WR-35
Rev. 8/23/13

pm

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

API 47 - 001 - 03335 County BARBOUR District COVE
Quad THORNTON Pad Name WHITESCARVER HEIRS, GRACE Field/Pool Name
Farm name WHITESCARVER HEIRS, GRACE Well Number 1
Operator (as registered with the OOG) TEXAS KEYSTONE, INC
Address 560 EPSILON DRIVE City PITTSBURGH State PA Zip 15238

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,349,625 Easting 595,341
Landing Point of Curve Northing Easting
Bottom Hole Northing 4,349,625 Easting 595,341

Elevation (ft) 1,456' 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 2/14/2014 Date drilling commenced 3/24/2014 Date drilling ceased 4/4/2014
Date completion activities began 4/29/2014 Date completion activities ceased 4/29/2014
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 85' & 625' Open mine(s) (Y/N) depths N
Salt water depth(s) ft None Void(s) encountered (Y/N) depths N
Coal depth(s) ft 164' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Reviewed by:

API 47- 001 - 03335 Farm name WHITESCARVER HEIRS, GRACE 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	17.5"	13.375"	34'	NEW	43.60#		SANDED IN
Surface	12.375"	9.625"	462'	NEW	26.00#		Y - 10 BBL
Coal							
Intermediate 1	8.875"	7.0"	1,561'	NEW	19.00#		Y - 10 BBL
Intermediate 2							
Intermediate 3							
Production	6.25"	4.50"	5,182'	NEW	10.50#	1,796' & 4,036'	N - TOC 1,206'
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft ^{3}/sks)	Volume (ft ^{3})	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	STANDARD TYPE 1	200	15.6	1.18	177	SURFACE	17
Coal							
Intermediate 1	CLASS A	250	15.6	1.18	236	SURFACE	118
Intermediate 2							
Intermediate 3							
Production	TD 171 & 151CEMENT	145 & 120	13.5 & 14.2	1.71 & 1.51	185 & 135	1,250'	360
Tubing							

Drillers TD (ft) 5,625' Loggers TD (ft) 5,650'
Deepest formation penetrated 5TH ELK 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 No centralizers were used with the Conductor, Surface, or Intermediate casing. On the production casing, centralizers were placed at 4956', 4653', 4391', 4167', 1937', and 1644'.

WAS WELL COMPLETED AS SHOT HOLE ■ Yes □ No DETAILS Perforations were shot in 5 different zones.

WAS WELL COMPLETED OPEN HOLE? □ Yes ■ No DETAILS

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

API 47- 001 - 03335 Farm name WHITESCARVER HEIRS, GRACE Well number 1

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	4/22/2014	5,040'	5,061'	30	3RD ELK
2	4/29/2014	4,628'	4,634'	18	1ST ELK
3	4/29/2014	4,366'	4,374'	16	1ST ALEXANDER
4	4/29/2014	4,132'	4,138'	18	BENSON
5	4/29/2014	1,912'	1,928'	32	GORDON

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/29/14	27	3,550#	4,150#	2,490#	310,000	739	
2	4/29/14	24.8	3,407#	2,200#	2,278#	190,000	490	
3	4/29/14	26.9	3,531#	3,900#	2,256#	190,000	536	
4	4/29/14	28.3	3,450#	3,800#	2,257#	225,000	484	
5	4/29/14	27.2	2,455#	1,800#	1,597#	350,000	625	

Please insert additional pages as applicable.

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API 47- 001 - 03335 Farm name WHITESCARVER HEIRS, GRACE Well number 1

PRODUCING FORMATION(S)	DEPTHS			
3RD ELK	5,036'	TVD	5,036'	MD
1ST ELK	4,617'		4,617'	
ALEXANDER	4,365'		4,365'	
BENSON	4,121'		4,121'	

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 950 psi Bottom Hole N/A psi DURATION OF TEST 72 hrs

OPEN FLOW Gas 599 mcfpd Oil 0 bpd NGL 0 bpd Water 0 bpd GAS MEASURED BY □ Estimated ■ Orifice □ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Fill	0	9	0	9	
Sand	9	12	9	12	
Shale	12	30	12	30	
Sand	30	60	30	60	
Sand & Shale	60	85	60	85	
Shale	85	110	85	110	1/4" FW
Sand & Shale	110	164	110	164	
Coal	164	169	164	169	
Sand & Shale	169	300	169	300	
Sand	300	380	300	380	
Sand & Shale	380	800	380	800	1/2" FW
Shale	800	990	800	990	
Red Rock	990	1145	990	1145	
Little Lime	1145	1161	1145	1161	

Please insert additional pages as applicable.

Drilling Contractor WHIPSTOCK
Address 13646 Route 403 Hwy. N. City Clymer State PA Zip 15728

Logging Company NABORS Completion & Production Services
Address 1650 Hacker's Creek City Jane Lew State WV Zip 26378

Cementing Company NABORS Completion & Production Services
Address 1650 Hacker's Creek City Jane Lew State WV Zip 26378

Stimulating Company NABORS Completion & Production Services
Address 1650 Hacker's Creek City Jane Lew State WV Zip 26378

Please insert additional pages as applicable.

Completed by Jonathan M. Brady Telephone 412-434-5616 x. - 1207
Signature Jonathan M. Brady Title Geologist/Direction of Regulatory Affairs Date 7/10/2014

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

API 47-001-03335 Farm Name WHITESCARVER HEIRS, GRACE Well Number 1

ADDITIONAL PRODUCING FORMATIONS

PRODUCING FORMATION(S)		DEPTHS			
GORDON		1927	TVD	1927	MD

ADDITIONAL LITHOLOGY DEPTHS

LITHOLOGY/ FORMATION	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)
PENCIL CAVE	1161	1190			
BIG LIME	1325	1481			
WEIR	1481	1618			
BEREA	1618	1647			
GANTZ	1647	1761			
FIFTY FOOT	1761	1905			
GORDON	1905	1932			
SAND & SHALE	1932	2368			
BAYARD	2368	2426			
SPEECHLEY	2426	2928			
BALLTOWN	2928	3207			
SAND & SHALE	3207	3874			
RILEY	3874	4122			
BENSON	4122	4348			
ALEXANDER	4348	4529			
1ST ELK	4529	4773			
2ND ELK	4773	5036			
3RD ELK	5036	5170			
4TH ELK	5170	5364			
5TH ELK	5364	5650			
		TD = 5650			

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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 - 15 - 02889 County CLAY District UNION
Quad ELKHURST 7.5' Pad Name _____ Field/Pool Name _____
Farm name ROBERT TAYLOR Well Number KING #13
Operator (as registered with the OOG) RAVEN RIDGE ENERGY, LLC
Address 3230 PENNSYLVANIA AVENUE City CHARLESTON State WV Zip 25302

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

Elevation (ft) 1,274' 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)
SOAP

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Date permit issued 6/26/2013 Date drilling commenced 10/31/2013 Date drilling ceased 11/4/2013
Date completion activities began 12/19/2013 Date completion activities ceased 1/5/2014
Verbal plugging (Y/N) N Date permission granted N/A Granted by N/A

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

Freshwater depth(s) ft 200' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 1150' - 1650' Void(s) encountered (Y/N) depths N
Coal depth(s) ft NONE OF RECORD Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

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API 47- 15 - 02889 Farm name ROBERT TAYLOR Well number KING #13

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	14 1/4"	13 3/8"	30'	NEW	J-55 - 42 LBS	NONE	SAND -IN BY RIG
Surface	12 1/4"	9 5/8"	377'	NEW	J-55 - 29 LBS	120'	YES
Coal							
Intermediate 1	8 3/4"	7"	1967'	NEW	J-55 - 17LBS	335'	YES
Intermediate 2							
Intermediate 3							
Production	6 1/4"	4 1/2"	2318'	NEW	J-55 - 10.5 LBS	NONE	N/A
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 I	10 - RIG				GROUND LEVEL	8
Surface	CLASS I	130	15.6	1.18	153.4	GROUND LEVEL	8
Coal							
Intermediate 1	CLASS I	280	14.5	1.36	380.8	GROUND LEVEL	8
Intermediate 2							
Intermediate 3							
Production	CLASS I	50	15.6	1.18	59	1750'	8
Tubing							

Drillers TD (ft) 2362' Loggers TD (ft) 2358'
Deepest formation penetrated SQUAW 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 CENTRALIZERS PLACED ON JOINTS 1,3,6,9 AND 12 OF THE 4 1/2" CASING

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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- 15 - 02889 Farm name ROBERT TAYLOR Well number KING #13

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	12/18/13	2111'	2123'	6	INJUN
2	12/18/13	2133'	2139'	3	INJUN
3	12/18/13	2153'	2165'	12	SQUAW

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	12/19/13	35	11500	2400	1848	20,000	492	0

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Please insert additional pages as applicable.

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API 47- 15 - 02889 Farm name ROBERT TAYLOR Well number KING #13

PRODUCING FORMATION(S)	DEPTHS			
INJUN	2111' - 2139'	TVD		MD
SQUAW	2153' - 2165'			

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 220 psi Bottom Hole _____ psi DURATION OF TEST 12 hrs

OPEN FLOW	Gas	Oil	NGL	Water	GAS MEASURED BY
	20 mcfpd	6 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)
SAND/SHALE	0	1588'	0		
SALT SANDS	1588'	1678'			
SAND/SHALE	1678'	1828'			
LITTLE LIME	1828'	1882'			
PENCIL CAVE	1882'	1896'			
BIG LIME	1896'	2014'			
INJUN	2014'	2068'			
SQUAW	2078'	2092'			
SAND/SHALE	2092'	2132'			
WEIR	2132'	2190'			
SAND/SHALE	2190'	2362'			

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Please insert additional pages as applicable.

Drilling Contractor WACO OIL & GAS
Address P.O. BOX 397 City GLENVILLE State WV Zip 26351

Logging Company NABORS COMPLETION & PRODUCTION, CO.
Address 82 ELKINS ROAD City BUCKHANNON State WV Zip 26201

Cementing Company FORMATION CEMENTING INC.
Address P.O. BOX 2667 City ZANESVILLE State OH Zip 43702

Stimulating Company PRODUCERS SERVICE CORPORATION
Address 109 SOUTH GRAHAM STREET City ZANESVILLE State OH Zip 43701
Please insert additional pages as applicable.

Completed by DANIELLE N. BOGGS Telephone 304-344-9291
Signature Danielle N. Boggs Title OPERATIONS MANAGER Date 5/30/2014

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

WR-35
Rev (9-11)

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

Date: 3/21/2014
API: 47-017-06004

Farm Name: Kiley, Joseph & Jacqueline _____ Operator Well No: OXFD-1E-HS

LOCATION: Oxford 1 Elevation: 1,112.77 Quadrangle: OXFORD

District: West Union County: DODDRIDGE
Latitude: _____ Feet South of Deg. Min. Sec. 39.24238700
Longitude: Feet South of Deg. Min. Sec. -80.82563800

Company: CNX Gas Company LLC		Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. Ft.
Address: 200 Evergreene Drive Waynesburg, PA 15370		20	60	60	Cemented In
Agent: Steven Green		13 3/8	654	654	633 sxs (139bbls) 50bbls return
Inspector: Bill Hendershot		9 5/8	2582	2582	870 sxs (206bbls) 53bbls return
Date Permit Issued: 5/26/2011		5 ½	14977.5	14977.5	2480 sxs (628bbls) - est TOC @ 1268'
Date Well Work Commenced:	6/19/2013				
Date Well Work Completed:	3/23/2014				
Verbal Plugging:					
Date Permission granted on:	6/19/2013				
Rotary Cable Rig X					
Total Vertical Depth (ft): Original Hole - 6,579.4					
Total Measured Depth (ft): 15,002.0					
Fresh Water Depth (ft): 30' & 580'					
Salt Water Depth (ft): None					
Is coal being mined in the area (N/Y)? N					
Coal Depths (ft.): None Present					
Void(s) encountered (N/Y) Depth(s): NA					

OPEN FLOW DATA (If more than two producing formations please include

Producing formation Marcellus Pay zone depth (ft) 6804
Gas: Initial open flow NA MCF/d Oil: Initial open flow NA Bbl/d
Final open flow NA MCF/d Final open flow NA Bbl/d
Time of open flow between initial and final tests NA Hours
Static rock Pressure NA psig (surface pressure) after NA Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after Hours

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I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Signature Date 6/19/2014 6.16.14

17-06004

Were core samples taken? Yes__ No_x_ Were cuttings caught during drilling? Yes_x_ No__

Were Electrical, Mechanical or Geophyisical logs recorded on this well? If yes, please list: Bond Log, Gamma Ray Log

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing or Stimulating: Please See Attached

Plug Back Details including Plug Type and Depth(s): Please See Attached

Surface:

Formations Encountered: Please See Attached

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17-06004

OXF 1E
47-017-06004

Stimulation Summary

Date	Stage #	Formation	Frac Type	Top Perf	Bottom Perf	# of Perfs	BD Press (psi)	ATP (psi)	Avg Rate (bpm)	ISIP (psi)	Frac Gradient	Sand (lbs)	Acid (gals)	Water (gals)
12/15/2013	1A	Marcellus	Slickwater	14,625	14,837	48	5,577	7,397	53.2	4,342	1.09	25,788	6,000	279,038
12/16/2013	1B	Marcellus	Slickwater	14,645	14,739	32	6,226	8,729	62.2	4,718	1.15	13,138	3,000	238,737
12/17/2013	1C	Marcellus	Slickwater	14,323	14,577	40	6,401	8,137	67.1	5,688	1.30	236,914	9,000	456,780
12/18/2013	1D	Marcellus	Slickwater	14,344	14,520	40	7,277	7,879	58.8	4,890	1.18	123,465	3,000	311,079
12/18/2013	1E	Marcellus	Slickwater				6,505	7,921	66.5	5,116	1.21	347,716	3,000	300,347
12/19/2013	2	Marcellus	Slickwater	14,023	14,277	40	6,612	8,258	68.4	2,858	0.87	501,853	3,000	453,065
12/19/2013	3	Marcellus	Slickwater	13,723	13,977	40	5,952	7,895	70.5	2,974	0.89	501,081	3,000	463,462
12/21/2013	4	Marcellus	Slickwater	13,423	13,677	40	6,159	8,228	80.2	3,095	0.90	502,917	3,000	421,869
12/22/2013	5	Marcellus	Slickwater	13,123	13,377	40	6,295	8,283	79.4	4,362	1.10	407,374	3,000	394,451
12/22/2013	6	Marcellus	Slickwater	12,823	13,077	40	6,465	7,902	79.9	3,161	0.92	503,687	3,000	423,842
12/23/2013	7A	Marcellus	Slickwater	12,523	12,777	40	6,543	7,920	53.2	3,806	1.01	305,197	6,000	560,323
12/23/2013	7B	Marcellus	Slickwater	12,546	12,606	24	NA	8,077	76.9	4,751	1.16	218,857	3,000	279,206
12/27/2013	8	Marcellus	Slickwater	12,223	12,477	40	6,136	7,650	78.5	3,911	1.03	506,918	3,000	486,010
12/27/2013	9	Marcellus	Slickwater	11,923	12,177	40	5,397	7,487	83.1	3,468	0.96	499,653	3,000	471,385
12/28/2013	10	Marcellus	Slickwater	11,623	11,877	40	5,764	7,695	78.0	3,180	0.92	419,032	3,000	434,657
12/29/2013	11	Marcellus	Slickwater	11,323	11,577	40	5,085	7,852	80.1	3,686	1.00	504,011	3,000	448,621
12/29/2013	12	Marcellus	Slickwater	11,023	11,277	40	5,582	7,750	80.1	3,419	0.95	507,793	3,000	437,932
12/30/2013	13	Marcellus	Slickwater	10,723	10,977	40	5,678	8,147	77.6	3,217	0.92	501,639	3,000	436,728
1/2/2014	14	Marcellus	Slickwater	10,423	10,677	40	5,112	8,320	82.1	3,593	0.98	501,743	3,000	421,255
1/5/2014	15	Marcellus	Slickwater	10,123	10,377	40	5,249	8,077	79.4	4,078	1.05	503,322	3,000	537,065
1/5/2014	16	Marcellus	Slickwater	9,823	10,077	40	5,628	8,061	82.4	3,382	0.95	499,211	3,000	473,200
1/5/2014	17	Marcellus	Slickwater	9,523	9,777	40	6,059	7,843	78.4	3,561	0.97	503,980	6,000	565,926
1/6/2014	18	Marcellus	Slickwater	9,223	9,477	40	5,290	8,215	78.4	3,217	0.92	495,796	3,000	502,330
1/6/2014	19	Marcellus	Slickwater	8,923	9,177	40	5,172	7,856	87.6	3,121	0.91	502,170	3,000	512,713
1/10/2014	20	Marcellus	Slickwater	8,623	8,877	40	5,073	7,819	78.3	4,470	1.11	506,768	6,000	669,959
1/10/2014	21	Marcellus	Slickwater	8,323	8,577	40	6,202	7,369	88.9	4,529	1.12	498,369	3,000	436,505
1/11/2014	22	Marcellus	Slickwater	8,023	8,277	40	6,308	7,543	84.5	5,126	1.21	419,727	3,000	408,026
1/11/2014	23	Marcellus	Slickwater	7,775	7,977	40	5,724	7,462	87.4	3,355	0.94	501,155	3,000	479,711
1/12/2014	24	Marcellus	Slickwater	7,525	7,727	40	5,476	6,949	84.7	4,839	1.17	412,097	3,000	321,542
1/12/2014	25	Marcellus	Slickwater	7,223	7,477	40	5,450	7,046	86.5	4,355	1.09	502,932	3,000	389,985
1/13/2014	26	Marcellus	Slickwater	6,923	7,177	40	5,578	7,100	86.3	3,453	0.96	503,151	3,000	388,612

17-06004

OXF 1E
47-017-06004

Stage #	Plug Type	Plug Depth
1	No plug	No plug
2	Composite Frac Plug	14,300
3	Composite Frac Plug	14,000
4	Composite Frac Plug	13,700
5	Composite Frac Plug	13,400
6	Composite Frac Plug	13,100
7A/7B	Composite Frac Plug	12,800
8	Composite Frac Plug	12,500
9	Composite Frac Plug	12,200
10	Composite Frac Plug	11,900
11	Composite Frac Plug	11,600
12	Composite Frac Plug	11,300
13	Composite Frac Plug	11,000
14	Composite Frac Plug	10,700
15	Composite Frac Plug	10,400
16	Composite Frac Plug	10,100
17	Composite Frac Plug	9,800
18	Composite Frac Plug	9,500
19	Composite Frac Plug	9,175
20	Composite Frac Plug	8,900
21	Composite Frac Plug	8,600
22	Composite Frac Plug	8,300
23	Composite Frac Plug	8,000
24	Composite Frac Plug	7,750
25	Composite Frac Plug	7,500
26	Composite Frac Plug	7,200
	Bridge Plug	6,500

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WV Department of
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OXF 1E
47-017-06004

Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Sandstone and Shale, Undif.	0	1937	0	1937	
Maxton	1937	1967	1937	1980	
Greenbrier Group	1980	2040	1980	2040	
Big Injun (Grnbr)	2040	2120	2040	2277	
Weir	2277	2308	2277	2516	
Berea Ss	2515	2520	2516	2691	
Fourth	2690	2714	2691	2945	
Bayard	2944	2985	2945	3344	
Speechley	3340	3398	3344	3917	
Balltown A	3904	3930	3917	4129	
Balltown B	4112	4185	4129	4443	
Riley	4422	4443	4443	4977	
Benson	4952	5000	4977	5221	
Alexander	5196	5280	5221	6342	
Cashaqua Sh	6278	6399	6342	6487	
Middlesex Sh	6399	6448	6487	6555	
West River	6448	6524	6555	6688	
Geneseo Sh	6524	6554	6688	6751	
Tully Ls	6554	6573	6751	6797	
Hamilton	6573	6581	6797	6820	
Marcellus	6581	6636	6820	6979	Gas
Cherry Valley	6618	6620	6979	not encountered	
Onondaga	6636	6647	not encountered	not encountered	
Huntersville	6647	not encountered	not encountered	not encountered	

Office of Oil and Gas
JUN 25 2014
Department of
Environmental Protection

17-06004

noble energy

NOBLE ENERGY

Location: Doddridge Co., WV
Field: Doddridge
Facility: Oxford Pad

Slot: Slot E
Well: OXFD1EHS
Wellbore: OXFD1EHS PWB

BAKER HUGHES

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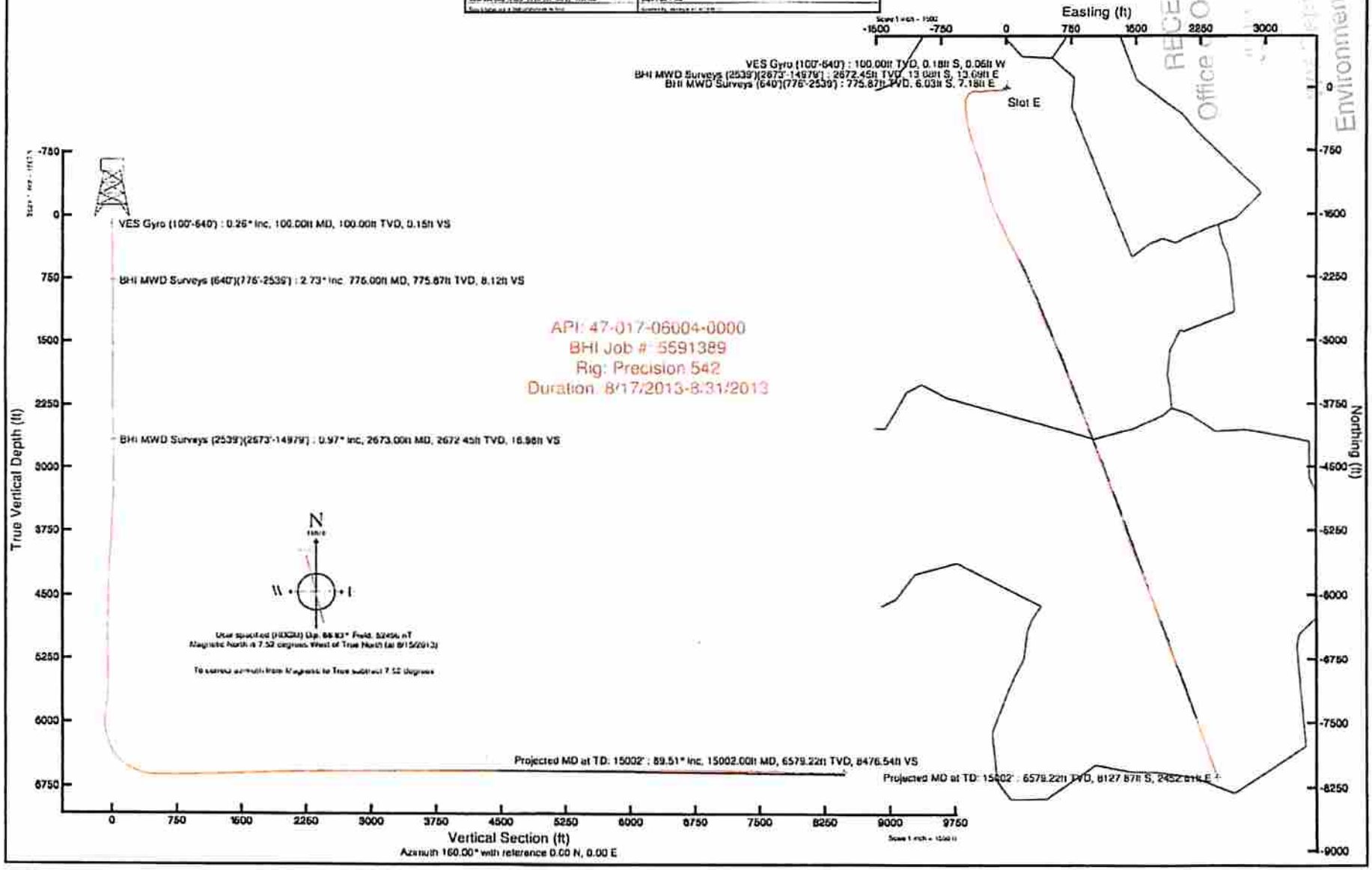
Office of Oil and Gas
Environmental Protection



API: 47-017-06004-0000
BHI Job #: 5591389
Rig: Precision 542
Duration: 8/17/2013-8/31/2013

17-06004

noble energy

Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

Office of Oil and Gas
JUN 2
WV Department of Environmental Protection

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

REPORT SETUP INFORMATION

Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 4.0.1
North Reference	True	User	Edsaryar
Scale	0.999963	Report Generated	9/10/2013 at 10:54:04 AM
Convergence at slot	n/a	Database/Source file	Well Architect Eastern US/OXFD1EHS_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-76.79	-22.54	1624545.67	273156.61	39°14'32.534"N	80°49'32.368"W
Facility Reference Pt			1624569.34	273233.05	39°14'33.293"N	80°49'32.081"W
Field Reference Pt			0.00	0.00	38°17'12.460"N	86°28'23.077"W

WELLPATH DATUM

Calculation method	Minimum curvature	Precision 542 (RT) to Facility Vertical Datum	18.60ft
Horizontal Reference Pt	Slot	Precision 542 (RT) to Mean Sea Level	1138.60ft
Vertical Reference Pt	Precision 542 (RT)	Precision 542 (RT) to Mud Line at Slot (Slot E)	18.60ft
MD Reference Pt	Precision 542 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	160.00°

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noble energy

Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

WELLPATH DATA (190 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	198.140	0.00	0.00	0.00	0.00	1624545.67	273156.61	39°14'32.534"N	80°49'32.368"W	0.00	0.000	0.00	0.00	0.00
18.60	0.000	198.140	18.60	0.00	0.00	0.00	1624545.67	273156.61	39°14'32.534"N	80°49'32.368"W	0.00	0.000	0.00	0.00	0.00
100.00	0.260	198.140	100.00	0.15	-0.18	-0.06	1624545.61	273156.44	39°14'32.532"N	80°49'32.368"W	0.18	198.140	0.32	0.32	0.00
200.00	0.190	153.970	200.00	0.49	-0.54	-0.06	1624545.61	273156.07	39°14'32.529"N	80°49'32.368"W	0.54	185.854	0.18	-0.07	-44.17
300.00	0.230	154.880	300.00	0.85	-0.87	0.10	1624545.76	273155.74	39°14'32.525"N	80°49'32.366"W	0.88	173.281	0.04	0.04	0.91
400.00	0.290	158.080	400.00	1.31	-1.29	0.28	1624545.93	273155.32	39°14'32.521"N	80°49'32.364"W	1.32	167.633	0.06	0.06	3.20
500.00	0.580	147.130	499.99	2.05	-1.95	0.65	1624546.29	273154.65	39°14'32.515"N	80°49'32.359"W	2.05	161.502	0.30	0.29	-10.95
600.00	1.340	120.580	599.98	3.45	-2.97	1.93	1624547.56	273153.61	39°14'32.505"N	80°49'32.343"W	3.54	146.920	0.86	0.76	-26.55
640.00	1.540	119.620	639.97	4.22	-3.47	2.80	1624548.42	273153.10	39°14'32.500"N	80°49'32.332"W	4.46	141.079	0.50	0.50	-2.40
776.00	2.730	120.660	775.87	8.12	-6.03	7.18	1624552.76	273150.48	39°14'32.475"N	80°49'32.276"W	9.37	130.014	0.88	0.87	0.76
798.00	2.760	117.740	797.85	8.91	-6.54	8.10	1624553.67	273149.95	39°14'32.469"N	80°49'32.265"W	10.41	128.925	0.65	0.14	-13.27
893.00	2.060	108.770	892.76	11.68	-8.15	11.74	1624557.29	273148.28	39°14'32.453"N	80°49'32.218"W	14.29	124.784	0.83	-0.74	-9.44
988.00	1.210	60.950	987.73	12.59	-8.22	14.23	1624559.78	273148.19	39°14'32.453"N	80°49'32.187"W	16.43	119.997	1.62	-0.89	-50.34
1082.00	0.560	335.230	1081.72	11.97	-7.32	14.91	1624560.47	273149.07	39°14'32.462"N	80°49'32.178"W	16.61	116.143	1.38	-0.69	-91.19
1177.00	1.710	277.690	1176.70	10.85	-6.71	13.31	1624558.88	273149.71	39°14'32.468"N	80°49'32.198"W	14.90	116.743	1.56	1.21	-60.57
1272.00	1.180	258.760	1271.67	10.04	-6.71	10.94	1624556.51	273149.74	39°14'32.468"N	80°49'32.228"W	12.84	121.501	0.74	-0.56	-19.93
1367.00	1.420	229.840	1366.65	10.30	-7.66	9.08	1624554.64	273148.82	39°14'32.458"N	80°49'32.252"W	11.88	130.124	0.73	0.25	-30.44
1462.00	1.140	175.190	1461.62	11.62	-9.36	8.26	1624553.79	273147.13	39°14'32.442"N	80°49'32.263"W	12.48	138.550	1.26	-0.29	-57.53
1556.00	0.770	88.440	1555.62	12.72	-10.27	8.97	1624554.49	273146.21	39°14'32.433"N	80°49'32.253"W	13.64	138.858	1.42	-0.39	-92.29
1651.00	1.520	74.530	1650.60	13.02	-9.92	10.83	1624556.35	273146.53	39°14'32.436"N	80°49'32.230"W	14.68	132.494	0.84	0.79	-14.64
1745.00	0.600	53.390	1744.58	12.98	-9.29	12.42	1624557.95	273147.14	39°14'32.442"N	80°49'32.210"W	15.51	126.796	1.05	-0.98	-22.49
1835.00	0.590	51.610	1834.57	12.70	-8.72	13.16	1624558.70	273147.69	39°14'32.448"N	80°49'32.200"W	15.79	123.531	0.02	-0.01	-1.98
1924.00	0.550	26.790	1923.57	12.26	-8.06	13.72	1624559.27	273148.35	39°14'32.454"N	80°49'32.193"W	15.91	120.432	0.28	-0.04	-27.89
2015.00	1.500	276.160	2014.56	11.44	-7.54	12.73	1624558.29	273148.88	39°14'32.460"N	80°49'32.206"W	14.79	120.640	1.95	1.04	-121.57
2104.00	1.610	261.670	2103.53	10.67	-7.60	10.33	1624555.89	273148.86	39°14'32.459"N	80°49'32.236"W	12.83	126.319	0.46	0.12	-16.28
2193.00	0.340	223.850	2192.51	10.54	-7.97	8.91	1624554.46	273148.51	39°14'32.455"N	80°49'32.254"W	11.96	131.793	1.53	-1.43	-42.49
2282.00	0.660	137.610	2281.51	11.13	-8.54	9.08	1624554.62	273147.94	39°14'32.450"N	80°49'32.252"W	12.46	133.246	0.81	0.36	-96.90
2372.00	1.350	134.350	2371.50	12.56	-9.66	10.18	1624555.71	273146.80	39°14'32.439"N	80°49'32.238"W	14.04	133.490	0.77	0.77	-3.62
2462.00	0.990	145.360	2461.48	14.27	-11.04	11.38	1624556.89	273145.40	39°14'32.425"N	80°49'32.223"W	15.86	134.125	0.47	-0.40	12.23
2539.00	0.710	129.270	2538.47	15.32	-11.89	12.13	1624557.62	273144.54	39°14'32.417"N	80°49'32.213"W	16.99	134.426	0.47	-0.36	-20.90

17-06004

noble energy

Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2673.00	0.970	126.010	2672.45	16.98	-13.08	13.69	1624559.17	273143.33	39°14'32.405"N	80°49'32.194"W	18.94	133.698	0.20	0.19	-2.43
2726.00	1.230	136.800	2725.44	17.87	-13.76	14.44	1624559.91	273142.64	39°14'32.398"N	80°49'32.184"W	19.95	133.614	0.63	0.49	20.36
2816.00	1.540	151.290	2815.42	19.95	-15.53	15.69	1624561.12	273140.85	39°14'32.381"N	80°49'32.168"W	22.07	134.707	0.52	0.34	16.10
2861.00	1.790	212.520	2860.40	20.98	-16.65	15.60	1624561.02	273139.73	39°14'32.369"N	80°49'32.169"W	22.81	136.866	3.80	0.56	136.07
2905.00	2.390	218.910	2904.37	21.87	-17.94	14.65	1624560.06	273138.45	39°14'32.357"N	80°49'32.181"W	23.17	140.763	1.46	1.36	14.52
2953.00	4.200	241.300	2952.29	22.66	-19.57	12.48	1624557.86	273136.86	39°14'32.341"N	80°49'32.209"W	23.21	147.464	4.56	3.77	46.65
2998.00	5.140	251.670	2997.14	22.85	-20.99	9.12	1624554.48	273135.49	39°14'32.327"N	80°49'32.252"W	22.89	156.509	2.80	2.09	23.04
3043.00	6.220	257.990	3041.92	22.45	-22.13	4.83	1624550.17	273134.41	39°14'32.315"N	80°49'32.306"W	22.65	167.701	2.77	2.40	14.04
3087.00	7.320	261.330	3085.62	21.57	-23.05	-0.28	1624545.05	273133.57	39°14'32.306"N	80°49'32.371"W	23.05	180.690	2.65	2.50	7.59
3132.00	8.390	261.020	3130.19	20.38	-24.00	-6.35	1624538.96	273132.71	39°14'32.297"N	80°49'32.448"W	24.82	194.832	2.38	2.38	-0.69
3177.00	9.200	261.010	3174.66	19.06	-25.07	-13.15	1624532.15	273131.74	39°14'32.286"N	80°49'32.535"W	28.31	207.679	1.80	1.80	-0.02
3267.00	8.010	252.020	3263.65	17.47	-28.13	-26.22	1624519.04	273128.87	39°14'32.256"N	80°49'32.701"W	38.46	222.989	1.99	-1.32	-9.99
3357.00	7.800	259.060	3352.80	16.28	-31.23	-38.18	1624507.03	273125.95	39°14'32.225"N	80°49'32.853"W	49.32	230.725	1.10	-0.23	7.82
3448.00	9.040	266.140	3442.82	13.32	-32.88	-51.38	1624493.81	273124.49	39°14'32.209"N	80°49'33.021"W	61.00	237.384	1.77	1.36	7.78
3538.00	10.860	272.010	3531.46	8.18	-33.06	-66.91	1624478.28	273124.55	39°14'32.207"N	80°49'33.218"W	74.63	243.708	2.31	2.02	6.52
3628.00	10.850	268.230	3619.86	2.35	-33.02	-83.85	1624461.35	273124.83	39°14'32.208"N	80°49'33.433"W	90.12	248.505	0.79	-0.01	-4.20
3717.00	12.350	266.390	3707.04	-2.95	-33.88	-101.72	1624443.46	273124.24	39°14'32.199"N	80°49'33.660"W	107.22	251.579	1.74	1.69	-2.07
3807.00	9.900	262.060	3795.34	-7.29	-35.55	-118.99	1624426.17	273122.82	39°14'32.183"N	80°49'33.880"W	124.19	253.364	2.87	-2.72	-4.81
3896.00	9.390	263.840	3883.08	-10.62	-37.39	-133.79	1624411.35	273121.20	39°14'32.164"N	80°49'34.068"W	138.92	254.386	0.66	-0.57	2.00
3986.00	11.620	276.990	3971.58	-16.49	-37.07	-150.09	1624395.06	273121.76	39°14'32.168"N	80°49'34.275"W	154.60	256.125	3.62	2.48	14.61
4075.00	9.380	274.300	4059.08	-23.55	-35.44	-166.22	1624378.95	273123.63	39°14'32.184"N	80°49'34.480"W	169.96	257.964	2.58	-2.52	-3.02
4164.00	10.390	269.950	4146.76	-29.27	-34.90	-181.48	1624363.70	273124.39	39°14'32.189"N	80°49'34.674"W	184.80	259.113	1.41	1.13	-4.89
4253.00	9.620	261.350	4234.41	-33.47	-36.03	-196.86	1624348.31	273123.49	39°14'32.178"N	80°49'34.870"W	200.13	259.628	1.89	-0.87	-9.66
4343.00	9.240	256.120	4323.20	-35.72	-38.89	-211.31	1624333.82	273120.84	39°14'32.150"N	80°49'35.053"W	214.86	259.571	1.04	-0.42	-5.81
4432.00	8.570	253.500	4411.13	-36.89	-42.49	-224.60	1624320.47	273117.44	39°14'32.114"N	80°49'35.222"W	228.59	259.287	0.88	-0.75	-2.94
4521.00	9.000	261.340	4499.08	-38.66	-45.42	-237.84	1624307.19	273114.70	39°14'32.085"N	80°49'35.391"W	242.14	259.188	1.43	0.48	8.81
4611.00	9.310	261.970	4587.94	-41.56	-47.50	-252.01	1624293.00	273112.84	39°14'32.065"N	80°49'35.571"W	256.45	259.326	0.36	0.34	0.70
4700.00	7.730	261.560	4675.95	-44.25	-49.38	-265.06	1624279.92	273111.14	39°14'32.046"N	80°49'35.736"W	269.62	259.446	1.78	-1.78	-0.46
4790.00	6.240	266.550	4765.28	-46.86	-50.57	-275.93	1624269.03	273110.12	39°14'32.034"N	80°49'35.875"W	280.53	259.615	1.79	-1.66	5.54
4879.00	4.140	261.500	4853.91	-48.88	-51.33	-283.94	1624261.02	273109.47	39°14'32.027"N	80°49'35.976"W	288.54	259.752	2.41	-2.36	-5.67

17-06004

noble energy

Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
4969.00	2.030	242.910	4943.78	-49.33	-52.54	-288.57	1624256.37	273108.34	39°14'32.015"N	80°49'36.035"W	293.31	259.681	2.56	-2.34	-20.66
5058.00	1.050	192.770	5032.75	-48.45	-54.05	-290.15	1624254.76	273106.85	39°14'32.000"N	80°49'36.055"W	295.15	259.447	1.77	-1.10	-56.34
5147.00	0.850	125.050	5121.74	-47.22	-55.23	-289.79	1624255.10	273105.67	39°14'31.988"N	80°49'36.051"W	295.01	259.210	1.20	-0.22	-76.09
5237.00	0.850	129.030	5211.73	-46.10	-56.03	-288.73	1624256.16	273104.85	39°14'31.980"N	80°49'36.037"W	294.11	259.018	0.07	0.00	4.42
5326.00	0.930	128.580	5300.72	-44.92	-56.90	-287.65	1624257.22	273103.97	39°14'31.972"N	80°49'36.024"W	293.22	258.812	0.09	0.09	-0.51
5416.00	1.130	137.770	5390.71	-43.47	-58.01	-286.48	1624258.37	273102.84	39°14'31.961"N	80°49'36.009"W	292.30	258.553	0.29	0.22	10.21
5506.00	1.510	142.960	5480.68	-41.52	-59.61	-285.17	1624259.66	273101.21	39°14'31.945"N	80°49'35.992"W	291.34	258.193	0.44	0.42	5.77
5581.00	0.500	127.010	5555.67	-40.30	-60.60	-284.32	1624260.50	273100.22	39°14'31.935"N	80°49'35.981"W	290.70	257.968	1.38	-1.35	-21.27
5626.00	2.370	280.900	5600.66	-40.61	-60.54	-285.07	1624259.75	273100.28	39°14'31.936"N	80°49'35.991"W	291.43	258.010	6.28	4.16	341.98
5671.00	6.280	283.700	5645.52	-42.46	-59.78	-288.38	1624256.45	273101.09	39°14'31.943"N	80°49'36.033"W	294.51	258.288	8.70	8.69	6.22
5715.00	9.790	285.180	5689.08	-45.95	-58.23	-294.33	1624250.52	273102.73	39°14'31.958"N	80°49'36.108"W	300.03	258.809	7.99	7.98	3.36
5760.00	11.780	285.190	5733.29	-50.80	-56.03	-302.46	1624242.43	273105.06	39°14'31.980"N	80°49'36.212"W	307.60	259.506	4.42	4.42	0.02
5805.00	14.230	286.910	5777.13	-56.77	-53.21	-312.18	1624232.75	273108.01	39°14'32.008"N	80°49'36.335"W	316.68	260.327	5.51	5.44	3.82
5850.00	17.450	282.070	5820.42	-63.67	-50.19	-324.08	1624220.90	273111.21	39°14'32.038"N	80°49'36.487"W	327.94	261.196	7.73	7.16	-10.76
5895.00	21.070	275.710	5862.90	-70.77	-47.98	-338.73	1624206.28	273113.64	39°14'32.060"N	80°49'36.673"W	342.11	261.939	9.29	8.04	-14.13
5940.00	22.150	274.620	5904.73	-77.81	-46.49	-355.23	1624189.80	273115.37	39°14'32.075"N	80°49'36.883"W	358.26	262.544	2.56	2.40	-2.42
5984.00	20.550	265.510	5945.72	-83.34	-46.42	-371.21	1624173.83	273115.67	39°14'32.075"N	80°49'37.086"W	374.10	262.871	8.36	-3.64	-20.70
6029.00	18.470	244.990	5988.19	-84.83	-50.06	-385.56	1624159.43	273112.25	39°14'32.039"N	80°49'37.268"W	388.79	262.602	15.83	-4.62	-45.60
6074.00	20.210	229.150	6030.67	-81.44	-58.16	-397.91	1624146.96	273104.32	39°14'31.959"N	80°49'37.425"W	402.14	261.684	12.24	3.87	-35.20
6119.00	21.750	224.780	6072.69	-75.12	-69.17	-409.66	1624135.05	273093.50	39°14'31.850"N	80°49'37.574"W	415.46	260.416	4.88	3.42	-9.71
6164.00	21.770	225.100	6114.49	-68.05	-80.98	-421.44	1624123.09	273081.86	39°14'31.734"N	80°49'37.724"W	429.15	259.124	0.27	0.04	0.71
6209.00	21.620	222.240	6156.30	-60.67	-93.01	-432.93	1624111.43	273070.01	39°14'31.615"N	80°49'37.870"W	442.81	257.876	2.37	-0.33	-6.36
6254.00	23.070	211.210	6197.94	-51.28	-106.69	-443.08	1624101.09	273056.47	39°14'31.480"N	80°49'37.999"W	455.74	256.461	9.84	3.22	-24.51
6298.00	24.950	203.670	6238.14	-39.17	-122.57	-451.27	1624092.66	273040.72	39°14'31.323"N	80°49'38.103"W	467.62	254.805	8.17	4.27	-17.14
6343.00	27.830	194.940	6278.46	-23.68	-141.42	-457.79	1624085.86	273021.96	39°14'31.136"N	80°49'38.186"W	479.14	252.833	10.72	6.40	-19.40
6388.00	30.550	186.680	6317.76	-4.84	-162.94	-461.83	1624081.50	273000.51	39°14'30.924"N	80°49'38.237"W	489.73	250.566	10.79	6.04	-18.36
6432.00	34.260	180.800	6354.91	16.74	-186.45	-463.31	1624079.68	272977.03	39°14'30.691"N	80°49'38.256"W	499.42	248.079	11.05	8.43	-13.36
6477.00	38.500	178.480	6391.13	41.88	-213.13	-463.11	1624079.48	272950.35	39°14'30.428"N	80°49'38.254"W	509.80	245.288	9.90	9.42	-5.16
6522.00	43.530	176.090	6425.08	70.07	-242.61	-461.68	1624080.47	272920.85	39°14'30.136"N	80°49'38.235"W	521.55	242.279	11.71	11.18	-5.31
6567.00	48.700	174.010	6456.26	101.39	-274.90	-458.86	1624082.82	272888.52	39°14'29.817"N	80°49'38.200"W	534.91	239.074	11.96	11.49	-4.62

17-06004

noble energy

Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
6612.00	54.610	172.520	6484.17	135.72	-309.93	-454.71	1624086.46	272853.43	39°14'29.471"N	80°49'38.147"W	550.29	235.721	13.39	13.13	-3.31
6656.00	59.660	171.000	6508.04	171.90	-346.50	-449.40	1624091.23	272816.80	39°14'29.109"N	80°49'38.079"W	567.47	232.367	11.84	11.48	-3.45
6701.00	60.700	171.340	6530.42	210.20	-385.07	-443.40	1624096.65	272778.14	39°14'28.728"N	80°49'38.003"W	587.27	229.027	2.40	2.31	0.76
6746.00	62.280	170.450	6551.90	249.03	-424.12	-437.15	1624102.33	272739.01	39°14'28.342"N	80°49'37.924"W	609.07	225.867	3.92	3.51	-1.98
6791.00	67.190	168.710	6571.10	289.14	-464.12	-429.78	1624109.11	272698.90	39°14'27.947"N	80°49'37.830"W	632.55	222.799	11.46	10.91	-3.87
6836.00	72.630	166.730	6586.55	331.00	-505.40	-420.78	1624117.50	272657.50	39°14'27.539"N	80°49'37.716"W	657.63	219.780	12.77	12.09	-4.40
6881.00	77.980	164.850	6597.96	374.29	-547.57	-410.09	1624127.56	272615.17	39°14'27.122"N	80°49'37.580"W	684.11	216.830	12.56	11.89	-4.18
6926.00	82.910	163.150	6605.43	418.55	-590.22	-397.86	1624139.16	272572.35	39°14'26.700"N	80°49'37.424"W	711.79	213.983	11.57	10.96	-3.78
6970.00	87.470	161.330	6609.12	462.34	-631.96	-384.49	1624151.92	272530.42	39°14'26.288"N	80°49'37.254"W	739.73	211.316	11.15	10.36	-4.14
7015.00	90.400	161.830	6609.96	507.31	-674.64	-370.27	1624165.50	272487.53	39°14'25.866"N	80°49'37.074"W	769.57	208.760	6.61	6.51	1.11
7105.00	88.860	161.350	6610.54	597.27	-760.03	-341.85	1624192.66	272401.74	39°14'25.022"N	80°49'36.712"W	833.37	204.217	1.79	-1.71	-0.53
7194.00	89.940	161.020	6611.47	686.25	-844.27	-313.15	1624220.11	272317.09	39°14'24.189"N	80°49'36.347"W	900.47	200.350	1.27	1.21	-0.37
7284.00	90.090	160.780	6611.45	776.24	-929.31	-283.70	1624248.30	272231.62	39°14'23.349"N	80°49'35.973"W	971.65	196.976	0.31	0.17	-0.27
7374.00	90.680	162.650	6610.84	866.19	-1014.76	-255.46	1624275.27	272145.77	39°14'22.504"N	80°49'35.614"W	1046.42	194.130	2.18	0.66	2.08
7464.00	90.830	167.330	6609.65	955.82	-1101.66	-232.16	1624297.29	272058.54	39°14'21.645"N	80°49'35.318"W	1125.86	191.900	5.20	0.17	5.20
7553.00	90.740	163.620	6608.43	1044.39	-1187.79	-209.85	1624318.33	271972.09	39°14'20.794"N	80°49'35.035"W	1206.19	190.019	4.17	-0.10	-4.17
7643.00	90.920	164.040	6607.13	1134.18	-1274.22	-184.78	1624342.11	271885.30	39°14'19.940"N	80°49'34.716"W	1287.55	188.251	0.51	0.20	0.47
7732.00	91.260	161.060	6605.44	1223.06	-1359.10	-158.10	1624367.54	271800.04	39°14'19.101"N	80°49'34.377"W	1368.27	186.635	3.37	0.38	-3.35
7822.00	91.450	157.420	6603.31	1313.01	-1443.22	-126.22	1624398.18	271715.47	39°14'18.270"N	80°49'33.972"W	1448.73	184.998	4.05	0.21	-4.04
7912.00	91.720	154.440	6600.82	1402.74	-1525.35	-89.53	1624433.65	271632.80	39°14'17.458"N	80°49'33.505"W	1527.98	183.359	3.32	0.30	-3.31
8001.00	91.850	155.480	6598.05	1491.35	-1605.95	-51.88	1624470.10	271551.66	39°14'16.661"N	80°49'33.027"W	1606.79	181.850	1.18	0.15	1.17
8091.00	91.790	157.530	6595.19	1581.14	-1688.44	-16.02	1624504.74	271468.66	39°14'15.846"N	80°49'32.571"W	1688.52	180.544	2.28	-0.07	2.28
8181.00	91.510	154.830	6592.60	1670.89	-1770.73	20.31	1624539.85	271385.84	39°14'15.032"N	80°49'32.109"W	1770.85	179.343	3.01	-0.31	-3.00
8270.00	91.540	152.790	6590.23	1759.34	-1850.56	59.57	1624577.93	271305.44	39°14'14.243"N	80°49'31.610"W	1851.52	178.156	2.29	0.03	-2.29
8360.00	91.600	154.500	6587.76	1848.75	-1931.18	99.51	1624616.67	271224.25	39°14'13.447"N	80°49'31.103"W	1933.74	177.050	1.90	0.07	1.90
8450.00	91.230	157.630	6585.54	1938.50	-2013.40	136.01	1624651.95	271141.50	39°14'12.634"N	80°49'30.639"W	2017.99	176.135	3.50	-0.41	3.48
8539.00	90.800	157.550	6583.96	2027.40	-2095.67	169.93	1624684.66	271058.75	39°14'11.821"N	80°49'30.208"W	2102.54	175.364	0.49	-0.48	-0.09
8629.00	90.770	155.050	6582.73	2117.20	-2178.06	206.10	1624719.60	270975.83	39°14'11.007"N	80°49'29.748"W	2187.79	174.594	2.78	-0.03	-2.78
8718.00	90.370	154.240	6581.84	2205.81	-2258.48	244.21	1624756.52	270894.86	39°14'10.212"N	80°49'29.264"W	2271.65	173.829	1.01	-0.45	-0.91
8807.00	90.400	155.100	6581.24	2294.42	-2338.92	282.29	1624793.41	270813.87	39°14'09.417"N	80°49'28.780"W	2355.90	173.118	0.97	0.03	0.97

17-06004

noble energy

Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
8897.00	90.830	157.920	6580.28	2384.24	-2421.45	318.16	1624828.05	270730.82	39°14'08.601"N	80°49'28.324"W	2442.26	172.515	3.17	0.48	3.13
8987.00	90.920	158.510	6578.90	2474.18	-2505.01	351.55	1624860.21	270646.78	39°14'07.775"N	80°49'27.900"W	2529.56	172.011	0.66	0.10	0.66
9076.00	90.890	160.560	6577.50	2563.16	-2588.38	382.66	1624890.09	270562.96	39°14'06.951"N	80°49'27.504"W	2616.52	171.590	2.30	-0.03	2.30
9165.00	90.800	158.720	6576.19	2652.15	-2671.81	413.62	1624919.81	270479.09	39°14'06.126"N	80°49'27.111"W	2703.64	171.200	2.07	-0.10	-2.07
9255.00	90.800	157.390	6574.93	2742.09	-2755.28	447.26	1624952.20	270395.14	39°14'05.301"N	80°49'26.684"W	2791.34	170.780	1.48	0.00	-1.48
9344.00	90.860	156.240	6573.64	2830.94	-2837.08	482.29	1624986.03	270312.83	39°14'04.493"N	80°49'26.238"W	2877.78	170.352	1.29	0.07	-1.29
9434.00	90.650	152.000	6572.45	2920.44	-2918.03	521.56	1625024.10	270231.32	39°14'03.693"N	80°49'25.739"W	2964.27	169.866	4.72	-0.23	-4.71
9524.00	90.830	152.940	6571.29	3009.65	-2997.83	563.16	1625064.51	270150.91	39°14'02.904"N	80°49'25.211"W	3050.27	169.361	1.06	0.20	1.04
9613.00	90.650	151.340	6570.14	3097.80	-3076.51	604.74	1625104.93	270071.64	39°14'02.126"N	80°49'24.682"W	3135.38	168.879	1.81	-0.20	-1.80
9703.00	90.280	151.820	6569.41	3186.83	-3155.66	647.58	1625146.59	269991.87	39°14'01.344"N	80°49'24.138"W	3221.42	168.403	0.67	-0.41	0.53
9792.00	90.120	159.210	6569.10	3275.50	-3236.60	684.44	1625182.25	269910.39	39°14'00.544"N	80°49'23.669"W	3308.17	168.060	8.31	-0.18	8.30
9882.00	90.310	166.190	6568.76	3365.34	-3322.47	711.18	1625207.72	269824.14	39°13'59.695"N	80°49'23.330"W	3397.73	167.918	7.76	0.21	7.76
9971.00	90.310	165.630	6568.28	3453.87	-3408.79	732.85	1625228.11	269737.51	39°13'58.842"N	80°49'23.054"W	3486.68	167.867	0.63	0.00	-0.63
10061.00	90.430	167.060	6567.70	3543.31	-3496.24	754.09	1625248.07	269649.76	39°13'57.978"N	80°49'22.784"W	3576.64	167.828	1.59	0.13	1.59
10151.00	90.310	161.310	6567.12	3633.03	-3582.80	778.61	1625271.30	269562.85	39°13'57.122"N	80°49'22.473"W	3666.43	167.739	6.39	-0.13	-6.39
10240.00	90.770	156.580	6566.28	3721.99	-3665.83	810.58	1625302.04	269479.36	39°13'56.302"N	80°49'22.067"W	3754.38	167.532	5.34	0.52	-5.31
10330.00	90.890	158.100	6564.97	3811.88	-3748.87	845.24	1625335.47	269395.82	39°13'55.481"N	80°49'21.626"W	3842.98	167.294	1.69	0.13	1.69
10420.00	90.830	157.230	6563.62	3901.79	-3832.11	879.44	1625368.44	269312.09	39°13'54.658"N	80°49'21.192"W	3931.73	167.075	0.97	-0.07	-0.97
10509.00	90.800	155.490	6562.36	3990.60	-3913.63	915.13	1625402.91	269230.06	39°13'53.852"N	80°49'20.738"W	4019.20	166.839	1.96	-0.03	-1.96
10599.00	90.280	158.050	6561.51	4080.44	-3996.32	950.62	1625437.18	269146.85	39°13'53.035"N	80°49'20.287"W	4107.83	166.620	2.90	-0.58	2.84
10688.00	90.310	157.510	6561.05	4169.38	-4078.71	984.27	1625469.62	269063.98	39°13'52.221"N	80°49'19.859"W	4195.79	166.433	0.61	0.03	-0.61
10778.00	90.340	158.770	6560.54	4259.33	-4162.24	1017.78	1625501.89	268979.97	39°13'51.395"N	80°49'19.434"W	4284.87	166.259	1.40	0.03	1.40
10867.00	90.340	163.060	6560.01	4348.29	-4246.32	1046.88	1625529.74	268895.47	39°13'50.564"N	80°49'19.064"W	4373.47	166.151	4.82	0.00	4.82
10957.00	90.340	164.560	6559.48	4438.09	-4332.75	1071.97	1625553.55	268808.68	39°13'49.710"N	80°49'18.745"W	4463.39	166.103	1.67	0.00	1.67
11047.00	90.370	162.240	6558.92	4527.92	-4418.99	1097.68	1625577.99	268722.08	39°13'48.857"N	80°49'18.418"W	4553.28	166.050	2.58	0.03	-2.58
11136.00	90.400	159.790	6558.32	4616.90	-4503.14	1126.63	1625605.69	268637.51	39°13'48.026"N	80°49'18.051"W	4641.94	165.954	2.75	0.03	-2.75
11226.00	90.310	160.810	6557.76	4706.90	-4587.87	1156.97	1625634.77	268552.35	39°13'47.188"N	80°49'17.665"W	4731.51	165.846	1.14	-0.10	1.13
11315.00	90.310	159.060	6557.28	4795.89	-4671.47	1187.50	1625664.07	268468.31	39°13'46.362"N	80°49'17.277"W	4820.04	165.737	1.97	0.00	-1.97
11405.00	90.310	151.450	6556.79	4885.51	-4753.14	1225.15	1625700.50	268386.10	39°13'45.555"N	80°49'16.799"W	4908.49	165.546	8.46	0.00	-8.46
11495.00	90.430	151.050	6556.21	4974.47	-4832.04	1268.43	1625742.62	268306.57	39°13'44.775"N	80°49'16.249"W	4995.75	165.291	0.46	0.13	-0.44

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Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
11584.00	90.400	160.810	6555.57	5063.13	-4913.20	1304.69	1625777.67	268224.88	39°13'43.973"N	80°49'15.788"W	5083.48	165.128	10.97	-0.03	10.97
11674.00	90.370	164.990	6554.96	5152.99	-4999.20	1331.14	1625802.85	268138.50	39°13'43.123"N	80°49'15.452"W	5173.39	165.090	4.64	-0.03	4.64
11763.00	90.340	171.350	6554.41	5241.04	-5086.27	1349.38	1625819.80	268051.18	39°13'42.262"N	80°49'15.220"W	5262.22	165.142	7.15	-0.03	7.15
11853.00	90.310	168.710	6553.90	5329.66	-5174.90	1364.96	1625834.07	267962.34	39°13'41.386"N	80°49'15.022"W	5351.89	165.224	2.93	-0.03	-2.93
11943.00	90.310	161.570	6553.41	5419.24	-5261.83	1388.03	1625855.85	267875.08	39°13'40.527"N	80°49'14.729"W	5441.83	165.222	7.93	0.00	-7.93
12032.00	90.370	159.030	6552.88	5508.23	-5345.61	1418.03	1625884.61	267790.86	39°13'39.699"N	80°49'14.348"W	5530.50	165.143	2.85	0.07	-2.85
12122.00	90.120	158.080	6552.50	5598.20	-5429.38	1450.93	1625916.27	267706.62	39°13'38.871"N	80°49'13.930"W	5619.91	165.038	1.09	-0.28	-1.06
12211.00	90.150	159.510	6552.29	5687.17	-5512.35	1483.12	1625947.24	267623.19	39°13'38.051"N	80°49'13.521"W	5708.39	164.941	1.61	0.03	1.61
12301.00	89.600	158.010	6552.49	5777.15	-5596.24	1515.72	1625978.60	267538.84	39°13'37.221"N	80°49'13.107"W	5797.87	164.845	1.78	-0.61	-1.67
12391.00	89.570	155.510	6553.14	5867.00	-5678.93	1551.23	1626012.88	267455.64	39°13'36.404"N	80°49'12.656"W	5886.98	164.722	2.78	-0.03	-2.78
12481.00	89.540	157.570	6553.84	5956.83	-5761.48	1587.06	1626047.48	267372.57	39°13'35.588"N	80°49'12.201"W	5976.07	164.599	2.29	-0.03	2.29
12570.00	89.600	160.150	6554.50	6045.80	-5844.48	1619.15	1626078.35	267289.10	39°13'34.768"N	80°49'11.793"W	6064.62	164.515	2.90	0.07	2.90
12660.00	89.600	159.940	6555.13	6135.80	-5929.07	1649.87	1626107.81	267204.07	39°13'33.932"N	80°49'11.403"W	6154.35	164.450	0.23	0.00	-0.23
12750.00	89.540	158.690	6555.81	6225.79	-6013.27	1681.66	1626138.35	267119.42	39°13'33.100"N	80°49'10.999"W	6243.99	164.376	1.39	-0.07	-1.39
12839.00	89.540	160.780	6556.52	6314.78	-6096.75	1712.48	1626167.94	267035.49	39°13'32.274"N	80°49'10.607"W	6332.69	164.311	2.35	0.00	2.35
12929.00	89.630	160.360	6557.18	6404.77	-6181.62	1742.42	1626196.62	266950.19	39°13'31.435"N	80°49'10.227"W	6422.50	164.258	0.48	0.10	-0.47
13018.00	89.570	162.040	6557.80	6493.74	-6265.87	1771.10	1626224.05	266865.53	39°13'30.603"N	80°49'09.862"W	6511.37	164.217	1.89	-0.07	1.89
13108.00	89.630	160.770	6558.42	6583.71	-6351.17	1799.80	1626251.49	266779.82	39°13'29.760"N	80°49'09.498"W	6601.26	164.178	1.41	0.07	-1.41
13198.00	89.510	161.120	6559.10	6673.70	-6436.24	1829.18	1626279.61	266694.34	39°13'28.919"N	80°49'09.125"W	6691.11	164.135	0.41	-0.13	0.39
13288.00	89.600	158.850	6559.80	6763.69	-6520.79	1859.98	1626309.16	266609.34	39°13'28.083"N	80°49'08.733"W	6780.87	164.080	2.52	0.10	-2.52
13378.00	89.570	156.260	6560.45	6853.60	-6603.96	1894.34	1626342.28	266525.67	39°13'27.261"N	80°49'08.297"W	6870.29	163.995	2.88	-0.03	-2.88
13467.00	89.630	159.280	6561.07	6942.52	-6686.34	1928.00	1626374.73	266442.81	39°13'26.447"N	80°49'07.869"W	6958.76	163.915	3.39	0.07	3.39
13557.00	89.690	157.780	6561.61	7032.48	-6770.09	1960.94	1626406.43	266358.59	39°13'25.619"N	80°49'07.451"W	7048.36	163.846	1.67	0.07	-1.67
13647.00	89.170	157.150	6562.50	7122.39	-6853.21	1995.43	1626439.69	266274.97	39°13'24.797"N	80°49'07.012"W	7137.81	163.766	0.91	-0.58	-0.70
13737.00	89.140	155.740	6563.83	7212.21	-6935.70	2031.40	1626474.43	266191.96	39°13'23.982"N	80°49'06.556"W	7227.07	163.675	1.57	-0.03	-1.57
13826.00	89.110	159.800	6565.19	7301.11	-7018.06	2065.06	1626506.87	266109.12	39°13'23.168"N	80°49'06.128"W	7315.57	163.604	4.56	-0.03	4.56
13916.00	89.230	163.050	6566.49	7391.06	-7103.35	2093.72	1626534.27	266023.42	39°13'22.325"N	80°49'05.764"W	7405.49	163.577	3.61	0.13	3.61
14006.00	89.230	160.700	6567.70	7481.00	-7188.87	2121.71	1626560.99	265937.50	39°13'21.480"N	80°49'05.408"W	7495.43	163.557	2.61	0.00	-2.61
14095.00	89.080	159.090	6569.02	7569.98	-7272.44	2152.30	1626590.35	265853.49	39°13'20.654"N	80°49'05.020"W	7584.24	163.514	1.82	-0.17	-1.81
14185.00	89.140	161.410	6570.41	7659.97	-7357.13	2182.71	1626619.50	265768.37	39°13'19.817"N	80°49'04.633"W	7674.08	163.475	2.58	0.07	2.58

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Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

WELLPATH DATA (190 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
14274.00	89.140	165.470	6571.75	7748.78	-7442.41	2208.07	1626643.60	265682.72	39°13'18.974"N	80°49'04.311"W	7763.05	163.475	4.56	0.00	4.56
14364.00	89.320	160.690	6572.96	7838.61	-7528.48	2234.25	1626668.50	265596.28	39°13'18.123"N	80°49'03.979"W	7853.02	163.471	5.31	0.20	-5.31
14454.00	89.200	160.160	6574.12	7928.60	-7613.27	2264.40	1626697.40	265511.05	39°13'17.285"N	80°49'03.596"W	7942.88	163.436	0.60	-0.13	-0.59
14544.00	89.260	158.570	6575.33	8018.59	-7697.49	2296.11	1626727.87	265426.38	39°13'16.453"N	80°49'03.193"W	8032.65	163.390	1.77	0.07	-1.77
14633.00	89.480	159.630	6576.31	8107.57	-7780.62	2327.86	1626758.38	265342.79	39°13'15.631"N	80°49'02.790"W	8121.39	163.344	1.22	0.25	1.19
14723.00	89.540	161.250	6577.08	8197.56	-7865.42	2357.99	1626787.26	265257.56	39°13'14.793"N	80°49'02.407"W	8211.27	163.312	1.80	0.07	1.80
14812.00	89.600	159.750	6577.75	8286.55	-7949.31	2387.70	1626815.72	265173.24	39°13'13.963"N	80°49'02.029"W	8300.16	163.282	1.69	0.07	-1.69
14902.00	89.570	159.620	6578.40	8376.55	-8033.71	2418.94	1626845.72	265088.39	39°13'13.129"N	80°49'01.633"W	8389.98	163.243	0.15	-0.03	-0.14
14979.00	89.510	160.760	6579.02	8453.54	-8106.15	2445.04	1626870.74	265015.58	39°13'12.413"N	80°49'01.301"W	8466.87	163.215	1.48	-0.08	1.48
15002.00	89.510	160.760	6579.22	8476.54	-8127.87	2452.61	1626877.99	264993.76	39°13'12.199"N	80°49'01.205"W	8489.85	163.209	0.00	0.00	0.00

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
4500' VS Target		6564.00	-4391.19	1092.42	1625573.14	268749.95	39°13'49.132"N	80°49'18.485"W	point
OXFD1EHS BHL Rev-2		6603.00	-8127.61	2452.36	1626877.74	264994.02	39°13'12.201"N	80°49'01.208"W	point

WELLPATH COMPOSITION - Ref Wellbore: OXFD1EHS AWB Ref Wellpath: OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.60	640.00	Generic gyro - northseeking (Standard)	VES Gyro (100'-640')	OXFD1EHS AWB
640.00	2539.00	NaviTrak (MagCorr)	BHI MWD Surveys (640')(776'-2539')	OXFD1EHS AWB
2539.00	14979.00	NaviTrak (MagCorr)	BHI MWD Surveys (2539')(2673'-14979')	OXFD1EHS AWB
14979.00	15002.00	Blind Drilling (std)	Projection to bit	OXFD1EHS AWB

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Actual Wellpath Report

OXFD1EHS AWP (Curve&Lateral) Proj: 15002'

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot E
Area	Doddridge Co., WV	Well	OXFD1EHS
Field	Doddridge	Wellbore	OXFD1EHS AWB
Facility	Oxford Pad		

COMMENTS

Wellpath general comments
API: 47-017-06004-0000
BHI Job #: 5591389
Rig: Precision 542
Duration: 8/17/2013-8/31/2013
VES Gyro (100'-640')
BHI MWD Surveys (640')(776'-2539')
BHI MWD Surveys (2539')(2673'-14979')
Projected MD at TD: 15002'

Office of Oil and Gas
Environmental Protection

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	12/16/2013
Job End Date	1/13/2014
State	West Virginia
County	Doddridge
API Number	47-017-06004-00-00
Operator Name	Noble Energy, Inc
Well Name and Number	OXF1 E
Longitude	-80.82563800
Latitude	39.24238700
Datum	NAD27
Federal/Tribal Well	NO
True Vertical Depth	657
Total Base Water Volume (gal)	13,404,355
Total Base Non Water Volume	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Oil & Gas

Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Fresh Water	7732-18-5	100.00000	88.76027	Density = 8.340
SAND - PREMIUM WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	8.08627	
SAND - COMMON WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	2.16123	
HYDROCHLORIC ACID 5-10%	Halliburton	Solvent					
			Hydrochloric acid	7647-01-0	10.00000	0.07774	
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
			Guar gum	9000-30-0	100.00000	0.02187	
FDP-S1078-12	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00938	
			Alcohols, C12-16, ethoxylated	68551-12-2	10.00000	0.00313	
			Ammonium chloride	12125-02-9	10.00000	0.00313	
			9-Octadecenamide, n,n-bis-2 (hydroxy ethyl), (Z)	93-83-4	5.00000	0.00156	
CALCIUM CHLORIDE	Halliburton	Additive					

Environmental Protection

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			Calcium chloride	10043-52-4	100.00000	0.00943	
FR-66	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.00436	
BE-9W	Halliburton	Biocide					
			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00390	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive					
			Acetic anhydride	108-24-7	100.00000	0.00180	
			Acetic acid	64-19-7	60.00000	0.00108	
LP-65 MC	Halliburton	Scale Inhibitor					
			Ammonium chloride	12125-02-9	10.00000	0.00260	
SP BREAKER	Halliburton	Breaker					
			Sodium persulfate	7775-27-1	100.00000	0.00105	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Ethanol	64-17-5	60.00000	0.00036	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00018	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00003	
			Naphthalene	91-20-3	5.00000	0.00003	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00018	
			Propargyl alcohol	107-19-7	10.00000	0.00003	
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							
		Other Ingredient(s)					
			Water	7732-18-5		0.90323	
		Other Ingredient(s)					
			Organic phosphonate	Confidential		0.01562	
		Other Ingredient(s)					
			Inorganic salt	Confidential		0.00938	
		Other Ingredient(s)					
			Polyacrylamide copolymer	Confidential		0.00436	
		Other Ingredient(s)					
			Fatty acid ester	Confidential		0.00156	
		Other Ingredient(s)					
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.00109	
		Other Ingredient(s)					
			Alcohols, C12-16, ethoxylated	68551-12-2		0.00073	
		Other Ingredient(s)					
			Sodium chloride	7647-14-5		0.00073	
		Other Ingredient(s)					

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			Ammonium chloride	12125-02-9		0.00073	
		Other Ingredient(s)					
			Fatty acid tall oil amide	Confidential		0.00073	
		Other Ingredient(s)					
			Formaldehyde	50-00-0		0.00026	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00022	
		Other Ingredient(s)					
			Silica gel	112926-00-8		0.00022	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00022	
		Other Ingredient(s)					
			Oxyalkylated phenolic resin	Confidential		0.00016	
		Other Ingredient(s)					
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8		0.00015	
		Other Ingredient(s)					
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6		0.00015	
		Other Ingredient(s)					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00009	
		Other Ingredient(s)					
			Fatty acids, tall oil	Confidential		0.00009	
		Other Ingredient(s)					
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00009	
		Other Ingredient(s)					
			Oxyalkylated phenolic resin	Confidential		0.00006	
		Other Ingredient(s)					
			Crystalline Silica, Quartz	14808-60-7		0.00002	
		Other Ingredient(s)					
			Olefins	Confidential		0.00001	
		Other Ingredient(s)					
			Olefins	Confidential		0.00001	
		Other Ingredient(s)					
			Olefins	Confidential		0.00000	
		Other Ingredient(s)					
			Olefins	Confidential		0.00000	
		Other Ingredient(s)					
			Sodium sulfate	7757-82-6		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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WR-35
Rev (9-11)

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

Date: 3/21/2014
API: 47-017-06005

Farm Name: Kiley, Joseph & Jacqueline _____ Operator Well No: OXFD-1F-HS (Pilot Hole)

LOCATION: Oxford 1 Elevation: 1,112.77 Quadrangle: OXFORD

District: West Union County: DODDRIDGE
Latitude: _____ Feet South of Deg. Min. Sec. 39.24233500
Longitude: Feet South of Deg. Min. Sec. -80.82565500

Company: CNX Gas Company LLC		Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. Ft.
Address: 200 Evergreene Drive Waynesburg, PA 15370		20	60	60	Cemented In
Agent: Steven Green		13 3/8	681	681	863 sxs (188 bbls) 108 bbls return
Inspector: Bill Hendershot		9 5/8	2570	2570	824 (205 bbls) 45 bbls return
Date Permit Issued: 5/26/2011		5 ½	14776	14776	2488 sxs (615 bbls) – est TOC @ 2370
Date Well Work Commenced:	5/31/2013				
Date Well Work Completed:	3/27/2014				
Verbal Plugging:					
Date Permission granted on:	5/31/2013				
Rotary Cable Rig X					
Total Vertical Depth (ft): ORIGINAL HOLE 6,758.7; ST 01 - 6,594.0					
Total Measured Depth (ft): 14,792.0					
Fresh Water Depth (ft): 30' & 580'					
Salt Water Depth (ft): None					
Is coal being mined in the area (N/Y)? N					
Coal Depths (ft.): None Present					
Void(s) encountered (N/Y) Depth(s): NA					

OPEN FLOW DATA (If more than two producing formations please include additional data on separate sheet)

Producing formation Marcellus Pay zone depth (ft) 6721
Gas: Initial open flow NA MCF/d Oil: Initial open flow NA Bbl/d
Final open flow NA MCF/d Final open flow NA Bbl/d
Time of open flow between initial and final tests NA Hours
Static rock Pressure NA psig (surface pressure) after Hours

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after Hours

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Office of Oil and Gas
JUN 25 2014
W.V. Department of Environmental Protection

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this document and all the attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information I believe that the information is true, accurate, and complete.

Signature Date 6/20/2014 6/20/14

17-06005

Were core samples taken? Yes__ No_x_ Were cuttings caught during drilling? Yes_x_ No___

Were Electrical, Mechanical or Geophyisical logs recorded on this well? If yes, please list: Bond Log, Gamma Ray Log

NOTE: IN THE AREA BELOW PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF THE TOPS AND BOTTOMS OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE FROM SURFACE TO TOTAL DEPTH.

Perforated Intervals, Fracturing or Stimulating: Please See Attached

Plug Back Details including Plug Type and Depth(s): Please See Attached

Surface:

Formations Encountered: Please See Attached

OXF 1F
47-017-06005

Stimulation Summary

Date	Stage #	Formation	Frac Type	Top Perf	Bottom Perf	# of Perfs	BD Press (psi)	ATP (psi)	Avg Rate (bpm)	ISIP (psi)	Frac Gradient	Sand (lbs)	Acid (gals)	Water (gals)
12/15/2013	1	Marcellus	Slickwater	14,423	14,662	48	6,628	8,434	87.4	3,756	1.00	440,525	3,000	395,790
12/16/2013	2	Marcellus	Slickwater	14,175	14,377	40	5,654	7,710	72.9	4,118	1.06	415,053	3,000	409,694
12/17/2013	3	Marcellus	Slickwater	13,925	14,127	40	6,006	8,188	77.3	3,678	0.99	412,750	3,000	370,813
12/18/2013	4	Marcellus	Slickwater	13,675	13,877	40	5,888	7,705	75.1	3,199	0.92	405,713	3,000	362,249
12/18/2013	5	Marcellus	Slickwater	13,373	13,627	40	6,759			3,592	0.98	422,070	3,000	400,375
12/19/2013	6	Marcellus	Slickwater	13,073	13,327	40	5,816	7,765	77.4	2,956	0.88	504,208	3,000	427,819
12/20/2013	7	Marcellus	Slickwater	12,773	13,027	40	5,311	7,431	75.4	4,701	1.15	499,253	3,000	399,227
12/21/2013	8	Marcellus	Slickwater	12,473	12,727	40	7,123	7,968	79.9	2,941	0.88	502,584	3,000	422,884
12/22/2013	9	Marcellus	Slickwater	12,173	12,427	40	6,537	7,471	75.9	3,006	0.89	502,585	3,000	420,603
12/23/2013	10	Marcellus	Slickwater	11,873	12,127	40	6,081	8,107	82.5	4,825	1.17	498,531	3,000	563,785
12/26/2013	11	Marcellus	Slickwater	11,573	11,827	40	5,323	7,423	79.4	4,767	1.16	501,556	3,000	417,753
12/27/2013	12	Marcellus	Slickwater	11,273	11,527	40	5,924	7,526	89.7	3,651	0.99	503,210	3,000	416,313
12/28/2013	13	Marcellus	Slickwater	10,973	11,227	40	5,673	8,258	85.3	4,147	1.07	500,856	3,000	515,138
12/28/2013	14	Marcellus	Slickwater	10,673	10,927	40	5,085	7,858	87.0	4,918	1.18	479,427	3,000	428,636
12/29/2013	15	Marcellus	Slickwater	10,373	10,627	40	5,085	7,910	82.3	5,336	1.24	495,764	3,000	525,765
12/30/2013	16	Marcellus	Slickwater	10,073	10,327	40	5,484	8,113	88.2	4,180	1.07	500,478	3,000	488,666
1/2/2014	17	Marcellus	Slickwater	9,773	10,027	40	4,778	7,038	90.1	2,784	0.86	497,643	3,000	403,549
1/2/2014	18	Marcellus	Slickwater	9,473	9,727	40	5,081	7,302	90.4	3,722	1.00	498,958	3,000	403,623
1/5/2014	19	Marcellus	Slickwater	9,173	9,427	40	6,233	7,495	90.0	3,118	0.91	502,170	3,000	434,754
1/10/2014	20	Marcellus	Slickwater	8,873	9,127	40	6,137	6,998	88.7	3,509	0.97	504,763	3,000	395,489
1/10/2014	21	Marcellus	Slickwater	8,573	8,827	40	5,805	7,554	82.9	3,903	1.03	501,585	3,000	445,761
1/11/2014	22	Marcellus	Slickwater	8,273	8,527	40	5,991	7,187	88.7	3,276	0.93	503,776	3,000	387,647
1/11/2014	23	Marcellus	Slickwater	7,973	8,227	40	5,748	7,422	84.6	4,738	1.15	458,718	3,000	385,083
1/12/2014	24	Marcellus	Slickwater	7,673	7,927	40	6,419	7,289	87.2	4,106	1.06	504,699	3,000	425,993
1/12/2014	25	Marcellus	Slickwater	7,373	7,627	40	5,589	7,353	84.2	3,590	0.98	503,049	3,000	448,305
1/12/2014	26	Marcellus	Slickwater	7,073	7,327	40	5,695	7,113	86.2	4,420	1.10	503,765	3,000	389,430
1/13/2014	27	Marcellus	Slickwater	6,825	7,027	40	6,073	7,105	85.5	2,962	0.88	500,071	3,000	405,363

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OXF 1F
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Stage #	Plug Type	Plug Depth
1	No plug	No plug
2	Composite Frac Plug	14,400
3	Composite Frac Plug	14,150
4	Composite Frac Plug	13,900
5	Composite Frac Plug	13,650
6	Composite Frac Plug	13,350
7	Composite Frac Plug	13,050
8	Composite Frac Plug	12,750
9	Composite Frac Plug	12,450
10	Composite Frac Plug	12,150
11	Composite Frac Plug	11,850
12	Composite Frac Plug	11,550
13	Composite Frac Plug	11,250
14	Composite Frac Plug	10,950
15	Composite Frac Plug	10,650
16	Composite Frac Plug	10,350
17	Composite Frac Plug	10,050
18	Composite Frac Plug	9,750
19	Composite Frac Plug	9,450
20	Composite Frac Plug	9,150
21	Composite Frac Plug	8,850
22	Composite Frac Plug	8,550
23	Composite Frac Plug	8,250
24	Composite Frac Plug	7,899
25	Composite Frac Plug	7,650
26	Composite Frac Plug	7,350
27	Composite Frac Plug	7,050
	Bridge Plug	6,500

PLUG BACK DETAILS:

SHUT DOWN RIG PUMPS AND TIE SCHLUMBERGER INTO TO DRILL STRING AND PUMP 25 BBL MUD PUSH @ 10PPG, W/ 1 GAL/ BBL B220 FOLLOWED W/310 SX MIXED AT17.5 PPG 0.94 YIELD = 52 BBLS CLASS H CEMENT W/0.4 GAL/SX D-080, 0.02 GAL/SX D-047 & 0.25 GAL/SX D-80, YIELD 0.94 FT3/SX. MIX FLUID 3.458 GAL/SX 3:42MIN @ 50BC. W/4 BBLS MUD PUSH @ 10PPG. DROP FOAM BALL AND DISPLACE WITH 96 BBLS SOBM. POOH 7 STANDS F/6,750' T6,013'. CIRCULATE OUT 2 SURFACE TO SURFACE CIRCULATIONS. WASH DOWN AND TAG TOP OF PLUG #1 @ 6,020'. (SPACER &TRACE OF CEMENT BACK TO SURFACE). SHUT DOWN RIG PUMPS AND TIE SCHLUMBERGER INTO TO DRILL STRING AND PUMP 25 BBL MUD PUSH @ 10PPG, W/ 1 GAL/ BBL B220 FOLLOWED W/310 SX MIXED AT17.5 PPG 0.94 YIELD = 52 BBLS CLASS H CEMENT W/0.4 GAL/SX D-080, 0.02 GAL/SX D-047 & 0.25 GAL/SX D-80, YIELD 0.94 FT3/SX. MIX FLUID 3.458 GAL/SX 3:42MIN @ 50BC, W/4 BBLS MUD PUSH @ 10PPG, DROP FOAM BALL AND DISPLACE WITH 82 BBLS SOBM ESTIMATED TOP OF CEMENT AT 5,300'. POOH 10 STANDS F/6,013' T/ 5,118'. RIG SERVICE. PUMP 1 SURFACE TO SURFACE CIRCULATION PRIOR TO PULLING OUT OF THE HOLE. (NO SIGNS OF CEMENT BACK TO SURFACE). PUMP SLUG AND POOH F/5,118' T/817'

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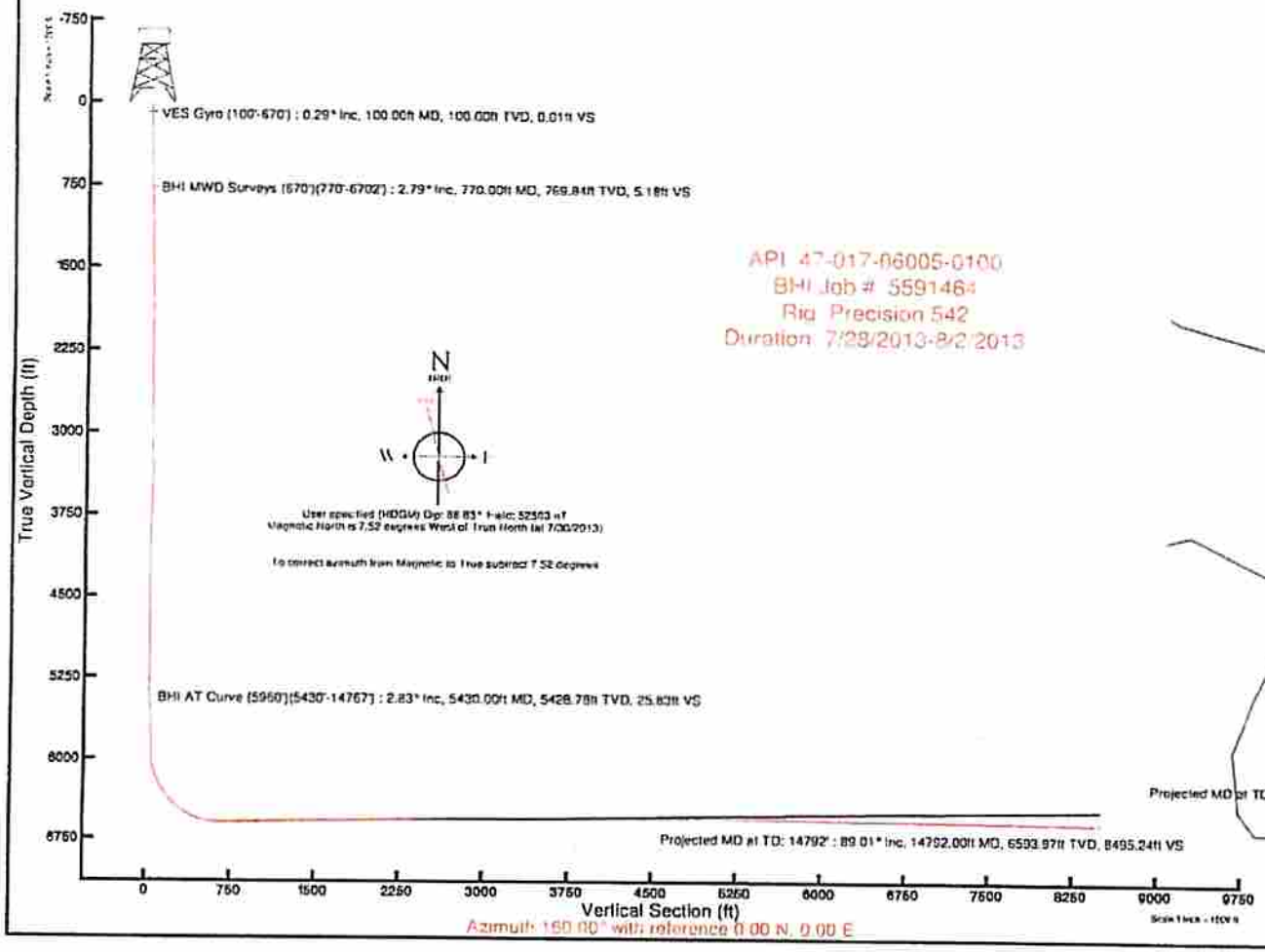
Formations	Top TVD	Base TVD	Top MD	Base MD	Fluid
Sandstone and Shale, Undif.	0	1937	0	1938	
Maxton	1937	1967	1938	1981	
Greenbrier Group	1980	2040	1981	2041	
Big Injun (Grnbr)	2040	2120	2041	2278	
Weir	2277	2308	2278	2516	
Berea Ss	2515	2520	2516	2691	
Fourth	2690	2714	2691	2945	
Bayard	2944	2985	2945	3341	
Speechley	3340	3398	3341	3905	
Balltown A	3904	3930	3905	4113	
Balltown B	4112	4185	4113	4423	
Riley	4422	4443	4423	4953	
Benson	4952	5000	4953	5197	
Alexander	5196	5280	5197	6295	
Cashaqua Sh	6278	6399	6295	6442	
Middlesex Sh	6399	6448	6442	6509	
West River	6448	6524	6509	6633	
Geneseo Sh	6524	6554	6633	6695	
Tully Ls	6554	6573	6695	6742	
Hamilton	6573	6581	6742	6768	
Marcellus	6581	6636	6768	6938	Gas
Cherry Valley	6618	6620	6938	not encountered	
Onondaga	6636	6647	not encountered	not encountered	
Huntersville	6647	not encountered	not encountered	not encountered	

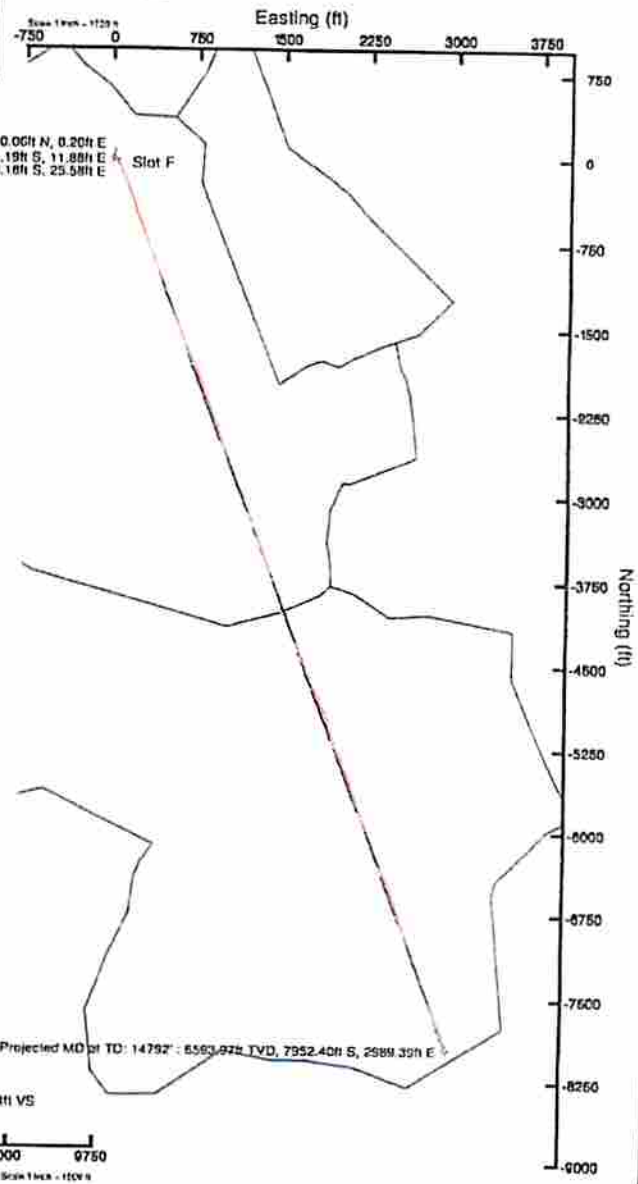
NOBLE ENERGY

Location: Doddridge Co., WV
Field: Doddridge
Facility: Oxford Pad

Slot: Slot F
Well: OXFD1FHS
Wellbore: OXFD1FHS PWB



API 47-017-06005-0100
BHI Job # 5591464
Rig Precision 542
Duration 7/29/2013-8/2/2013



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Actual Wellpath Report

OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXFD1FHS
Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

REPORT SETUP INFORMATION

Projection System	NAD27 / Lambert West Virginia SP, Northern Zone (4701), US feet	Software System	WellArchitect® 4.0.1
North Reference	True	User	Edsaryar
Scale	0.999963	Report Generated	11/5/2013 at 2:46:29 PM
Convergence at slot	n/a	Database/Source file	Well Architect Eastern US/OXFD1FHS_AWB.xml

WELLPATH LOCATION

	Local coordinates		Grid coordinates		Geographic coordinates	
	North[ft]	East[ft]	Easting[US ft]	Northing[US ft]	Latitude	Longitude
Slot Location	-96.04	-28.07	1624539.86	273137.44	39°14'32.344"N	80°49'32.438"W
Facility Reference Pt			1624569.34	273233.05	39°14'33.293"N	80°49'32.081"W
Field Reference Pt			0.00	0.00	38°17'12.460"N	86°28'23.077"W

WELLPATH DATUM

Calculation method	Minimum curvature	Precision 542 (RT) to Facility Vertical Datum	18.60ft
Horizontal Reference Pt	Slot	Precision 542 (RT) to Mean Sea Level	1138.60ft
Vertical Reference Pt	Precision 542 (RT)	Precision 542 (RT) to Mud Line at Slot (Slot F)	18.60ft
MD Reference Pt	Precision 542 (RT)	Section Origin	N 0.00, E 0.00 ft
Field Vertical Reference	Mean Sea Level	Section Azimuth	160.00°

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REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXFD1FHS
Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

WELLPATH DATA (182 stations) † = interpolated/extrapolated station

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
0.00†	0.000	72.990	0.00	0.00	0.00	0.00	1624539.86	273137.44	39°14'32.344"N	80°49'32.438"W	0.00	0.000	0.00	0.00	0.00
18.60	0.000	72.990	18.60	0.00	0.00	0.00	1624539.86	273137.44	39°14'32.344"N	80°49'32.438"W	0.00	0.000	0.00	0.00	0.00
100.00	0.290	72.990	100.00	0.01	0.06	0.20	1624540.06	273137.50	39°14'32.344"N	80°49'32.435"W	0.21	72.990	0.36	0.36	0.00
200.00	0.360	78.470	200.00	0.07	0.20	0.75	1624540.61	273137.63	39°14'32.346"N	80°49'32.428"W	0.77	75.216	0.08	0.07	5.48
300.00	0.340	85.000	300.00	0.19	0.29	1.35	1624541.21	273137.71	39°14'32.347"N	80°49'32.421"W	1.38	78.051	0.04	-0.02	6.53
400.00	0.540	98.230	399.99	0.49	0.24	2.11	1624541.98	273137.65	39°14'32.346"N	80°49'32.411"W	2.13	83.406	0.22	0.20	13.23
500.00	1.040	104.430	499.98	1.23	-0.05	3.46	1624543.32	273137.34	39°14'32.343"N	80°49'32.394"W	3.46	90.820	0.51	0.50	6.20
600.00	1.520	93.050	599.96	2.26	-0.35	5.66	1624545.51	273137.01	39°14'32.340"N	80°49'32.366"W	5.67	93.500	0.54	0.48	-11.38
670.00	1.980	94.240	669.93	3.12	-0.48	7.79	1624547.65	273136.84	39°14'32.339"N	80°49'32.339"W	7.81	93.561	0.66	0.66	1.70
770.00	2.790	103.620	769.84	5.18	-1.19	11.88	1624551.72	273136.08	39°14'32.332"N	80°49'32.287"W	11.94	95.699	0.90	0.81	9.38
862.00	2.560	130.290	861.74	8.20	-3.04	15.63	1624555.44	273134.17	39°14'32.314"N	80°49'32.239"W	15.92	101.016	1.36	-0.25	28.99
957.00	2.470	160.030	956.65	12.09	-6.34	17.94	1624557.71	273130.84	39°14'32.281"N	80°49'32.210"W	19.03	109.454	1.36	-0.09	31.31
1052.00	1.480	143.560	1051.60	15.32	-9.25	19.37	1624559.09	273127.91	39°14'32.252"N	80°49'32.192"W	21.47	115.523	1.19	-1.04	-17.34
1147.00	1.210	95.570	1146.57	16.93	-10.33	21.10	1624560.80	273126.80	39°14'32.242"N	80°49'32.170"W	23.49	116.094	1.18	-0.28	-50.52
1210.00	1.030	61.420	1209.56	17.13	-10.13	22.26	1624561.96	273126.99	39°14'32.244"N	80°49'32.155"W	24.45	114.465	1.08	0.29	-54.21
1273.00	0.930	67.510	1272.55	17.02	-9.66	23.23	1624562.94	273127.44	39°14'32.248"N	80°49'32.143"W	25.16	112.583	0.23	-0.16	9.67
1368.00	0.650	296.710	1367.55	16.60	-9.12	23.46	1624563.18	273127.97	39°14'32.254"N	80°49'32.140"W	25.17	111.252	1.52	-0.29	-137.68
1463.00	1.150	282.270	1462.54	15.70	-8.68	22.05	1624561.77	273128.44	39°14'32.258"N	80°49'32.158"W	23.69	111.488	0.57	0.53	-15.20
1558.00	1.230	167.960	1557.53	16.20	-9.47	21.33	1624561.04	273127.65	39°14'32.250"N	80°49'32.167"W	23.34	113.951	2.11	0.08	-120.33
1652.00	1.850	144.510	1651.49	18.66	-11.70	22.42	1624562.10	273125.42	39°14'32.228"N	80°49'32.153"W	25.28	117.551	0.93	0.66	-24.95
1741.00	1.520	96.210	1740.46	20.56	-12.99	24.43	1624564.09	273124.09	39°14'32.215"N	80°49'32.127"W	27.67	118.011	1.59	-0.37	-54.27
1831.00	0.600	58.290	1830.44	20.99	-12.87	26.01	1624565.68	273124.18	39°14'32.217"N	80°49'32.107"W	29.02	116.332	1.23	-1.02	-42.13
1921.00	0.740	295.020	1920.44	20.49	-12.38	25.89	1624565.56	273124.68	39°14'32.221"N	80°49'32.109"W	28.70	115.560	1.31	0.16	-136.97
2010.00	1.330	305.520	2009.42	19.23	-11.54	24.53	1624564.21	273125.54	39°14'32.230"N	80°49'32.126"W	27.10	115.194	0.69	0.66	11.80
2100.00	1.080	272.830	2099.41	18.04	-10.89	22.83	1624562.52	273126.22	39°14'32.236"N	80°49'32.148"W	25.29	115.501	0.80	-0.28	-36.32
2189.00	0.510	237.210	2188.40	17.80	-11.06	21.66	1624561.35	273126.06	39°14'32.234"N	80°49'32.163"W	24.32	117.057	0.82	-0.64	-40.02
2279.00	0.810	152.860	2278.39	18.52	-11.85	21.61	1624561.29	273125.28	39°14'32.227"N	80°49'32.163"W	24.64	118.727	1.02	0.33	-93.72
2368.00	1.720	140.660	2367.37	20.41	-13.44	22.74	1624562.40	273123.67	39°14'32.211"N	80°49'32.149"W	26.42	120.575	1.06	1.02	-13.71
2458.00	1.510	136.880	2457.33	22.77	-15.35	24.41	1624564.04	273121.73	39°14'32.192"N	80°49'32.128"W	28.84	122.159	0.26	-0.23	-4.20
2524.00	1.780	126.530	2523.31	24.43	-16.59	25.83	1624565.44	273120.47	39°14'32.180"N	80°49'32.109"W	30.70	122.717	0.61	0.41	-15.68

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Actual Wellpath Report

OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXFD1FHS
Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

WELLPATH DATA (182 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
2634.00	1.950	128.440	2633.25	27.45	-18.77	28.67	1624568.25	273118.25	39°14'32.158"N	80°49'32.073"W	34.27	123.219	0.16	0.15	1.74
2724.00	0.930	124.240	2723.22	29.34	-20.14	30.47	1624570.03	273116.86	39°14'32.145"N	80°49'32.050"W	36.52	123.458	1.14	-1.13	-4.67
2813.00	0.820	127.320	2812.21	30.47	-20.93	31.57	1624571.12	273116.05	39°14'32.137"N	80°49'32.036"W	37.88	123.538	0.13	-0.12	3.46
2903.00	0.400	249.820	2902.21	31.01	-21.43	31.79	1624571.33	273115.55	39°14'32.132"N	80°49'32.034"W	38.34	123.980	1.21	-0.47	136.11
3002.00	1.910	269.300	3001.18	30.46	-21.57	29.82	1624569.36	273115.44	39°14'32.131"N	80°49'32.059"W	36.80	125.878	1.55	1.53	19.68
3082.00	0.840	223.280	3081.16	30.29	-22.01	28.08	1624567.61	273115.02	39°14'32.126"N	80°49'32.081"W	35.68	128.088	1.82	-1.34	-57.52
3172.00	1.490	216.320	3171.14	31.23	-23.43	26.94	1624566.45	273113.61	39°14'32.112"N	80°49'32.095"W	35.70	131.021	0.74	0.72	-7.73
3262.00	1.480	186.390	3261.11	32.92	-25.53	26.12	1624565.59	273111.53	39°14'32.091"N	80°49'32.106"W	36.52	134.352	0.85	-0.01	-33.26
3351.00	1.520	212.030	3350.08	34.68	-27.67	25.36	1624564.81	273109.40	39°14'32.070"N	80°49'32.115"W	37.54	137.497	0.75	0.04	28.81
3441.00	1.630	283.580	3440.06	34.71	-28.39	23.48	1624562.92	273108.71	39°14'32.063"N	80°49'32.139"W	36.84	140.399	2.05	0.12	79.50
3531.00	1.950	310.950	3530.02	32.66	-27.08	21.08	1624560.54	273110.05	39°14'32.076"N	80°49'32.170"W	34.32	142.099	1.00	0.36	30.41
3620.00	1.480	308.470	3618.98	30.36	-25.37	19.04	1624558.52	273111.79	39°14'32.093"N	80°49'32.196"W	31.72	143.117	0.53	-0.53	-2.79
3710.00	1.540	331.070	3708.94	28.17	-23.59	17.54	1624557.05	273113.59	39°14'32.111"N	80°49'32.215"W	29.40	143.364	0.66	0.07	25.11
3800.00	0.750	355.300	3798.93	26.41	-21.95	16.91	1624556.44	273115.25	39°14'32.127"N	80°49'32.223"W	27.71	142.384	1.01	-0.88	26.92
3889.00	0.630	356.510	3887.92	25.38	-20.88	16.83	1624556.38	273116.32	39°14'32.137"N	80°49'32.224"W	26.82	141.122	0.14	-0.13	1.36
3979.00	1.370	5.940	3977.91	23.93	-19.31	16.91	1624556.49	273117.88	39°14'32.153"N	80°49'32.223"W	25.67	138.789	0.84	0.82	10.48
4076.00	0.890	13.980	4074.89	22.27	-17.43	17.22	1624556.82	273119.76	39°14'32.171"N	80°49'32.219"W	24.50	135.352	0.52	-0.49	8.29
4165.00	0.920	48.040	4163.88	21.43	-16.28	17.91	1624557.53	273120.90	39°14'32.183"N	80°49'32.210"W	24.21	132.265	0.60	0.03	38.27
4255.00	0.800	52.950	4253.87	20.97	-15.42	18.95	1624558.58	273121.74	39°14'32.191"N	80°49'32.197"W	24.43	129.130	0.16	-0.13	5.46
4345.00	0.960	87.750	4343.86	21.02	-15.01	20.21	1624559.84	273122.13	39°14'32.195"N	80°49'32.181"W	25.17	126.606	0.61	0.18	38.67
4435.00	1.090	95.600	4433.84	21.62	-15.07	21.81	1624561.45	273122.06	39°14'32.195"N	80°49'32.161"W	26.51	124.630	0.21	0.14	8.72
4524.00	0.440	2.810	4522.84	21.67	-14.81	22.67	1624562.31	273122.30	39°14'32.197"N	80°49'32.150"W	27.08	123.146	1.34	-0.73	-104.26
4614.00	0.460	1.160	4612.83	21.01	-14.10	22.70	1624562.35	273123.01	39°14'32.204"N	80°49'32.149"W	26.72	121.850	0.03	0.02	-1.83
4703.00	0.310	43.360	4701.83	20.57	-13.57	22.87	1624562.53	273123.54	39°14'32.210"N	80°49'32.147"W	26.59	120.679	0.35	-0.17	47.42
4793.00	0.570	83.240	4791.83	20.57	-13.34	23.48	1624563.14	273123.76	39°14'32.212"N	80°49'32.139"W	27.01	119.598	0.43	0.29	44.31
4882.00	0.660	105.260	4880.82	20.96	-13.42	24.42	1624564.07	273123.66	39°14'32.211"N	80°49'32.127"W	27.86	118.797	0.28	0.10	24.74
4972.00	0.860	115.730	4970.82	21.75	-13.85	25.52	1624565.18	273123.21	39°14'32.207"N	80°49'32.113"W	29.04	118.486	0.27	0.22	11.63
5061.00	0.740	238.790	5059.81	22.34	-14.44	25.63	1624565.28	273122.63	39°14'32.201"N	80°49'32.112"W	29.42	119.390	1.58	-0.13	138.27
5151.00	0.450	197.090	5149.81	22.73	-15.08	25.03	1624564.67	273122.00	39°14'32.195"N	80°49'32.120"W	29.22	121.060	0.56	-0.32	-46.33
5240.00	0.400	167.090	5238.80	23.32	-15.71	25.00	1624564.62	273121.36	39°14'32.188"N	80°49'32.120"W	29.53	122.152	0.25	-0.06	-33.71

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Actual Wellpath Report

OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXFD1FHS
Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

WELLPATH DATA (182 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
5330.00	0.700	178.720	5328.80	24.15	-16.57	25.08	1624564.69	273120.50	39°14'32.180"N	80°49'32.119"W	30.06	123.450	0.35	0.33	12.92
5419.00	1.030	155.970	5417.79	25.46	-17.84	25.42	1624565.01	273119.22	39°14'32.167"N	80°49'32.115"W	31.06	125.067	0.53	0.37	-25.56
5430.00	2.830	153.420	5428.78	25.83	-18.18	25.58	1624565.17	273118.89	39°14'32.164"N	80°49'32.113"W	31.38	125.396	16.38	16.36	-23.18
5491.00	4.420	157.820	5489.66	29.68	-21.70	27.14	1624566.68	273115.34	39°14'32.129"N	80°49'32.093"W	34.75	128.642	2.64	2.61	7.21
5580.00	3.510	152.970	5578.45	35.81	-27.30	29.68	1624569.13	273109.70	39°14'32.074"N	80°49'32.061"W	40.33	132.615	1.09	-1.02	-5.45
5670.00	0.660	356.130	5668.40	38.04	-29.24	30.89	1624570.32	273107.75	39°14'32.055"N	80°49'32.045"W	42.54	133.426	4.58	-3.17	-174.27
5759.00	2.820	174.070	5757.37	39.68	-30.91	31.09	1624570.49	273106.08	39°14'32.038"N	80°49'32.043"W	43.84	134.836	3.91	2.43	199.93
5849.00	2.330	157.820	5847.28	43.65	-34.80	32.01	1624571.35	273102.17	39°14'32.000"N	80°49'32.031"W	47.28	137.399	0.97	-0.54	-18.06
5939.00	0.280	357.750	5937.26	45.27	-36.28	32.69	1624572.01	273100.68	39°14'31.985"N	80°49'32.022"W	48.83	137.981	2.88	-2.28	-177.86
5984.00	1.670	158.010	5982.25	45.82	-36.78	32.93	1624572.24	273100.18	39°14'31.980"N	80°49'32.019"W	49.36	138.160	4.30	3.09	356.13
6028.00	8.060	156.880	6026.07	49.55	-40.21	34.38	1624573.64	273096.73	39°14'31.946"N	80°49'32.001"W	52.91	139.470	14.52	14.52	-2.57
6073.00	13.580	153.230	6070.25	57.95	-47.84	38.00	1624577.15	273089.05	39°14'31.871"N	80°49'31.955"W	61.09	141.535	12.35	12.27	-8.11
6118.00	15.980	150.440	6113.76	69.31	-57.94	43.44	1624582.44	273078.86	39°14'31.771"N	80°49'31.886"W	72.42	143.142	5.56	5.33	-6.20
6163.00	17.920	150.220	6156.80	82.24	-69.34	49.93	1624588.76	273067.37	39°14'31.658"N	80°49'31.803"W	85.45	144.242	4.31	4.31	-0.49
6208.00	20.740	152.050	6199.26	96.95	-82.39	57.11	1624595.74	273054.22	39°14'31.529"N	80°49'31.712"W	100.25	145.273	6.41	6.27	4.07
6253.00	25.620	154.710	6240.62	114.54	-98.24	65.00	1624603.40	273038.26	39°14'31.373"N	80°49'31.612"W	117.80	146.507	11.09	10.84	5.91
6298.00	29.540	156.290	6280.50	135.31	-117.20	73.62	1624611.74	273019.17	39°14'31.185"N	80°49'31.502"W	138.40	147.863	8.86	8.71	3.51
6342.00	32.070	157.060	6318.29	157.80	-137.89	82.54	1624620.35	272998.35	39°14'30.981"N	80°49'31.389"W	160.71	149.095	5.82	5.75	1.75
6387.00	34.920	157.120	6355.81	182.60	-160.76	92.21	1624629.68	272975.34	39°14'30.755"N	80°49'31.266"W	185.33	150.163	6.33	6.33	0.13
6432.00	38.960	156.820	6391.77	209.60	-185.64	102.79	1624639.89	272950.31	39°14'30.509"N	80°49'31.131"W	212.20	151.028	8.99	8.98	-0.67
6476.00	43.090	156.300	6424.96	238.43	-212.13	114.28	1624650.99	272923.65	39°14'30.247"N	80°49'30.985"W	240.96	151.688	9.42	9.39	-1.18
6521.00	47.490	156.710	6456.61	270.34	-241.46	127.02	1624663.30	272894.14	39°14'29.957"N	80°49'30.823"W	272.83	152.253	9.80	9.78	0.91
6566.00	51.830	157.770	6485.73	304.59	-273.08	140.28	1624676.09	272862.33	39°14'29.645"N	80°49'30.655"W	307.00	152.811	9.81	9.64	2.36
6612.00	55.910	158.800	6512.85	341.72	-307.59	154.01	1624689.31	272827.62	39°14'29.304"N	80°49'30.480"W	344.00	153.403	9.05	8.87	2.24
6656.00	60.360	160.480	6536.07	379.07	-342.62	167.00	1624701.78	272792.41	39°14'28.957"N	80°49'30.315"W	381.15	154.015	10.62	10.11	3.82
6701.00	64.630	161.180	6556.85	418.97	-380.31	180.10	1624714.32	272754.52	39°14'28.585"N	80°49'30.149"W	420.80	154.660	9.59	9.49	1.56
6745.00	69.550	162.340	6573.97	459.47	-418.80	192.77	1624726.42	272715.86	39°14'28.204"N	80°49'29.988"W	461.03	155.284	11.44	11.18	2.64
6790.00	75.510	162.310	6587.48	502.34	-459.68	205.80	1624738.84	272674.80	39°14'27.800"N	80°49'29.822"W	503.64	155.882	13.24	13.24	-0.07
6835.00	80.660	162.040	6596.76	546.32	-501.58	219.27	1624751.70	272632.70	39°14'27.386"N	80°49'29.651"W	547.41	156.387	11.46	11.44	-0.60
6880.00	83.240	160.930	6603.07	590.86	-543.82	233.42	1624765.22	272590.25	39°14'26.969"N	80°49'29.471"W	591.80	156.770	6.23	5.73	-2.47

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Actual Wellpath Report

OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

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Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

WELLPATH DATA (182 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
6925.00	89.510	160.030	6605.91	635.75	-586.13	248.42	1624779.59	272547.73	39°14'26.551"N	80°49'29.280"W	636.60	157.031	14.08	13.93	-2.00
6969.00	90.460	159.330	6605.92	679.75	-627.39	263.70	1624794.26	272506.25	39°14'26.143"N	80°49'29.086"W	680.56	157.202	2.68	2.16	-1.59
7014.00	90.340	158.890	6605.61	724.74	-669.43	279.74	1624809.69	272463.98	39°14'25.727"N	80°49'28.882"W	725.53	157.321	1.01	-0.27	-0.98
7059.00	90.620	158.810	6605.23	769.73	-711.40	295.98	1624825.30	272421.78	39°14'25.312"N	80°49'28.676"W	770.52	157.410	0.65	0.62	-0.18
7104.00	91.260	158.830	6604.49	814.71	-753.35	312.24	1624840.93	272379.59	39°14'24.898"N	80°49'28.469"W	815.50	157.488	1.42	1.42	0.04
7194.00	91.140	159.150	6602.61	904.68	-837.35	344.50	1624871.95	272295.13	39°14'24.067"N	80°49'28.059"W	905.45	157.637	0.38	-0.13	0.36
7283.00	91.140	160.290	6600.84	993.66	-920.82	375.34	1624901.56	272211.22	39°14'23.243"N	80°49'27.667"W	994.38	157.823	1.28	0.00	1.28
7373.00	91.050	161.320	6599.12	1083.63	-1005.80	404.92	1624929.88	272125.82	39°14'22.403"N	80°49'27.291"W	1084.25	158.071	1.15	-0.10	1.14
7463.00	91.350	162.610	6597.23	1173.56	-1091.35	432.78	1624956.47	272039.86	39°14'21.557"N	80°49'26.937"W	1174.03	158.369	1.47	0.33	1.43
7552.00	91.450	161.110	6595.06	1262.48	-1175.90	460.48	1624982.92	271954.92	39°14'20.721"N	80°49'26.585"W	1262.85	158.615	1.69	0.11	-1.69
7642.00	91.450	158.400	6592.78	1352.44	-1260.31	491.61	1625012.80	271870.06	39°14'19.887"N	80°49'26.190"W	1352.80	158.691	3.01	0.00	-3.01
7731.00	90.950	157.630	6590.92	1441.37	-1342.82	524.92	1625044.89	271787.08	39°14'19.072"N	80°49'25.766"W	1441.77	158.649	1.03	-0.56	-0.87
7821.00	91.350	156.860	6589.11	1531.25	-1425.80	559.73	1625078.47	271703.60	39°14'18.251"N	80°49'25.324"W	1531.73	158.566	0.96	0.44	-0.86
7911.00	91.260	160.180	6587.06	1621.18	-1509.51	592.67	1625110.17	271619.41	39°14'17.424"N	80°49'24.905"W	1621.69	158.564	3.69	-0.10	3.69
8000.00	90.650	159.440	6585.58	1710.17	-1593.03	623.38	1625139.64	271535.45	39°14'16.598"N	80°49'24.515"W	1710.66	158.629	1.08	-0.69	-0.83
8090.00	90.680	157.970	6584.53	1800.14	-1676.88	656.06	1625171.08	271451.13	39°14'15.770"N	80°49'24.100"W	1800.65	158.633	1.63	0.03	-1.63
8180.00	90.620	156.550	6583.51	1890.02	-1759.87	690.85	1625204.64	271367.63	39°14'14.949"N	80°49'23.658"W	1890.62	158.567	1.58	-0.07	-1.58
8269.00	90.740	154.230	6582.45	1978.72	-1840.78	727.91	1625240.50	271286.19	39°14'14.150"N	80°49'23.187"W	1979.47	158.424	2.61	0.13	-2.61
8359.00	90.680	158.410	6581.34	2068.51	-1923.18	764.04	1625275.41	271203.28	39°14'13.335"N	80°49'22.728"W	2069.39	158.333	4.64	-0.07	4.64
8449.00	90.580	162.430	6580.35	2158.49	-2007.95	794.20	1625304.31	271118.07	39°14'12.497"N	80°49'22.344"W	2159.31	158.420	4.47	-0.11	4.47
8538.00	90.980	161.150	6579.14	2247.43	-2092.48	822.01	1625330.87	271033.14	39°14'11.662"N	80°49'21.991"W	2248.15	158.553	1.51	0.45	-1.44
8628.00	90.580	160.040	6577.91	2337.42	-2177.36	851.90	1625359.51	270947.83	39°14'10.823"N	80°49'21.611"W	2338.08	158.632	1.31	-0.44	-1.23
8717.00	90.370	158.520	6577.17	2426.40	-2260.60	883.39	1625389.76	270864.14	39°14'10.000"N	80°49'21.211"W	2427.07	158.656	1.72	-0.24	-1.71
8807.00	90.830	159.960	6576.23	2516.39	-2344.75	915.29	1625420.42	270779.53	39°14'09.169"N	80°49'20.806"W	2517.06	158.676	1.68	0.51	1.60
8896.00	90.830	163.360	6574.94	2605.33	-2429.21	943.29	1625447.16	270694.68	39°14'08.334"N	80°49'20.450"W	2605.92	158.778	3.82	0.00	3.82
8986.00	90.520	162.880	6573.88	2695.19	-2515.32	969.42	1625472.02	270608.19	39°14'07.483"N	80°49'20.118"W	2695.67	158.923	0.63	-0.34	-0.53
9075.00	90.460	162.940	6573.12	2784.07	-2600.39	995.57	1625496.91	270522.75	39°14'06.642"N	80°49'19.785"W	2784.45	159.050	0.10	-0.07	0.07
9164.00	90.180	162.120	6572.62	2872.98	-2685.28	1022.29	1625522.38	270437.47	39°14'05.803"N	80°49'19.446"W	2873.29	159.158	0.97	-0.31	-0.92
9254.00	90.280	161.930	6572.26	2962.93	-2770.89	1050.06	1625548.88	270351.47	39°14'04.957"N	80°49'19.093"W	2963.18	159.245	0.24	0.11	-0.21
9343.00	90.580	159.510	6571.59	3051.91	-2854.89	1079.45	1625577.02	270267.05	39°14'04.126"N	80°49'18.720"W	3052.14	159.288	2.74	0.34	-2.72

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9433.00	89.750	158.460	6571.33	3141.89	-2938.90	1111.72	1625608.05	270182.57	39°14'03.296"N	80°49'18.310"W	3142.14	159.279	1.49	-0.92	-1.17
9523.00	90.220	158.070	6571.36	3231.85	-3022.50	1145.05	1625640.14	270098.49	39°14'02.470"N	80°49'17.886"W	3232.13	159.251	0.68	0.52	-0.43
9613.00	89.880	156.190	6571.28	3321.73	-3105.42	1180.02	1625673.89	270015.07	39°14'01.650"N	80°49'17.442"W	3322.06	159.194	2.12	-0.38	-2.09
9702.00	89.780	156.940	6571.54	3410.57	-3187.08	1215.42	1625708.07	269932.90	39°14'00.843"N	80°49'16.992"W	3410.97	159.125	0.85	-0.11	0.84
9791.00	89.720	157.320	6571.93	3499.46	-3269.08	1250.01	1625741.45	269850.40	39°14'00.032"N	80°49'16.552"W	3499.92	159.074	0.43	-0.07	0.43
9881.00	89.880	160.010	6572.25	3589.43	-3352.91	1282.75	1625772.95	269766.10	39°13'59.204"N	80°49'16.136"W	3589.91	159.064	2.99	0.18	2.99
9971.00	89.880	160.670	6572.43	3679.42	-3437.66	1313.03	1625801.97	269680.92	39°13'58.366"N	80°49'15.752"W	3679.88	159.095	0.73	0.00	0.73
10060.00	90.340	160.980	6572.26	3768.41	-3521.72	1342.26	1625829.96	269596.44	39°13'57.535"N	80°49'15.380"W	3768.84	159.136	0.62	0.52	0.35
10150.00	90.060	161.660	6571.95	3858.39	-3606.98	1371.09	1625857.52	269510.76	39°13'56.693"N	80°49'15.014"W	3858.78	159.187	0.82	-0.31	0.76
10239.00	90.180	161.820	6571.76	3947.35	-3691.50	1398.97	1625884.16	269425.85	39°13'55.857"N	80°49'14.659"W	3947.69	159.245	0.22	0.13	0.18
10329.00	90.280	160.440	6571.40	4037.33	-3776.66	1428.08	1625912.00	269340.27	39°13'55.016"N	80°49'14.290"W	4037.64	159.287	1.54	0.11	-1.53
10419.00	90.830	160.560	6570.53	4127.32	-3861.49	1458.12	1625940.79	269255.01	39°13'54.177"N	80°49'13.908"W	4127.62	159.313	0.63	0.61	0.13
10508.00	90.250	165.270	6569.69	4216.18	-3946.53	1484.26	1625965.67	269169.59	39°13'53.337"N	80°49'13.576"W	4216.41	159.389	5.33	-0.65	5.29
10598.00	90.550	158.060	6569.06	4306.08	-4031.91	1512.55	1625992.70	269083.81	39°13'52.493"N	80°49'13.216"W	4306.28	159.437	8.02	0.33	-8.01
10687.00	90.830	157.550	6567.99	4395.00	-4114.31	1546.17	1626025.09	269000.93	39°13'51.678"N	80°49'12.789"W	4395.24	159.404	0.65	0.31	-0.57
10777.00	91.350	159.120	6566.28	4484.95	-4197.93	1579.39	1626057.07	268916.83	39°13'50.852"N	80°49'12.367"W	4485.21	159.382	1.84	0.58	1.74
10867.00	91.260	152.930	6564.23	4574.66	-4280.10	1615.93	1626092.40	268834.13	39°13'50.040"N	80°49'11.903"W	4574.99	159.316	6.88	-0.10	-6.88
10956.00	91.600	157.070	6562.00	4663.28	-4360.72	1653.52	1626128.80	268752.96	39°13'49.243"N	80°49'11.425"W	4663.69	159.234	4.67	0.38	4.65
11046.00	91.790	157.190	6559.34	4753.12	-4443.61	1688.49	1626162.53	268669.57	39°13'48.423"N	80°49'10.981"W	4753.59	159.194	0.25	0.21	0.13
11135.00	91.910	159.970	6556.47	4842.04	-4526.41	1720.97	1626193.79	268586.30	39°13'47.605"N	80°49'10.568"W	4842.53	159.183	3.12	0.13	3.12
11225.00	91.380	159.210	6553.88	4932.00	-4610.73	1752.34	1626223.91	268501.54	39°13'46.772"N	80°49'10.170"W	4932.49	159.190	1.03	-0.59	-0.84
11315.00	89.720	155.740	6553.02	5021.89	-4693.84	1786.81	1626257.15	268417.93	39°13'45.950"N	80°49'09.732"W	5022.43	159.160	4.27	-1.84	-3.86
11404.00	88.860	154.680	6554.12	5110.57	-4774.63	1824.13	1626293.27	268336.60	39°13'45.152"N	80°49'09.258"W	5111.22	159.091	1.53	-0.97	-1.19
11494.00	88.890	159.420	6555.89	5200.41	-4857.47	1859.20	1626327.11	268253.26	39°13'44.333"N	80°49'08.812"W	5201.12	159.056	5.27	0.03	5.27
11583.00	89.260	160.670	6557.33	5289.40	-4941.11	1889.57	1626356.25	268169.18	39°13'43.506"N	80°49'08.426"W	5290.09	159.072	1.46	0.42	1.40
11673.00	89.320	164.000	6558.44	5379.30	-5026.85	1916.88	1626382.28	268083.05	39°13'42.659"N	80°49'08.079"W	5379.93	159.127	3.70	0.07	3.70
11763.00	89.200	164.390	6559.61	5469.05	-5113.44	1941.39	1626405.51	267996.11	39°13'41.803"N	80°49'07.768"W	5469.57	159.210	0.45	-0.13	0.43
11852.00	89.420	159.700	6560.68	5557.97	-5198.07	1968.81	1626431.68	267911.08	39°13'40.966"N	80°49'07.419"W	5558.44	159.255	5.28	0.25	-5.27
11942.00	89.450	157.140	6561.57	5647.92	-5281.76	2001.91	1626463.54	267826.93	39°13'40.139"N	80°49'06.999"W	5648.41	159.242	2.84	0.03	-2.84
12031.00	88.890	155.840	6562.85	5736.74	-5363.36	2037.41	1626497.83	267744.81	39°13'39.333"N	80°49'06.548"W	5737.30	159.199	1.59	-0.63	-1.46

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Actual Wellpath Report

OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

noble energy

BAKER HUGHES

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXFD1FHS
Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

WELLPATH DATA (182 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
12121.00	89.050	158.790	6564.47	5826.62	-5446.37	2072.11	1626531.30	267661.30	39°13'38.512"N	80°49'06.107"W	5827.23	159.170	3.28	0.18	3.28
12211.00	89.010	161.080	6566.00	5916.60	-5530.89	2102.98	1626560.92	267576.34	39°13'37.677"N	80°49'05.715"W	5917.20	159.182	2.54	-0.04	2.54
12300.00	89.080	162.070	6567.48	6005.55	-5615.32	2131.11	1626587.80	267491.51	39°13'36.842"N	80°49'05.358"W	6006.11	159.217	1.11	0.08	1.11
12390.00	89.380	162.250	6568.69	6095.48	-5700.98	2158.68	1626614.10	267405.45	39°13'35.995"N	80°49'05.007"W	6095.99	159.261	0.39	0.33	0.20
12480.00	89.380	160.920	6569.66	6185.44	-5786.37	2187.11	1626641.26	267319.66	39°13'35.151"N	80°49'04.646"W	6185.91	159.295	1.48	0.00	-1.48
12570.00	89.350	162.800	6570.66	6275.38	-5871.88	2215.12	1626668.01	267233.74	39°13'34.306"N	80°49'04.290"W	6275.81	159.331	2.09	-0.03	2.09
12659.00	89.450	162.450	6571.59	6364.28	-5956.82	2241.70	1626693.33	267148.43	39°13'33.467"N	80°49'03.953"W	6364.66	159.377	0.41	0.11	-0.39
12749.00	89.380	160.410	6572.51	6454.25	-6042.12	2270.36	1626720.73	267062.71	39°13'32.624"N	80°49'03.589"W	6454.59	159.406	2.27	-0.08	-2.27
12839.00	89.750	160.720	6573.19	6544.24	-6126.99	2300.30	1626749.42	266977.41	39°13'31.785"N	80°49'03.208"W	6544.57	159.422	0.54	0.41	0.34
12928.00	89.820	160.500	6573.53	6633.23	-6210.94	2329.85	1626777.72	266893.04	39°13'30.955"N	80°49'02.833"W	6633.55	159.438	0.26	0.08	-0.25
13017.00	89.260	154.890	6574.24	6722.12	-6293.25	2363.61	1626810.27	266810.25	39°13'30.141"N	80°49'02.404"W	6722.47	159.415	6.33	-0.63	-6.30
13107.00	89.260	153.200	6575.41	6811.63	-6374.16	2403.00	1626848.45	266728.76	39°13'29.342"N	80°49'01.903"W	6812.07	159.344	1.88	0.00	-1.88
13197.00	89.350	156.420	6576.50	6901.24	-6455.58	2441.30	1626885.54	266646.79	39°13'28.537"N	80°49'01.417"W	6901.78	159.285	3.58	0.10	3.58
13286.00	89.350	157.260	6577.51	6990.10	-6537.41	2476.30	1626919.33	266564.46	39°13'27.728"N	80°49'00.972"W	6990.69	159.254	0.94	0.00	0.94
13376.00	89.820	163.010	6578.16	7080.06	-6622.01	2506.87	1626948.65	266479.42	39°13'26.892"N	80°49'00.584"W	7080.64	159.265	6.41	0.52	6.39
13465.00	89.660	163.530	6578.56	7168.91	-6707.24	2532.49	1626973.00	266393.82	39°13'26.049"N	80°49'00.258"W	7169.42	159.315	0.61	-0.18	0.58
13555.00	89.820	159.980	6578.97	7258.85	-6792.71	2560.66	1626999.91	266307.96	39°13'25.205"N	80°48'59.901"W	7259.33	159.345	3.95	0.18	-3.94
13644.00	89.380	161.640	6579.59	7347.84	-6876.75	2589.91	1627027.92	266223.49	39°13'24.374"N	80°48'59.529"W	7348.29	159.363	1.93	-0.49	1.87
13734.00	89.380	163.040	6580.57	7437.76	-6962.51	2617.21	1627053.95	266137.35	39°13'23.526"N	80°48'59.182"W	7438.16	159.399	1.56	0.00	1.56
13823.00	89.290	160.690	6581.60	7526.70	-7047.07	2644.91	1627080.40	266052.38	39°13'22.690"N	80°48'58.830"W	7527.07	159.428	2.64	-0.10	-2.64
13913.00	89.380	160.950	6582.65	7616.68	-7132.07	2674.48	1627108.71	265966.96	39°13'21.850"N	80°48'58.455"W	7617.04	159.444	0.31	0.10	0.29
14002.00	89.480	158.850	6583.53	7705.67	-7215.64	2705.06	1627138.05	265882.95	39°13'21.024"N	80°48'58.066"W	7706.03	159.450	2.36	0.11	-2.36
14092.00	89.420	159.070	6584.40	7795.65	-7299.64	2737.37	1627169.12	265798.49	39°13'20.194"N	80°48'57.656"W	7796.02	159.444	0.25	-0.07	0.24
14181.00	89.260	159.700	6585.42	7884.64	-7382.93	2768.70	1627199.22	265714.74	39°13'19.371"N	80°48'57.258"W	7885.01	159.443	0.73	-0.18	0.71
14271.00	89.450	158.710	6586.43	7974.63	-7467.06	2800.65	1627229.92	265630.16	39°13'18.539"N	80°48'56.852"W	7975.01	159.441	1.12	0.21	-1.10
14360.00	89.110	156.600	6587.55	8063.54	-7549.37	2834.48	1627262.53	265547.36	39°13'17.726"N	80°48'56.422"W	8063.95	159.421	2.40	-0.38	-2.37
14450.00	89.170	156.150	6588.90	8153.35	-7631.82	2870.55	1627297.37	265464.39	39°13'16.911"N	80°48'55.964"W	8153.81	159.387	0.50	0.07	-0.50
14539.00	89.170	160.270	6590.19	8242.28	-7714.43	2903.57	1627329.18	265381.31	39°13'16.094"N	80°48'55.545"W	8242.77	159.375	4.63	0.00	4.63
14629.00	89.230	159.600	6591.45	8332.27	-7798.96	2934.45	1627358.80	265296.33	39°13'15.259"N	80°48'55.153"W	8332.75	159.381	0.75	0.07	-0.74
14718.00	89.110	160.960	6592.74	8421.25	-7882.73	2964.48	1627387.59	265212.13	39°13'14.431"N	80°48'54.771"W	8421.73	159.390	1.53	-0.13	1.53

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Actual Wellpath Report

OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXFD1FHS
Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

WELLPATH DATA (182 stations)

MD [ft]	Inclination [°]	Azimuth [°]	TVD [ft]	Vert Sect [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Closure Dist [ft]	Closure Dir [°]	DLS [°/100ft]	Build Rate [°/100ft]	Turn Rate [°/100ft]
14767.00	89.010	160.010	6593.54	8470.25	-7928.91	2980.84	1627403.27	265165.72	39°13'13.974"N	80°48'54.563"W	8470.72	159.396	1.95	-0.20	-1.94
14792.00	89.010	160.010	6593.97	8495.24	-7952.40	2989.39	1627411.47	265142.11	39°13'13.742"N	80°48'54.455"W	8495.71	159.398	0.00	0.00	0.00

TARGETS

Name	MD [ft]	TVD [ft]	North [ft]	East [ft]	Grid East [US ft]	Grid North [US ft]	Latitude	Longitude	Shape
OXFD1FHS LP Plat		5965.00	-562.87	173.32	1624704.85	272572.09	39°14'26.780"N	80°49'30.235"W	point
OXFD1FHS BHL Rev-4		6467.10	-7953.41	2987.40	1627409.46	265141.13	39°13'13.732"N	80°48'54.480"W	point
OXFD1FHS LP Rev-4		6604.00	-598.32	253.85	1624784.85	272535.47	39°14'26.430"N	80°49'29.211"W	point

WELLPATH COMPOSITION - Ref Wellbore: OXFD1FHS AWB Ref Wellpath: OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

Start MD [ft]	End MD [ft]	Positional Uncertainty Model	Log Name/Comment	Wellbore
18.60	670.00	Generic gyro - northseeking (Standard)	VES Gyro (100'-670')	OXFD1FHS AWB
670.00	5419.00	NaviTrak (MagCorr)	BHI MWD Surveys (670')(770'-6702')	OXFD1FHS AWB
5419.00	14767.00	NaviTrak (MagCorr)	BHI AT Curve (5960')(5430'-14767')	OXFD1FHS AWB
14767.00	14792.00	Blind Drilling (std)	Projection to bit	OXFD1FHS AWB

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OXFD1FHS AWP (Curve&Lateral) Proj: 14792'

REFERENCE WELLPATH IDENTIFICATION

Operator	NOBLE ENERGY	Slot	Slot F
Area	Doddridge Co., WV	Well	OXFD1FHS
Field	Doddridge	Wellbore	OXFD1FHS AWB
Facility	Oxford Pad		

COMMENTS

Wellpath general comments
API: 47-017-06005-0100
BHI Job #: 5591464
Rig: Precision 542
Duration: 7/28/2013-8/12/2013
VES Gyro (100'-670')
BHI MWD Surveys (670')(770'-5960')
BHI AT Curve (5960')(5430'-14767')
Projected MD at TD: 14792'
API: 47-017-06005-0000
BHI Job #: 5591464
Rig: Precision 542
Duration: 7/28/2013-8/1/2013
VES Gyro (100'-670')
BHI MWD Surveys (670')(770'-6702')
Projected MD at TD: 6755'

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Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date	12/15/2013
Job End Date	1/13/2014
State	West Virginia
County	Doddridge
API Number	47-017-06005-00-00
Operator Name	Noble Energy, Inc.
Well Name and Number	OXF1 F
Longitude	-80.82565500
Latitude	39.24233500
Datum	NAD27
Federal/Tribal Well	NO
True Vertical Depth	6,594
Total Base Water Volume (gal)	11,490,788
Total Base Non Water Volume	0

FracFocus Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

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Hydraulic Fracturing Fluid Composition:

Trade Name	Supplier	Purpose	Ingredients	Chemical Abstract Service Number (CAS #)	Maximum Ingredient Concentration in Additive (% by mass)**	Maximum Ingredient Concentration in HF Fluid (% by mass)**	Comments
Fresh Water	Operator	Base Fluid					
			Fresh Water	7732-18-5	100.00000	87.09127	Density = 8.330
SAND - PREMIUM WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	9.62541	
SAND - COMMON WHITE	Halliburton	Proppant					
			Crystalline silica, quartz	14808-60-7	100.00000	2.44392	
HYDROCHLORIC ACID 5-10%	Halliburton	Solvent					
			Hydrochloric acid	7647-01-0	10.00000	0.06715	
FR-66	Halliburton	Friction Reducer					
			Hydrotreated light petroleum distillate	64742-47-8	30.00000	0.02552	
CALCIUM CHLORIDE	Halliburton	Brine					
			Calcium chloride	10043-52-4	96.00000	0.00979	
FE-1A ACIDIZING COMPOSITION	Halliburton	Additive					
			Acetic anhydride	108-24-7	100.00000	0.00337	
			Acetic acid	64-19-7	60.00000	0.00202	
BE-9W	Halliburton	Biocide					

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			Tributyl tetradecyl phosphonium chloride	81741-28-8	10.00000	0.00393	
WG-36 GELLING AGENT	Halliburton	Gelling Agent					
			Guar gum	9000-30-0	100.00000	0.00287	
LP-65 MC	Halliburton	Scale Inhibitor					
			Ammonium chloride	12125-02-9	10.00000	0.00253	
LoSurf-300D	Halliburton	Non-ionic Surfactant					
			Ethanol	64-17-5	60.00000	0.00068	
			Heavy aromatic petroleum naphtha	64742-94-5	30.00000	0.00034	
			Poly(oxy-1,2-ethanediyl), alpha-(4-nonylphenyl)-omega-hydroxy-, branched	127087-87-0	5.00000	0.00000	
			Naphthalene	91-20-3	5.00000	0.00006	
			1,2,4 Trimethylbenzene	95-63-6	1.00000	0.00001	
HAI-OS ACID INHIBITOR	Halliburton	Corrosion Inhibitor					
			Methanol	67-56-1	60.00000	0.00033	
			Propargyl alcohol	107-19-7	10.00000	0.00006	
SP BREAKER	Halliburton	Breaker					
			Sodium persulfate	7775-27-1	100.00000	0.00013	
Ingredients shown above are subject to 29 CFR 1910.1200(i) and appear on Material Safety Data Sheets (MSDS). Ingredients shown below are Non-MSDS							
		Other Ingredient(s)					
			Water	7732-18-5		0.77699	
		Other Ingredient(s)					
			Polyacrylamide copolymer	Confidential		0.02552	
		Other Ingredient(s)					
			Propylene glycol	57-55-6		0.02358	
		Other Ingredient(s)					
			Organic phosphonate	Confidential		0.01518	
		Other Ingredient(s)					
			Sodium chloride	7647-14-5		0.00476	
		Other Ingredient(s)					
			Alcohols, C12-16, ethoxylated	68551-12-2		0.00425	
		Other Ingredient(s)					
			Ammonium chloride	12125-02-9		0.00425	
		Other Ingredient(s)					
			Fatty acid tall oil amide	Confidential		0.00425	Denise Tuck, Halliburton 3000 N. Sam Houston Pkwy E., Houston, TX 77032 281-871-6226
		Other Ingredient(s)					
			Sorbitan, mono-9-octadecenoate, (Z)	1338-43-8		0.00085	
		Other Ingredient(s)					
			Sorbitan monooleate polyoxyethylene derivative	9005-65-6		0.00085	

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		Other Ingredient(s)					
			Strontium chloride	10476-85-4		0.00051	
		Other Ingredient(s)					
			Potassium chloride	7447-40-7		0.00051	
		Other Ingredient(s)					
			Oxyalkylated phenolic resin	Confidential		0.00034	
		Other Ingredient(s)					
			Formaldehyde	50-00-0		0.00025	
		Other Ingredient(s)					
			Reaction product of acetophenone, formaldehyde, thiourea and oleic acid in dimethyl formamide	68527-49-1		0.00017	
		Other Ingredient(s)					
			Fatty acids, tall oil	Confidential		0.00017	
		Other Ingredient(s)					
			Alcohols, C14-C15, ethoxylated	68951-67-7		0.00017	
		Other Ingredient(s)					
			Bentonite, benzyl(hydrogenated tallow alkyl) dimethylammonium stearate complex	121888-68-4		0.00014	
		Other Ingredient(s)					
			Oxyalkylated phenolic resin	Confidential		0.00011	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00003	
		Other Ingredient(s)					
			Surfactant mixture	Confidential		0.00003	
		Other Ingredient(s)					
			Silica gel	112926-00-8		0.00003	
		Other Ingredient(s)					
			Olefins	Confidential		0.00003	
		Other Ingredient(s)					
			Olefins	Confidential		0.00003	
		Other Ingredient(s)					
			Olefins	Confidential		0.00001	
		Other Ingredient(s)					
			Olefins	Confidential		0.00001	
		Other Ingredient(s)					
			Crystalline Silica, Quartz	14808-60-7		0.00000	
		Other Ingredient(s)					
			Sodium sulfate	7757-82-6		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)

17.06005

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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- 021 - 05767 County Gilmer District Glenville
Quad Glenville 7.5' Pad Name na Field/Pool Name na
Farm name Ross, Mike & Morris, I.L. Well Number Summers S-1
Operator (as registered with the OOG) Energy Corporation of America
Address 501 56th St. City Charleston State WV Zip 25304

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4308648 Easting 518056
Landing Point of Curve Northing na Easting na
Bottom Hole Northing na Easting na

Elevation (ft) 758 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 5/5/14 Date drilling commenced 5/23/14 Date drilling ceased 5/26/14
Date completion activities began 6/25/14 Date completion activities ceased 6/25/14
Verbal plugging (Y/N) na Date permission granted na Granted by na

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

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

Reviewed by:

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API 47- 021 - 05767 Farm name Ross, Mike & Morris, I.L. Well number Summers S-1

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	17 1/2"	13 3/8"	40'	N	43.6#/ft	na	Driven
Surface	8 7/8"	7"	633'	N	16#/ft	40'	Y
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	6 3/8"	4.5	1973'	N	9.5#/ft ET-65	na	N (TOC 594')
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	Driven						
Surface	Class A	125	15.6	1.20	150	Surface	8
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50/50 Poz	100	14.4	1.29	129	594'	600
Tubing							

Drillers TD (ft) 2013' Loggers TD (ft) 1998'
Deepest formation penetrated Berea Plug back to (ft) na
Plug back procedure na

Kick off depth (ft) na

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 Centralizers placed on Shoe and every 200' 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- 021 - 05767 Farm name Ross, Mike & Morris, I.L. Well number Summers S-1

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	6/24/14	1632	1638	12	Big Injun
1	6/24/14	1476	1490	28	Blue Monday
					Both formaitons treated together

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	6/25/14	30	1795	1956	1585	51900	331	218MCF

Please insert additional pages as applicable.

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API 47- 021 - 05767 Farm name Ross, Mike & Morris, I.L. Well number Summers S-1

PRODUCING FORMATION(S)	DEPTHS			
Blue Monday	1476-1490	TVD	1476-1490	MD
Big Injun	1632-1638		1632-1638	

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Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 213 psi Bottom Hole na psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 84 mcfpd Oil na bpd NGL na bpd Water na 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)
Fill	0	30	0	30	Fill
Shale	30	490	30	490	Shale
Sandstone/Shale	490	645	490	645	Interbedded Sandstone and Shale
Sandstone	645	810	645	810	Sandstone
Shale	810	1066	810	1066	Shale
1st Salt Sand	1066	1134	1066	1134	Sandstone with small gas show
Shale	1134	1184	1134	1184	Shale
2nd Salt Sand	1184	1204	1184	1204	Sandstone
Shale	1204	1268	1204	1268	Shale
3rd Salt Sand	1268	1290	1268	1290	Sandstone
Shale	1290	1374	1290	1374	Shale
Maxton	1374	1380	1374	1380	Sandstone with small gas show
Shale	1380	1472	1380	1472	Shale
Blue Monday	1472	1490	1472	1490	Sandstone with small gas show

Please insert additional pages as applicable.

Drilling Contractor Waco Oil and Gas Co
Address 1595 U.S. 33 City Glenville State WV Zip 26351

Logging Company Nabors Completion & Production
Address 528 Industrial Park Rd. City Jane Lew State WV Zip 26378

Cementing Company Universal Well Services
Address RT. 5 Hall Road City Buckhannon State WV Zip 26201

Stimulating Company Universal Well Services
Address RT. 5 Hall Road City Buckhannon State WV Zip 26201

Please insert additional pages as applicable.

Completed by Lowell Warden Telephone 304-925-6100
Signature _____ Title VP of Business Development Date _____

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

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Rev. 8/23/13

API 47- 021 - 05767 Farm name Ross, Mike & Morris, I.L. Well number Summers S-1

PRODUCING FORMATION(S)	DEPTHS			
Blue Monday	1476-1490	TVD	1476-1490	MD
Big Injun	1632-1638		1632-1638	

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 213 psi Bottom Hole na psi DURATION OF TEST 24 hrs

OPEN FLOW Gas 84 mcfpd Oil na bpd NGL na bpd Water na 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		
Shale	1490	1500	1490	1500	Shale
Big Lime	1500	1582	1500	1582	Limestone
Limey Sandstone	1582	1654	1582	1654	Limey Sandstone
Shale	1654	1708	1654	1708	Shale
Weir	1708	1842	1708	1842	Sandstone
Shale	1842	1911	1842	1911	Shale
Berea	1911	1923	1911	1923	Siltstone
Shale	1923	2013	1923	2013	Shale (TD)

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Please insert additional pages as applicable.

Drilling Contractor Waco Oil and Gas Co
Address 1595 U.S. 33 City Glenville State WV Zip 26351

Logging Company Nabors Completion & Production
Address 528 Industrial Park Rd. City Jane Lew State WV Zip 26378

Cementing Company Universal Well Services
Address RT. 5 Hall Road City Buckhannon State WV Zip 26201

Stimulating Company Universal Well Services
Address RT. 5 Hall Road City Buckhannon State WV Zip 26201

Please insert additional pages as applicable.

Completed by Lowell Warden Telephone 304-925-6100
Signature Title VP of Business Development Date 7-18-2014

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

Hydraulic Fracturing Fluid Product Component Information Disclosure

Job Start Date:	6/25/2014
Job End Date:	6/25/2014
State:	West Virginia
County:	Gilmer
API Number:	47-021-05767-00-00
Operator Name:	Energy Corporation of America
Well Name and Number:	Summers S-1 - #1
Longitude:	-80.79188000
Latitude:	38.92647000
Datum:	NAD27
Federal/Tribal Well:	NO
True Vertical Depth:	1,931
Total Base Water Volume (gal):	13,902

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Frac Focus
Chemical Disclosure Registry

GROUNDWATER PROTECTION COUNCIL

Oil & Gas

21-05767

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	ECA	Base Fluid					
			Water	7732-18-5	100.00000	62.88373	Includes Fresh and recycled water
20-40 mesh White Sand	Universal Well Services	Proppant					
			Crystalline Silica	14808-60-7	99.00000	27.90092	
Nitrogen	Universal Well Services	Base Fluid					
			Nitrogen	7727-37-9	100.00000	8.57724	
UNIFOAM	Universal Well Services	Surfactant					
			Glycol Ethers	111-76-2	20.00000	0.04769	
			N-Cocoamidopropyl-N,N-dimethyl-N-2-hydroxypropylsulfobetaine	68139-30-0	15.00000	0.03576	
			Sulfonic Acids, C-14-16- Alkane Hydroxy and C14-16-Alkene, Sodium Salts	68439-57-6	5.00000	0.01192	
Unigel 5F	Universal Well Services	Dry Gellant					
			Guar Gum	9000-30-0	100.00000	0.05430	
NE-90	Universal Well Services	Non-Emulsifier for Acid					
			Methanol	67-56-1	60.00000	0.01194	

			Isopropanol	67-63-0	10.00000	0.00199	
			2-Ethylhexanol	104-76-7	10.00000	0.00199	
			EO-C7-9-iso-, C8-rich alcohols	78330-19-5	5.00000	0.00100	
			Polyethylene Glycol	25322-68-3	5.00000	0.00100	
			EO-C9-11-iso-, C10-rich alcohols	78330-20-8	5.00000	0.00100	
			Heavy Aromatic Naphtha	64742-94-5	5.00000	0.00100	
			Naphthalene	91-20-3	1.00000	0.00020	
CLA-CHEK LP	Universal Well Services	Clay control					
			Ethylene Glycol	107-21-1	40.00000	0.00767	
			2-Propen-1aminium, N,N-dimethyl-N-2-propenyl-,chloride, homopolymer	26062-79-3	20.00000	0.00384	
Iron Control A	Universal Well Services	Iron Control for Acid					
			Ethylene Glycol	107-21-1	30.00000	0.00651	
LEB 10X	Universal Well Services	Breaker					
			Ethylene Glycol	107-21-1	60.00000	0.00166	

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)

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WV Dept. of Environmental Protection

21-05767

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Rev. 8/23/13

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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 - 033 - 03962 County HARRISON District TEN MILE
Quad WOLF SUMMIT 7.5' Pad Name E. FLETCHER Field/Pool Name WOLF SUMMIT
Farm name FLETCHER, RICHARD & ELIZABETH Well Number 15
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,351,096 M Easting 545,482 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing ____ Easting ____

Elevation (ft) 1,319' GL Type of Well □New ■ Existing Type of Report □Interim ■Final

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

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

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

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

Drilling Media Surface hole □ Air □ Mud □Fresh Water Intermediate hole □ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air □ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 3/17/14 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 4/11/14 Date completion activities ceased 4/11/14
Verbal plugging (Y/N) N Date permission granted ____ Granted by ____

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Environmental Protection

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

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

Reviewed by:

WR-35
Rev. 8/23/13

API 47- 033 - 03962 Farm name FLETCHER, RICHARD & ELIZABETH Well number 15

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		8 5/8"	673.15'	EXISTING	20#		EXISTING
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		4 1/2"	3028.75'	EXISTING	J-55		EXISTING
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	205					EXISTING
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	410					EXISTING
Tubing							

Drillers TD (ft) 3078' Loggers TD (ft) N/A
Deepest formation penetrated Fifth Sand Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) N/A

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
EXISTING

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- 033 - 03962 Farm name FLETCHER, RICHARD & ELIZABETH Well number 15

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	4/11/14	2936'	2952'	56	FIFTH SAND

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/11/14	10	1292	1728	1149	20,000	326	

Please insert additional pages as applicable.

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API 47- 033 - 03962 Farm name FLETCHER, RICHARD & ELIZABETH Well number 15

PRODUCING FORMATION(S)	DEPTHS	
Fifth Sand	2936'-2952' TVD	2936'-2952' MD

Please insert additional pages as applicable.

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

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

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0		0		SEE ORIGINAL WELL RECORD
Pittsburgh Coal					
Sand/Shale					
Big Lime					
Big Injun					
Shale					
Fifty Foot					
Shale					
Sand					
Shale					
Gordon					
Shale					
TD					

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

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations manager Date 06/27/14

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

33-03962

Prepared for:

H G Energy LLC

Roger Heldman

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Matt Untied

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #:

WELL NAME:

DATE of SERVICE:

CUSTOMER PO#

Description	Notes	Amount	Units
BLENDER CHARGE 0-10 BPM		1	EA
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE		1	EA
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @ 70 Miles	140	MI
IC ACID 15%		500	GAL
ACID DELIVERY		4	HR
PRO HIB II		1	GAL
PRO CLA LOK (KCL SUBSTITUTE)		20	GAL
PRO NE-21		10	GAL
PRO GEL 4		250	LB
BUFFER II		50	LB
BUFFER I		50	LB
BIO CLEAR 750		1	LB
AP BREAKER		22	LB
BXL-A		15	GAL
BXL-10C		15	GAL
DATA VAN		1	STAGE
SAND 20/40 OTTAWA		200	CWT
SAND DELIVERY / TON MILES	10 Ton @ 70 Miles	700	TMILE

Customer Approval: _____

JR

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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 - 033 - 04062 County HARRISON District TEN MILE
Quad SALEM 7.5' Pad Name C.W. SMITH Field/Pool Name WOLF SUMMIT
Farm name HERROD, DON M. & DEBRA Well Number 10
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,350,817 M Easting 546,275 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing ____ Easting ____

Elevation (ft) 1,158' GL Type of Well ☐New ■ Existing Type of Report ☐Interim ■Final

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

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

Well Type ☐ Brine Disposal ☐ CBM ☐ Gas ☐ Oil ■ Secondary Recovery ☐ Solution Mining ☐ Storage ☐ Other ____

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

Drilling Media Surface hole ☐ Air ☐ Mud ☐Fresh Water Intermediate hole ☐ Air ☐ Mud ☐ Fresh Water ☐ Brine
Production hole ☐ Air ☐ Mud ☐ Fresh Water ☐ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 2/11/14 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 3/27/14 Date completion activities ceased 4/11/14
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 N/A Open mine(s) (Y/N) depths N
Salt water depth(s) ft N/A Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

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Environmental Protection

Reviewed by:

WR-35
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API 47- 033 - 04062 Farm name HERROD, DON M. & DEBRA Well number 10

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		8 5/8"	396'	EXISTING	20#		EXISTING
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		4 1/2"	2776'	EXISTING	J-55		EXISTING
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	130					EXISTING
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	450					EXISTING
Tubing							

Drillers TD (ft) 2825' Loggers TD (ft) N/A
Deepest formation penetrated Fifth Sand Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) N/A

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
EXISTING

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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Rev. 8/23/13

API 47- 033 - 04062 Farm name HERROD, DON M. & DEBRA Well number 10

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	4/11/14	2701'	2711'	40	Fifth Sand

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/11/14	10	2205	2274	2201	20,000	325	

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Please insert additional pages as applicable.

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API 47- 033 - 04062 Farm name HERROD, DON M. & DEBRA Well number 10

PRODUCING FORMATION(S)	DEPTHS			
Fifth Sand	2701'-2711'	TVD	2701'-2711'	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 QUANTITYAND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0		0		SEE ORIGINAL WELL RECORD
Pittsburgh Coal					
Sand/Shale					
Big Lime					
Big Injun					
Shale					
Fifty Foot					
Shale					
Sand					
Shale					
Fifth Sand					
Shale					
TD					

Please insert additional pages as applicable.

Drilling Contractor _____
Address _____ City _____ State _____ Zip _____

Logging Company Appalachian Well Surveys
Address 10291 Ohio Ave City Cambridge State OH Zip 43725

Cementing Company _____
Address _____ City _____ State _____ Zip _____

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

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations Manager Date 06/23/14

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

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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 - 033 - 04064 County HARRISON District TEN MILE
Quad WOLF SUMMIT 7.5' Pad Name NATHAN GOFF Field/Pool Name WOLF SUMMIT
Farm name JOHNSON, WM. R. & PAMELA Well Number 59
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,349,258 M Easting 544,326 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing ____ Easting ____

Elevation (ft) 1,037' GL Type of Well □New ■ Existing Type of Report □Interim ■Final

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

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

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

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

Drilling Media Surface hole □ Air □ Mud □Fresh Water Intermediate hole □ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air □ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 3/17/14 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 4/24/14 Date completion activities ceased 4/24/14
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 N/A Open mine(s) (Y/N) depths N
Salt water depth(s) ft N/A Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:

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API 47- 033 - 04064 Farm name JOHNSON, WM. R. & PAMELA Well number 59

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		8 5/8"	398'	EXISTING	20#		EXISTING
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production		4 1/2"	2740.5'	EXISTING	J-55		EXISTING
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	130					EXISTING
Coal							
Intermediate 1							
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	460					EXISTING
Tubing							

Drillers TD (ft) 2771' Loggers TD (ft) N/A
Deepest formation penetrated Fifth Sand Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) N/A

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
EXISTING

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- 033 - 04064 Farm name JOHNSON, WM. R. & PAMELA Well number 59

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	EXISTING	2652'	2654'	12	FIFTH SAND

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/24/14	10	2013	2566	1953	20,000	366	

Please insert additional pages as applicable.

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API 47- 033 - 04064 Farm name JOHNSON, WM. R. & PAMELA Well number 59

PRODUCING FORMATION(S)	DEPTHS			
Fifth Sand	2652'-2654'	TVD	2652'-2654'	MD

Please insert additional pages as applicable.

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

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

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0		0		SEE ORIGINAL WELL RECORD
Pittsburgh Coal					
Sand/Shale					
Big Lime					
Big Injun					
Shale					
Fifty Foot					
Shale					
Sand					
Shale					
Gordon					
Shale					
TD					

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

Please insert additional pages as applicable.

Completed by Roger Heldman Telephone 304-420-1107
Signature _____ Title Operations Manger Date 06/27/14

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

33-04064

Prepared for:

H G Energy LLC

Roger Heldman

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Matt Untied

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #:

WELL NAME:

DATE of SERVICE:

CUSTOMER PO#

Description	Notes	Amount	Units
BLENDER CHARGE 0-10 BPM		1	EA
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE		1	EA
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @ 70 Miles	140	MI
IC ACID 15%		500	GAL
ACID DELIVERY		4	HR
PRO HIB II		1	GAL
PRO CLA LOK (KCL SUBSTITUTE)		20	GAL
PRO NE-21		10	GAL
PRO GEL 4		250	LB
BUFFER II		50	LB
BUFFER I		50	LB
BIO CLEAR 750		1	LB
AP BREAKER		22	LB
BXL-A		15	GAL
BXL-10C		15	GAL
DATA VAN		1	STAGE
SAND 20/40 OTTAWA		200	CWT
SAND DELIVERY / TON MILES	10 Ton @ 70 Miles	700	TMILE

Customer Approval: _____

pm

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Rev. 8/23/13

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

API 47 - 033 - 04422 County HARRISON District TEN MILE
Quad WOLF SUMMIT 7.5' Pad Name NATHAN GOFF Field/Pool Name WOLF SUMMIT
Farm name JOHNSON, CHAD W. Well Number 65
Operator (as registered with the OOG) H.G. ENERGY LLC
Address 5260 DuPONT ROAD City PARKERSBURG State WV Zip 26101

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4,348,609 M Easting 543,425 M
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing ____ Easting ____

Elevation (ft) 1,246' GL Type of Well □New ■ Existing Type of Report □Interim ■Final

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

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

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

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

Drilling Media Surface hole □ Air □ Mud □Fresh Water Intermediate hole □ Air □ Mud □ Fresh Water □ Brine
Production hole □ Air □ Mud □ Fresh Water □ Brine
Mud Type(s) and Additive(s)
N/A

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JUL 02 2014
WV Department of
Environmental Protection

Date permit issued 2/11/14 Date drilling commenced N/A Date drilling ceased N/A
Date completion activities began 4/24/14 Date completion activities ceased 4/24/14
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 N/A Open mine(s) (Y/N) depths N
Salt water depth(s) ft N/A Void(s) encountered (Y/N) depths N
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N

Reviewed by:
____

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API 47- 033 - 04422 Farm name JOHNSON, CHAD W. Well number 65

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		9 5/8"	646'	EXISTING	23#		EXISTING
Coal							
Intermediate 1		7"	1746'	EXISTING	LS		EXISTING
Intermediate 2							
Intermediate 3							
Production		4 1/2"	2990.3'	EXISTING	J-55		EXISTING
Tubing							
Packer type and depth set							

Comment Details

CEMENT DATA	Class/Type of Cement	Number of Sacks	Slurry wt (ppg)	Yield (ft^3/sks)	Volume (ft^3)	Cement Top (MD)	WOC (hrs)
Conductor							
Surface	Reg Neat	340					EXISTING
Coal							
Intermediate 1	Reg Neat	100					EXISTING
Intermediate 2							
Intermediate 3							
Production	50:50 Pozmix	150					EXISTING
Tubing							

Drillers TD (ft) 3,050' Loggers TD (ft) N/A
Deepest formation penetrated Fifth Sand Plug back to (ft) N/A
Plug back procedure N/A

Kick off depth (ft) N/A

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
EXISTING

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- 033 - 04422 Farm name JOHNSON, CHAD W. Well number 65

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	EXISTING	2898'	2910'	72	FIFTH SAND

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
1	4/24/14	10	1718	2153	1665	20,000	372	

Please insert additional pages as applicable.

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API 47- 033 - 04422 Farm name JOHNSON, CHAD W. Well number 65

PRODUCING FORMATION(S)	DEPTHS	
Fifth Sand	2898'-2910' TVD	2898'-2910' MD

Please insert additional pages as applicable.

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

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

OPEN FLOW Gas _____ mcfpd Oil _____ bpd NGL _____ bpd Water _____ bpd GAS MEASURED BY ☐ Estimated ☐ Orifice ☐ Pilot

LITHOLOGY/ FORMATION NAME	TOP DEPTH IN FT TVD	BOTTOM DEPTH IN FT TVD	TOP DEPTH IN FT MD	BOTTOM DEPTH IN FT MD	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H_2S, ETC)
Sand/Shale	0		0		SEE ORIGINAL WELL RECORD
Pittsburgh Coal					
Sand/Shale					
Big Lime					
Big Injun					
Shale					
Fifty Foot					
Shale					
Sand					
Shale					
Gordon					
Shale					
TD					

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

Please insert additional pages as applicable.

Completed by Roger Helman Telephone 304-420-1107
Signature _____ Title Operations Manger Date 06/27/14

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

33-04422

Prepared for:

H G Energy LLC

Roger Heldman

PRODUCERS SERVICE CORP.

Prepared by:

Producers Service Corp

Matt Untied

109 S. Graham St.

Zanesville, OH 43702

740-454-6253

INVOICE #:

WELL NAME:

DATE of SERVICE:

CUSTOMER PO#

Description	Notes	Amount	Units
BLENDER CHARGE 0-10 BPM		1	EA
FLUID PUMP CHARGE 0-3000 PSI MIN CHARGE		1	EA
MILEAGE CHARGE PER UNIT ONE WAY	2 Units @ 70 Miles	140	MI
IC ACID 15%		500	GAL
ACID DELIVERY		4	HR
PRO HIB II		1	GAL
PRO CLA LOK (KCL SUBSTITUTE)		20	GAL
PRO NE-21		10	GAL
PRO GEL 4		250	LB
BUFFER II		50	LB
BUFFER I		50	LB
BIO CLEAR 750		1	LB
AP BREAKER		22	LB
BXL-A		15	GAL
BXL-10C		15	GAL
DATA VAN		1	STAGE
SAND 20/40 OTTAWA		200	CWT
SAND DELIVERY / TON MILES	10 Ton @ 70 Miles	700	TMILE

Customer Approval: _____

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Rev. 8/23/13

pM

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

API 47 - 039 - 06363 County Kanawha District Union
Quad St. Albans Pad Name ____ Field/Pool Name WVSU
Farm name Board of Governors, WVSU Well Number #1
Operator (as registered with the OOG) Reserve Oil and Gas, Inc.
Address 929 Charleston Road City Spencer State WV Zip 25276

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4247780 Easting 0432920
Landing Point of Curve Northing ____ Easting ____
Bottom Hole Northing ____ Easting ____

Elevation (ft) 594 GL Type of Well ☒New ☐ Existing Type of Report ☐Interim ☒Final

Permit Type ☐ Deviated ☐ Horizontal ☐ Horizontal 6A ☒ Vertical Depth Type ☐ Deep ☒ Shallow

Type of Operation ☐ Convert ☐ Deepen ☒Drill ☐ Plug Back ☐ Redrilling ☐ Rework ☒ Stimulate

Well Type ☐ Brine Disposal ☐ CBM ☒Gas ☐ Oil ☐ Secondary Recovery ☐ Solution Mining ☐ Storage ☐ Other ____

Type of Completion ☐ Single ☒Multiple Fluids Produced ☐ Brine ☒Gas ☐ NGL ☐ Oil ☐ Other ____
Drilled with ☐ Cable ☒ Rotary

Drilling Media Surface hole ☒Air ☐ Mud ☐Fresh Water Intermediate hole ☒Air ☐ Mud ☐ Fresh Water ☐ Brine
Production hole ☐ Air ☒Mud ☐ Fresh Water ☐ Brine
Mud Type(s) and Additive(s)
N/A

Date permit issued 8/29/2013 Date drilling commenced 4/8/2014 Date drilling ceased 5/2/2014
Date completion activities began 5/16/2014 Date completion activities ceased 5/18/14
Verbal plugging (Y/N) N/A Date permission granted N/A Granted by N/A

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

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Freshwater depth(s) ft 80', 98', & 575' Open mine(s) (Y/N) depths No
Salt water depth(s) ft 1130' Void(s) encountered (Y/N) depths No
Coal depth(s) ft N/A Cavern(s) encountered (Y/N) depths No
Is coal being mined in area (Y/N) No

Reviewed by:
R.F.

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API 47- 039 - 06363 Farm name Board of Governors WVSU 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	N/A	20"	15'	New	N/A	N/A	filled with dirt
Surface	17½"	13⅜"	63'	New	26lb	N/A	to surface by hand
Coal							
Intermediate 1	12¼"	9⅝"	336'	New	26 lb	84'	No,
Intermediate 2	8⅞"	7"	1730'	New	17lb	295'	Yes, 10bbls to pit,
Intermediate 3							
Production	6½"	4½"	4409.95	New	11.6lb	JTS: 10,20,30,40,50	
Tubing							
Packer type and depth set							

Comment Details Grouted backside of 9⅝" w/ 50 sacks cement and cement stayed up.

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	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Surface	Type 1	40	N/A	N/A	N/A	0	13hrs
Coal							
Intermediate 1	Type1/3% CaCl .25flake	150	15.6	1.18	177.0	0	18hrs
Intermediate 2	Type1/2%gel 3% CaCl .25flake	270	14.8	1.40	378.0	0	10hrs
Intermediate 3							
Production	Strong Life 250/Kolseal	160	12.6	2.11	337.6	0	
Tubing							

Drillers TD (ft) 4425 Loggers TD (ft) 4416
Deepest formation penetrated Rhinestreet Plug back to (ft) 4410
Plug back procedure N/A

Kick off depth (ft) N/A

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

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

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING
20": N/A
13⅜": N/A
9⅝: N/A
7": N/A
4½": JTS: 10, 20, 30, 40, 50, 60

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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Rev. 8/23/13

API 47- 039 - 06363 Farm name Board of Governors WVSU Well number #1

PERFORATION RECORD

Stage No.	Perforation date	Perforated from MD ft.	Perforated to MD ft.	Number of Perforations	Formation(s)
1	5/16/14	4396	3961	40	Huron / Shale / Rhinestreet
2	5/16/14	3838	3340	40	Sand and Shale / Huron

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) 7½% HCL	Amount of Nitrogen/other (units)
1	5/16/14	52,511	2442	3254	1733		274 gallons	1,000,731 N2
2	5/16/14	53,014	2039	3061	1602		823 gallons	1,000,975 N2

Please insert additional pages as applicable.

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API 47- 039 - 06363 Farm name Board of Governors WVSU Well number #1

PRODUCING FORMATION(S)	DEPTHS	
Sand and Shale	3333 - 3339 TVD	3340 - 3346 MD
Huron	3339 - 4113	3346 - 4120
Shale	4113 - 4251	4120 - 4258
Rhinestreet	4251 - 4389	4258 - 4396

Please insert additional pages as applicable.

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

SHUT-IN PRESSURE Surface 120 psi Bottom Hole _____ psi DURATION OF TEST 26 hrs

OPEN FLOW Gas 304 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 attachment A

Please insert additional pages as applicable.

Drilling Contractor Kanawha Valley Drilling
Address 929 Charleston Road City Spencer State WV Zip 25276

Logging Company Nabors Completion & Production Services Co.
Address 515 West Greens Road, Suite 100 City Houston State TX Zip 77067

Cementing Company Universal Well Service
Address Rt 5, Hall Road City Buckhannon State WV Zip 26201

Stimulating Company Universal Well Service
Address Rt 5, Hall Road City Buckhannon State WV Zip 26201
Please insert additional pages as applicable.

Completed by Ryan Fields Telephone 304-927-5033
Signature Ryan Fields Title Office Assistant Date 7/8/2014

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

Formation	TOP (TVD)	BOTTOM (TVD)	TOP (MD)	BOTTOM (MD)	Remarks
K.B to G.L.			0	7	80' hole damp
Fill	0	48	7	55	
Rock	48	73	55	80	98' 3" stream
Sand and Shale	73	353	80	360	Started soaping
Grey Sand / Shale	353	573	360	580	
Coarse Sand	573	593	580	600	575' 1/4" stream
Shale	593	913	600	920	hole damp
Salt Sand	913	1158	920	1165	
Sand and Shale	1158	1393	1165	1400	1130' big water
Little Lime	1393	1488	1400	1495	3" to 4" stream
Big Lime	1493	1638	1500	1645	
Injun	1638	1673	1645	1680	1517' switch to
Sand and Shale	1673	2125	1680	2132	fluid
Berea	2125	2137	2132	2144	
Sand and Shale	2137	3339	2144	3346	2950' gas check
Huron	3339	4113	3346	4120	No show
Shale	4113	4251	4120	4258	
Rhinestreet	4251	4418	4258	4425	