

Janie 12/23/88

REF.A (TAG 165)
10" POPLAR ON POINT

LATITUDE 38° 12' 30"

REFERENCES
1" = 100'

N 34° 16' 32.01" E 112.72'

(TAG 164)

S 17° 15' 44.62" W 125.11'

2042 225

2038

S 86° 15' W 924.0'

2208
STK. CALLED FOR NEAR
STREAM INTERSECTION
S 15° 00' E 660.0'

QUARRIER LANDS

REF.B (TAG 166)
36" B.OAK BELOW ROAD

2068

SPRUCE FORK

FOURMILE FORK

S 20° 00' E 990.0'

S 14° 00' W 825.0'

S 07° 00' W 759.0'

NORTH

RESERVED AREA

MAXY FORK

1525

2043

S 11° 49' 56" W 5461.33'

S 18° 43' 13" W 8740.57' (DEED)

S 19° 21' 34" W 8755.32 (SURVEY)

S 24° 00' W 1221.0'

S 07° 00' E 726.0'

S 27° 00' W 891.0'

S 66° 10' 21" W 14307.11'

N 31° 26' 43" E 3416.79'

S 48° 00' W 1650.0'

S 32° 00' W 660.0'

S 31° 00' W 462.0'

S 20° 00' W 660.0'

WITH CREEK

S 67° 30' W 594.0'

MARMET LANDS

ROBERT C. LONG
2809 ACRES

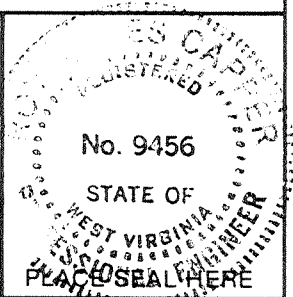
SMALLE BRANCH

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS

FILE NO. DCM047001-88
DRAWING NO. _____
SCALE 1" = 2000'
MINIMUM DEGREE OF
ACCURACY 1 IN 5000
PROVEN SOURCE OF
ELEVATION KAN-2058
ELEVATION=1053.09

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 REGU-
LATIONS ISSUED AND PRESCRIBED BY THE DEPART-
MENT OF ENERGY.

(SIGNED) Roy James Capper
R.P.E. 9466 L.L.S. _____



STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY
OIL AND GAS DIVISION



DATE 6 DECEMBER, 1988
OPERATOR'S WELL NO. LONG #1
API WELL NO. _____

47 - 039 - 4623
STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS,") PRODUCTION STORAGE ___ DEEP SHALLOW ___

LOCATION: ELEVATION 1032.11 WATER SHED LENS CREEK OF KANAWHA RIVER

DISTRICT LOUDON C COUNTY KANAWHA

QUADRANGLE BELLE 7.5' 238 1032 Peyton DC

SURFACE OWNER ROBERT C. LONG ESTATE ACREAGE 2809

OIL & GAS ROYALTY OWNER SAME LEASE ACREAGE _____

LEASE NO. _____

PROPOSED WORK: DRILL CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR
STIMULATE PLUG OFF OLD FORMATION ___ PERFORATE NEW
FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

JAN 00 1989

PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___

TARGET FORMATION NEWBURG ESTIMATED DEPTH 5300'

WELL OPERATOR D.C. MALCOLM, INC. DESIGNATED AGENT DUNCAN C. MALCOLM

ADDRESS 1006 COMMERCE SQUARE ADDRESS 1006 COMMERCE SQUARE

CHARLESTON, WV 25301 549 CHARLESTON, WV 25301

DEEP WELL 6-6 Kanawha Forest (305)

LONGITUDE 81° 35' 00"

COUNTY NAME

PERMIT

FORM WW-6
H.T. HALL 48673

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

- 1) Well Operator: D. C. Malcolm, Inc. 29900, 6, 238
- 2) Operator's Well Number: _____ Long #1 _____ 3) Elevation: 1032'
- 4) Well type: (a) Oil ___ / or Gas X /
(b) If Gas: Production X / Underground Storage ___ /
Deep X / Shallow ___ /
- 5) Proposed Target Formation(s): Devonian Shale, Newburg
- 6) Proposed Total Depth: 5700 feet
- 7) Approximate fresh water strata depths: 100'
- 8) Approximate salt water depths: _____
- 9) Approximate coal seam depths: 290'
- 10) Does land contain coal seams tributary to active mine? Yes ___ / No X /
- 11) Proposed Well Work: To drill and complete new, deep well
- 12)

CASING AND TUBING PROGRAM

TYPE	SPECIFICATIONS			FOOTAGE INTERVALS		CEMENT
	Size	Grade	Weight per ft.	For drilling	Left in well	
Conductor	11 3/4"	LS	42#/ft.	350'	350'	CTS
Fresh Water						
Coal	8 5/8"	LS	23#/ft.	2000'	2000'	200' Fill
Intermediate	5 1/2"	J-55	15.5#/ft.	5600'	5600'	3000' Fill
Production	3 1/2"	J-55	10.2#/ft.	5700'	5700'	300' Fill
Tubing						
Liners						

PACKERS : Kind _____
 Sizes _____
 Depths set _____

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For Division of Oil and Gas Use Only **DIVISION OF OIL & GAS**

Fee(s) paid: Well Work Permit Reclamation Fund WPCP
 Plat WW-9 WW-2B Bond 5 Blanket Agent JL
 (Type)

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- 1) Date: December 8, 1988
- 2) Operator's well number
Long Heirs #1
- 3) API Well No: 47 - 039 - 4623
State - County - Permit

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY
STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY, DIVISION OF OIL AND GAS

NOTICE AND APPLICATION FOR A WELL WORK PERMIT

- | | |
|--|---|
| <p>4) Surface Owner(s) to be served:</p> <p>(a) Name <u>Estate of Robert C. Lone</u>
Address <u>Attn: David S. Long, Trustee</u>
<u>1959 Parkwood Rd.</u></p> <p>(b) NAME <u>Charleston, WV 25314</u>
Address _____</p> <p>(c) Name _____
Address _____</p> | <p>5) (a) Coal Operator:</p> <p>Name <u>None</u>
Address _____</p> <p>(b) Coal Owner(s) with Declaration
Name <u>Estate of Robert C. Long</u>
Address <u>Attn: David S. Long, Trustee</u>
<u>1959 Parkwood Rd.</u></p> <p>NAME <u>Charleston, WV 25314</u>
Address _____</p> <p>(c) Coal Lessee with Declaration
Name <u>American Electric Power</u>
Address <u>P. O. Box 700</u>
<u>Lancaster, OH 43130</u>
Attn: <u>Craig Cramer</u></p> |
| <p>6) Inspector <u>Carlos Hively</u>
Address <u>223 Pinch Ridge Rd.</u>
<u>Elkview, WV 25071</u>
Telephone (304)- <u>965-6069</u></p> | |

TO THE PERSON(S) NAMED ABOVE TAKE NOTICE THAT:

 Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil and gas OR

 X Included is the information required by Chapter 22B, Article 1, Section 8(d) of the Code of West Virginia (see page 2)

I certify that as required under Chapter 22B of the West Virginia Code I have served copies of this notice and application, a location plat, and accompanying documents pages 1 through on the above named parties, by:

- Personal Service (Affidavit attached)
- X Certified Mail (Postmarked postal receipt attached)
- Publication (Notice of Publication attached)

I have read and understand Chapter 22B and 38 CSR 11-18, and I agree to the terms and conditions of any permit issued under this application. I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator D. C. Malcolm, Inc.
By: Douglas C. Malcolm, Douglas C. Malcolm
Its: Production Manager
Address 1006 Commerce Square
Charleston, WV 25301
Telephone 304-343-9593

Subscribed and sworn before me this 8th day of December, 1988

W. A. Brennan Notary Public
My commission expires August 20, 1996



IV-35
(Rev 8-81)

Date June 21, 1989
Operator's
Well No. 1
Farm Long Heirs
API No. 047 - 039 - 4623

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State of West Virginia
Department of Mines
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 y / Shallow ___ /)

LOCATION: Elevation: 1042' KB Watershed Lens Creek
District: Loudon County Kanawha Quadrangle Belle 7.5'

COMPANY D.C. Malcolm, Inc
ADDRESS 1006 Commerce Sq., Chas., WV 25301
DESIGNATED AGENT D.C. Malcolm
ADDRESS 1006 Commerce Sq., Chas., WV 25301
SURFACE OWNER David S. Long, Trustee
ADDRESS 1959 Parkwood Rd., Chas., WV 25314
MINERAL RIGHTS OWNER Same as Surface Owner
ADDRESS _____
OIL AND GAS INSPECTOR FOR THIS WORK Carlos
Hively ADDRESS Elkview, WV
PERMIT ISSUED 1-4-89
DRILLING COMMENCED 3-28-89
DRILLING COMPLETED 4-21-89(drlg) 6-5-89(frac)

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cond.			
13-10"	370' KB	370' KB	CTS 220 sx
9 5/8			
8 5/8	1520' KB	1520' KB	250 sx
7			
5 1/2	5286' KB	5286' KB	270 sx
4 1/2			
3 1/2	5517' KB	800'	28 sx
2			
Liners used			

IF APPLICABLE: PLUGGING OF DRY HOLE ON
CONTINUOUS PROGRESSION FROM DRILLING OR
REWORKING. VERBAL PERMISSION OBTAINED
ON _____

GEOLOGICAL TARGET FORMATION Newburg Depth 5465'-84' feet
Total Depth Of
Depth of completed well 5520 feet Rotary x / Cable Tools _____
Water strata depth: Fresh _____ feet; Salt 700 feet
Coal seam depths: None Is coal being mined in the area? No

OPEN FLOW DATA

Producing formation Devonian Shale Pay zone depth 3459'-69' feet
Gas: Initial open flow S/G 178 Mcf/d Oil: Initial open flow 0 Bbl/d
Final open flow 70/536 Mcf/d Final open flow 0 Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 290 psig (surface measurement) after 72 hours shut in
(If applicable due to multiple completion--)
Second producing formation Big Lime Pay zone depth 1540-1570 feet
Gas: Initial open flow 178 Mcf/d Oil: Initial open flow 0 Bbl/d
Final open flow 466 Mcf/d Oil: Final open flow 0 Bbl/d
Time of open flow between initial and final tests 8 hours
Static rock pressure 165 psig (surface measurement) after 72 hours shut in

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

- 1) Perf Newburg 5464'-76' (CBL) w/4 SPF. Frac w/523 bbls H2O, 1000 gal HF acid, 14000# sand & displaced w/40 MSCF N2. BDP=5556 psi, ATP=5584 psi.
- 2) Plugged well back w/ gel, cmt, and wireline bridge plug at 4300'.
- 3) Perf Dev. Shale 3459'-69'. Frac w/90 quality foam--103 bbls H2O, 37500# sand, 460 MSCF N2. BDP=3545 psi, ATP=3700 psi.
- 4) Perf Big Lime 1540'-70' w/17 shots. Acidize with 3000 gal 15% HCl, 3000 gal gel, 3000 gal 15% HCl and 3000 gal gel. 167 MSCF N2 assist throughout job.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Sand & Shale			0	1150	
Sand			1150	1202	
Shale & Sand			1202	1320	
Sand			1320	1430	
Limestone (Big Lime)			1430	1602	Gas @1450. Gas @ 1550' (178 mcf/d)
Sand (Injun)			1602	1631	
Siltstone & Shale			1631	2033	
Shale (Sunbury)			2033	2046	
Sand (Berea)			2046	2050	
Devonian Shale			2050	4696	S/G @ 3460', 4120'
Onondaga Limestone			4696	4892	
Oriskany Sandstone			4892	4810	
Limestone 485 (top only)			4810	5465	
Newburg Sandstone 535			5465	5485	
Limestone 537			5485	5530	Total Depth

UD 2030
M 3250

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DEPARTMENT OF ENERGY

(Attach separate sheets as necessary)

D. C. Malcolm, Inc.
Well Operator
By: Joseph C. Malin
Date: 6-21-89

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 coal, encountered in the drilling of a well."