

OIL AND GAS WELL  
SUMMARY REPORT

API No. 45-027-20797 VDMR Well Rep. No. \_\_\_\_\_

DMQ File No. BV-219

Operator Ashland Exploration Inc.

Farm Bitter

Co. Well No. 16-V

County Buchanan Quadrangle Patterson-7 1/2'

Location (UTM) N4,130,230 ; E 418,420 UTM Zone 17

(Lat. and Long.) \_\_\_\_\_

Field \_\_\_\_\_ Province Appalachian Plateaus

Elev. (specify) 2106.20 GR. TD 6962 Form. at TD Onondaga

Initial Flow - None Age Devonian

Date compl. or abandoned October 29, 1985

Result Gas well

Gas Shows 3871-4340, 4975-5027, 5027-6904

Gas Pays \_\_\_\_\_

Main Production \_\_\_\_\_ Prod. Form. Devonian; Berea

Final Flow - 492,000 cu.ft. Age Devonian; Mississippian

Treatment: Lower Devonian shale - N2 frac. using 500 gallons of 2890

HCL and 1750,00 SCF of N2. Upper Devonian shale - N2 frac. using 500 gallons of

2890 HCL and 2,000,000 SCF of N2. Berea - 75 quality foam frac using 500 gallons

of 1590 HCL, 30,000 pounds of 20/40 sand, 486,000 SCF of N2, 190 barrels of

Initial Production TL & FW, 112 barrels of TSLF.

Oil shows \_\_\_\_\_

Water FW \_\_\_\_\_ at \_\_\_\_\_ at \_\_\_\_\_ at \_\_\_\_\_

SW Yes at 1796' at 2284' 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 X Sonic \_\_\_\_\_ Other \_\_\_\_\_

Formation.	Top	Datum (Subsea)	Thickness
Sand and Shale	0	+2106.20	1796
Salt sand	1796	+310.20	1037
Arns Limestone	2833	-726.80	301
Upper Maxton	3134	-1027.80	195
Middle Maxton	3329	-1222.8	270
Lower Maxton	3599	-1492.80	126
Little Lime	3725	-1618.80	90
Pencil Coal Shale	3815	-1708.80	46
Big Lime	3961	-1754.80	<del>46</del> 1090
Coffee Shale	4951	-2844.80	24
Blea	4975	-2868.80	52
Remarks Devonian Shale	5027	-2920.80	1877
Mondega	6904	-4797.80	58

## References

Released to Open File: Completion

February 19, 1986

Samples

None

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

Formation.	Top	Datum (Subsea)	Thickness
Sand and Shale	0	+2106.20	1796
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Bevil Coal Shale	3815	-1708.80	46
Big Lime	3961	-1754.80	<del>44</del> 1090
Coffee Shale	4951	-2844.80	24
Bleda	4975	-2868.80	52
Remarks Devonian Shale	5027	-2920.80	1877
Mondega	6904	-4797.80	58

## References

Released to Open File: Completion

February 19, 1986

Samples

None

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

Date: Oct. 29, 1985

Operator's Well No. 16-V

ASHLAND EXPLORATION, INC  
RITTER  
16-V  
BU-219  
EL. - 2106.20  
PATTERSON-7 1/2'  
45-027-20797

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 Grundy District, Buchanan County, Virginia on 29 day, October 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    / 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: ASHLAND EXPLORATION, INC.

By Derek S. Hina *Derek S. Hina*  
Its Engineering Technician

Address: P. O. Box 391, Ashland, KY 41114

Telephone: (606) 329-4191

FORM 16  
APPENDIX A,  
SHEET 1, (OBVERSE)

16-V  
API WELL NO. 45 - 027 - 20797  
State County Permit  
Date: November 14, 1985  
Operator's Well  
Name W. M. Ritter #16-V

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

DRILLING CONTRACTOR Ray Resources, Inc.  
ADDRESS 2101 Washington St., East Charleston, WV 25311  
TELEPHONE 304-344-4666

GEOLOGICAL TARGET FORMATION Devonian Shale  
DEPTH OF COMPLETED WELL 6962 FEET  
DATE DRILLING COMMENCED 9/10/85  
DATE DRILLING COMPLETED 9/25/85  
DRILLING RIG: ROTARY X / CABLE TOOL        /

GEOLOGICAL DATA      Depth      Thickness  
                            Top      Bottom

Fresh Water

Salt water              1796      2284      488

Coal Seams                              Name              MINING IN AREA  
  Yes    No    Mined    Out  
  X

Oil    Formation

Gas                      3871      4340      469      Formation      Big Lime  
                            4975      5027      52                      Berea  
                            5027      6904      1877                      Devonian Shale

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

- Applicant's own drilling experience in the area
- Information supplied by the coal operator in the area
- Information already in possession of the Inspector
- X   Other (as follows) From geophysical logs submitted w/this report

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

Size	Top	Bottom	Length	Perforated	
				From	To
Conductor 16"	0'	26'	26'	- cmt by hand w/15 sks Cl "A"	

Casing circulated and cemented in to the surface:

11 3/4"	0'	500'	500'		
Cmt w/240 sks Cl "A"					

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

8 5/8"	0'	2412'	2412'		
Cmt w/550 sks Cl "A"					

Other casing and tubing left in the well:

4 1/2"	0'	6936'	6936'	6760-6780'
Cmt w/375 sks Cl "A"				6322-6342'
2 3/8"	0'	6787'	6787'	5008-5018'

Liners left in well, under Code of Virginia § 45.1-336 or otherwise:

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

Packers or bridge plugs:	Kind	Size	Set At
	R-4	2 3/8" x 4 1/2"	5073'

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

SAMPLES AND CUTTINGS

will ___ /	will not <u>X</u> /	be available for examination by a member of the Virginia Geological Survey;
will ___ /	will not <u>X</u> /	be furnished the Virginia Geological Survey upon request;
will ___ /	will not <u>X</u> /	require sacks to be furnished by the Survey.

DRILLER'S LOG

Compiled by Derek S. Hina

<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>		
		Sand & Shale		0	1796	1796'	(includes all coal & fresh wtr horizons)
	Salt Sand	Sand		1796	2284	488	
		Shale		2284	2833	549	
	Avis LS	Lime		2833	2888	55	
		Shale		2888	3134	246	
	U. Maxton	Sand		3134	3198	64	
		Shale		3198	3329	131	
	M. Maxton	Sand		3329	3390	61	
		Shale		3390	3599	209	
	L. Maxton	Sand		3599	3650	51	
		Shale		3650	3725	75	
	Little Lime	Lime		3725	3815	90	
	Pencil Cave	Shale		3815	3861	46	
	Big Lime	Lime		3861	4340	479	
		Shale		4340	4951	611	
	Coffee Sh.	Shale		4951	4975	24	
	Berea	Sand		4975	5027	52	
	D. Shale	Shale		5027	6904	1877	
	Onondaga	Lime		6904	TD	58	
				DTD	6962		
				LTD	6956		

(Complete on supplemental sheets as necessary.)

Date: October 29, 1985

Operator's  
Well No. 16-V

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

DRILLING CONTRACTOR Ray Resources

Address: 2101 East Washington St., Charleston, WV 25311

Telephone: 304-344-4666

GEOLOGICAL TARGET FORMATION Devonian Shale

DEPTH OF COMPLETED WELL 6962 feet

DRILLING RIG Rotary X / Cable tool /

GEOLOGICAL DATA	Depth		Thickness
	Top	Bottom	

Fresh water:

Salt water:	1796'	2284'	488'
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Coal seams:

MINING IN AREA?

Name	MINING IN AREA?		
	Yes	No	Mined Out
		X	

Oil and gas:

	Depth			Thickness	Name
	3871'	4340'	469'		Big Lime
	4975'	5027'	52'		Berea
	5027'	6904'	1877'		Devonian Shale

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

- Applicant's own drilling experience in the area
- Information supplied by the coal operator in the area
- Information already in the possession of the Inspector

As follows: From geophysical logs submitted with this report



## OTHER GENERAL INFORMATION

An electric log survey was \_\_\_ / was not x / 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 \_\_\_ / did not x / 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. (Attachment I)

A continuous survey was \_\_\_ / was not \_\_\_ / 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.

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 0 BOD  
Gravity and grade: ---

DISCOVERY OF GAS OR INDICATIONS THEREOF

Indicated potential flow before stimulation TSTM MCFD  
Rock pressure: --- psig --- hour test

RECORD OF STIMULATION

Full description of stimulation:

Zone 1: Lower Devonian Shale Formation

N<sub>2</sub> frac using 500 gal 28% HCl & 1,750,000 SCF N<sub>2</sub>

Perforated 6700-6780 # Perfs. 30H Perf. Size 0.38

Breakdown 4150 psig. Avg. Injection 4170 psig.

Avg. I.R. --- BPM Init. S.I.P. 2930 psig 15 Min. S.I.P. 2800 psig  
60,000 SCF N<sub>2</sub>/M

Zone 2: Upper Devonian Shale Formation

N<sub>2</sub> frac using 500 gal 28% HCl & 2,000,000 SCF N<sub>2</sub>

Perforated 6322-6342 # Perfs. 30H Perf. Size 0.38

Breakdown 3300 psig. Avg. Injection 4000 psig.

Avg. I.R. --- BPM Init. S.I.P. 2800 psig 15 Min. S.I.P. 2100 psig  
60,000 SCF N<sub>2</sub>/M

Zone 3: Berea Formation

75 Q foam frac using 500 gal 15% HCl, 30,000# 20/40 sand, 486,000 SCF N<sub>2</sub>  
190 bbl. TL&FW, 119 bbl. TSLF

Perforated 5008-5018 # Perfs. 20H Perf. Size 0.38

Breakdown 2300 psig. Avg. Injection 2400 psig.

Avg. I.R. 20 BPM Init. S.I.P. 1900 psig 15 Min. S.I.P. 1700 psig  
Foam

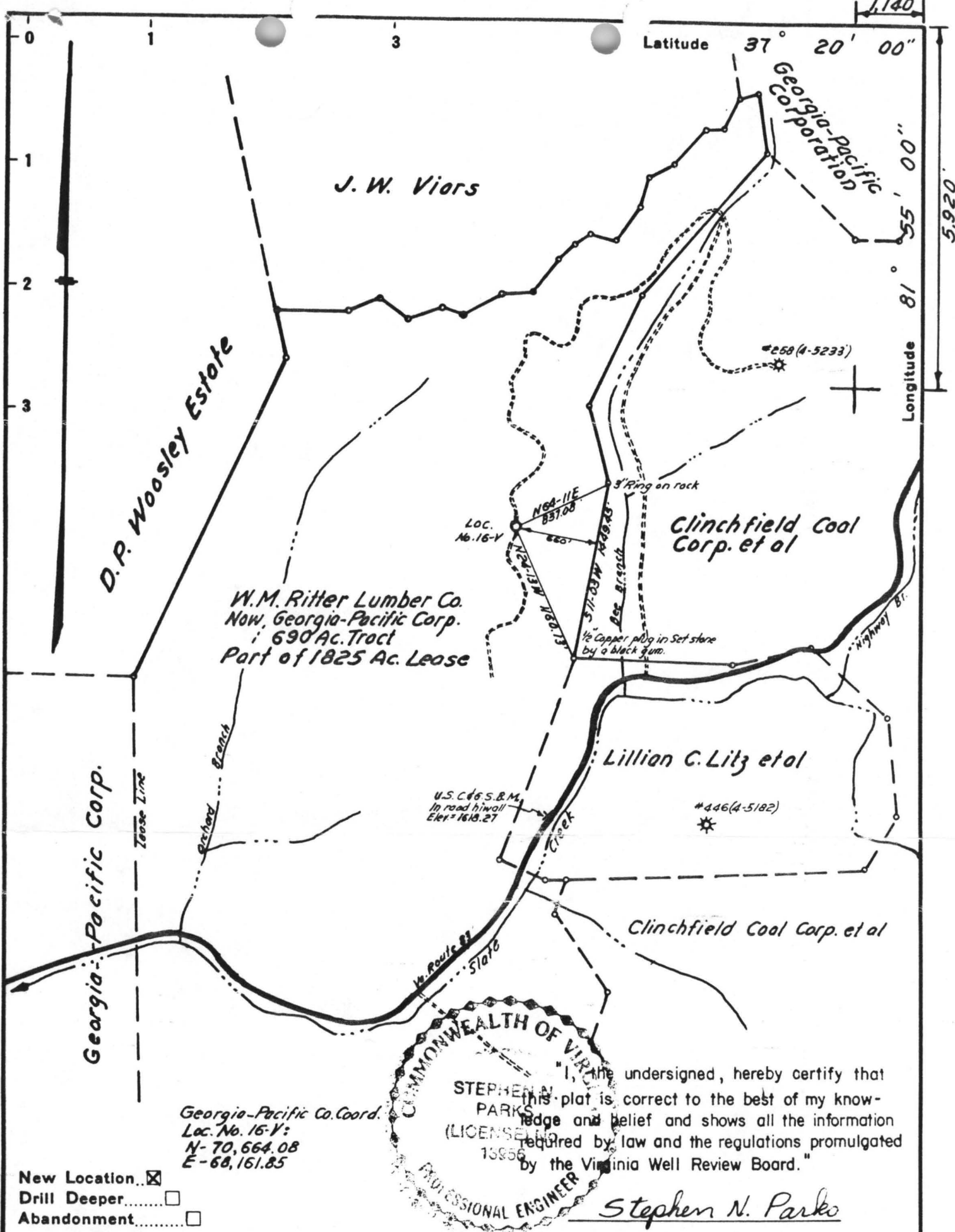
Final production ( ) natural (X) after stimulation

	BOD	MCFD	Hours Tested	Rock Pressure	Hours Tested
Zone 1:	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
Zone 2:	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>	<u>---</u>
Zone 3:	<u>---</u>	<u>188</u>	<u>3</u>	<u>740 psig</u>	<u>120</u>

Final production if gas zones are comingled: 492 MCFD

3 hours tested: 1620 psig. 120 hours tested

\*NOTE: Zones #1 & #2 are comingled & Zone #3 is separated  
by a R-4 pkr on 2 3/8" tbg @ 5073' KB



Georgia-Pacific Co. Coord.  
 Loc. No. 16-V:  
 N-70,664.08  
 E-68,161.85

New Location   
 Drill Deeper   
 Abandonment



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 promulgated by the Virginia Well Review Board."

*Stephen N. Parks*

Company	<i>Ashland Exploration, Inc.</i>
Address	<i>Box 391, Ashland, Ky. 41114</i>
Farm	<i>Georgia-Pacific Corporation</i>
Tract	Acres <i>1825</i> Lease No. <i>5693</i>
Well (Farm) No.	<i>16-V</i> Serial No. <i>104731</i>
Elevation (Spirit Level)	<i>2106.2</i>
Quadrangle	<i>Patterson</i>
County	<i>Buchanan</i> District <i>Grundy</i>
Engineer	<i>Stephen N. Parks</i>
Engineer's Registration No.	<i>13956</i>
File No.	_____ Drawing No. _____
Date	<i>June 10, 1985</i> Scale <i>1"=1,000'</i>

COMMONWEALTH OF VIRGINIA  
 DEPARTMENT OF MINES, MINERALS & ENERGY  
 DIVISION OF MINES & QUARRIES  
 OIL AND GAS SECTION  
 ABINGDON  
**WELL LOCATION MAP**  
 FILE NO. *BU-219*

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

- Denotes one inch spaces on border line of original tracing.