

AP-6-10

OIL AND GAS WELL  
SUMMARY REPORT

API No. 45-195-20706-00-03

VDMR Well  
Rep. No.

DMQ File No. WS-118

Operator ANR PRODUCTION COMPANY

Farm PENN VA .77

Co. Well No. 10088

County WISE

Quadrangle APPALACHIA-7 1/2'

Location (UTM) N4,090,270 ; E341,390

UTM Zone 17

(Lat. and Long.)

Field

Province APPALACHIAN PLATEAUS

Elev. (specify) 2262.81' GR

TD 5627

Form. at TD CORNIFEROUS

Age DEVONIAN

INITIAL FLOW-NONE

Date compl. or abandoned JUNE 5, 1985

Result GAS WELL

Gas Shows

Gas Pays

Main Production

Prod. Form. DEVONIAN;BIGLIME, BEREA, WEIP,

Age DEVONIAN, MISSISSIPPIAN SUNBURY

FINAL FLOW - 474,000 CU.FT.

Treatment:BIGLIME-GELLED ACIDERAC, 96 BARRELS OF(one half) 28% HCL AND (one half) 15% HCL, 63 BARRELS OF WATER. DEVONIAN BEREA, SUNBURY - 75 QUALITY FOAM FRAC, 42,500 POUNDS OF 20/40 SAND, 7500 POUNDS OF 10/20 SAND, 672,000 SCF OF N2. WEIR - 75 QUALITY FOAM FRAC, 40,000 POUNDS OF 10/20 SAND, 500,000 SCF OF N2.

Initial Production

Oil shows

Water FW YES at 88' at at

SW at at at

Coal 365' TO 373'; 665' TO 667.5'; 810' TO 813'

Plat Plotted Completion Report X

Drillers Log X Geologic Log

Samples Interval Sheet

Sample Interval

Remarks

Geophysical Logs S.P. Res Gamma X Neutron X

Density X Sonic Other

Stratigraphic Data Source ROSWELL K. BARRANCO

<u>Formation</u>	<u>Top</u>	<u>Datum (Subsea)</u>	<u>Thickness</u>
WISE AND NORTON	0	+2262.81	1566
LEE	1566	+ 696.81	1479
BLUESTONE	3045	-782.19	125
RAVENCLIFF	3170	-907.19	96
HINTON	3266	-1003.19	427
MAXON	3524	-1261.19	109
BLUEFIELD	3693	-1430.19	234
GREENBRIER	3927	-1664.19	453
INJUN	4380	-2117.19	57
WEIR	4437	-2174.19	193
SUNBURY	4630	-2367.19	144
Remark# BERA	4774	-2511.19	68
DEVONIAN SHALE	4842	-2579.19	726
DECOLLEMENT	5315		63
CORNIFEROUS	5568	-3305.19	59

References


Released to Open File: Completion NOVEMBER 6, 1985  
 Samples NONE

(Note: UTM measurements in meters, all others in feet)

OIL AND GAS WELL  
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Operator ANR PRODUCTION COMPANY

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Co. Well No. 10088

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(Lat. and Long.)

Field Province APPALACHIAN PLATEAUS

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Date compl. or abandoned JUNE 5, 1985

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Gas Shows

Gas Pays

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Plat Plotted Completion Report X

Drillers Log X Geologic Log

Samples Interval Sheet

Sample Interval

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Geophysical Logs S.P. Res Gamma Neutron

Density Sonic Other

Stratigraphic Data Source ROSWELL K. BARRANCO

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LEE	1566	+ 696.81	1479
BLUESTONE	3045	-782.19	125
RAVENCLIFF	3170	-907.19	96
HINTON	3266	-1003.19	427
MAXON	3524	-1261.19	169
BLUEFIELD	3693	-1430.19	234
GREENBRIER	3927	-1664.19	453
INJUN	4380	-2117.19	57
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References

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Released to Open File: Completion NOVEMBER 6, 1985  
 Samples NONE

(Note: UTM measurements in meters, all others in feet)

*WIS-118*

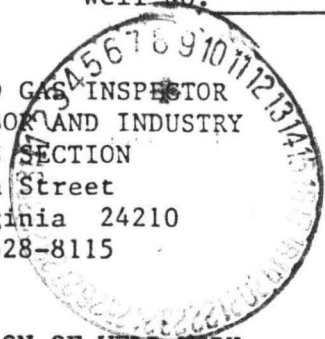
API Well No. 45 - 195 - 20706  
State County Permit

Date: 7-31-, 1985

Operator's Well No. 10088

*PENN VA. 77  
EL-2262.81' GR.  
APPALACHIA-7 1/2*

VIRGINIA OIL AND GAS INSPECTOR  
DEPARTMENT OF LABOR AND INDUSTRY  
OIL AND GAS SECTION  
205 W. Main Street  
Abingdon, Virginia 24210  
Phone 703 628-8115



*API-2/85*

REPORT OF COMPLETION OF WELL WORK

Pursuant to Regulation 4.06 of the Regulations under the Virginia Oil and Gas Act, the undersigned well operator reports completion of the type(s) of well work specified below on the referenced well in Richmond District, Wise County, Virginia on 30 day, July Month, 19 85.

WELL TYPE: Oil    / Gas x / Enhanced recovery    / Waste disposal    /  
If "Gas", Production x / Underground storage    /

Exempt by Code § 45.1-300.B.1 from general oil and gas conservation law: Yes x / No    /

WELL WORK: Drill x / Deepen    / Redrill    / Stimulate x /  
Plug off old formation    / Perforate new formation x /  
Plug    / Replug    /  
Other physical change in well (specify)   

The well work was done as shown in the Appendix(es) applicable to the type(s) of well work involved.

CONFIDENTIALITY STATUS UNDER CODE OF VIRGINIA § 45.1-332:

x Ninety days from the filing of this report,

or

Two years from   , 19   , the date on which the referenced well was completed, the well being an exploratory well as defined in Code of Virginia § 45.1-288.21.

APPLICANT: ANR PRODUCTION COMPANY

By *Ab Jones*  
Its Manager, Drilling & Engineering

111 E. Capitol St., Suite 400  
Address: Jackson, MS 39201-2185

Telephone: (601) 961-6315

FORM 16  
 APPENDIX A,  
 SHEET 1, (OBVERSE)

API WELL NO. 45 - 195 - 20706  
 State County Permit  
 Date: 7-31-85  
 Operator's Well  
 Name 10088

REPORT OF COMPLETION OF WELL WORK  
IF DRILLING, REDRILLING, OR DEEPENING IS INVOLVED

DRILLING CONTRACTOR Union Drilling, INC  
 ADDRESS P.O. Drawer 40, Buckhannon, W VA 26201  
 TELEPHONE \_\_\_\_\_

GEOLOGICAL TARGET FORMATION Devonian Shale, Weir, Big Lime  
 DEPTH OF COMPLETED WELL 5,627 FEET  
 DATE DRILLING COMMENCED 5-15-85  
 DATE DRILLING COMPLETED 6-5-85  
 DRILLING RIG: ROTARY X / CABLE TOOL \_\_\_\_\_ /

GEOLOGICAL DATA      Depth      Thickness  
                             Top      Bottom

Fresh Water                      ±80

Salt water                      Not Known

Name                      MINING IN AREA  
                                     Yes   No   Mined Out

Coal Seams	365'	373'	8'	Imboden		X
	665'	667.5	2.5'	Clintwood	X	
	810'	813'	3.0'	Dorchester	X	

Oil and Gas                      Not Known                      Name

The data on depth of strata is based on the source(s) checked below:

- X Applicant's own drilling experience in the area
- X Information supplied by the coal operator in the area
- \_\_\_\_\_ Information already in possession of the Inspector
- \_\_\_\_\_ As follows \_\_\_\_\_

OTHER GENERAL INFORMATION

An electric log survey was X / was not \_\_\_ / conducted pursuant to Code of Virginia § 45.1-333.B.2, at the coal owner's or operator's request.

An electric log survey was X / was not \_\_\_ / run for other purposes. This survey did X / did not \_\_\_ / disclose the vertical location of a coal seam.

Note: If a coal seam was located, the part of the survey from the surface through the coal is attached in accordance with Code of Virginia § 45.1-333.B.3.

Deviation surveys were X / were not \_\_\_ / required under Code of Virginia § 45.1-333.C "to the bottom of the lowest published coal seam depth".

Note: If deviation surveys were required, the survey results are attached.

A continuous survey was \_\_\_ / was not X / required under Code of Virginia § 45.1-333.C.

Note: If a continuous directional survey was required, the survey results are attached.

CHANGES IN THE PERMITTED WELL WORK

The well operator did \_\_\_ / did not X / make any change(s) in the permitted well work, verbally approved by the Inspector or Assistant Inspector under Regulation 4.03 of the Regulations under the Virginia Oil and Gas Act, for the purpose of insuring successful completion of the well work.

Note: The nature and purpose of each such change, if any, is set out below or on additional sheets if such are required.

CASING AND TUBING PROGRAM

PRELIMINARY INFORMATION

Is the subject well undrilled by the red shales? YES X / No     /  
 If "YES", was a coal protection string set to the red shales? YES X / NO     /

PROGRAM DETAILS

<u>SIZE</u>	<u>TOP</u>	<u>BOT.</u>	<u>LENGTH</u>	<u>FROM</u>	<u>PERFORATED TO</u>
-------------	------------	-------------	---------------	-------------	----------------------

Conductor

Casing circulated and cemented in to the surface:

10-3/4"	Surface	30'	30'
10-3/4"	Surface	453'	453'
7"	Surface	3,555'	3,555'

Coal protection casing set under the special rule of Code of Virginia S 45.1-334.

7"	Surface	3,555'	3,555'
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Other casing and tubing left in the well:

4-1/2"	Surface	5,592'	5,592'
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Liners left in well, under Code of Virginia S 45.1-336 or otherwise:

None

Other casing used in drilling but not left in the well:

None

Packers or bridge plugs:                      Kind                      Size                      Set At

None

REMARKS (SHUT DOWN DEPTHS, DATES: FISHING JOB DEPTHS, DATES: CAVING: ETC.)

SAMPLES AND CUTTINGS

will X / will not     / be available for examination by a member of the Division of Mineral Resources

will X / will not     / be furnished the Division of Mineral Resources upon request

will     / will not     / require sacks to be furnished by the Division of Mineral Resources



DRILLER'S LOGCompiled by Roswell K. Barranco

<u>Geologic Age</u>	<u>Formation</u>	<u>General Lithology</u>	<u>Color</u>	<u>Depth (feet)</u>		<u>Thickness</u>	<u>Remarks</u>
				<u>Top</u>	<u>Bottom</u>		
Pennsylvanian	Wise & Norton	Sandstone		0	1566	1566	
	Lee	Sandstone & Shale		1566	3045	1479	
Mississippian	Bluestone	Sandstone & Shale		3045	3170	125	
	Ravenclyff	Sandstone		3170	3266	96	
	Hinton	Sandstone & Shale		3266	3693	427	
	Maxon	Sandstone		3524	3693	169	
	Bluefield	Sandstone, Shale & Limestone		3693	3927	234	
	Greenbrier (Big Lime)	Limestone		3927	4380	453	
	Injun	Sandstone & Shale		4380	4437	57	
	Weir	Siltstone		4437	4630	193	
	Sunbury	Shale		4630	4774	144	
	Berea	Siltstone		4774	4842	68	
Devonian	Devonian Shale	Shale		4842	5568	726	
	Decollement			5315	5378	63	
Silurian	Corniferous	Limestone		5568	5627	59	

(Complete on supplemental sheets as necessary.)

Date: 7-31-, 1985

Operator's  
Well No. 10088

APPENDIX TO REPORT OF COMPLETION OF WELL WORK  
ON A WELL DRILLED IN SEARCH OF OIL OR GAS

DISCOVERY OF OIL OR INDICATIONS THEREOF

Indicated potential flow before stimulation N/A BOD

Gravity and grade: N/A

DISCOVERY OF GAS OR INDICATIONS THEREOF

Indicated potential flow before stimulation 0 MCFD

Rock pressure: Not psig N/A hour test  
Measurable

RECORD OF STIMULATION

Full description of stimulation:

Zone 1: Big Lime Formation: \_\_\_\_\_

Gelled Acid Frac. 96 bbls. 1/2 28% HCL & 1/2 15% HCL; 63 bbls H<sub>2</sub>O  
Breakdown Hydrostatic psig; Avg. Injection 584 psig; Avg. Injection Rate 33.6 BPM:  
ISIP 0 psig; 15-Min. Shut-In 0 psig. Perforated 4,162 - 4,286

Zone 2: \_\_\_\_\_ Formation: \_\_\_\_\_

Breakdown \_\_\_\_\_ psig. Avg. Injection \_\_\_\_\_ psig, Avg. Injection Rate \_\_\_\_\_ BPM:  
ISIP \_\_\_\_\_ psig, 15-Min. Shut-In \_\_\_\_\_ psig. Perforated \_\_\_\_\_

Zone 3: \_\_\_\_\_ Formation: \_\_\_\_\_

Breakdown \_\_\_\_\_ psig; Avg. Injection \_\_\_\_\_ psig; Avg. Injection Rate \_\_\_\_\_ BPM:  
ISIP \_\_\_\_\_ psig; 15-Min. Shut-In \_\_\_\_\_ psig. Perforated \_\_\_\_\_

Final Production check one: () after stimulation ( ) natural.

Zone 1 Big Lime 202 \_\_\_\_\_

Zone 2 \_\_\_\_\_

Zone 3 \_\_\_\_\_

Final production if gas zones are comingled: 474 MCFD

3 hours tested: \_\_\_\_\_ psig, \_\_\_\_\_ hours tested.

APPENDIX TO REPORT OF COMPLETION OF WELL WORK  
ON A WELL DRILLED IN SEARCH OF OIL OR GAS

DISCOVERY OF OIL OR INDICATIONS THEREOF

Indicated potential flow before stimulation N/A BOD  
Gravity and grade: N/A

DISCOVERY OF GAS OR INDICATIONS THEREOF

Indicated potential flow before stimulation 0 MCFD  
Rock pressure: Not psig N/A hour test  
Measurable

RECORD OF STIMULATION

Full description of stimulation:

Zone 1: Lower Devonian Formation  
75 quality foam frac, 42,500# 20/40, 7,500# 10/20  
672,000 SCF of N<sub>2</sub>  
Perforated 5,148 - 5,562 # Perfs. 67 Perf. Size .375  
Breakdown 4,230 psig. Avg. Injection 4,108 psig.  
Avg. I.R. .75 BPM Init. S.I.P. 1600 psig 15 Min. S.I.P. 1370 psig

Zone 2: Upper Devonian, Berea, Sunbury Formation  
75 quality foam frac, 42,500# 20/40, 7,500# 10/20  
672,000 SCF of N<sub>2</sub>  
Perforated 4,748-5,108 # Perfs. 62 Perf. Size .375  
Breakdown 2,610 psig. Avg. Injection 3,747 psig.  
Avg. I.R. .81 BPM Init. S.I.P. 1390 psig 15 Min. S.I.P. 1240 psig

Zone 3: Weir Formation  
75 quality foam frac, 40,000# 10/20, 500,000 SCF of N<sub>2</sub>  
Perforated 4,510 - 4,618 # Perfs. 66 Perf. Size .375  
Breakdown 2,200 psig. Avg. Injection 3,090 psig.  
Avg. I.R. .100 BPM Init. S.I.P. 1320 psig 15 Min. S.I.P. 1060 psig

Final production ( ) natural ( x ) after stimulation

	BOD	MCFD	Hours Tested	Rock Pressure	Hours Tested
Zone 1:	<u>Lower Devonian</u>	<u>60</u>	<u>3</u>	-----	-----
Zone 2:	<u>Upper Devonian, Berea &amp; Sunbury</u>	<u>60</u>	<u>3</u>	-----	-----
Zone 3:	<u>Weir</u>	-----	-----	-----	-----

Final production if gas zones are comingled: ----- MCFD

----- hours tested: ----- psig. ----- hours tested

## DEVIATION SURVEY

## Results

Depth From	Depth To	Survey
0'	478'	2-1/4°
0'	950'	1-1/2°
0'	1,385'	1-1/2°
0'	1,821'	1-1/4°
0'	2,539'	1°
0'	3,592'	1-3/4°
0'	4,155'	1/4°
0'	5,219'	3°
0'	5,627'	4°

(FOR OFFICE USE ONLY: API Well No. 45 -      -       
 State County Permit

Date: 7-2-, 1984

Operator's  
 Well No. 10088

VIRGINIA OIL AND GAS INSPECTOR  
 DEPARTMENT OF LABOR AND INDUSTRY  
 DIVISION OF MINES  
 219 Wood Avenue  
 Big Stone Gap, Virginia 24219-1799  
 Phone 703-523-0335

WELL PLAT

+ Denotes location of well on United States Topographic Maps, scale 1 to 24,000. Latitude and longitude lines are represented by border lines as shown.

This plat is new X / updated      /

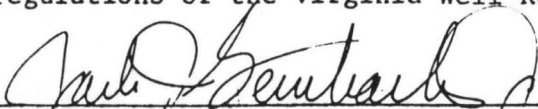
This plat is X / is not      / based on a line coordinate system established for the areas of the well location.

Well operator ANR PRODUCTION COMPANY

Address JACKSON, MISSISSIPPI  
 Farm PENN VIRGINIA RESOURCES CORPORATION  
 Tract 168 Acres 1058.31 Lease No.       
 Elevation 2262.81'  
 Quadrangle APPALACHIA  
 County WISE District RICHMOND  
 Registered Engineer X Registration No. 11439  
 Certified Land Surveyor      Cert. No.       
 File No.      Drawing No.       
 Date 7-2-84 Scale 1" = 400'

Certification of Well Plat

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 of the Virginia Well Review Board.

  
 Registered Engineer or Certified Land Surveyor  
 in Charge

WS-118

9,100'

Latitude 36° 57' 30"

Longitude 82° 45' 00"

EXISTING GAS WELL 10052  
N 45,057.05  
E 54,638.54  
EL. 1856.23'

EXISTING GAS WELL 195  
N 46,175.04  
E 56,858.04

N 27-43-34 W  
2479.21'

N 17-50-22 E  
3479.86'

T-168  
T.C. RUTHERFORD  
1058.31 AC.  
F E E

GAS WELL 10088  
N 42,862.50  
E 55,791.98  
EL. 2262.81'  
P.V.R.C. STA.  
No. 6290

**IMBODEN MINES  
ABANDONED**

STONEGA IMBODEN SEAM MINES ABANDONED