

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

API 47-069-00114 County Ohio District Triadelphia
Quad Valley Grove Pad Name Roy Ferrell Field/Pool Name _____
Farm name Roy Ferrell OHI 10H Well Number 834915
Operator (as registered with the OOG) Chesapeake Appalachia, L.L.C.
Address P.O. Box 18496 City Oklahoma City State OK Zip 73154-0496

As Drilled location NAD 83/UTM Attach an as-drilled plat, profile view, and deviation survey
Top hole Northing 4432655.70 Easting 540012.59
Landing Point of Curve Northing 4432623.73 Easting 540307.85
Bottom Hole Northing 4430817.10 Easting 541019.98

Elevation (ft) 1,196' GL Type of Well New Existing Type of Report Interim Final
Permit Type Deviated Horizontal Horizontal 6A Vertical Depth Type Deep Shallow
Type of Operation Convert Deepen Drill Plug Back Redrilling Rework Stimulate
Well Type Brine Disposal CBM Gas Oil Secondary Recovery Solution Mining Storage Other _____
Type of Completion Single Multiple Fluids Produced Brine Gas NGL Oil Other _____
Drilled with Cable Rotary

Drilling Media Surface hole Air Mud Fresh Water Intermediate hole Air Mud Fresh Water Brine
Production hole Air Mud Fresh Water Brine
Mud Type(s) and Additive(s)
SOBM

Date permit issued 8-7-2013 Date drilling commenced 8-25-2013 Date drilling ceased 2-6-2014
Date completion activities began 4/21/2014 Date completion activities ceased 5/1/2014
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 230', 350' Open mine(s) (Y/N) depths N
Salt water depth(s) ft 970', 1179', 1330' Void(s) encountered (Y/N) depths Y 659'
Coal depth(s) ft 659' Cavern(s) encountered (Y/N) depths N
Is coal being mined in area (Y/N) N
Office of Oil and Gas

APPROVED
NAME: Eric Blend
DATE: 9.23.11

RECEIVED
JUN 21 2016
WV Department of Environmental Protection
Reviewed by: RB
10/28/2016

API 47-069 - 00114 Farm name Roy Ferrell OHI 10H Well number 834915

CASING STRINGS	Hole Size	Casing Size	Depth	New or Used	Grade wt/ft	Basket Depth(s)	Did cement circulate (Y/ N) * Provide details below*
Conductor	24"	20"	118'	New	J-55 94#		Y
Surface	17 1/2"	13 3/8"	756'	New	J-55 54.5#		Y
Coal							
Intermediate 1	12 1/4"	9 5/8"	2,193'	New	J-55 40#		Y
Intermediate 2							
Intermediate 3							
Production	8 3/4" / 8 1/2"	5 1/2"	13,799'	New	P-110 20#		Y
Tubing		2 3/8"	7,126.5	New			
Packer type and depth set							

Comment Details _____

CEMENT DATA	Class/Type of Cement	Number of Sacks	Shurry wt (ppg)	Yield (ft ³ /sks)	Volume (ft ³)	Cement Top (MD)	WOC (hrs)
Conductor	Class A	180	15.60	1.20	216	Surface	8
Surface	Class A	519	15.60	1.20	622.8	Surface	8
Coal							
Intermediate 1	Class A	801	15.60	1.24	993.24	Surface	8
Intermediate 2							
Intermediate 3							
Production	Class A	2700	15.60	2.48	6,696	302'	8
Tubing							

Drillers TD (ft) 13,801' Loggers TD (ft) _____
 Deepest formation penetrated Marcellus Plug back to (ft) _____
 Plug back procedure _____

Kick off depth (ft) 5,485' _____

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

Well cored Yes No Conventional Sidewall Were cuttings collected Yes No

DESCRIBE THE CENTRALIZER PLACEMENT USED FOR EACH CASING STRING _____
Surface / Coal - Run centralizers in the middle and top of the first joint, top of the third joint and every 4th joint to surface.
 Production - Run 1st centralizer 3' from Shoe, 2nd at top of the first joint and then one every 3rd joint to TOC.

WAS WELL COMPLETED AS SHOT HOLE Yes No DETAILS _____

WAS WELL COMPLETED OPEN HOLE? Yes No DETAILS _____

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

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API 47- 069 - 00114 Farm name Roy Ferrell OHI 10H Well number 834915

PERFORATION RECORD

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

Please insert additional pages as applicable.

STIMULATION INFORMATION PER STAGE

Complete a separate record for each stimulation stage.

Stage No.	Stimulations Date	Ave Pump Rate (BPM)	Ave Treatment Pressure (PSI)	Max Breakdown Pressure (PSI)	ISIP (PSI)	Amount of Proppant (lbs)	Amount of Water (bbls)	Amount of Nitrogen/other (units)
	Attached							

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Please insert additional pages as applicable.

API 47- 069 - 00114 Farm name Roy Ferrell OHI 10H Well number _____

<u>PRODUCING FORMATION(S)</u>	<u>DEPTHS</u>		
Marcellus	6,661'	TVD	7,776' MD

Please insert additional pages as applicable.

GAS TEST Build up Drawdown Open Flow OIL TEST Flow Pump

SHUT-IN PRESSURE Surface 1,400 psi Bottom Hole 4,365 psi DURATION OF TEST 48 hrs

OPEN FLOW Gas 2,800 mcfpd Oil 106 bpd NGL _____ bpd Water 373 bpd GAS MEASURED BY Estimated Orifice Pilot

LITHOLOGY/ FORMATION	TOP	BOTTOM	TOP	BOTTOM	DESCRIBE ROCK TYPE AND RECORD QUANTITY AND TYPE OF FLUID (FRESHWATER, BRINE, OIL, GAS, H ₂ S, ETC)
	DEPTH IN FT NAME TVD	DEPTH IN FT TVD	DEPTH IN FT MD	DEPTH IN FT MD	
	0		0		
SS/Shale	90	330	90	330	
LS/Shale	330	650	330	650	
Pittsburgh Coal	644	690	644	690	
SS/Shale	690	1640	690	1640	
Shale	1640	1820	1640	1820	
SS	1820	2030	1820	2030	
SS/Shale	2030	2150	2030	2150	
Shale	2150	6465	2150	6905	
Geneseo	6465	6485	6905	6935	Gas 2000u
Tully	6485	6517	6935	6981	Gas 500u
Hamilton	6517	6650	6981	7624	Gas 1000u
Marcellus	6650	6661	7624	7776	Gas 2500u
TD		6766		14784	

RECEIVED
Office of Oil and Gas
14784

Please insert additional pages as applicable.

JUN 21 2016

Drilling Contractor Nomac Drilling
Address 171 Locust Ave Extension City WV Department of Environmental Protection State PA Zip 15349

Logging Company Nomac Drilling
Address 171 Locust Ave Extension City Mt. Morris State PA Zip 15349

Cementing Company Schlumberger
Address 1080 U.S. 33 City Weston State WV Zip 26452

Stimulating Company Weatherford, Artificial Lift Systems
Address 286 Weatherford BLVD City Buckhannon State WV Zip 26201

Please insert additional pages as applicable.

Completed by Jessica Greathouse Telephone 304-353-5240
Signature [Signature] Title Manager - Regulatory Operations Date 6/14/2016

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

10/28/2016

PERFORATION RECORD ATTACHMENT

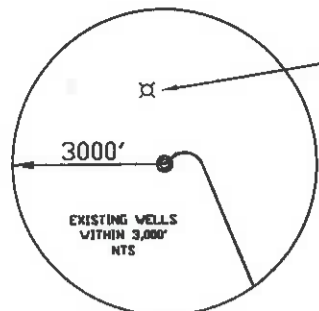
Well Name and Number: Roy Ferrell OHI 10H

API No. 47-069-00114

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JUN 21 2016
WV Department of
Environmental Protection

Stage	PERFORATION RECORD					STIMULATION RECORD					Average Injection Rate	
	Date	Interval Perforated		Total Number of Shots	Date	Interval Treated	Fluid		Propping Agent			
		From	To				Type	Amount	Type	Amount		
												Type
1	4/21/2014	13518	13640	35	4/21/2014	13518	13640	SLK Wtr	1328	Sand	357760	83.5
2	4/21/2014	13366	13489	35	4/21/2014	13366	13489	SLK Wtr	7229	Sand	357380	85.2
3	4/21/2014	13215	13337	35	4/21/2014	13215	13337	SLK Wtr	7284	Sand	358000	84.9
4	4/22/2014	13063	13186	35	4/22/2014	13063	13186	SLK Wtr	7460	Sand	358080	84.6
5	4/22/2014	12912	13034	35	4/22/2014	12912	13034	SLK Wtr	6981	Sand	357660	85.5
6	4/22/2014	12760	12883	35	4/22/2014	12760	12883	SLK Wtr	7279	Sand	357020	83.8
7	4/22/2014	12609	12731	35	4/22/2014	12609	12731	SLK Wtr	7401	Sand	358040	85.1
8	4/23/2014	12457	12580	35	4/23/2014	12457	12580	SLK Wtr	7360	Sand	357560	84.7
9	4/23/2014	12306	12428	35	4/23/2014	12306	12428	SLK Wtr	7667	Sand	356940	85.2
10	4/23/2014	12154	12277	35	4/23/2014	12154	12277	SLK Wtr	7255	Sand	358660	85.1
11	4/23/2014	12003	12125	35	4/23/2014	12003	12125	SLK Wtr	7354	Sand	354400	82.1
12	4/23/2014	11851	11974	35	4/23/2014	11851	11974	SLK Wtr	7331	Sand	357460	84.9
13	4/24/2014	11700	11822	35	4/24/2014	11700	11822	SLK Wtr	7265	Sand	358060	85.4
14	4/24/2014	11548	11671	35	4/24/2014	11548	11671	SLK Wtr	7254	Sand	357620	85.5
15	4/24/2014	11397	11519	35	4/24/2014	11397	11519	SLK Wtr	7350	Sand	357960	85.3
16	4/24/2014	11245	11368	35	4/24/2014	11245	11368	SLK Wtr	7159	Sand	357960	85.1
17	4/24/2014	11094	11216	35	4/24/2014	11094	11216	SLK Wtr	7271	Sand	357820	84.5
18	4/24/2014	10942	11065	42	4/24/2014	10942	11065	SLK Wtr	7322	Sand	357200	84.8
19	4/25/2014	10791	10913	35	4/25/2014	10791	10913	SLK Wtr	7395	Sand	360200	85.1
20	4/25/2014	10639	10762	35	4/25/2014	10639	10762	SLK Wtr	7238	Sand	357440	84.8
21	4/26/2014	10488	10610	35	4/26/2014	10488	10610	SLK Wtr	7097	Sand	357320	84.5
22	4/26/2014	10336	10459	35	4/26/2014	10336	10459	SLK Wtr	7320	Sand	357200	84.9
23	4/26/2014	10185	10307	35	4/26/2014	10185	10307	SLK Wtr	7227	Sand	357740	84.9
24	4/26/2014	10033	10156	35	4/26/2014	10033	10156	SLK Wtr	7114	Sand	355740	85
25	4/26/2014	9882	10004	35	4/26/2014	9882	10004	SLK Wtr	8056	Sand	357740	84.9
26	4/26/2014	9730	9853	35	4/26/2014	9730	9853	SLK Wtr	7812	Sand	357500	84.7
27	4/26/2014	9579	9701	35	4/26/2014	9579	9701	SLK Wtr	7269	Sand	358020	85
28	4/27/2014	9427	9550	35	4/27/2014	9427	9550	SLK Wtr	7218	Sand	356680	84.7
29	4/27/2014	9276	9398	35	4/27/2014	9276	9398	SLK Wtr	7126	Sand	357960	84.9

10/28/2016



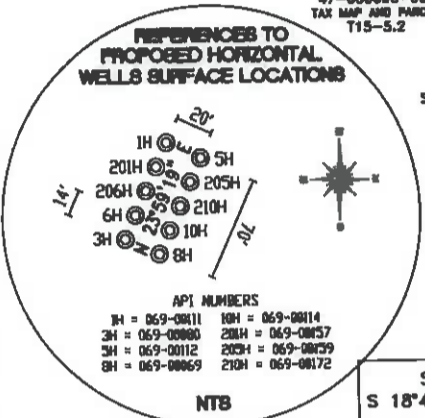
API NUMBER
069-00022
N 12°52'15" W
1,472'
PLUGGED

WELL (SURFACE HOLE)
ROY FERRELL
OHI 10H
WV-N (NAD 83)
N: 4430818.8
E: 540011.8
UTM (NAD 83)
N: 4430818.8
E: 540011.8

WELL (SURFACE HOLE)
ROY FERRELL
OHI 10H
WV-N (NAD 83)
N: 563740.58
E: 1679863.05
UTM (NAD 83)
N: 4432655.70
E: 540012.59

WELL (LANDING POINT)
ROY FERRELL
OHI 10H
WV-N (NAD 83)
N: 563619.44
E: 1680830.20
UTM (NAD 83)
N: 4432623.73
E: 540307.85

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OHI 10H
WV-N (NAD 83)
N: 563619.44
E: 1680830.20
UTM (NAD 83)
N: 4432623.73
E: 540307.85



ROY E. FERRELL
3.2 TOTAL ACRES
LEASE NUMBER
47-000686-001
TAX MAP AND PARCEL
T15-5.2

STEPHANIE A. GOFF
2 TOTAL ACRES
LEASE NUMBER
1-329294-001
TAX MAP AND PARCEL
T15-6.3

JACK AND NORMA
TYRAS
76.84 TOTAL ACRES
LEASE NUMBER
1-272778-000
TAX MAP AND PARCEL
T15-6

SPRING #1
S 18°41'17" W 730'

WILLIAM A. CHILDERS
190.30 TOTAL ACRES
LEASE NUMBER
1-324677-000
TAX MAP AND PARCEL
T20-5

JIMMY W. AND R.
SHERRON
66.5 TOTAL ACRES
LEASE NUMBER
1-258016-000
TAX MAP AND PARCEL
T15-9

BERNARD W. HANEY
6.692 TOTAL ACRES
LEASE NUMBER
1-329096-000
TAX MAP AND PARCEL
T15-10.1

JOHN A. AND C.L.
FRYE
67.806 TOTAL ACRES
LEASE NUMBER
1-324747-000
TAX MAP AND PARCEL
T15-10

WELL (BOTTOM HOLE)
ROY FERRELL
OHI 10H
WV-N (NAD 83)
N: 541019.0
E: 543811.1
UTM (NAD 83)
N: 541019.0
E: 543811.1

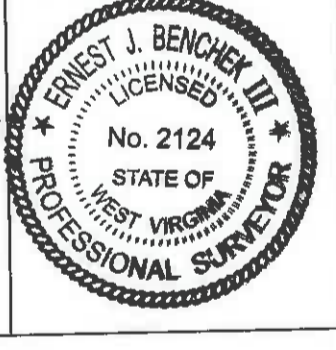
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REFERENCE NOTES
Boundaries as shown taken from deeds, tax maps and field locations. A full boundary survey is not expressed nor implied. All bearings are based on true north. Ownership taken from public records Ohio County, West Virginia FEBRUARY 2011 State Plane Coordinates & MD 83 Lat/Long by differential similar mapping grade GPS Drafted by: E.A.M.

TH (UTM-NAD 83)
N) 4432656.1
E) 540011.8
BOTTOM HOLE (UTM-NAD 83)
N) 4430818.8
E) 541019.0

FILE #: CHE 034
DRAWING #: 1856
PLAT = 1" - 2000'
SCALE: TICK MARK = 1" - 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE SUBMITTER MAPPING OF ELEVATION: GRADE GPS

I, THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
Signed:
L.L.S. #2124 : Ernest J. Benchek III



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS WVDEP
OFFICE OF OIL & GAS
601 57TH STREET
CHARLESTON, WV 25304

Well Type: Oil Waste Diposal Production Deep Gas Liquid Injection Storage Shallow

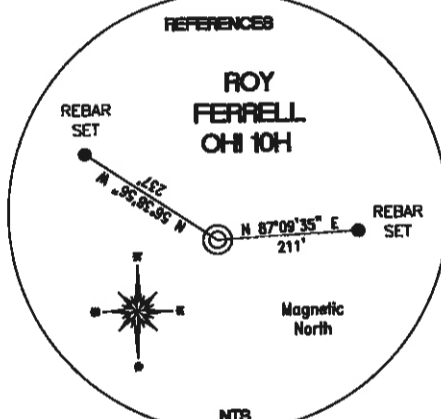
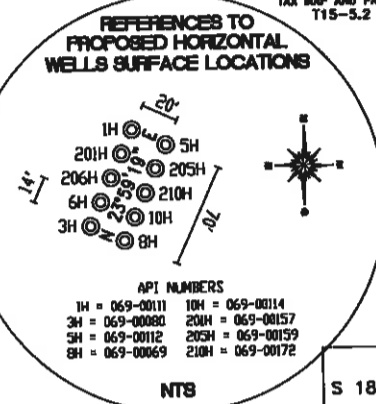
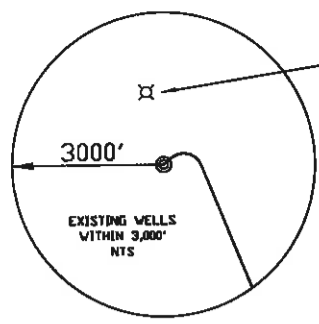
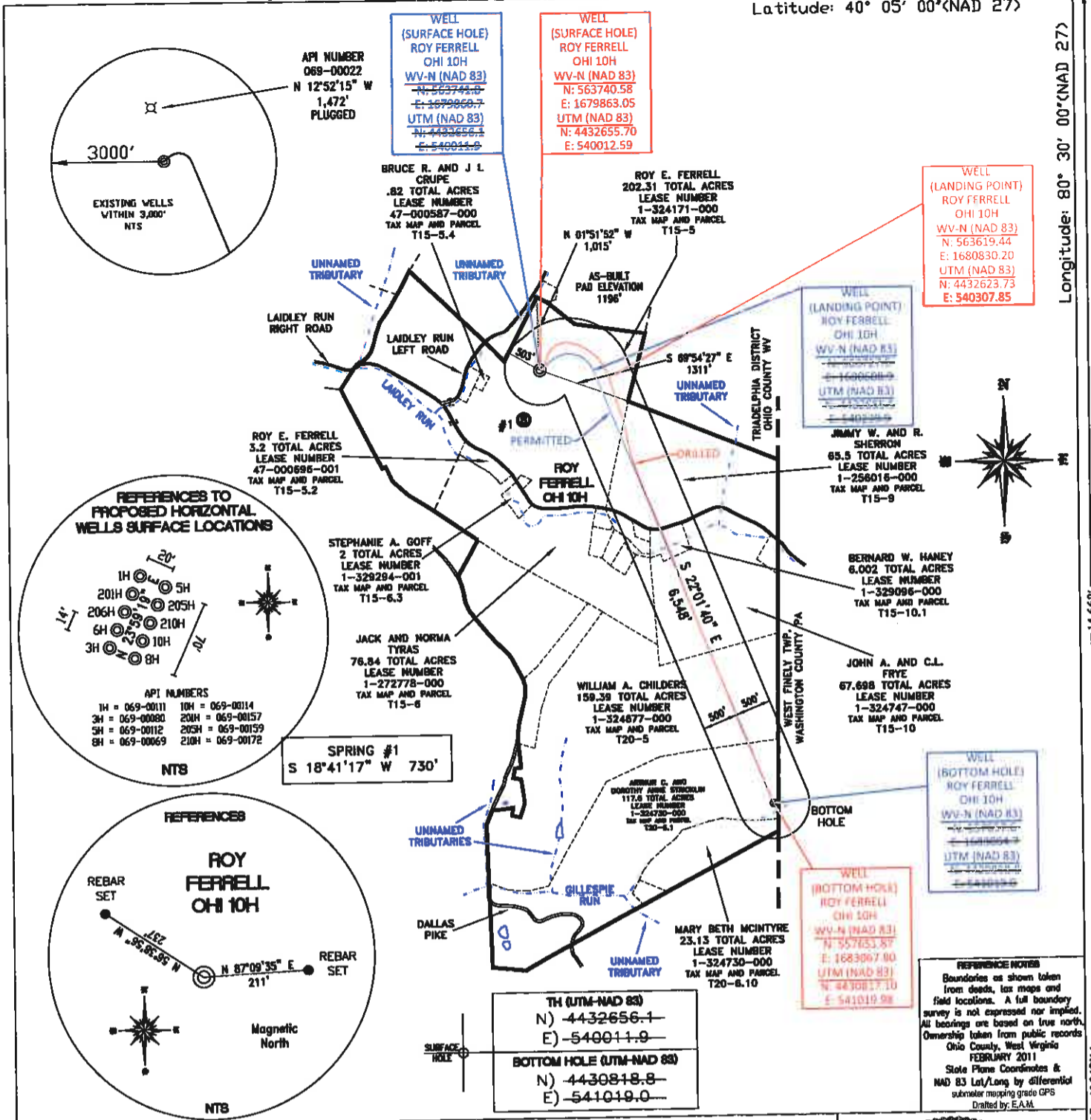
WATERSHED: WHEELING CREEK
COUNTY/DISTRICT: OHIO/TRIADELPHIA
SURFACE OWNER: ROY E. FERRELL
OIL & GAS ROYALTY OWNER: ROY E. FERRELL
LEASE NUMBERS: _____

DATE: MAY 10, 2016
OPERATOR'S WELL #: ROY FERRELL OHI 10H AS-DRILLED
API WELL #: 47 69 00159
STATE COUNTY PERMIT
AS-BUILT
ELEVATION : 1196.0'

QUADRANGLE: VALLEY GROVE WV.
ACREAGE: 202.31 +/-
ACREAGE: 581.28 +10/28/2016

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
PLUG OFF FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY):
TARGET FORMATION: MARCELLUS
WELL OPERATOR : CHESAPEAKE APPALACHIA, LLC.
ADDRESS: PO BOX 18496
CITY: OKLAHOMA CITY STATE: OK ZIP CODE: 73154-0496

AS-DRILLED DEPTH: TVD: 6,762.113' TMD: 13,801'
DESIGNATED AGENT : JESSICA GREATHOUSE
ADDRESS: Po Box 6070
CITY: CHARLESTON STATE: WV ZIP CODE: 25301



TH (UTM-NAD 83)	N) -4432656.1
	E) -540011.9
BOTTOM HOLE (UTM-NAD 83)	N) -4430818.8
	E) -541019.0

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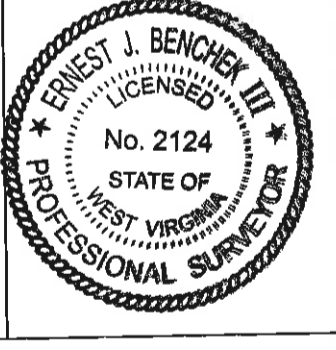
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 UTM (NAD 83)
 N: 4432623.73
 E: 540307.85

WELL (BOTTOM HOLE)
 ROY FERRELL
 OHI 10H
 WV-N (NAD 83)
 N: 557653.87
 E: 1683067.90
 UTM (NAD 83)
 N: 4430817.10
 E: 541019.98

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 Signed: *[Signature]*
 L.L.S. #2124 : Ernest J. Benchek III



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 OFFICE OF OIL & GAS
 601 57TH STREET
 CHARLESTON, WV 25304

DATE: MAY 10, 2016

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API WELL #: 47 69 00159
 STATE COUNTY PERMIT

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 Gas Liquid Injection Storage Shallow AS-BUILT

WATERSHED: WHEELING CREEK ELEVATION : 1196.0'

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SURFACE OWNER: ROY E. FERRELL ACREAGE: 202.31 +/-

OIL & GAS ROYALTY OWNER: ROY E. FERRELL ACREAGE: 581.28 +10/28/2016

LEASE NUMBERS: _____

DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE
 PLUG OFF FORMATION PERFORATE NEW FORMATION PLUG & ABANDON
 CLEAN OUT & REPLUG OTHER CHANGE (SPECIFY): _____

TARGET FORMATION: MARCELLUS AS-DRILLED DEPTH: TVD: 6,762.113' TMD: 13,801'

WELL OPERATOR : CHESAPEAKE APPALACHIA, LLC. DESIGNATED AGENT : JESSICA GREATHOUSE

ADDRESS: PO BOX 18496 ADDRESS: Po Box 6070

CITY: OKLAHOMA CITY STATE: OK ZIP CODE: 73154-0496 CITY: CHARLESTON STATE: WV ZIP CODE: 25301



Well Name: Roy Ferrell OHI 10H

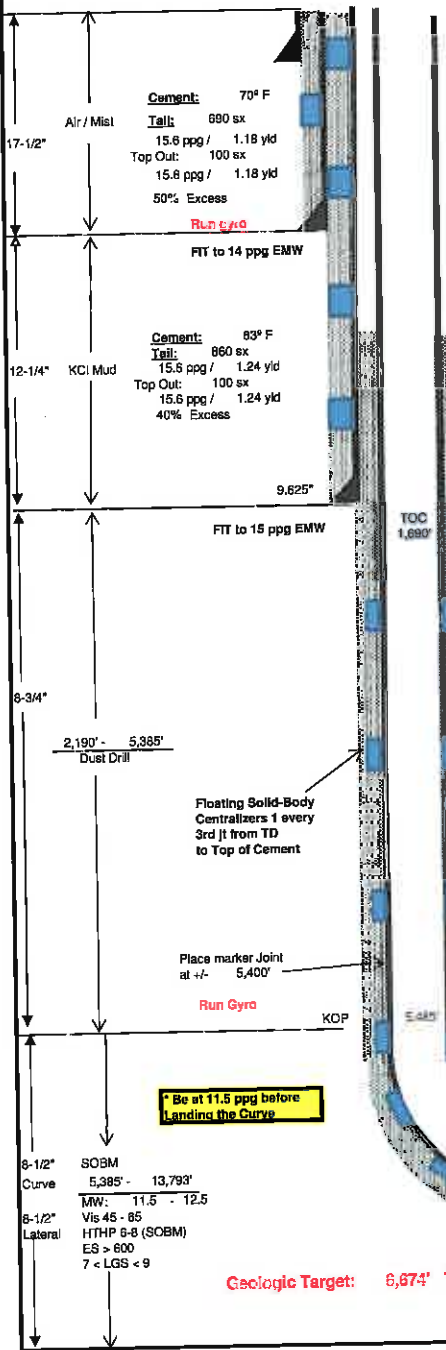
Drilling Rig: Nomac 37

Directional Drilling: Cathedral

Drilling Engineer: Jeremy Pye
 Superintendent: R. Harless / J. Melville
 Asset Manager: Garrett Smith
 Geologist: Milton Smith
 Land: Bryan Lohoff

Formation: Marcellus
 County, State: Ohio, WV
 Surface Latitude: 40.043114
 Surface Longitude: -80.531168
 BH Latitude: 40.026513
 BH Longitude: -80.519479
 KB Elevation: 1214'
 Ground Elevation: 1196'

Drilling Mud: MI Swaco
 Cement Surface: Schlumberger
 Cement Longstrings: Schlumberger
 Wellhead: Sweco
 AFE #: 161981 Well #: 834915



Wellhead Equipment	
Tree Description	Blanking Cap
Tubing Head	11" x 5M x 7-1/16" 10M
'B' Section	9-5/8" SOW x 11" 5M
'A' Section	

Casing Detail						
	Size	Wt	Grd	Conn.	From:	To:
Surface	13.375	54.5 #	J-55	STC	0'	740'
Interm	9.625	40 #	J-55	LTC	0'	2,190'
Prod	5.5	20 #	P-110	TXP	0'	13,793'

Casing Design						
	Size	ID	Coil	Burst	Tens	MU torq
Surface	13.375	12.615	1130	2740	514	5140
Interm	9.625	8.935	2570	3950	520	5200
Prod	5.5	4.778	12100	12630	641	11270

Directional Drilling Details								
Section	TMD	Inc.	Azimuth	TVD	BUR	DLS	+N/S	+E/W
Surface	0.00'	0.00	0.00	0.00'	0.00	0.00	0.0'	0.0'
Build/Turn	840'	0.00	0.00	840'	0.00	0.00	0.0'	0.0'
Hold	1,090'	5.00	80.00	1,090'	2.00	2.00	5.5'	9.4'
Drop	1,840'	5.00	80.00	1,838'	0.00	0.00	29.4'	51.0'
Hold	1,890'	0.00	0.00	1,887'	-2.00	2.00	34.9'	60.4'
Hold	2,300'	0.00	0.00	2,297'	0.00	0.00	34.9'	60.4'
Hold	3,643'	0.00	0.00	3,640'	0.00	0.00	34.9'	60.4'
Hold	5,000'	0.00	0.00	4,997'	0.00	0.00	34.9'	60.4'
KOP	5,485'	0.00	0.00	5,482'	0.00	0.00	34.9'	60.4'
Build/Turn	5,869'	48.43	14.44	5,911'	10.00	10.00	221.6'	108.5'
Landing	7,234'	89.40	157.98	6,677'	3.24	10.00	-8.6'	748.7'
TD	13,793'	89.40	157.98	6,746'	0.00	0.00	-8,068.2'	3,205.4'
VS Plane	157.98						VS Length	6,845.95'

Run	Log Type	Interval
1	None	Surface
2	None	Intermediate to Surf. Csg
	CBL	Over Surface Casing
3	None	KOP to Int. Csg
	CBL	Over Intermediate Casing

Mudlogger operational at: NA

Formation Depths (TVD)	
GENESEO	8,468'
TULLY	8,498'
HAMILTON	6,526'
MARCELLUS	6,644'
ONONDAGA	6,704'

Plot Date	7/26/13
Geplot Date	1/6/14
AFE Date	8/9/13

Permit VS. Actual	0'
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Cement: 123° F
 Lead: 789 sx
 15.0 ppg / 1.34 yd
 Tail: 1,917 sx
 15.8 ppg / 1.18 yd
 15% Excess
 Pump-time: 5 hours
 Ensure Gas Block Addition to In Lead Slurry
 PBHL: 5.5"
 TMD: 13,793'
 TVD: 6,746'
 Inclination: 89.40 deg

Geologic Target: 6,674' TVD @ 0' VS w/ 0.60 degrees Down-dip

Gyro the 1st well on the pad at KOP. Ensure all Surveys are referenced to Grid North!!

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Drawn by: Jeremy Pye
Date: 1/14/14

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Hydraulic Fracturing Fluid Product Component Information Disclosure

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Environmental Protection

Fracture Date:	4/21/2014
State:	WEST VIRGINIA
County:	OHIO
API Number:	4706900114
Operator Name:	CHEAPEAKE APPALACHIA LLC
Well Name and Number:	ROY FERRELL OHI 10H
Longitude:	-80.531168
Latitude:	40.043114
Long/Lat Projection:	NAD27
Production Type:	GAS
True Vertical Depth (TVD):	6,762
Total Water Volume (gal)*:	14,018,172

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	CHEAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	85.47902%	
Recycled Produced Water	CHEAPEAKE ENERGY	Carrier/Base Fluid	Water	007732-18-5	100.00%	1.90557%	
EC6110A	NALCO	Anti-Bacterial Agent	Ethanol Glutaraldehyde (Pentanediol) Quaternary Ammonium Compounds	000064-17-5 000111-30-8 NA	5.00% 60.00% 10.00%	0.00091% 0.01093% 0.00182%	
EC6629A	NALCO	Scale Inhibitor	No Hazardous Components	NONE		0.00000%	
Northern White Sand	WEATHERFORD	Proppant - Natural	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	7.68129%	
100 Mesh Sand	WEATHERFORD	Proppant - Natural	Crystalline Silica (Quartz Sand, Silicon Dioxide)	014808-60-7	100.00%	3.43930%	
ACIB	WEATHERFORD	Acid	Hydrochloric Acid	007647-01-0	15.00%	0.12920%	
HYDROCHLORIC	WEATHERFORD	Acid	Water	007732-18-5	85.00%	0.73211%	
WP6684L	WEATHERFORD	pH Adjusting Agent	Potassium Carbonate	000584-08-7	60.00%	0.01428%	
WGA 15L	WEATHERFORD	Gelling Agent	Potassium Hydroxide	001310-58-3	40.00%	0.00952%	
WFR-65LA	WEATHERFORD	Friction Reducer	Petroleum Distillate Hydrotreated Light Ammonium Acetate Petroleum Distillate Hydrotreated Light	064742-47-8 000631-61-8 064742-47-8	70.00% 5.00% 40.00%	0.00564% 0.00479% 0.03833%	

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WIC-641L	WEATHERFORD	Iron Control Agent	Citric Acid	000077-92-9	70.00%	0.00181%
WBK-133	WEATHERFORD	Breaker	Ammonium Persulfate	007727-54-0	100.00%	0.00019%
OXIDIZER	WEATHERFORD	Corrosion Inhibitor	2-Butoxyethanol (Ethyleneglycol Monobutyl Ether)	000111-76-2	7.00%	0.00003%
WAI-251LC	WEATHERFORD		Branched-Ethoxylated Nonyl Phenol (Branched-Nonyl Phenol Ethoxylate)	068412-54-4	10.00%	0.00005%
			Cinnamaldehyde	000104-55-2	10.00%	0.00005%
			Dimethyl Formamide	000068-12-2	40.00%	0.00019%
			Ethylene Glycol	000107-21-1	60.00%	0.00028%
			Isopropanol (Isopropyl Alcohol, Propan-2-ol)	000067-63-0	7.00%	0.00003%
			Tar bases, quinoline derivs, benzyl chloride-quaternized	072480-70-7	13.00%	0.00006%
			Triethyl Phosphate	000078-40-0	7.00%	0.00003%

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Additional Ingredients Not Listed on MSDS

EC6110A, EC6629A	NALCO	Anti-Bacterial Agent, Scale Inhibitor	Methanol (Methyl Alcohol) Proprietary Acrylate Polymer Proprietary Quaternary Ammonium Salt	000067-56-1 TRADE SECRET TRADE SECRET		0.00592% 0.00592% 0.00592%
WAI-251LC, WFR-65LA, WGA-15L, WIC-641L, WPB-584L	WEATHERFORD	Corrosion Inhibitor, Friction Reducer, Gelling Agent, Iron Control Agent, pH Adjusting Agent	Water Alcohols ethoxylated C12-16 Guar Gum Potassium Carbonate Proprietary Alcohol Proprietary Ethoxylated Nonylphenol Proprietary Friction Reducer Additive Sorbitan Water	007732-18-5 068551-12-2 009000-30-0 000584-08-7 TRADE SECRET TRADE SECRET TRADE SECRET 008007-43-0 007732-18-5		0.01904% 0.00544% 0.00544% 0.01473% 0.00015% 0.00015% 0.08948% 0.00544% 0.00174%

* Total Water Volume sources may include fresh water, produced water, and/or recycled water
** Information is based on the maximum potential for concentration and thus the total may be over 100%

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

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

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