



west virginia department of environmental protection

Office of Oil and Gas
601 57th Street SE
Charleston, WV 25304
(304) 926-0450
(304) 926-0452 fax

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

PERMIT MODIFICATION APPROVAL

January 09, 2014

CHESAPEAKE APPALACHIA, L.L.C.
POST OFFICE BOX 6070
CHARLESTON, WV 25362

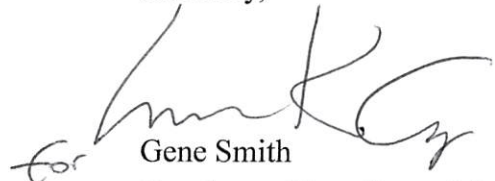
Re: Permit Modification Approval for API Number 6900112 , Well #: ROY FERRELL OHI 5H
Modified Casing

Oil and Gas Operator:

The Office of Oil and Gas has reviewed the attached permit modification for the above referenced permit. The attached modification has been approved and well work may begin. Please be reminded that the oil and gas inspector is to be notified twenty-four (24) hours before permitted well work is commenced.

Please call James Martin at 304-926-0499, extension 1654 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read 'Gene Smith', with a large flourish extending to the right.

Gene Smith
Regulatory/Compliance Manager
Office of Oil and Gas



Danielle Southall
Regulatory Analyst II

August 23, 2013

VIA UPS

Ms. Laura Cooper
Office of Oil & Gas
601 57th Street
Charleston, WV 25304

Re: Modification to Roy Ferrell OHI 5H API# 47-069-00112 & Roy Ferrell OHI 201H
API# 47-069-00157

Dear Ms. Cooper:

Attached please find a revised WW-6B and wbs for the above captioned wells. We would like to modify the casing due to directional work and to stay consistent with the other Ferrell wells. The BHL's will remain the same. These well are situated on the Roy Ferrell property, in Triadelphia District, Wetzel County, West Virginia.

If you have any questions or require additional information, please contact me at 304-517-1416 ext 86024.

Sincerely,

Chesapeake Appalachia, LLC

A handwritten signature in blue ink, appearing to be "Dee Southall", written over a circular stamp or mark.

Dee Southall

DS:brw

Enclosure(s)

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WV Department of
Environmental Protection

STATE OF WEST VIRGINIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS
WELL WORK PERMIT APPLICATION

1) Well Operator: Chesapeake Appalachia, LLC 49447757 69- Ohio 7- Triadelphia 648-Valley Grove
Operator ID County District Quadrangle

2) Operator's Well Number: Roy Ferrell OHI 5H Well Pad Name: Roy Ferrell OHI Pad

3 Elevation, current ground: 1196' Elevation, proposed post-construction: 1196'

4) Well Type: (a) Gas Oil Underground Storage
Other _____
(b) If Gas: Shallow Deep
Horizontal

5) Existing Pad? Yes or No: Yes

6) Proposed Target Formation(s), Depth(s), Anticipated Thicknesses and Associated Pressure(s):
Target formation- Marcellus, Target top TVD- 6630', Target base TVD- 6690', Anticipated thickness- 60', Associated Pressure- 4177

*MSJK
8/22/2013*

7) Proposed Total Vertical Depth: 6640'

8) Formation at Total Vertical Depth: Marcellus

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9) Proposed Total Measured Depth: 17,700'

10) Approximate Fresh Water Strata Depths: 326'

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11) Method to Determine Fresh Water Depth: Form a water well~4000' WNW of the pad

WV Department of
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12) Approximate Saltwater Depths: 800'

13) Approximate Coal Seam Depths: 646'

14) Approximate Depth to Possible Void (coal mine, karst, other): 646' void abandoned mine ✓

15) Does proposed well location contain coal seams directly overlying or adjacent to an active mine? If so, indicate name and depth of mine: No.

16) Describe proposed well work: Drill and stimulate any potential zones between and including the Benson to the Marcellus. **If we should encounter a void, place basket above and below void area - balance cement to bottom of void and grout from basket to surface. Run casing not less than 20' below void nor more than 50' below void.
(*If freshwater is encountered deeper than anticipated it must be protected, set casing 50' below and cts)

17) Describe fracturing/stimulating methods in detail:
Well will be perforated within the target formation and stimulated with a slurry of water, sand, and chemical additives at a high rate. This will be performed in stages with the plug and perf method along the wellbore until the entire lateral has been stimulated within the target formation. All stage plugs are then drilled out and the well is flowed back to surface.
The well is produced through surface facilities consisting of high pressure production units, vertical separation units, water and oil storage tanks.

18) Total area to be disturbed, including roads, stockpile area, pits, etc, (acres): 11

19) Area to be disturbed for well pad only, less access road (acres): 7

WW - 6B
(3/13)

20)

CASING AND TUBING PROGRAM

<u>TYPE</u>	<u>Size</u>	<u>New or Used</u>	<u>Grade</u>	<u>Weight per ft.</u>	<u>FOOTAGE: For Drilling</u>	<u>INTERVALS: Left in Well</u>	<u>CEMENT: Fill -up (Cu. Ft.)</u>
Conductor	20"	New	J-55	94#	✓ 100'	100'	CTS
Fresh Water	13 3/8"	New	J-55	54.5#	✓ 741'	741'	680 sx/CTS
Coal	9 5/8"	New	J-55	40#	✓ 2200'	2200'	820 sx/CTS
Intermediate	7"	New	P-110	20#	✓ If Needed	If Needed	If needed/As Possible
Production	5 1/2"	New	P-110	20#	✓ 17,700'	17,700'	Lead 970 sx Tail 2020 sx/100' inside intermediate
Tubing	2 3/8"	New	N-80	4.7#	✓ Approx. 7,373'	Approx. 7,373'	
Liners							

MPK- 8/22/2013

<u>TYPE</u>	<u>Size</u>	<u>Wellbore Diameter</u>	<u>Wall Thickness</u>	<u>Burst Pressure</u>	<u>Cement Type</u>	<u>Cement Yield</u>
Conductor	20"	30"	0.25	2120	15.6 ppg	1.19/50% Excess
Fresh Water	13 3/8"	17.5"	0.380	2740	15.6 ppg	1.19/50% Excess
Coal	9 5/8"	12 1/4"	0.395	3950	15.6 ppg	1.19/50% Excess
Intermediate	7"	8 3/4"	.0317	4360	15.6 ppg	1.20/15% Excess
Production	5 1/2"	8 3/4"	0.361	12360	15.6 ppg	1.20/15% Excess
Tubing	2 3/8"	4.778"	0.190			
Liners						

PACKERS

Kind:	10K Arrowset AS1-X		
Sizes:	5 1/2"		
Depths Set:	Approx. 6,197'		


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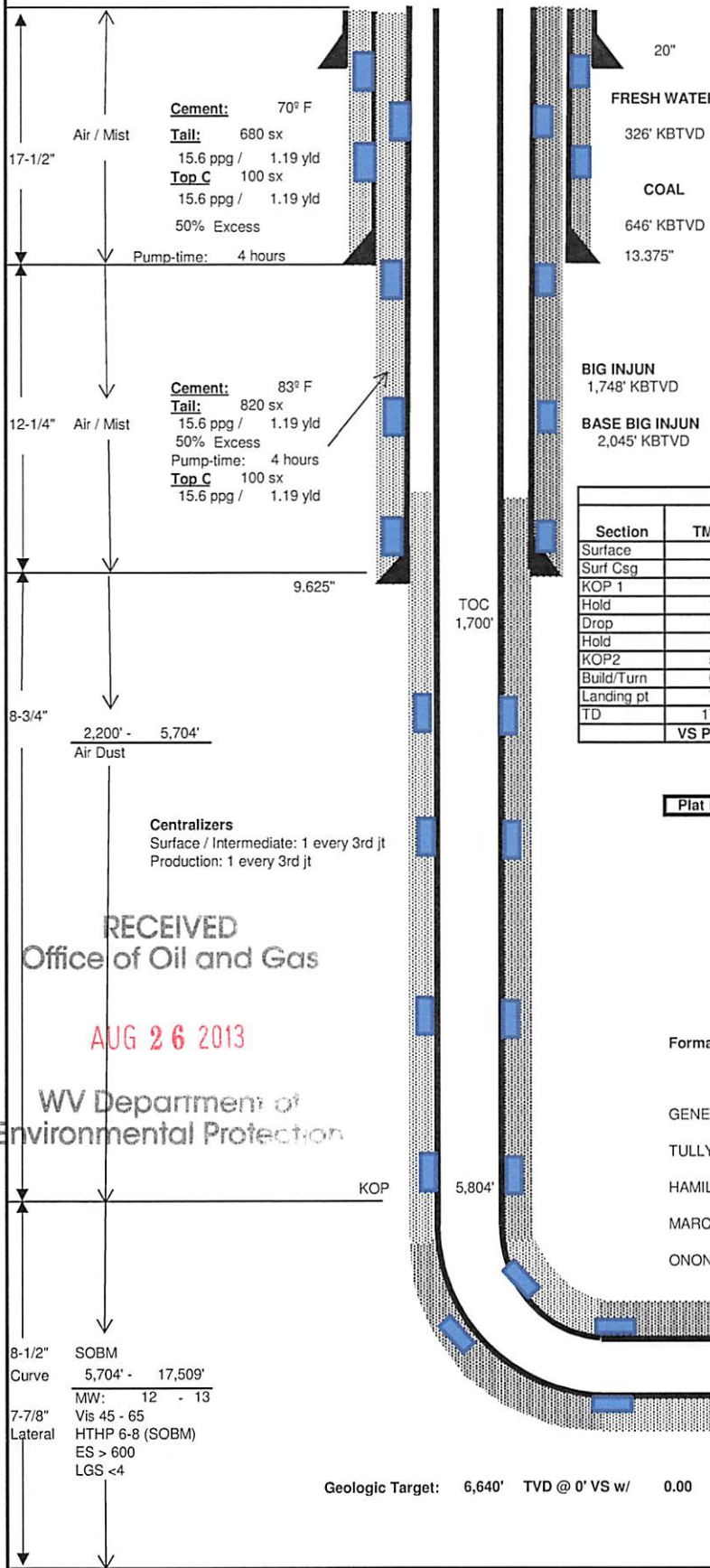
AUG 26 2013

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Page 2 of 3

01/10/2014

		Well Name: Roy Ferrel OHI 5H	Drilling Rig: N/A
Drilling Engineer: Lacey Sharp	Formation: Marcellus	Directional Drilling: N/A	
Superintendent: N/A	County, State: Ohio, WV	Drilling Mud: N/A	
Asset Manager: N/A	Surface Latitude: 40.043220	Cement Surface: N/A	
Geologist: N/A	Surface Longitude: -80.531108	Cement Longstrings: N/A	
Land: N/A	BH Latitude: 40.069385	Wellhead: N/A	
	BH Longitude: -80.541555	AFE #: N/A	
	KB Elevation: 1216'		
	Ground Elevation: 1196'		



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

Casing Detail					
	Size	Wt	Grd	Conn.	From: To:
Conductor	20.000	94.0 #	J-55	STC	0' 100'
Surface	13.375	54.5 #	J-55	STC	0' 741'
Interm	9.625	40 #	J-55	LTC	0' 2,200'
Prod	5.5	20 #	P-110	TXP	0' 17,509'

Casing Design						
	Size	ID	Coll	Burst	Tens	MU torq
Surface	13.375	12.615	1130	2740	514	5140
Interm	9.625	8.835	2570	3950	520	5200
Prod	5.5	4.778	12200	12360	641	8530

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'
Surf Csg	741'	0.00	0.00	741'	0.00	0.00	0.0'	0.0'
KOP 1	840'	0.00	0.00	840'	0.00	0.00	0.0'	0.0'
Hold	1,140'	6.00	90.80	1,139'	2.00	2.00	-0.2'	15.7'
Drop	1,640'	6.00	90.80	1,637'	0.00	0.00	-0.9'	68.0'
Hold	1,940'	0.00	0.00	1,936'	-2.00	2.00	-1.2'	83.6'
KOP2	5,804'	0.00	0.00	5,800'	0.00	0.00	-1.2'	83.6'
Build/Turn	6,454'	62.87	91.15	6,327'	9.67	9.67	-7.6'	405.9'
Landing pt	7,373'	90.00	338.21	6,640'	2.95	12.00	616.8'	761.5'
TD	17,509'	90.00	338.21	6,640'	0.00	0.00	10,028.2'	-3,000.9'
	VS Plane	338.21					VS Length	10,425.60'

Lateral Length ==> 11,054.70'

Plat Date 7/26/13

Logging Program		
Run	Log Type	Interval
1	TBD	TBD
2	TBD	TBD

Mudlogger operational at Surface

Formation Depths (TVD)

GENESEO	6,440'
TULLY	6,470'
HAMILTON	6,498'
MARCELLUS	6,616'
ONONDAGA	6,676'

Cement: 122° F
 Lead: 970 sx
 15.6 ppg / 1.20 yld
 Tail: 2,020 sx
 15.6 ppg / 1.20 yld
 15% Excess
 Pump-time: 6 hours

PBHL 5.5"
 TMD: 17,509'
 TVD: 6,640'
 Inclination: 90.00 deg

Geologic Target: 6,640' TVD @ 0° VS w/ 0.00 degrees/100 ft Up-dip

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 Environmental Protection

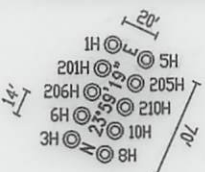
AUG 26 2013

01/10/2014

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

Drawn by: Lacey Sharp
 Date: 8/21/2013

REFERENCES TO PROPOSED HORIZONTAL WELLS SURFACE LOCATIONS

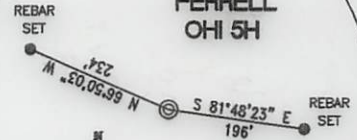


API NUMBERS
1H = 069-0011 10H = 069-00114
3H = 069-00080 201H = 069-00157
5H = 069-00112 205H = 069-00159
8H = 069-00069 210H = 069-00172

NTS

REFERENCES

ROY FERRELL OHI 5H



Magnetic North

NTS

TH (UTM-NAD 83)	
N)	4432667.8
E)	540016.9
BOTTOM HOLE (UTM-NAD 83)	
N)	4435567.1
E)	539110.7

MICHAEL AND VALERIE McDONALD
187.497 TOTAL ACRES
LEASE NUMBER
1-324166-000
TAX MAP AND PARCEL
T09-51

DAVID AND ESTER SLIGAR
25 TOTAL ACRES
DEED BOOK / PAGE
706/474
TAX MAP AND PARCEL
T10-7

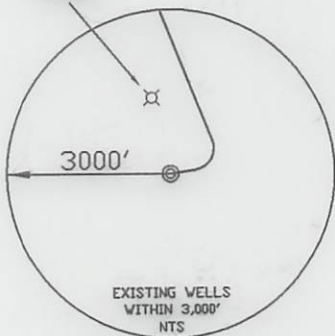
REX AND BETH STRAWN
15.078 TOTAL ACRES
LEASE NUMBER
1-324163-000
TAX MAP AND PARCEL
T14-36.1

REX AND BETH STRAWN
44.55 TOTAL ACRES
LEASE NUMBER
1-324163-000
TAX MAP AND PARCEL
T10-11.2

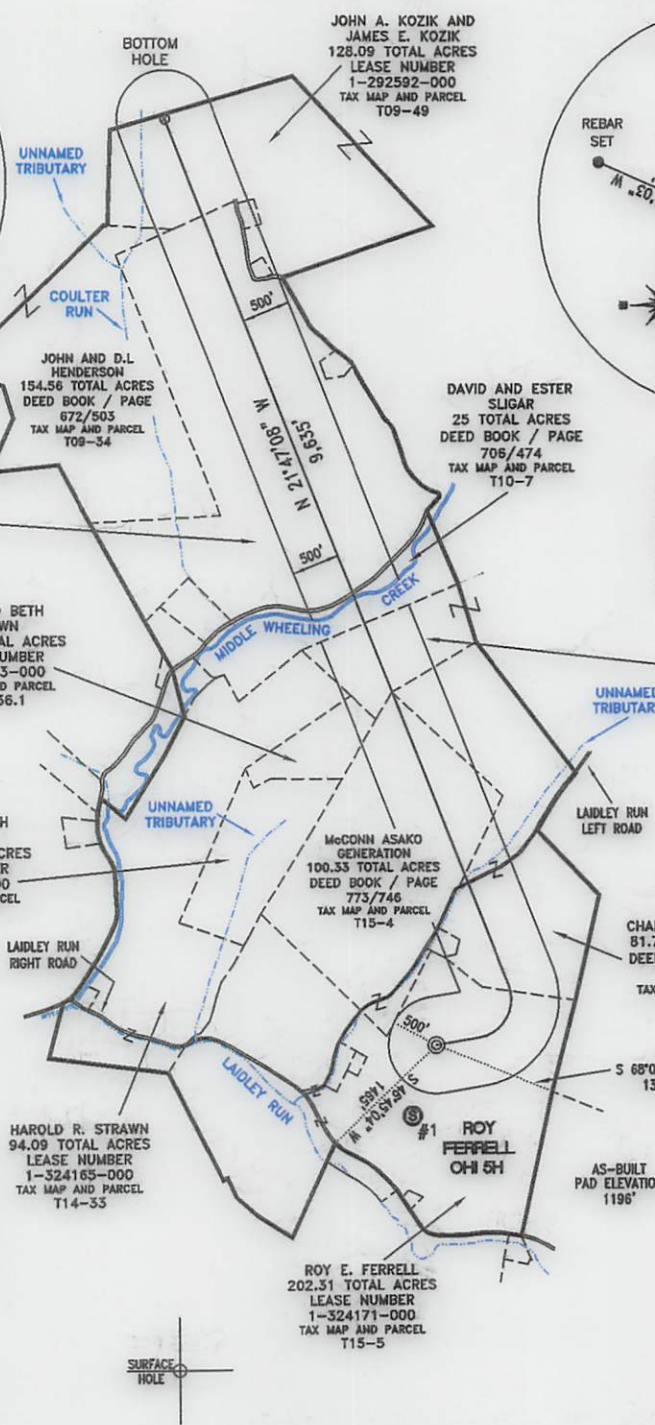
SPRING #1
S 18°58'33" W 772'

REX AND BETH STRAWN
34.929 TOTAL ACRES
LEASE NUMBER
1-324699-000
TAX MAP AND PARCEL
T14-36

API NUMBER
069-00022
N 13°52'29" W
1,438'
PLUGGED



EXISTING WELLS WITHIN 3,000' NTS



HAROLD R. STRAWN
94.09 TOTAL ACRES
LEASE NUMBER
1-324165-000
TAX MAP AND PARCEL
T14-33

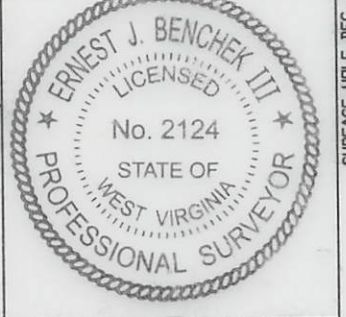
ROY E. FERRELL
202.31 TOTAL ACRES
LEASE NUMBER
1-324171-000
TAX MAP AND PARCEL
T15-5

CHARLES L. FERRELL
81.79 TOTAL ACRES
DEED BOOK / PAGE
W79/92
TAX MAP AND PARCEL
T15-3

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 MARCH 2011
State Plane Coordinates & NAD 83 Lat/Long by differential submeter mapping grade GPS
Drafted by: E.A.M.

FILE #: CHE 034
DRAWING #: 1854
PLAT = 1" - 2000'
SCALE: TICK MARK = 1" - 2000'
MINIMUM DEGREE OF ACCURACY: 1/200
PROVEN SOURCE SUBMETER 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: JULY 26, 2013
OPERATOR'S WELL #: ROY FERRELL OHI 5H
API WELL #: 47 69 00112 H6A MOD
STATE COUNTY PERMIT
ELEVATION : 1196'

QUADRANGLE: VALLEY GROVE WV.
ACREAGE: 202.31 +/-
ACREAGE: 719.704 +/-

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

ESTIMATED DEPTH: TVD: 6,665' TMD: 16,690'
DESIGNATED AGENT : ERIC B. GILLESPIE
ADDRESS: Po Box 6070
CITY: CHARLESTON STATE: WV ZIP CODE: 25301

01/10/2014