6387	6436	NA
Tully (ls)	6320	6351	6436	6488	NA
Mahantango (shale)	6351	6486	6488	6786	NA
Marcellus (shale)	6486		6786		gas

69-00163

Well API #: 47069001630000			STIMULATION INFORMATION PER STAGE								
WELL NAME	STAGE NUM	Stim 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		
CHARLES FRYE OHI 8	1	5/19/2015	97	7,641	8,412	4,472	501,207	7,669			
CHARLES FRYE OHI 8	2	5/20/2015	102	7,885	8,571	4,553	500,233	7,150			
CHARLES FRYE OHI 8	3	5/20/2015	102	7,918	8,675	4,782	500,618	7,167			
CHARLES FRYE OHI 8	4	5/20/2015	101	7,905	8,300	4,314	503,668	7,385			
CHARLES FRYE OHI 8	5	5/21/2015	102	7,672	8,495	4,377	500,609	7,128			
CHARLES FRYE OHI 8	6	5/21/2015	102	7,413	8,619	4,425	499,541	7,127			
CHARLES FRYE OHI 8	7	5/21/2015	103	7,824	9,333	4,733	483,106	7,217			
CHARLES FRYE OHI 8	8	5/22/2015	104	7,590	9,065	4,436	501,203	7,186			
CHARLES FRYE OHI 8	9	5/22/2015	100	7,817	8,729	4,186	502,829	8,644			
CHARLES FRYE OHI 8	10	5/22/2015	102	7,241	7,911	4,403	505,023	7,158			
CHARLES FRYE OHI 8	11	5/23/2015	103	7,395	7,838	4,797	494,818	7,137			
CHARLES FRYE OHI 8	12	5/23/2015	103	7,229	8,917	4,651	502,543	7,180			
CHARLES FRYE OHI 8	13	5/23/2015	102	7,363	8,858	4,818	499,731	7,102			
CHARLES FRYE OHI 8	14	5/23/2015	103	7,405	7,727	4,527	503,131	6,967			
CHARLES FRYE OHI 8	15	5/24/2015	104	7,159	7,586	4,746	486,386	6,865			
CHARLES FRYE OHI 8	16	5/24/2015	102	7,235	8,781	4,637	503,728	7,674			
CHARLES FRYE OHI 8	17	5/24/2015	102	7,081	8,717	4,951	501,219	6,949			
CHARLES FRYE OHI 8	18	5/24/2015	101	7,097	7,569	4,707	505,876	6,926			
CHARLES FRYE OHI 8	19	5/25/2015	100	7,097	7,692	4,452	508,396	7,125			
CHARLES FRYE OHI 8	20	5/25/2015	100	7,316	8,340	4,627	504,397	7,058			
CHARLES FRYE OHI 8	21	5/25/2015	95	6,884	8,363	4,528	502,338	7,078			
CHARLES FRYE OHI 8	22	5/25/2015	101	6,979	7,589	4,394	504,819	6,976			

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	5/20/2015
Job End Date:	5/25/2015
State:	West Virginia
County:	Ohio
API Number:	47-069-00163-00-00
Operator Name:	Southwestern Energy
Well Name and Number:	OHI FRYE CHARLES 8H
Longitude:	-80.56583000
Latitude:	40.03864000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	6,614
Total Base Water Volume (gal):	6,672,456
Total Base Non Water Volume:	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Interstate Oil & Gas Compact Commission

69-00163

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	Operator	Carrier					
			Water	7732-18-5	100.00000	82.66182	
Sand, White, 40/70	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		9.65370	
Sand, White, 100 mesh	Baker Hughes	Proppant					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		6.37980	
HCl, 10.1 - 15%	Baker Hughes	Acidizing					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		1.17457	SmartCare Product
MaxPerm-20A, 265 gallon tote	Baker Hughes	Friction Reducer					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.07430	SmartCare Product
Ferrotrol 300L	Baker Hughes	Iron Control					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00807	SmartCare Product
CI-39	Baker Hughes	Corrosion Inhibitor					
			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00236	
GBW-5	Baker Hughes	Breaker					

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			MSDS and Non-MSDS Ingredients Listed Below	N/A		0.00061	SmartCare Product
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.							
Ingredients in Additive (s) (MSDS and non-MSDS)	Baker Hughes	See Trade Name(s) List					
			Crystalline Silica (Quartz)	14808-60-7	100.00000	16.02483	
			Water	7732-18-5	85.00000	1.04662	
			Hydrochloric Acid	7647-01-0	15.00000	0.17609	
			1-Propanesulfonic acid, 2-methyl-2-[(1-oxo-2-propen-1-yl) amino]-, polymer with 2-propenamide, sodium salt	83446-68-8	60.00000	0.04455	
			Hydrotreated Light Distillate	64742-47-8	30.00000	0.02228	
			Citric Acid	77-92-9	60.00000	0.00484	
			Oxyalkylated alcohol	78330-21-9	5.00000	0.00371	
			Polyoxyethylene sorbitan monooleate	9005-65-6	5.00000	0.00371	
			Sorbitan, mono-(9Z)-9-octadecenoate	1338-43-8	5.00000	0.00371	
			Sodium Chloride	7647-14-5	5.00000	0.00371	
			Oxyalkylated Fatty Acid	61791-002	40.00000	0.00094	
			Formic Acid	64-18-6	30.00000	0.00071	
			Tar Bases, Quinoline Derivs., Benzyl Chloride-Quaternized	72480-70-7	30.00000	0.00071	
			Aldehyde	104-55-2	30.00000	0.00071	
			Ammonium Persulphate	7727-54-0	100.00000	0.00061	
			Isopropanol	67-63-0	5.00000	0.00012	
			Quaternary Ammonium Compound	100765-57-9	5.00000	0.00012	
			Sulfurized polyolefin	68037-13-8	5.00000	0.00012	
			Potassium Iodide	7681-11-0	2.00000	0.00005	
			Polyaklylene	7756-94-7	1.00000	0.00002	
			Potassium Acetate	127-08-2	0.50000	0.00001	

* 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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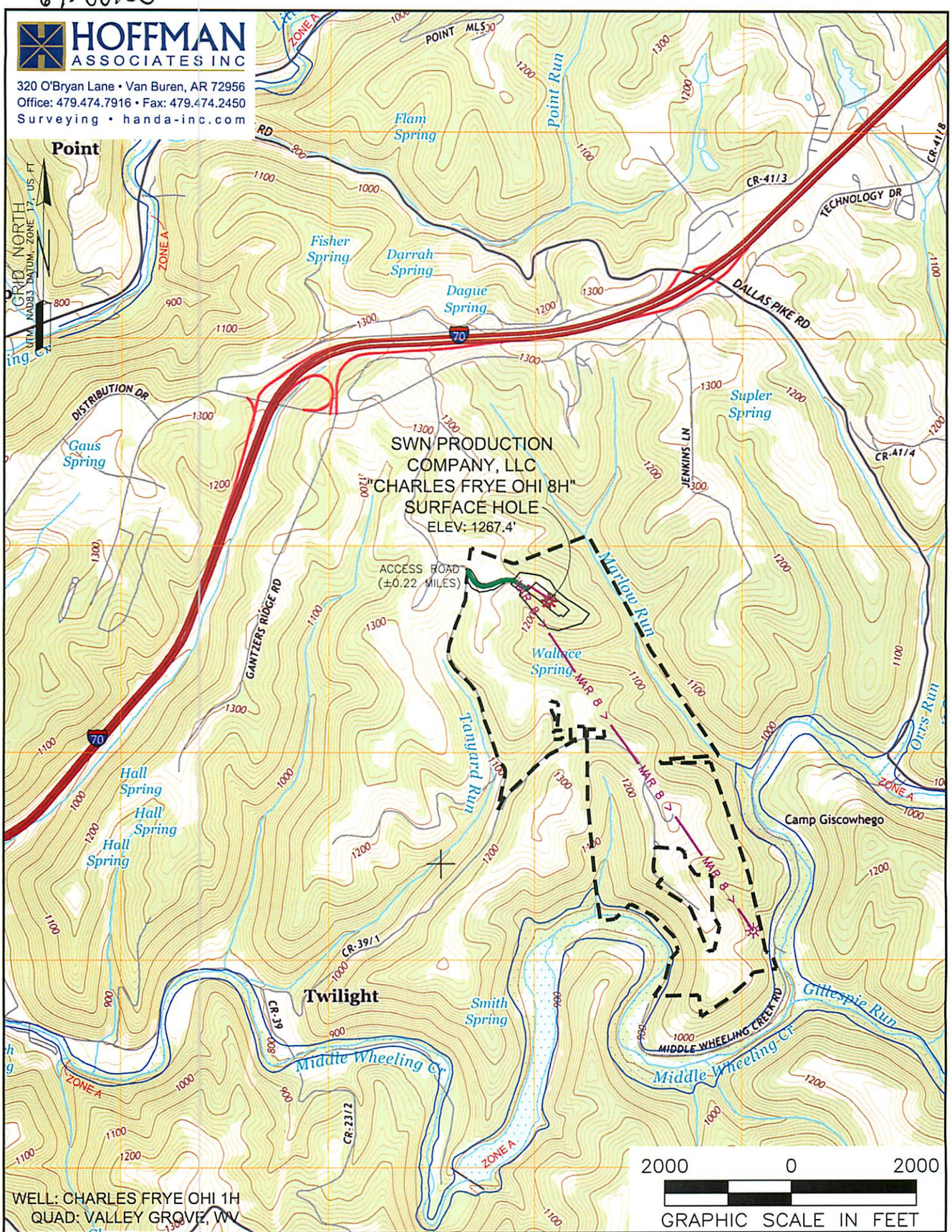
69.00163

69-00163

HOFFMAN ASSOCIATES INC
320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
Surveying • handa-inc.com



WELL: CHARLES FRYE OHI 1H
QUAD: VALLEY GROVE, WV

NAME AND DISTANCE TO THE NEAREST STREAM:	STREAM CROSSING COORDINATES (NAD 83):
MARLOW RUN IS LOCATED ±0.18 MILES NORTHEAST OF THE CENTER OF THE DRILL PAD.	NO NEW CROSSINGS.

WELL RESTRICTIONS:

WELL PAD, LOD, & E & S CONTROL FEATURES TO PERENNIAL STREAM, LAKE, POND, RESERVOIR OR WETLAND: >100 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO NATURALLY PRODUCING TROUT STREAM: >300 FEET
WELL PAD, LOD, & E & S CONTROL FEATURES TO GROUNDWATER INTAKE OR PUBLIC WATER SUPPLY: >1000 FEET
WELL SHL TO EXISTING WATER WELL OR DEVELOPED SPRING: >250 FEET
CENTER OF PAD TO OCCUPIED DWELLING STRUCTURE: >625 FEET
CENTER OF PAD TO AGRICULTURAL BUILDINGS LAGER THAN 2500 SQ FT: >625 FEET

FEMA FLOOD INFORMATION:

BY GRAPHIC PLOTTING ONLY FEMA FIRM INCORPORATED AREA OF OHIO COUNTY, WEST VIRGINIA; MAP NUMBER 54069C0078D, 54069C0090D, & 54069C0095D; EFFECTIVE DATE: JULY 17, 2006.

COMPANY: SWN Production Company, LLC — SWN Production Company™

OPERATOR'S WELL #: CHARLES FRYE OHI 8H

LOCATION: TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:
GEOGRAPHIC (NAD83):
LATITUDE: 40.053169°
LONGITUDE: −80.577101°

BOTTOM HOLE LOCATION:
GEOGRAPHIC (NAD83):
LATITUDE: 40.038688°
LONGITUDE: −80.565634°

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LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- EXISTING SPRING
- EXISTING WATER WELL
- ACCESS ROAD
- ACCESS ROAD TO PREV. SITE
- HIGHWAY/INTERSTATE
- COUNTY ROAD

REVISIONS:

DATE: 08-25-2015
DRAWN BY: S. HUTSON
SCALE: 1" = 2000'
DRAWING NO: 59061
TOPOGRAPHIC MAP

S:\WEST VIRGINIA\GAS WELLS\OHI – OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 8H\CHARLES FRYE OHI 8H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 08:59AM

PROPERTY NUMBER 2501162091
PAD ID 3001155647

69-00163

HOFFMAN ASSOCIATES INC
320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
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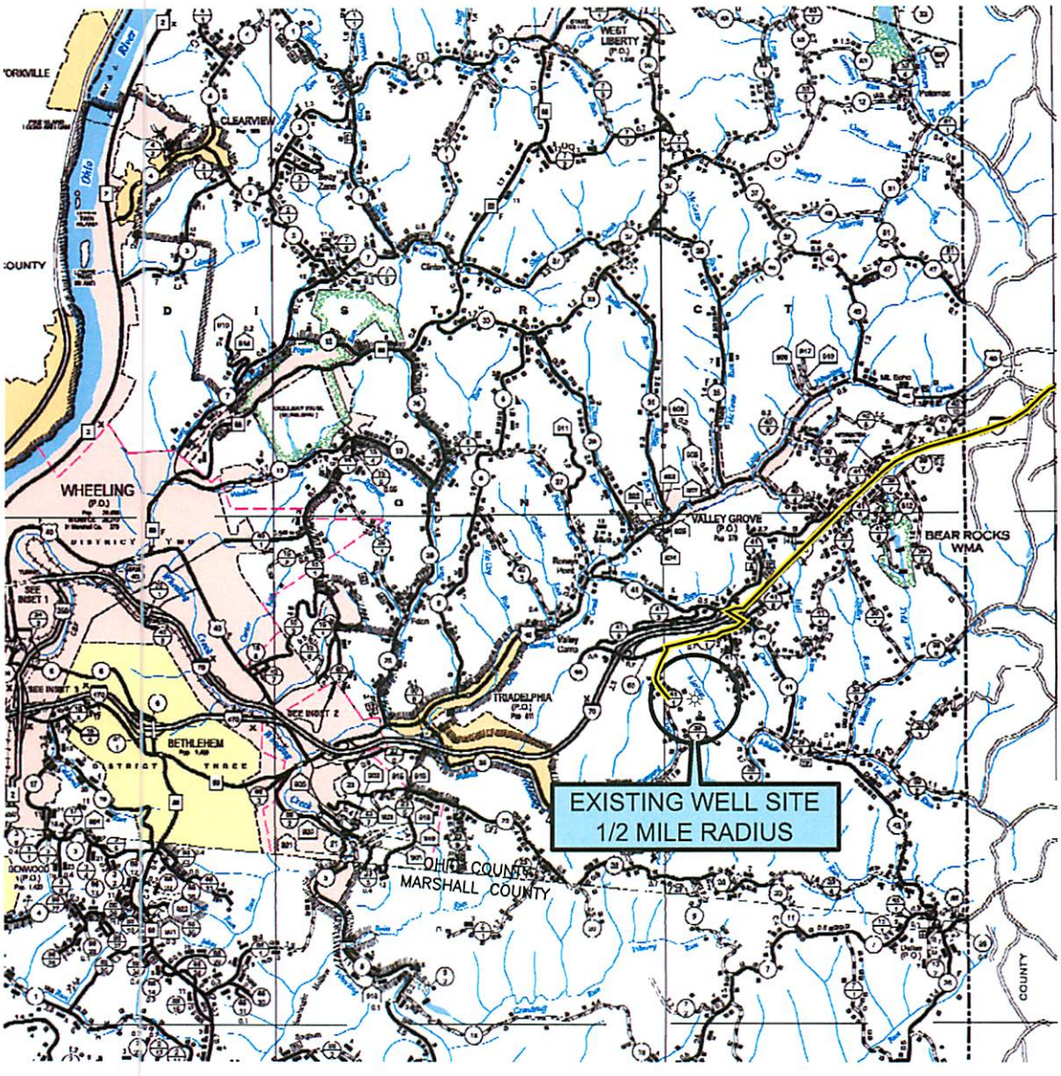
GRID NORTH
UTM, NAD83 DATUM, ZONE 17, US FT



ACCESS ROAD COORDINATES (NAD 83):

LEAVE PUBLIC ROAD	LAT: 40.054421°	LONG: -80.581823°
ENTER WELL SITE	LAT: 40.053584°	LONG: -80.578284°

GENERAL HIGHWAY MAP
OHIO COUNTY
WEST VIRGINIA
PREPARED BY
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
IN CORPORATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

GENERAL HIGHWAY MAP
MARSHALL COUNTY
WEST VIRGINIA
PREPARED BY
WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
PLANNING DIVISION
IN CORPORATION WITH
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

2 0 2
GRAPHIC SCALE IN MILES

DRIVING DIRECTIONS:

DRIVING DIRECTIONS:
FROM THE INTERSECTION OF HACKERS CREEK ROAD AND I-79N (EXIT 105) IN JANE LEW, WEST VIRGINIA; TRAVEL NORTH ON I-79 FOR ±92.4 MILES TO I-70W; BEAR LEFT ONTO I-70W AND TRAVEL ±20.9 MILES TO DALLAS PIKE (EXIT 11); TURN LEFT (EAST) ONTO DALLAS PIKE AND TRAVEL ±0.1 MILES TO MCCUTCHEON ROAD; TURN RIGHT (SOUTHWEST) ONTO MCCUTCHEON ROAD AND TRAVEL ±1.0 MILES; TURN LEFT (SOUTH) ONTO MCCUTCHEON ROAD AND TRAVEL ±0.7 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OHI" ACCESS ROAD; TURN LEFT (EAST) ONTO EXISTING ACCESS ROAD AND TRAVEL ±0.2 MILES TO EXISTING SWN PRODUCTION COMPANY, LLC "CHARLES FRYE OHI" GAS WELL PAD.

DRIVING PRECAUTIONS:
DRIVING DIRECTIONS NOT PROVIDED BY SWN.

DISTANCE / DIRECTION FROM NEAREST TOWN:

±1.7 MILES SOUTHEAST FROM VALLEY CAMP, WEST VIRGINIA 26059

LEGEND:

- PROPOSED SURFACE HOLE / BOTTOM HOLE
- DRIVING DIRECTION ROUTE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR

COMPANY: SWN Production Company, LLC — SWN Production Company™

OPERATOR'S WELL #: CHARLES FRYE OHI 8H

LOCATION: TRIDELPHIA DISTRICT, OHIO COUNTY, WEST VIRGINIA

SURFACE HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.053169°
LONGITUDE: -80.577101°

BOTTOM HOLE LOCATION:

GEOGRAPHIC (NAD83):
LATITUDE: 40.038688°
LONGITUDE: -80.565634°

RECEIVED
Office of Oil and Gas
SEP 08 2015
WV Department of
Environmental Protection

REVISIONS:

DATE: 08-25-2015
DRAWN BY: S. HUTSON
SCALE: 1" = 2 MILES
DRAWING NO: 59061
DRIVING DIRECTION MAP

S:\WEST VIRGINIA\GAS WELLS\OHI - OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 8H\CHARLES FRYE OHI 8H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 09:00AM

PROPERTY NUMBER 2501162091
PAD ID 3001155647

9895'

HOFFMAN ASSOCIATES INC

320 O'Bryan Lane • Van Buren, AR 72956
Office: 479.474.7916 • Fax: 479.474.2450
Surveying • handa-inc.com

LINE	BEARING	DISTANCE	DESCRIPTION	MONUMENT
L1	N 29°27'25" E	1233'	SHL TO LANDMARK	PARCEL CORNER
L2	S 61°05'29" E	1932'	SHL TO LANDMARK	PARCEL CORNER
L3	S 37°17'05" W	20.39'	SHL TO REF. PNT.	CHARLES FRYE OHI 3H WELL HEAD (069-00079)
L4	S 50°46'42" E	27.76'	SHL TO REF. PNT.	CHARLES FRYE OHI 10H WELL HEAD (069-00091)

LINE	BEARING	DISTANCE	CURVE LENGTH	DESCRIPTION
L5	S 08°20'41" W	436.44'		SHL TO LP
L6	S 34°20'48" E	5845.23'		LP TO BHL

Latitude: 40°05'00"

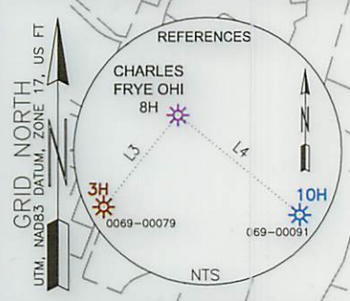
Longitude: 80°32'30"

11004'

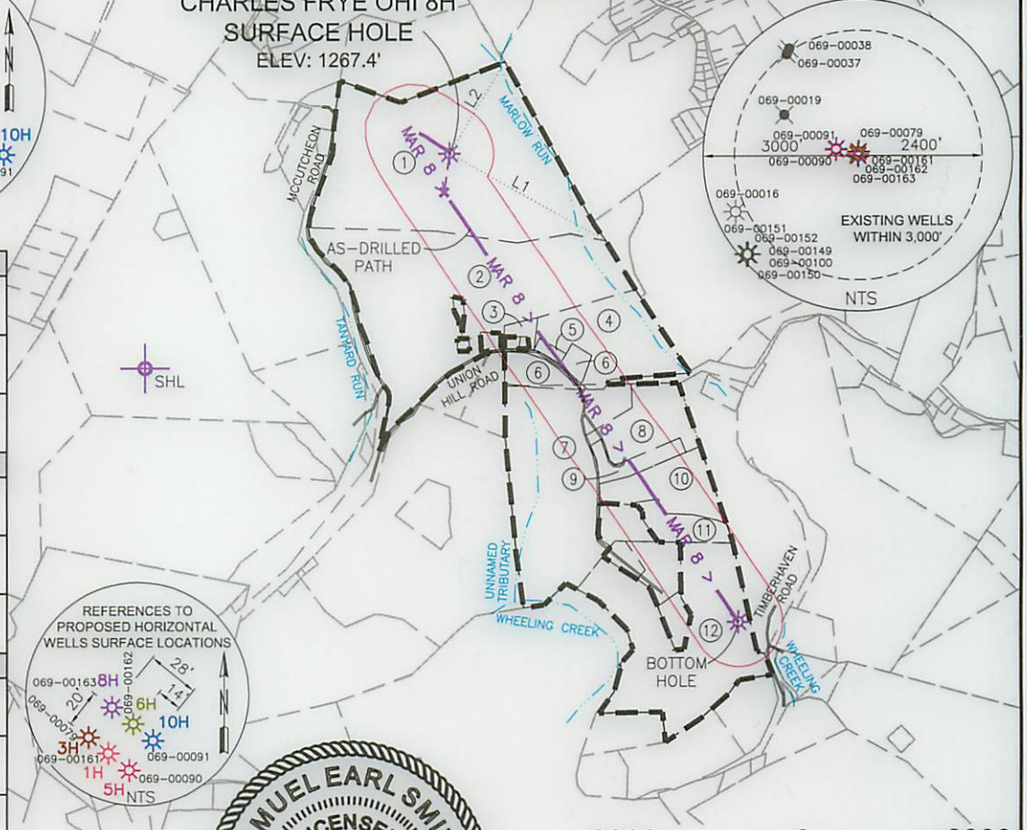
TRACT	SURFACE OWNER (S) / ROYALTY OWNER (R)	TAX PARCEL	ACRES
1	CHARLES FRYE & DOROTHY FRYE (S) DOROTHY V FRYE (R)	06-T14-01	105.00
2	ZACHARY ALLAN MEYER (S) ZACHARY MEYER & JENNIFER MEYER (R)	06-T14-02	91.58
3	DONALD MOFFITT JR & L L MOFFITT (S) DONALD L MOFFITT JR & LINDA J MOFFITT (R) DAVID R MOFFITT (R) JUDITH L REBICH (R)	06-T14-03.3	1.649
4	DAVID R MOFFITT & LINDA J MOFFITT (S/R)	06-T14-03	34.231
5	REGINA A CONKLIN & HENRY M CONKLIN (S) REGINA A CONKLIN & HENRY J CONKLIN (R)	06-T14-03.4	1.048
6	DAVID R MOFFITT & L J MOFFITT (S) DAVID R MOFFITT & LINDA J MOFFITT (R)	06-T14-03.2	2.00
7	JUSTUS LUZADER JR, LIFE ESTATE (S) JUSTUS LUZADER JR (R)	06-T14-11	57.513
8	RICHARD J LUZADER (S/R)	06-T14-11.1	14.992
9	JASON GRAY & NICOLE L GRAY (S) RICHARD J LUZADER (R)	06-T14-11.3	5.00
10	KIRK LUZADER & JUDY LUZADER (S) KIRK D LUZADER & JUDY L LUZADER (R)	06-T14-11.2	14.365
11	KIRK D LUZADER & JUDY L LUZADER (S/R)	06-T14-11.4	6.94
12	CHRISTY M BOPP (S/R)	06-T14-10	54.866

NOTES ON SURVEY

1. COORDINATE SYSTEM IS UTM, NAD 83 DATUM, ZONE 17, U.S. FOOT AND WELL COORDINATES ESTABLISHED USING SURVEY GRADE GPS.
2. SURFACE AND ROYALTY OWNER INFORMATION AND THEIR BOUNDARIES SHOWN HEREON WERE PLOTTED FROM DEEDS AND/OR TAX PARCEL MAPS PROVIDED BY CLIENT AND/OR FIELD LOCATIONS.
3. THIS PLAT DOES NOT REPRESENT A BOUNDARY SURVEY OF THE PARCELS SHOWN HEREON.
4. NO OCCUPIED DWELLINGS AND AGRICULTURE BUILDINGS GREATER THAN 2500 SQ FT. WITHIN 625 FEET OF PROPOSED OF CENTER OF PAD.
5. NO WATER WELLS OR DEVELOPED SPRINGS WITHIN 250 FEET OF PROPOSED WELL.
6. NO PERENNIAL STREAMS, LAKES, PONDS, OR RESERVOIRS WITHIN 100 FEET OF THE LIMITS OF DISTURBANCE.
7. NO NATURALLY PRODUCING TROUT STREAM WITHIN 300 FEET OF LIMITS OF DISTURBANCE.
8. NO GROUND INTAKE OR PUBLIC WATER SUPPLY WITHIN 1000 FEET OF WELL PAD, LIMITS OF DISTURBANCE, E & S CONTROLS OR PUBLIC WATER SUPPLY.



SWN PRODUCTION COMPANY, LLC
"CHARLES FRYE OHI 8H"
SURFACE HOLE
ELEV: 1267.4'



SURFACE HOLE LOCATION (SHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.053169° LONGITUDE: -80.577101°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,546,375.541 EASTING: 1,758,758.170
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,433,744.133 EASTING: 536,070.563
LANDING POINT LOCATION (LPL):
GEOGRAPHIC (NAD83): LATITUDE: 40.051984° LONGITUDE: -80.577335°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,545,943.721 EASTING: 1,758,694.830
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,433,612.514 EASTING: 536,051.256
BOTTOM HOLE LOCATION (BHL):
GEOGRAPHIC (NAD83): LATITUDE: 40.038688° LONGITUDE: -80.565634°
UTM (NAD83, ZONE 17, FEET): NORTHING: 14,541,117.681 EASTING: 1,761,992.710
UTM (NAD83, ZONE 17, METERS): NORTHING: 4,432,141.534 EASTING: 537,056.452

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 REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.

P.S. 2315 Samuel Smith

SAMUEL EARL SMITH
LICENSED
No. 2315
WEST VIRGINIA
PROFESSIONAL SURVEYOR

2000 0 2000
GRAPHIC SCALE IN FEET

COMPANY: SWN Production Company, LLC — SWN Production Company™

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

WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25034

MINIMUM DEGREE OF ACCURACY: 1/200

PROVEN SOURCE OF ELEVATION: SURVEY GRADE GPS (NAVD 88, US FT)

OPERATOR'S WELL #: CHARLES FRYE OHI 8H

API WELL #: 47 (STATE) 69 (COUNTY) 00163H6A (PERMIT)

WELL TYPE: OIL ☐ WASTE DISPOSAL ☐ PRODUCTION ☒ DEEP ☐ GAS ☒ LIQUID INJECTION ☐ STORAGE ☐ SHALLOW ☒

WATERSHED: MIDDLE WHEELING CREEK — ELEVATION: 1267.4'

DISTRICT: TRIDELPHIA — COUNTY: OHIO — QUADRANGLE: VALLEY GROVE

SURFACE OWNER: CHARLES FRYE & DOROTHY FRYE — ACREAGE: ±105.00

OIL & GAS ROYALTY OWNER: DOROTHY V FRYE — ACREAGE: ±105.00

DRILL ☐ DRILL DEEPER ☐ REDRILL ☐ FRACTURE OR STIMULATE ☒ PLUG OFF OLD FORMATION ☐ PERFORATE NEW FORMATION ☒

CONVERT ☐ PLUG & ABANDON ☐ CLEAN OUT & REPLUG ☐ OTHER CHANGE ☒ (SPECIFY) AS-DRILLED

TARGET FORMATION: MARCELLUS — ESTIMATED DEPTH: 6,614' TVD 12,865' TMD

WELL OPERATOR: SWN PRODUCTION COMPANY, LLC
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

DESIGNATED AGENT: DEE SOUTHALL
ADDRESS: P.O. BOX 1300
CITY: JANE LEW STATE: WV ZIP CODE: 26378

LEGEND:
- PROPOSED SURFACE HOLE / BOTTOM HOLE
- EXISTING / PRODUCING WELLHEAD
- ABANDONED WELL
- PLUGGED & ABANDONED WELL
- CUT CONDUCTOR
- LEASE BOUNDARY
- 500' DHP BUFFER
- MAR 1 > MARCELLUS DHP
- ABANDONED PATH

REVISIONS:

DATE: 08-25-2015
DRAWN BY: S. HUTSON
SCALE: 1" = 2000'
DRAWING NO: 59061
WELL LOCATION PLAT

S:\WEST VIRGINIA\GAS WELLS\OHI - OHIO COUNTY, WV\CHARLES FRYE OHI\CHARLES FRYE OHI 8H\CHARLES FRYE OHI 8H-ASDRILLED.DWG
TUESDAY SEPTEMBER 01 2015 08:58AM

PROPERTY NUMBER 2501162091
PAD ID 3001155647

WR-35
Rev. 8/23/13

Page ___ of ___

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

API 47 - 075 - 00037 County Pocahontas District Green Bank
Quad Sinks of Gandy Pad Name _____ Field/Pool Name Glady Storage
Farm name U.S. Forest Service Well Number 7468
Operator (as registered with the OOG) Columbia Gas Transmission, LLC
Address 1700 MacCorkle Ave SE City Charleston State WV Zip 25325-1273

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing _____ Easting _____
Landing Point of Curve Northing _____ Easting _____
Bottom Hole Northing _____ Easting _____

Elevation (ft) 3749 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)

_____

_____

Date permit issued 6/2/15 Date drilling commenced 7/16/15 Date drilling ceased _____
Date completion activities began _____ Date completion activities ceased 9/14/15
Verbal plugging (Y/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 _____ Open mine(s) (Y/N) depths _____
Salt water depth(s) ft _____ Void(s) encountered (Y/N) depths _____
Coal depth(s) ft _____ Cavern(s) encountered (Y/N) depths _____
Is coal being mined in area (Y/N) _____

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JK

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API 47- 075 - 00037 Farm name U.S. Forest Service Well number 7468

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							
Surface							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production							
Tubing							
Packer type and depth set							

Comment Details No existing casing was altered and no additional casing installed during permitted well work.

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							
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production							
Tubing							

Drillers TD (ft) _____ Loggers TD (ft) _____
Deepest formation penetrated _____ Plug back to (ft) _____
Plug back procedure _____

Kick off depth (ft)_____

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 _____

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)

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	9/10/15	3	25	N/A	N/A	0	110	270 acid (bbls)

Please insert additional pages as applicable.

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PRODUCING FORMATION(S)	DEPTHS	
Oriskany (storage)	____ TVD	6043 MD

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 1600 psi Bottom Hole ____ psi DURATION OF TEST ____ hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	26,000 mcfpd	____ 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)
	0		0		

Please insert additional pages as applicable.

Drilling Contractor ____
Address ____ City ____ State ____ Zip ____

Logging Company ____
Address ____ City ____ State ____ Zip ____

Cementing Company ____
Address ____ City ____ State ____ Zip ____

Stimulating Company C&J Energy Services
Address 580 Hawthorn Dr City Norton State VA Zip ____

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Please insert additional pages as applicable.

Completed by Jim Amos Telephone 304-483-0073
Signature Jim E Amos Title Senior Engineer Date 9/17/15

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

15-00037

Glady 7468
Date well work commenced: 7/16/15
Date well work completed: 9/14/15
Work Performed
Killed well. Pulled tubing. Ran pipe inspection and cement bond logs. Installed new wellhead. Performed coil tubing clean-out and acid stimulation.

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