

New Location...   
 Drill Deeper.....   
 Abandonment.....

CABOT OIL & GAS CORP. OF W.VA.  
 Company P.O. Box 454-Glasgow, WVa. 25086  
 Address Surface: H.F. Brotherton  
 Farm H.F. Brotherton Hrs. Unit NW 84  
 Tract \_\_\_\_\_ Acres 108 Lease No. 3-1091  
 Well (Farm) No. 1 Serial No. 1494  
 Elevation (Spirit Level) 939.1  
 Quadrangle Henna NW  
 County Jackson District Ripley  
 Engineer Ray Boston  
 Engineer's Registration No. 3204  
 File No. \_\_\_\_\_ Drawing No. \_\_\_\_\_  
 Date 12-12-58 Scale 1" = 1320'

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION  
 CHARLESTON

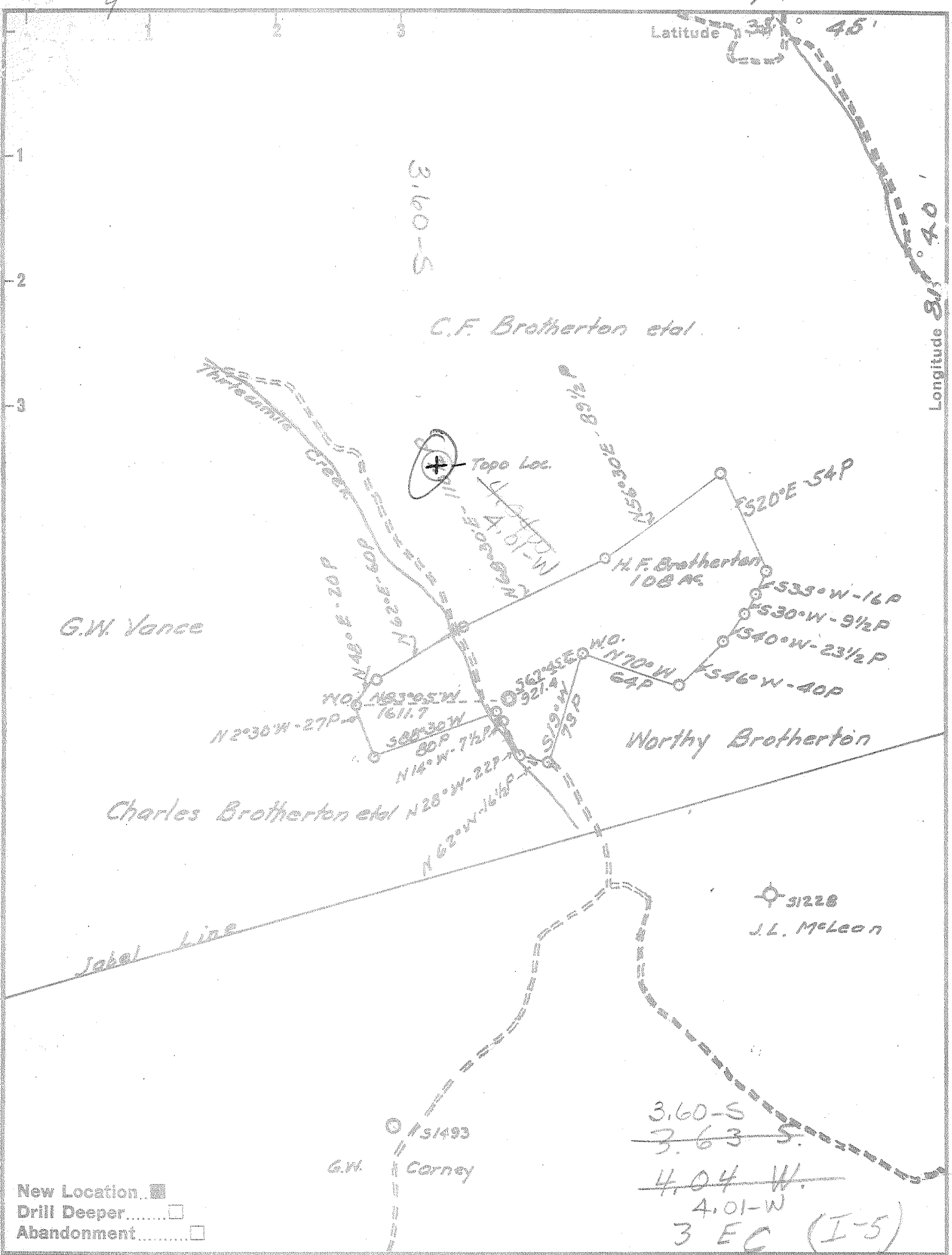
WELL LOCATION MAP

FILE NO. JAC-990 - Frac.

+ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.

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

SEP 16 1959



New Location    
 Drill Deeper    
 Abandonment

3.60-S  
~~3.63 S.~~  
~~4.04 W.~~  
 4.01-W  
 3 EC (I-5)

Company Godfrey L. Cabot Inc.  
 Address Box 1473 Charleston W. Va  
 Farm H.F. Brotherton Hrs Unit W. Va 88  
 Tract \_\_\_\_\_ Acres 108 Lease No. 3-1091  
 Well (Farm) No. 1 Serial No. 1494  
 Elevation (Spirit Level) 939.1  
 Quadrangle Hennas NW  
 County Jackson District Ripley  
 Engineer Ray Boster  
 Engineer's Registration No. 3204  
 File No. \_\_\_\_\_ Drawing No. \_\_\_\_\_  
 Date 12-12-58 Scale 1" = 1320'

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION  
 CHARLESTON  
**WELL LOCATION MAP**  
 FILE NO. JAC-990

+ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.  
 - Denotes one inch spaces on border line of original tracing.

No Samples 6-6 1972 Deep Well ✓

**RECEIVED**  
 NOV 1 - 1985



DIVISION OF OIL & GAS  
**DEPT. OF ENERGY** of West Virginia  
 Department of Mines  
 Oil and Gas Division

Date October 30, 1985  
 Operator's  
 Well No. #1  
 Farm H. F. Brotherton  
 API No. 47 - 035 - 0990 FRAC

FD-35  
 (Rev 8-61)

**WELL OPERATOR'S REPORT  
 OF  
 DRILLING, FRACTURING AND/OR STIMULATING, OR PHYSICAL CHANGE**

WELL TYPE: Oil      / Gas x / Liquid Injection      / Waste Disposal      /  
 (If "Gas," Production x / Underground Storage      / Deep      / Shallow x /)

LOCATION: Elevation: 939.1 Watershed Thirteen Mile Creek  
 District: Ripley County Jackson Quadrangle Kenna 7 1/2'

COMPANY Cabot Oil & Gas Corp. of WV 149  
 ADDRESS P.O. Box 454, Glasgow, WV 25086  
 DESIGNATED AGENT Robert E. Horrell  
 ADDRESS P.O. Box 454, Glasgow, WV 25086  
 SURFACE OWNER H. F. Brotherton  
c/o Lucy Lantz, RFD 1, Box 90C'  
 ADDRESS Given, WV 25245  
 MINERAL RIGHTS OWNER Gary Lee Carney, Rt. 1,  
Box 265, Given, WV 25245  
Lucy Lantz, RFD 1, Box 90C, Given, WV 25245  
 ADDRESS Clay Brotherton, Rt. 1, Box 90C, Given, WV  
 OIL AND GAS INSPECTOR FOR THIS WORK Jerry  
Tephabock ADDRESS Ripley, WV 25271  
 PERMIT ISSUED August 13, 1985  
 WORKOVER COMMENCED 9/9/85  
 WORKOVER COMPLETED 10/9/85  
 IF APPLICABLE: **PLUGGING OF DRY HOLE ON  
 CONTINUOUS PROGRESSION FROM DRILLING OR  
 REWORKING. VERBAL PERMISSION OBTAINED  
 ON**

Casing Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"			
9 5/8			
8 5/8			
7	pulled	3785'	squeezed from 4430'-4068'
5 1/2	pulled	4295'	
4 1/2			
3 1/2	ran	2725.95'	130 sks
2	pulled	5090'	
1 1/2 <del>runners</del> used	ran	2636.95'	w/seating nipple on bott

GEOLOGICAL TARGET FORMATION Huron Shale Depth 4104-4289 feet  
 Depth of completed well PBTD = 2930 feet Rotary      / Cable Tools       
 Water strata depth: Fresh 80,855 feet; Salt      feet  
 Coal seam depths: NR Is coal being mined in the area?     

OPEN FLOW DATA  
 Producing formation Berea Pay zone depth 2632-45' feet  
 Gas: Initial open flow      Mcf/d Oil: Initial open flow      Bbl/d  
 4 hr & 6 hr Final open flow 275 Mcf/d Final open flow      Bbl/d  
 Time of open flow between initial and final tests      hours  
 Static rock pressure 600 psig (surface measurement) after 48 hours shut in  
 (If applicable due to multiple completion--)  
 Second producing formation      Pay zone depth      feet  
 Gas: Initial open flow      Mcf/d Oil: Initial open flow      Bbl/d  
 Final open flow      Mcf/d Oil: Final open flow      Bbl/d  
 Time of open flow between initial and final tests      hours  
 Static rock pressure      psig (surface measurement) after      hours shut in

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.

9/09/85 - MIRU Pool Well Service. Could not pull 2-3/8" tubing. Ran Free-point. LTD 5105'. Tbg free @ 5090'. Cut tbg & pulled. R/U Young Wireline, ran Free-point on 5 1/2" csg. Stuck @ 4325'. Ran GR, CBL. TOC 4306'. Good Bond. Set BP @ 4500' to plug back Oriskany, perf'd to squeeze @ 4430'. Set cmt retainer @ 4420'. R/U B-J, squeezed with 100 sks 50/50 poz, 10% salt, 5#/sk gilsonite, .75% friction reducer. Run 2-7/8" w/ Tri-State mechanical cutter (137 jts) to 4295'. Cut 5 1/2". Pulled 5 1/2" casing. Run GR/CBL & Sonic Seismogram. Ratty bond to 4208'. Perf 7" at 4200'. R/U Halliburton. Squeezed 100 sks 50/50 poz, 10% salt, 5# gilsonite/sk, 3/4 of 1% CFR-2. Could only displace plug to 3750'. Drld cmt to 4205'. TOC 4145'. 100% bond. Perf to squeeze 2" (8 holes) 4099'-4101'. R/U B-J. Pumped 24 bbls cmt, 50/50 poz, 2% CaCl<sub>2</sub>. Drld cmt from 3860'-4100'. R/U McCullough. Ran cmt bond log & Seismogram. Top of cmt 4068', 100% bond. Perf Shale 4104' - 4289', 4101', 07', 12', 32', 62', 68', 81', 4200', 08', 44', 48', 50', 52', 56', 58', 61', 70', 81', 89' (19 holes). 9/27/85 - Found hole full of salt water at 1200'. Swabbed down to 2500', 30 min fluid level 1800'. R/U McCullough ran noise log, found fluid coming in at 4280', 4200' & 4132'. Decided

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
					to abandon Huron Shale. Set BP at 4080'. Dumped 2 sks Cal-seal on BP. Run Tri-State mechanical cutter. Cut 7" at 3785'. Pulled 7" casing. R/U Young Wireline, ran G/R, Caliper, Comp Density logs. Set BP @ 2930'. Dump 2 sks Cal-seal. Ran 102 jts 3 1/2" 10RD 9.2# tbg, set @ 2725.95' GL. R/U B-J, cmt'd w/130 sks Thixotropic. Ran GR, CBL & Sonic Seismogram. LTD 2709'. TOC 2447', 100% bond. Perf Berea 2632'-2645' (13 holes). R/U B-J, pumped 500 gals 15% HCL. B/D Berea @ 2260 psi. ISIP 1500 psi.. Treated w/60,000 # 20/40 sand, max 2#/gal. AIR 12 BPM 75 Q foam, 3 BPM H <sub>2</sub> O w/5000 Scf/min N <sub>2</sub> . ATP 2300 psi. T/F 231 bbls, S/L 183 bbls total N <sub>2</sub> 385,000 Scf. ISIP 2100 psi, 15 min 1910 psi, released thru 1/4" choke. Ran 79 jts & 2 subs 1 1/2" 2.75# 10RD tbg set @ 2636.95' w/ seating nipple on bottom. Tstd 10/10/85. SICP 600 psi. SITP 570 psi. Berea. 4hr O/F. 44/10 H <sub>2</sub> O thru 2" = 275 Mcf/d. 6 hr O/F 44/10 H <sub>2</sub> O thru 2" = 275 Mcf/d.
			PBTD	2930'	Plugged back Oriskany and Huron Shale
					See attached original well record

(Attach separate sheets as necessary)

Cabot Oil & Gas Corp. of WV  
Well Operator  
By: Robert E. Harrell District Production Superintendent  
Date: October 30, 1985

Note: Regulation 2.02(i) provides as follows:  
"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including



STATE OF WEST VIRGINIA  
DEPARTMENT OF MINES  
OIL AND GAS DIVISION

Quadrangle Kenna

Permit No. JAG-990

WELL RECORD

Oil or Gas Well GAS  
(KIND)

Company Godfrey L. Cabot, Inc.  
Address Charleston, W. Va.  
Farm H. F. Brotherton Acres 108  
Location (waters) \_\_\_\_\_  
Well No. 1, Serial 1494 Elev. 939  
District Ripley County Jackson  
The surface of tract is owned in fee by \_\_\_\_\_  
Address \_\_\_\_\_  
Mineral rights are owned by H. F. Brotherton Hrs.  
Address Given, W. Va.  
Drilling commenced December 29, 1958  
Drilling completed January 9, 1959  
Date Shot \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
With Not shot.  
Open Flow /10ths Water in \_\_\_\_\_ Inch  
/10ths Merc. in \_\_\_\_\_ Inch  
Volume 1,750 M. \_\_\_\_\_ Cu. Ft.  
Rock Pressure 520 lbs. 15 hrs.  
Oil \_\_\_\_\_ bbls., 1st 24 hrs.  
WELL ACIDIZED \_\_\_\_\_  
WELL FRACTURED \_\_\_\_\_

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16	20	20	Kind of Packer _____
18	198	198	Anchor
10	1234	1234	Size of <u>8-5/8"</u>
8 1/4	1731	1731	
6 1/2			Depth set _____
5 3/16			
3			Perf. top <u>1725</u>
2			Perf. bottom <u>1729</u>
Liners Used			Perf. top _____
			Perf. bottom _____

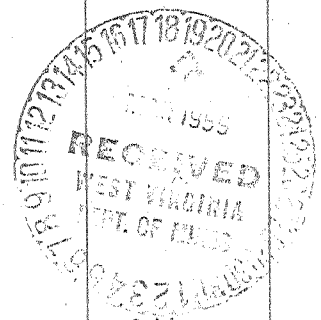
CASING CEMENTED \_\_\_\_\_ SIZE \_\_\_\_\_ No. Ft. \_\_\_\_\_ Date \_\_\_\_\_  
COAL WAS ENCOUNTERED AT \_\_\_\_\_ FEET \_\_\_\_\_ INCHES  
\_\_\_\_\_ FEET \_\_\_\_\_ INCHES FEET \_\_\_\_\_ INCHES  
\_\_\_\_\_ FEET \_\_\_\_\_ INCHES FEET \_\_\_\_\_ INCHES

RESULT AFTER TREATMENT

ROCK PRESSURE AFTER TREATMENT

Fresh Water 80', 855' Feet Salt Water 1235' Feet

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Red Rock			0	80	Water	80	1/2 blr./hr.
Shale			80	147			
Red Rock			147	176			
Shale			176	200			
Sand			200	230			
Slate & Shell			230	241			
Sand			241	267			
Red Rock			267	325			
Slate & Shell			325	356			
Red Rock			356	387			
Slate & Shell			387	397			
Red Rock			397	500			
Slate & Shell			500	518			
Red Rock			518	605			
Slate & Shell			605	700			
Red Rock			700	798			
Sand			798	831			
Slate & Shell			831	838			
Red Rock			838	900	Water	855	7 blrs. in 24 hrs.
Shale			900	1040			
Red Rock			1040	1086			
Slate & Shell			1086	1098			
Sand			1098	1132			
Shale			1132	1180			
Sand			1180	1250	S. Water	1235	1/2 blr./hr.
Slate & Shell			1250	1320	Oil	1320	Show.
Sand			1320	1388			
Slate & Shell			1388	1410			
Sand			1410	1496			
Slate & Shell			1496	1724			
Sand (Maxton)			1724	(over) 1733	Gas	1727-30	1,750 Mcf
TOTAL DEPTH				1733			





STATE OF WEST VIRGINIA  
DEPARTMENT OF MINES  
OIL AND GAS DIVISION  
Deepening  
**WELL RECORD**

Quadrangle Kenna

Permit No. Jac-990 D

Oil or Gas Well Gas  
(KIND)

Company Cabot Corporation  
Address Charleston, West Virginia  
Farm H. F. Brotherton Acres 108  
Location (waters) \_\_\_\_\_  
Well No. 1, Ser. 1494 Elev. 939  
District Ripley County Jackson  
The surface of tract is owned in fee by \_\_\_\_\_  
Address \_\_\_\_\_  
Mineral rights are owned by H. F. Brotherton, et al  
Address Given, W. Va.  
Drilling commenced 9-22-60  
Drilling completed 1-10-61  
Date Shot \_\_\_\_\_ From \_\_\_\_\_ To \_\_\_\_\_  
With \_\_\_\_\_  
Open Flow /10ths Water in \_\_\_\_\_ Inch  
/10ths Merc. in \_\_\_\_\_ Inch  
Volume 516,000 Cu. Ft.  
Rock Pressure 1470 lbs. -- hrs.  
Oil \_\_\_\_\_ bbls., 1st 24 hrs.  
WELL ACIDIZED \_\_\_\_\_

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			Kind of Packer <u>B.H.</u>
16			
13			
10			Size of <u>8"</u>
8 1/4	2281	2281	
6 1/2	5039	5039	Depth set _____
5 1/2	5069	5069	
3			Perf. top _____
2			Perf. bottom _____
Liners Used			Perf. top _____
			Perf. bottom _____

CASING CEMENTED 7" with 75 sacks  
SIZE No. Ft. Date  
5-1/2" with 14 sacks  
COAL WAS ENCOUNTERED AT \_\_\_\_\_ FEET \_\_\_\_\_ INCHES  
\_\_\_\_\_ FEET \_\_\_\_\_ INCHES  
\_\_\_\_\_ FEET \_\_\_\_\_ INCHES

WELL FRACTURED 20,000 gals. water and 25,000# sand

RESULT AFTER TREATMENT Production: 900 M - 90# line pr.

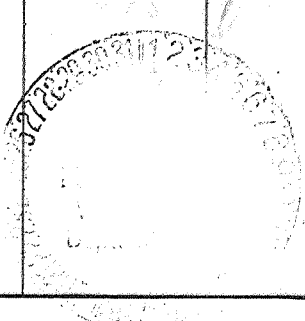
ROCK PRESSURE AFTER TREATMENT

Fresh Water 1763 Feet Salt Water \_\_\_\_\_ Feet

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Sand			1724	1963	Water	1763-1778;	hole full
Lime			1963	2142			
Sand			2142	2266			
Shale			2266	2274			
Lime			2274	2362			
Slate & Shell			2362	2630			
Berea Shell			2630	2645			Gas 30 Mcf
Slate & Shell	<i>up. boundary</i>		2645	3834			
Brown Shale	<i>low horizon</i>		3834	3891			
Slate & Shell			3891	4094			
Brown Shale			4094	4381	Gas	4242-4254;	52 Mcf
Slate & Shell			4381	4405			
Shale			4405	4780			
Brown Shale	<i>Rhines</i>		4780	4894			
Slate & Shell	<i>Some of some</i>		4894	4912			
Brown Shale	<i>Genesee</i>		4912	4978			
Shale	<b>Black - MARCELLUS</b>		4978	5013			(Berea and Brown shale gas decreased to 32Mc)
✓Corniferous	<u>463</u>		5013	5117			516 Mcf
✓Oriskany			5117		Gas	5127-5130;	
Total Depth			5133	5133			

Depth 5133  
Depth 1733  
D.D. footage 3400

475



Deep Well



1) Date: August 13, 19 85  
 2) Operator's Well No. H.F. Brotherton #1  
 3) API Well No. 47 035 0990 Frac  
 State County Permit

**RECEIVED**  
**AUG 15 1985**

STATE OF WEST VIRGINIA  
 DIVISION OF OIL & GAS DEPARTMENT OF MINES, OIL AND GAS DIVISION  
 DEPARTMENT OF ENERGY APPLICATION FOR A WELL WORK PERMIT

- 4) WELL TYPE: A Oil \_\_\_\_\_ / Gas X /  
 B (If "Gas", Production X / Underground storage \_\_\_\_\_ / Deep \_\_\_\_\_ / Shallow X /)
- 5) LOCATION: Elevation: 939.1 Watershed: Thirteen Mile Creek  
 District: Ripley County: Jackson Quadrangle: Kenna 7 1/2'
- 6) WELL OPERATOR Cabot Oil & Gas Corp. of W.V. (497) DESIGNATED AGENT Robert E. Horrell  
 Address P.O. Box 454 Address P.O. Box 454  
Glasgow, W.V. 25086 8150 Glasgow, W.V. 25086
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED Name \_\_\_\_\_ Address \_\_\_\_\_  
 9) DRILLING CONTRACTOR: Name \_\_\_\_\_ Address \_\_\_\_\_
- 10) PROPOSED WELL WORK: Drill \_\_\_\_\_ / Drill deeper \_\_\_\_\_ / Redrill \_\_\_\_\_ / Stimulate X /  
 Plug off old formation X / Perforate new formation X /  
 Other physical change in well (specify) Plug back Oriskany
- 11) GEOLOGICAL TARGET FORMATION, Huron Shale (40)
- 12) Estimated depth of completed well, 4500 feet  
 13) Approximate strata depths: Fresh, 80, 855 feet; salt, 1235 feet.  
 14) Approximate coal seam depths: NR Is coal being mined in the area? Yes \_\_\_\_\_ / No \_\_\_\_\_

15) CASING AND TUBING PROGRAM

CASING OR TUBING TYPE	SPECIFICATIONS					FOOTAGE INTERVALS		CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
	Size	Grade	Weight per ft.	New	Used	For drilling	Left in well		
Conductor	16					Existing	20'		Kinds
Fresh water	13					"	198'	On shoe	
Coal	10					"	1234'	On shoe	Sizes
Intermediate	8-5/8					"	2281'	On B.H. packer	
Production	7					"	5039'	75 sks	Depths set
<del>PIPE</del>	5-1/2					"	5069'	14 sks	
Liners									Perforations:
TUBING	1-1/2	J-55	2.75	X		Proposed	4400'		Top Bottom

- (1) Cut 5 1/2" csg. @ 4800' and pull. (3) Set cement retainer @ 4500'  
 (2) Set 7" cast iron bridge @ 4790'. (4) Squeeze cement 7" casing 4500'-3800'.

OFFICE USE ONLY  
 DRILLING PERMIT

Permit number 47-035-0990 Frac Date September 4 19 85

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector. (Refer to No. 8) Prior to the construction of roads, locations and pits for any permitted work. In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

The permitted work is as described in the Notice and Application, plat, and reclamation plan, subject to any modifications and conditions specified on the reverse hereof.  
 Permit expires September 4, 1987 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: <u>✓</u>	Agent: <u>ALB</u>	Plat: <u>gt. gt.</u>	Casing	Fee
				<u>15770</u>

*Jeffrey Tephah*  
 \_\_\_\_\_  
 Administrator, Office of Oil and Gas