



BENCH MARK DESCRIPTION
 U.S. GOVERNMENT BENCH MARK
 # W-150 STANDARD DISK SET
 VERTICALLY IN FACE OF
 ROCK CUT 16' WEST OF
 E OF ROAD ELEVATION
 851.26'

COAL NOTE
 LEASED TO MARROWBONE
 DEVELOPMENT CO.
 NOT OPERATED AT
 PRESENT

- REVISSED 3-22-79
- New Location
 - Storage
 - Drill Deeper
 - Abandonment
 - Re-Drill/Fracture

"I, the undersigned, hereby certify that this map is correct to the best of my knowledge and belief and shows all the information required by the rules and regulations of the oil and gas section of the mining laws of WEST VIRGINIA
 Minimum degree of accuracy is one part in 200

Signed William E. [Signature]

ENGR. REG. No. 2530
 BOX 1273 CHARLESTON, W.VA.

Company COLUMBIA GAS TRANS. CORP.
 Address BOX 1273 CHARLESTON, W.VA.
 Form COTIGA DEVELOPMENT CO.
 Lease 42832 Acres 4019.25
 Well Farm No. _____ Ser. No. 20672
 Elevation - Spirit Level 982.74' WC
 Quadrangle MYRTLE, W.VA., HOLDEN 15'
 Township or District HARVEY
 County MINGO
 Sec., Lot, Qr. _____ T. _____ R. _____
 Coordinates LAT: 37°50'58" LONG: 82°12'33"
 File No. 30-23 Dwg. No. _____
 Date 3-3-79 Scale 1" = 400'

FORM 1496 CE & CSD (REV. 11-78)

COLUMBIA GAS SYSTEM
 COLUMBIA GAS TRANSMISSION CORPORATION
 WELL LOCATION MAP

STATE OF WEST VIRGINIA
 (+) Denotes Values of Well On
 United States Topographic Maps

47-059-0923
 Scale 15' 7-1/2'

JUN 21 1979

BREEDEN SA 244
 → DEEP WELL



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

REVISED

WELL RECORD

Rotary X Oil _____
Cable _____ Gas X _____
Recycling _____ Comb. _____
Water Flood _____ Storage _____
Disposal _____ (Kind) _____

Quadrangle Myrtle, WV

Permit No. Ming-0923

Company <u>Columbia Gas Transmission Corp.</u>	Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
Address <u>P. O. Box 1273 - Charleston, WV</u>	Size			
Farm <u>W. H. Parsley</u> Acres <u>4019</u>	20-16			
Location (waters) <u>Left Fork of Laurel Branch</u>	Cond.			
Well No. <u>20672</u> Elev. <u>1400'</u> ⁹⁸²	13-10" 13 3/8	30'	30'	20 sks (30')
District <u>Harvey</u> County <u>Mingo</u>	9 5/8			
The surface of tract is owned in fee by <u>Cotiga</u> ^{992K}	8 5/8	1946.15'	1946.15'	605 sks (1946')
<u>Development Co.</u>	7			
Address <u>25 Darby Road, Paoli, PA 19301</u>	5 1/2			
Mineral rights are owned by <u>Cotiga Development Co.</u> Address <u>Paoli, PA 19301</u>	4 1/2	4250.75'	4250.75'	(2 staged) 135 sks (900')
Drilling Commenced <u>October 15, 1979</u>	3			77 sks (504')
Drilling Completed <u>October 23, 1979</u>	2 3/8"	4216'	4216'	
Initial open flow <u>Show</u> cu. ft. _____ bbls.	Liners Used			
Final production <u>180,000</u> cu. ft. per day _____ bbls.				
Well open <u>6</u> hrs. before test _____ RP.				
Well treatment details: <u>B. Shale-384# RP</u>				
<u>U. Shale/Berea-400# RP</u>				

Attach copy of cementing record.

Foam fractured B. Shale using 75% Quality foam with 750 gallons Mud Acid; 42,084 total gallons treating fluid; 330,000 scf N₂; 29,000# 80/100 and 29,000# 20/40 sand.

Foam fractured Upper Shale & Berea with 750 gallons 15% Hcl; 41,180 total gallons treating fluid; 324,000 scf N₂; 30,000# 80/100 and 30,000# 20/40 sand

Test after fracture - Brown Shale - 61 MCF; Berea and U. Shale - 119 MCF

Coal was encountered at 15', 309' & 350' Feet 24", 12" & 48" Inches

Fresh water 169' Feet Salt Water 1384' Feet

Producing Sand Upper Shale/Berea & B. Shale Depth 2808-50; 3607-4181

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	* Remarks
Sub Base			0	10		
Sand			10	15		
Coal			15	17		
Sand			17	112		
Sand & Shale			112	140		
Sand			140	309		1/2" water @ 169'
Coal			309	310		
Sand & Shale			310	350		
Coal			350	354		
Sand & Shale			354	456		
Sand			456	512		
Sand & Shale			512	521		
Sand			521	577		
Sand & Shale			577	598		
Sand			598	679		
Sand & Shale			679	805		
1st Salt Sand			805	908		
Sand & Shale			908	1004		
Sand			1004	1105		
2nd Salt Sand			1105	1812		1/2" water @ 1384'
Sand & Shale			1812	1830		
Line			1830	1843		
Red Rock			1843	1851		

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OIL & GAS DIVISION
DEPT. OF MINES

* Indicates Electric Log to the remarks section.

Formation	Color	Hard or Soft	Top Feet	Bottom Feet	Oil, Gas or Water	* Remarks
Slate & Shale			1851	1905		
Little Lime			1905	1932		
Slate			1932	1997		
B. Lime			1997	2124		
Shale			2124	2148		
Injun			2148	2208		
Upper Weir			2208	2276		
Sand & Shale			2276	2298		
Lower Weir			2298	2386		
Sand & Shale			2386	2725		
Coffee Shale			2725	2754		
Berea			2754	2833		
Brown Shale			2833	4260		Differential Valve set @ 3076'
Lime (Corniferous)			4260	4289		Packer set @ 3106'
				4289		Show of Gas @ T.D.
						T.D.

28

Date September 4, 19 80

APPROVED Joseph Campbell Owner

By Sr. Production & Storage Well Engr.

(Title)

OG-10
Rev. - 9-71
12



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
Oil and Gas Division
WELL RECORD¹²

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OIL & GAS DIVISION
DEPT. OF MINES

Rotary Oil _____
Cable _____ Gas
Recycling _____ Comb. _____
Water Flood _____ Storage _____
Disposal _____ (Kind)

Quadrangle Myrtle, WV
Permit No. 059-Ming - 0923

Company	Casing and Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft. (Sks.)
<u>Columbia Gas Transmission Corp.</u>				
<u>P. O. Box 1273, Charleston, WV</u>				
<u>W. H. Parsley</u> Acres <u>4019</u>				
<u>Location (waters) Left Fork of Laurel Branch</u>				
<u>Well No. 20672</u> Elev. <u>1400</u> ⁹⁸²⁶ ₉₀₂₆	Size 20-16			
<u>District Harvey</u> County <u>Mingo</u>	Cond. 13-10"			
<u>The surface of tract is owned in fee by Cotiga Development Co.</u>	13 3/8	30'	30'	20 sks (30')
<u>Address 25 Darby Road, Paoli, Pa. 19301</u>	9 5/8			
<u>Mineral rights are owned by Cotiga Development Company</u>	8 5/8	1946.15	1946.15	605 sks (1946')
<u>Address Paoli, Pa. 19301</u>	7			
<u>Drilling Commenced October 15, 1979</u>	5 1/2			
<u>Drilling Completed October 23, 1979</u>	4 1/2	4250.75	4250.75	135 sks (900')
<u>Initial open flow 0 cu. ft. _____ bbls.</u>	3			77 sks (504')
<u>Final production 174,000 cu. ft. per day _____ bbls.</u>	2 3/8	4216	4216	(2 staged)
<u>Well open 6 hrs. Before test 410# RP.</u>	Liners Used			

Well treatment details:

Attach copy of cementing record.

Foam fractured B. Shale using 75% Quality foam w/750 gallons Mud Acid; 42,084 total gallons treating fluid; 330,000 scf N₂; 29,000# 80/100 and 29,000# 20/40 Sand.
Foam fractured Upper Shale & Berea w/750 gal. 15% Hcl; 41,180 total gallons treating fluid; 324,000 scf N₂; 30,000# 80/100 and 30,000 20/40 Sand.

Coal was encountered at 15' & 309' & 350' Feet 24" & 12" & 48" Inches
Fresh water 169 Feet Salt Water 1384 Feet
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Sand			10	15		
Coal			15	17		
Sand			17	112		
Sand & Shale			112	140		
Sand			140	309		1/2" wtr @ 169'
Coal			309	310		
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Sand & Shale			354	456		
Sand			456	512		
Sand & Shale			512	521		
Sand			521	577		
Sand & Shale			577	598		
Sand			598	679		
Sand & Shale			679	805		
1st Salt Sand			805	908		
Sand & Shale			908	1004		
Sand			1004	1105		
2nd Salt Sand			1105	1812		1/2" wtr @ 1384'
Sand & Shale			1812	1830		
Lime			1830	1843		
Red Rock			1843	1851		

JUN 6 1980

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FORM IV-2
(Obverse)

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

Date: May 21, 1979

[08-78]

OIL AND GAS WELL PERMIT APPLICATION

Operator's Well No. 20672

API Well No. 47-059-0923
State County Form

WELL TYPE: Oil / Gas /
(If "Gas", Production / Underground storage / Deep / Shallow)
LOCATION: Elevation: 982.74 Watershed: Left Fork of Laurel Branch
District: Harvey County: Mingo Quadrangle: Myrtle

WELL OPERATOR Columbia Gas Transmission Corp.
Address P. O. Box 1273
Charleston, WV 25325

DESIGNATED AGENT John R. Henning
Address P.O. Box 1273
Charleston, WV 25325

OIL & GAS ROYALTY OWNER Cotiga Development Co.
Address 25 Darby Road
Paoli, Pennsylvania 19301
Acreage 4,019.25

COAL OPERATOR Unoperated
Address _____

SURFACE OWNER Cotiga Development Co.
Address 25 Darby Road
Paoli, Pennsylvania 19301
Acreage _____

COAL OWNER(S) WITH DECLARATION ON RECORD:
Name Cotiga Development Co.
Address 25 Darby Road
Paoli, Pennsylvania 19301

FIELD SALE (IF MADE) TO:
Name _____
Address _____

Name _____
Address _____

OIL & GAS INSPECTOR TO BE NOTIFIED
Name Arthur St. Clair
Address P. O. Box 157
Brenton, WV

COAL LESSEE WITH DECLARATION ON RECORD:
Name Marrowbone Development Co.
Address P. O. Box 445
Kermit, WV 25674

The undersigned well operator is entitled to operate for oil or gas purposes at the above location under a deed / lease / other contract / dated January 10, 1939, to the undersigned well operator from _____

[If said deed, lease, or other contract has been recorded:]

Recorded on _____, 19____, in the office of the Clerk of the County Commission of Mingo County, West Virginia, in Deed Book 29 at page 197. A permit is requested to follow:

PROPOSED WORK: Drill / Drill deeper / Redrill / Fracture or stimulate /
Plug off old formation / Perforate new formation /
Other physical change in well (specify) _____

--planned as shown on the work order on the reverse side hereof.

The above named coal operator, coal owner(s), and coal lessee are hereby notified that any objection they wish to make or are required to make by Code § 22-4-3 must be filed with the Department of Mines within fifteen (15) days after the receipt of this Application by the Department.

Copies of this Permit Application and the enclosed plat and reclamation plan have been mailed by registered mail or delivered by hand to the above named coal operator, coal owner(s), and coal lessee on or before the day of the mailing/delivery of this Permit Application to the Department of Mines at Charleston, West Virginia.

RECEIVED
MAY 24 1979

PLEASE SUBMIT COPIES OF ALL
OR PHYSICAL LOGS DIRECTLY TO:
WEST VIRGINIA OIL AND GAS
CONSERVATION COMMISSION
1015 WASHINGTON STREET EAST
CHARLESTON, WV 25311
TELEPHONE: (304) 348-2002

OIL & GAS DIVISION
DEPT. OF MINES
BLANKET BOND

COLUMBIA GAS TRANSMISSION CORPORATION
Well Operator

By Reuben J. Hudson
Its Manager, Drilling

[08-78]

PROPOSED WORK ORDER

THIS IS AN ESTIMATE ONLY:
ACTUAL INFORMATION MUST BE SUBMITTED ON FORM IV-35 UPON COMPLETION

DRILLING CONTRACTOR (IF KNOWN) FALCON DRILLING CORPORATION

Address 2030 Kanawha Blvd., East

Charleston, WV 25311

GEOLOGICAL TARGET FORMATION, Injun-Shale

Estimated depth of completed well, 4435 feet Rotary X / Cable tools /

Approximate water strata depths: Fresh, feet; salt, feet.

Approximate coal seam depths: Is coal being mined in the area: Yes / No X

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	3-3/8	H-40	48	X		60'		To surface	Kinds	
Fresh water										
Coal									Sizes	
Intermediate	8-5/8	K-55	24	X		1950'		To surface		
Production	4-1/2	K-55	10.5	X		4435'			Depths set	
Tubing	2-3/8	J-55	4.6	X		4435'				
Liners									Perforations:	
									Top	Bottom

NOTE: Regulation 7.02 of the Department of Mines provides that the original and four copies of Form IV-2 must be filed with the Department, accompanied by (i) a plat in the form prescribed by Regulation 11, (ii) a bond in one of the forms prescribed by Regulation 12, or in lieu thereof the other security allowed by Code § 22-4-2, (iii) Form IV-9, "Reclamation Plan", applicable to the reclamation required by Code § 22-4-12b and Regulation 23, (iv) unless previously paid on the same well, the fee required by Code § 22-4-12a, and (v) if applicable, the consent required by Code § 22-4-8a from the owner of any water well or dwelling within 200 feet of the proposed well.

A separate Form IV-2 shall not be required for fracturing or stimulating a well where fracturing constitutes the well itself. Such shall be part of the work for which a permit is sought and this permit must be posted at the well site.

If provisions being in accordance with Chapter 22, of the W. Va. Code, the location is hereby approved for drilling . This permit shall expire if operations have not commenced by 2-8-80.

[Signature]
Deputy Director - Oil & Gas Division

The following waiver must be completed by the coal operator and by any coal owner or coal lessee who has recorded a declaration under Code § 22-4-20, if the permit is to be issued within fifteen (15) days of receipt thereof:

W A I V E R

The undersigned coal operator / owner / lessee / of the coal under this well location has examined this proposed well location. If a mine map exists which covers the area of the well location, the well location has been added to the mine map. The undersigned has no objection to the work proposed to be done at this location, provided, the well operator has complied with all applicable requirements of the West Virginia Code and the governing regulations.

Date: , 19

By
Its