

PENN-VA.
WS-160
NORTON-7 1/2'
SUR. EL. - 1895.88'

API Well No. 45 - 195 - 20795
State County Permit

Date: October-3, 19 85

Operator's
Well No. 10106

API 10/85

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

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 6 day, October Month, 1985.

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 [Signature]
Its Manager, Drilling & Engineering

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

Telephone: (601) 961-6315

FORM 16
APPENDIX A,
SHEET 1, (OBVERSE)

API WELL NO. 45 - 195 - 20795
State County Permit
Date: October 3, 1985
Operator's Well
Name 10106

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

DRILLING CONTRACTOR Clint Hurt and Associates, Inc
ADDRESS P.O. Box 1973, Midland, TX 79702
TELEPHONE _____

GEOLOGICAL TARGET FORMATION Devonian Shale, Weir
DEPTH OF COMPLETED WELL 5470 FEET
DATE DRILLING COMMENCED 7-12-85
DATE DRILLING COMPLETED 7-25-85
DRILLING RIG: ROTARY X / CABLE TOOL _____ /

GEOLOGICAL DATA	Depth		Thickness
	Top	Bottom	

Fresh Water		±80	
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Salt water		Not Known	
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Name	MINING IN AREA	
	Yes	No Mined Out

Coal Seams		None	
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Oil and Gas		Not Known	
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below: The data on depth of strata is based on the source(s) checked

- Applicant's own drilling experience in the area
- 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 underlaid 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>BOTTOM</u>	<u>LENGTH</u>	<u>PERFORATED</u>	
				<u>FROM</u>	<u>TO</u>

Conductor

Casing circulated and cemented in to the surface:

13-3/8"	Surface	40'	40'
10-3/4"	Surface	531'	531'
7"	Surface	3,384'	3,384'

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

7"	Surface	3,384'	3,384'
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Other casing and tubing left in the well:

4-1/2"	Surface	5,436'	5,436'
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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

<u>Packers or bridge plugs:</u>	<u>Kind</u>	<u>Size</u>	<u>Set At</u>
None			

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

SAMPLES AND CUTTINGS

will <u>X</u> /	will not <u> </u> /	be available for examination by a member of the Division of Mineral Resources
will <u>X</u> /	will not <u> </u> /	be furnished the Division of Mineral Resources upon request
will <u> </u> /	will not <u> </u> /	require sacks to be furnished by the Division of Mineral Resources

DRILLER'S LOG

Compiled 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	1216	1216	
	Lee	Sandstone & Shale		1216	2796	1580	
Mississippian	Bluestone	Sandstone & Shale		2796	3004	208	
	Ravenclyff	Sandstone		3004	3095	91	
	Hinton	Sandstone & Shale		3095	3600	505	
	Maxon	Sandstone		3430	3600	170	
	Bluefield	Sandstone, Shale & Limestone		3600	3846	246	
	Greenbrier (Big Lime)	Limestone		3846	4408	562	
	Injun	Sandstone & Shale		-	-	0	
	Weir	Siltstone		4408	4576	168	
	Sunbury	Shale		4576	4737	161	
	Berea	Siltstone		4737	4784	47	
Devonian	Devonian Shale	Shale		4784	5456 (est.)	672 (est.)	
	Decollement			5150	5262	112	
Silurian	Corniferous	Limestone		5456 (est.)			

(Complete on supplemental sheets as necessary.)

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

RECORD OF STIMULATION
Measurable

Full description of stimulation:

Zone 1: Lower Devonian Formation
75 quality foam frac, 42,500#s 20/40, 7,500#s 10/20;
667,000 SCF of N₂
Perforated 5064' - 5,404' # Perfs. 69 Perf. Size .375
Breakdown 4200 psig. Avg. Injection 4278 psig.
Avg. I.R. .71 BPM Init. S.I.P. 2100 psig 15 Min. S.I.P. 1940 psig

Zone 2: Upper Devonian, Berea, Sunbury Formation
75 quality foam frac, 42,500 #s 20/40, 7,500#s 10/20; 984,000
SCF of N₂
Perforated 4,700' - 4,984 # Perfs. 66 Perf. Size .375
Breakdown 3650 psig. Avg. Injection 4324 psig.
Avg. I.R. 44.5 BPM Init. S.I.P. 2850 psig 15 Min. S.I.P. 2750 psig

Zone 3: Weir Formation
75 quality foam frac; 40,000#s 10/20; 693,000 SCF of N₂
Perforated 4,506' - 4,586' # Perfs. 66 Perf. Size .375
Breakdown 3,750 psig. Avg. Injection 4,138 psig.
Avg. I.R. .73.2 BPM Init. S.I.P. 2,480 psig 15 Min. S.I.P. 2,270 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>		
<u>Upper Devonian</u>					
Zone 2: <u>Berea, Sunbury</u>		<u>60</u>	<u>3</u>		
Zone 3: <u>Weir</u>		<u>174</u>	<u>3</u>		

Final production if gas zones are comingled: 189 MCFD

3 hours tested: _____ psig. _____ hours tested

DEVIATION SURVEY

Results

Depth From	Depth To	Survey
0'	360'	1-1/2°
0'	756'	1-1/4°
0'	1,500'	2-3/4°
0'	2,000'	3°
0'	2,501'	3-1/2°
0'	2,997'	3-3/4°
0'	4,001'	4°
0'	5,000'	3-1/2°
0'	5,470'	3-1/2°

NO-46

OIL AND GAS WELL
SUMMARY REPORT

API No. 45-195-20795-00-03 VDMR Well Rep. No. _____

DMQ File No. WS-160

Operator ANR PRODUCTION COMPANY

Farm PENN-VA

Co. Well No. 10106

County WISE Quadrangle NORTON 7 1/2'

Location (UTM) N4,087,030; E347,120 UTM Zone 17

(Lat. and Long.) _____

Field _____ Province APPALACHIAN PLATEAUS

Elev. (specify) 1895.88'GR. TD 5470 Form. at TD CORNIFEROUS

INITIAL FLOW NONE Age DEVONIAN

Date compl. or abandoned OCTOBER 6, 1985

Result GAS WELL

Gas Shows _____

Gas Pays _____

Main Production _____ Prod. Form. DEVONIAN, SUNBURY; BEREA, WEIR

FINAL FLOW ON 189,000 CU. FT. Age DEVONIAN; MISSISSIPPIAN

Treatment: LOWER DEVONIAN-75 QUALITY FOAM ERAC, 42,500 POUNDS OF 20/40 SAND, 7500

POUNDS OF 10/20 SAND, 667,000 SCF OF N2. UPPER DEVONIAN, BEREA, SUNBURY-75

QUALITY FOAM ERAC, 42,500 POUNDS OF 20/40 SAND, 7500 POUNDS OF 10/20 SAND, 984,000

SCF OF N2, WEIR-75 QUALITY FOAM ERAC, 40,000 POUNDS OF 10/20 SAND, 693,000 SCF OF N2.

Initial Production _____

Oil shows _____

Water FW YES at 80' at _____ at _____

SW _____ at _____ at _____ at _____

Coal _____

Plat _____ Plotted _____ Completion Report X

Drillers Log X Geologic Log _____

Samples _____ Interval Sheet _____

Sample Interval _____

Remarks _____

Geophysical Logs S.P. _____ Res _____ Gamma _____ Neutron _____

Density _____ Sonic _____ Other _____

Stratigraphic Data Source

ROSWELL K. BARRANCO

Formation	Top	Datum (Subsea)	Thickness
WISE AND NORTON	0	+1895.88	1216
LEE	1216	+ 679.88	1580
BLUESTONE	2796	- 900.12	208
RAVENCLIFF	3004	-1108.23	91
HINTON	3095	-1199.12	505
MAXON	3430	-1534.12	170
BLUEFIELD	3600	-1704.12	246
GREENBRIER	3846	-1950.12	562
WEIR	4408	-2512.12	168
SUNBURY	4576	-2680.12	161
BEREA	4737	-2841.12	47
Remarks DEVONIAN SHALE	4784	-2888.12	672
DECOLLEMENT	5150		112
CORNIFEROUS	5456	-3560.12	14

References

Released to Open File: Completion JANUARY 13, 1986
 Samples NONE

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

WS-160

Serial Location

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

Date: 8-14, 1985

Operator's Well No. 10106

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 / updated X /

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

Well operator ANR PRODUCTION COMPANY

Address JACKSON, MISSISSIPPI
Farm PENN VIRGINIA RESOURCES CORPORATION
Tract 187 Acres 278.32 Lease No.
Elevation 1895.90'
Quadrangle NORTON
County WISE District RICHMOND
Registered Engineer X Registration No. 11439
Certified Land Surveyor Cert. No.
File No. Drawing No.
Date 4-24-85 Scale 1" = 400'

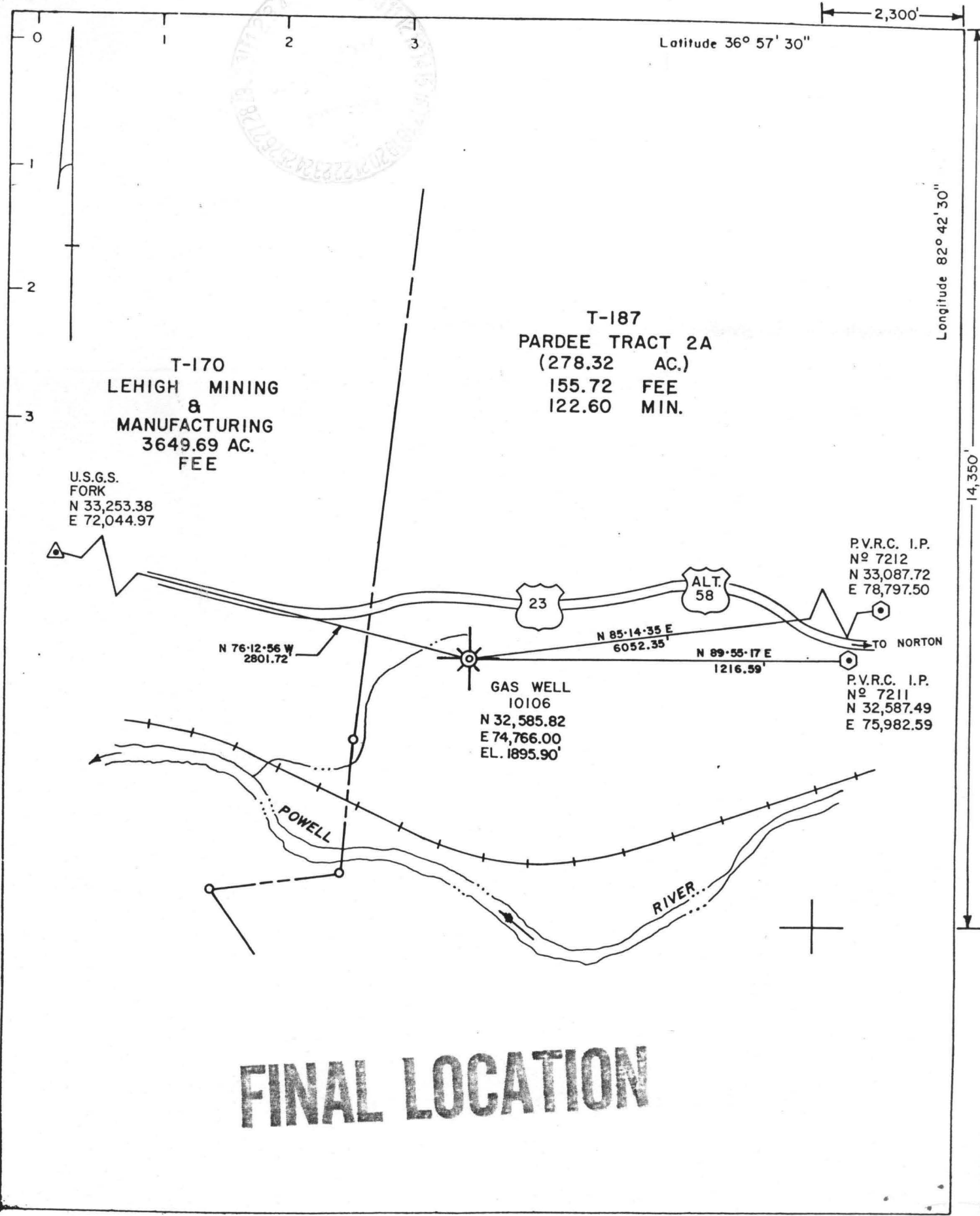
Certification of Well Plat

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.

Jack J. Semler
Registered Engineer or Certified Land Surveyor
in Charge

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FORM 5 (Draft 07-09-82)



FINAL LOCATION