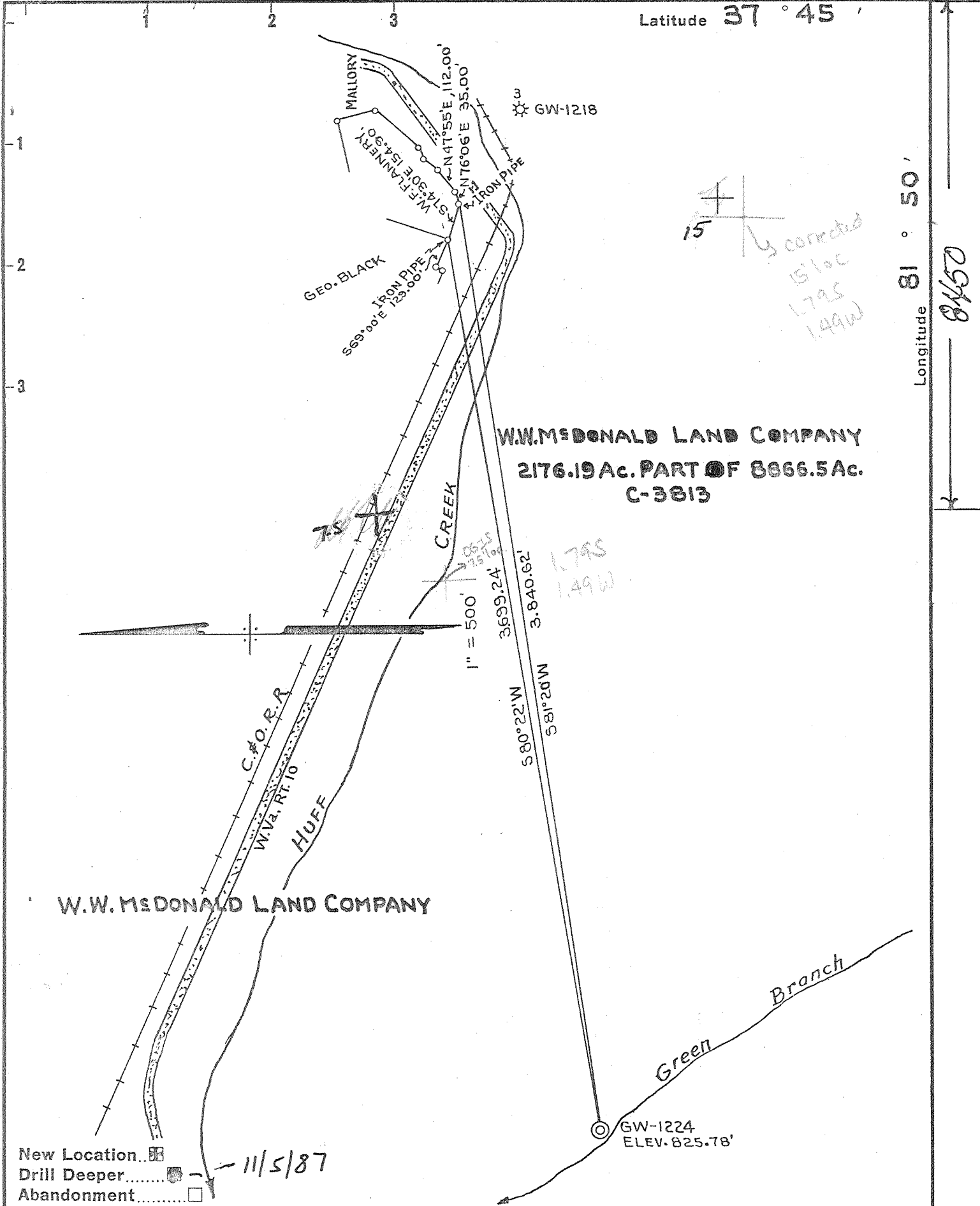


10/29/87

9000

Latitude 37° 45'

75'



Longitude 81° 50'

0248

W.W. McDONALD LAND COMPANY

W.W. McDONALD LAND COMPANY
2176.19 Ac. PART OF 8866.5 Ac.
C-3813

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

11/5/87

Company Cities Service 169
Address Box 873 Charleston, W.V. 25323
Farm W.W. McDONALD LAND COMPANY
PART OF 8866.5 Ac.
Tract _____ Acres 2176.19 Lease No. C-3813
Well (Farm) No. 4 Serial No. GW-1224
Elevation (Spirit Level) 825.78' MALLORY 7.5
Quadrangle GILBERT 2 S-163 W-172 15
County LOGAN District TRIADELPHIA
Engineer R. B. Anderson
Engineer's Registration No. 2074
File No. _____ Drawing No. W-16-55
Date SEPT. 16 1955 Scale 1" = 500'

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

WELL LOCATION MAP
FILE NO. LOG-496-DD

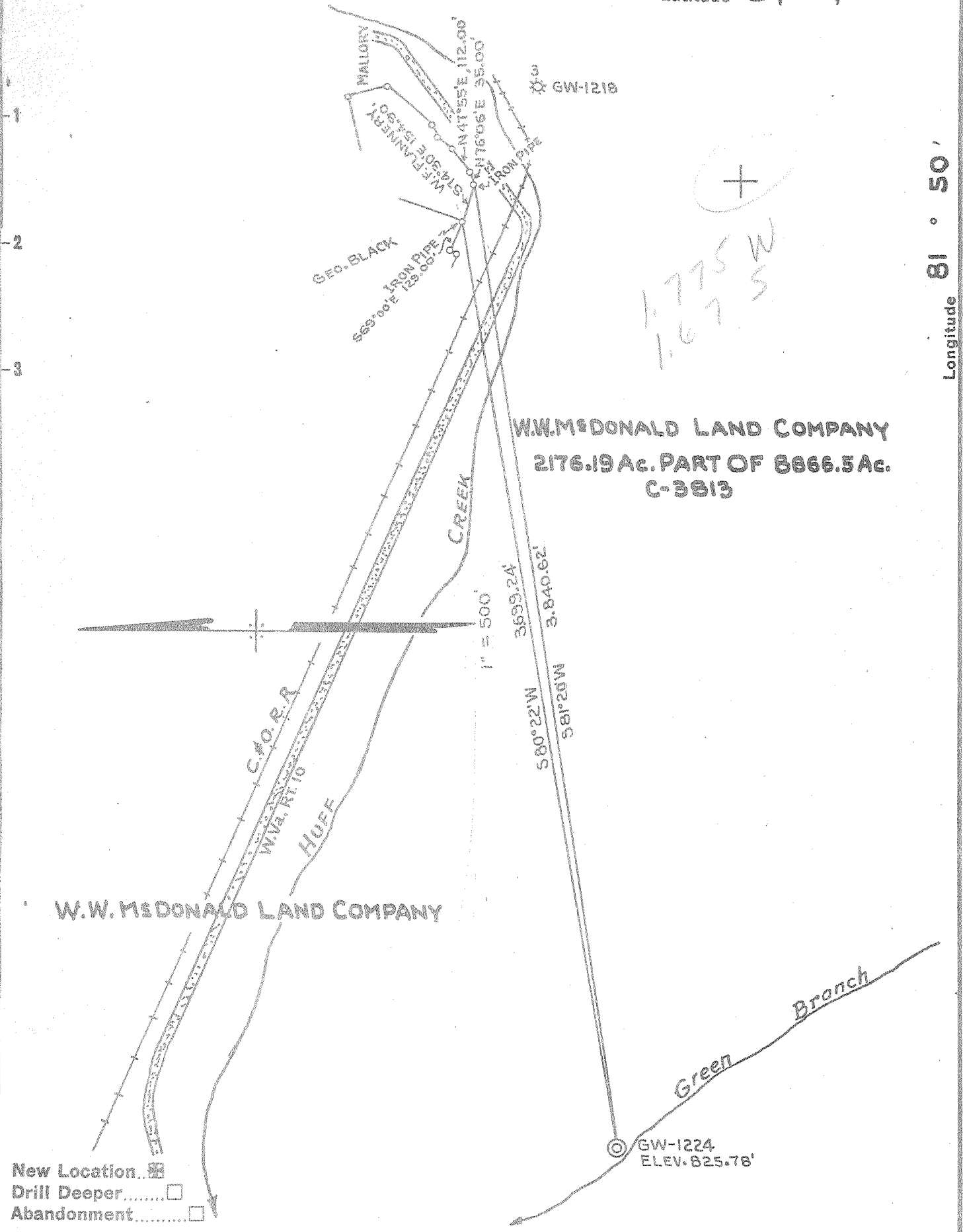
+ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown. NOV 9 1987

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

47-045-

Latitude 37° 45'

Longitude 81° 50'



W.W. McDONALD LAND COMPANY
 2176.19 Ac. PART OF 8866.5 Ac.
 C-3813

W.W. McDONALD LAND COMPANY

- New Location
- Drill Deeper
- Abandonment

GW-1224
 ELEV. 825.78'

Company	COLUMBIAN CARBON COMPANY
Address	BOX 873 CHARLESTON W.VA.
Farm	W.W. McDONALD LAND COMPANY
	PART OF 8866.5 Ac.
Tract	Acres 2176.19 Lease No. C-3813
Well (Farm) No.	4 Serial No. GW-1224
Elevation (Spirit Level)	825.78'
Quadrangle	GILBERT 2 S-163 W-172
County	LOGAN District TRIADELPHIA
Engineer	R. B. Anderson
Engineer's Registration No.	2074
File No.	Drawing No. W-16-55
Date	SEPT. 16 1955 Scale 1" = 500'

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

WELL LOCATION MAP
 FILE NO. LOG-496

+ 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.

6-6 266



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION 2

Quadrangle Gilbert 2 SW

WELL RECORD

Permit No. Log-496

Oil or Gas Well Gas

(KIND)

Company Columbian Carbon Company
Address Box 873, Charleston 23, W. Va.
Farm W.W. McDonald Land Co Acres 8866.5
Location (waters) Green Branch of Huff Creek
Well No. 4 - GW-1224 Elev. 825.78' G
District Triadelphia County Logan
The surface of tract is owned in fee by W.W. McDonald Land Co
Address Logan, W. Va.
Mineral rights are owned by W.W. McDonald Land Co, et al
(For further addresses contact C.C.C.)
Address _____
Drilling commenced 10-1-55
Drilling completed 2-1-56
Date Shot _____ From _____ To _____
With see reverse side

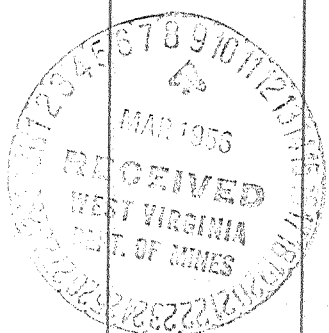
Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16			Kind of Packer
13 3/8"	38'	38'	none
10 3/4" 40#	525'	525'	Size of
8 1/2" 26#	1333' 10"	runned	Depth set
6 7/8" 20#	2188' 17"	2188' 17"	
5 3/16"			
3			Perf. top
2 3/8" 4.6#	2955' 17"	2955' 17"	Perf. bottom
Liners Used	with 2" cage		Perf. top
			Perf. bottom

Open Flow _____ /10ths Water in _____ Inch
16 /10ths Merc. in 2 Inch
Volume 622,000 Cu. Ft.
Rock Pressure 520 lbs. 96 hrs.
Oil _____ bbls., 1st 24 hrs.
Fresh water _____ feet _____ feet
Salt water 795' 875' feet _____ feet

CASING CEMENTED _____ SIZE _____ No. Ft. _____ Date _____
see reverse side

COAL WAS ENCOUNTERED AT _____ FEET _____ INCHES
_____ FEET _____ INCHES _____ FEET _____ INCHES
_____ FEET _____ INCHES _____ FEET _____ INCHES

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth Found	Remarks
Soil			0	16			
Sand			16	52			
Slate			52	160			
Sand			160	175			
Slate			175	250			
Sand			250	285			
Slate			285	316			
Sand			316	410			
Slate			410	434			
Sand			434	579			
Slate			579	630			
Sand			630	651			
Slate			651	690			
Sand			690	980	S. water	795'	1 blr/hr/
Slate			980	988	S. water	875'	hole full
Sand			988	1270			
Slate			1270	1297			
Lime			1297	1315			
Red Rock			1315	1318			
Lime			1318	1353			
Sand			1353	1427			
Slate			1427	1456			
Lime			1456	1492			
Slate			1492	1563			
Sand			1563	1655			
Slate			1655	1675			
Red Rock			1675	1683			
Slate			1683	1697			
Sand			1697	1800			
Slate			1800	1822			
Sand			1822	1843			
Red Rock			1843	1850			
Slate			1850	1873			
Lime			1873	1904			
Red Rock			1904	1920			
Slate			1920	1930			
Sand			1930	1990			



Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth Found	Remarks
late			1900	2025			
lime			2025	2072			
late			2072	2082			
Black Lime			2082	2150			
White Lime	2162' DJM	2171' STM	2150	2321	Gas	2301'	show
Red Rock			2321	2400	Gas	2310'	10,530 cu.ft.
late			2400	2900			
Brown Shale			2900	2923			
and			2923	2953			
late			2953	2960			
lime			2960	3026			
late & Shells			3026	3088			
		TOTAL DEPTH	- - - -	3088'			
		FILLED BACK TO	- - - -	2970'			
NOW RECORD							
-3-56	Shot 2919' to 2970' with 280 quarts Nitroglycerine. Before shot - no gas. 52'avings in hole. Cleaned out and bridged below Big Lime 2470-2320'.						
ACIDIZING RECORD							
-8-56	Acidized with 1000 gallons acid. Went in at 750-1000# pressure. After blowing 16 hours gas gauged 6/10 W. 2" 103M - 24 hours 4/10 W. 2" 84M.						
-14-56	Acidized with 2000 gallons acid. Went in at about 1000# pressure - flushed with 13 bbls. water. After blowing 22 hours 90/10 W. 2" 400M.						
-16-56	Acidized with 4000 gallons acid. Went in on vacuum to 21 bbls. 21st bbl. 100% - 55th bbl. 500% when they stopped and mixed more acid - 110 bbls. 1150%.						
	Final open flow - 622,000 cubic feet						
Casing RECORD							
10-27-55	10-3/4" casing - 15 bags Aquagel						
11-26-55	8-5/8" casing - 16 bags Aquagel.						
12-20-55	7" casing - 16 bags Aquagel.						

Date March 7, 1956

APPROVED Columbian Carbon Company, Owner

By O. W. Van Potten, Vice Pres.
(Title)



Date March 11, 1988
 Operator's
 Well No. A-4, GW-1224
 Farm McDonald Land Co.
 API No. 47 - 045 - 0496-DD

RECEIVED
 MAR 25 1988

State of West Virginia
 DEPARTMENT OF ENERGY
 Oil and Gas Division

DIVISION OF OIL & GAS
 DEPARTMENT OF ENERGY

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: 826' Watershed Green Branch of Huff Creek
 District: Triadelphia County Logan Quadrangle Gilbert

COMPANY Cities Service Oil and Gas Corporation

ADDRESS P. O. Box 873, Charleston, WV 25323

DESIGNATED AGENT Paul D. Phillips

ADDRESS P. O. Box 873, Charleston, WV 25323

SURFACE OWNER W.W. McDonald Land Co.

ADDRESS P. O. Box 1770, Logan, WV 25601

MINERAL RIGHTS OWNER W.W. McDonald Land Co.

ADDRESS P. O. Box 1770, Logan, WV 25601

OIL AND GAS INSPECTOR FOR THIS WORK Arthur

St. Clair ADDRESS P.O. Box 468, Brenton, WV
 24818

PERMIT ISSUED 11-5-87

Deepening ~~DRILLING~~ COMMENCED 11-9-87

Deepening ~~DRILLING~~ COMPLETED 11-17-87

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 3/8"	38	38	
10 3/4"	525	525	15 Bags Aquagel
8 5/8"	1333	Pulled	16 Bags Aquagel
7"	2189	2189	16 Bags Aquagel
5 1/2"			
4 1/2"	5053	5053	TOC 2374
3"			
2 3/8"	4946	4946	
Liners used			

GEOLOGICAL TARGET FORMATION Devonian Shale Depth 5035 feet

Depth of completed well 5076 feet Rotary x / Cable Tools _____

Water strata depth: Fresh None feet; Salt None feet

Coal seam depths: None Is coal being mined in the area? No

OPEN FLOW DATA

Producing formation Devonian Shale Pay zone depth _____ feet

Gas: Initial open flow _____ Mcf/d Oil: Initial open flow _____ Bbl/d

Final open flow 136 Mcf/d Final open flow _____ Bbl/d

Time of open flow between initial and final tests _____ hours

Static rock pressure 540 psig (surface measurement) after 108 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

MAR 25 1988

(Continue on reverse side)

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

Devonian Shale 4932-4708. Frac'd w/ 50,000# 20/40 sd, 1197 MSCF N2, TL&T 241, 40 BPM Foam.
 Devonian Shale 4460-3926. Frac'd w/ 80,000# 20/40 sd, 980 MSCF N2, TL&T 154, 80 BPM Foam.
 Devonian Shale 3808-3446. Frac'd w/ 60,000# 20/40 sd, 715 MSCF N2, TL&T 134, 60 BPM Foam

8307 7, 8, 407

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 MAR 25 1988

WELL LOG

DIVISION OF OIL & GAS
 DEPARTMENT OF ENERGY

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Big Lime			2170	2340	
Shale			2340	2460	
Weir			2460	2585	
Sunbury Shale			2585	2935	
Berea			2935	2980	
Devonian Shale			2980	5035	
Onondaga			5035	5076	
			new TD	5076	
			old TD	3088	
			new ftg	1988	

(Attach separate sheets as necessary)

Cities Service Oil and Gas Corporation
 Well Operator

By: Paul D. Hillig, Operations Manager

Date: March 11, 1988

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 ... encountered in the drilling of a well."



1) Date: August 14, 19 87
 2) Operator's Well No. McDonald Land A-4, GW-1224
 3) API Well No. 47 045 0496-DD
 State County Permit

RECEIVED
 OCT 26 1987

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

- 4) WELL TYPE: A Oil / Gas /
 B (If "Gas", Production / Underground storage / Deep / Shallow /)
- 5) LOCATION: Elevation: 826 Watershed: Green Branch of Huff Creek
 District: Triadelphia 3 County: Logan 045 Quadrangle: Gilbert 363
- 6) WELL OPERATOR Cities Service CODE: 9800 7) DESIGNATED AGENT Paul D. Phillips
 Address P. O. Box 873 Address P. O. Box 873
Charleston, WV 25323 Charleston, WV 25323
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED 9) DRILLING CONTRACTOR:
 Name Arthur St. Clair Name N/A
 Address Box 1300 Address _____
Mt. Cay, WV 25637
- 10) PROPOSED WELL WORK: Drill / Drill deeper / Redrill / Stimulate /
 Plug off old formation / Perforate new formation /
 Other physical change in well (specify) _____
- 11) GEOLOGICAL TARGET FORMATION, Devonian Shale 401
 12) Estimated depth of completed well, 5120 feet
 13) Approximate strata depths: Fresh, None feet; salt, 795; 875 feet.
 14) Approximate coal seam depths: None 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	13-3/8				X	38	38		Kinds <u>None</u>
Fresh water	10-3/4		40		X	525	525	15 bags aqua gel	
Coal	8-5/8		26		X	1333	Pulled	16 bags aqua gel	
Intermediate	7		20		X	2189	2189	16 Bags aqua gel	
Production									Depths set
Tubing									
Liners									Perforations:
	* 4-1/2	K-55	11.6	X		5120	5120	by 38 CSR 18-1/4	Bottom
	* 2-3/8	J-55	4.6	X		5120	5120		

*Additional Tubulars

OFFICE USE ONLY
 DRILLING PERMIT

Permit number 47-045-0496-DD Date November 5 19 87

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 November 5, 1989 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: <input checked="" type="checkbox"/>	Agent: <input checked="" type="checkbox"/>	Fee <u>235</u>	WOP <input checked="" type="checkbox"/>	S&E <input checked="" type="checkbox"/>	Other
---	--	----------------	---	---	-------

22078

NOTE: Keep one copy of this permit posted at the drilling location. [Signature] Director, Division of Oil and Gas File

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.