

Amil
3/22/91

LATITUDE 39-20-00

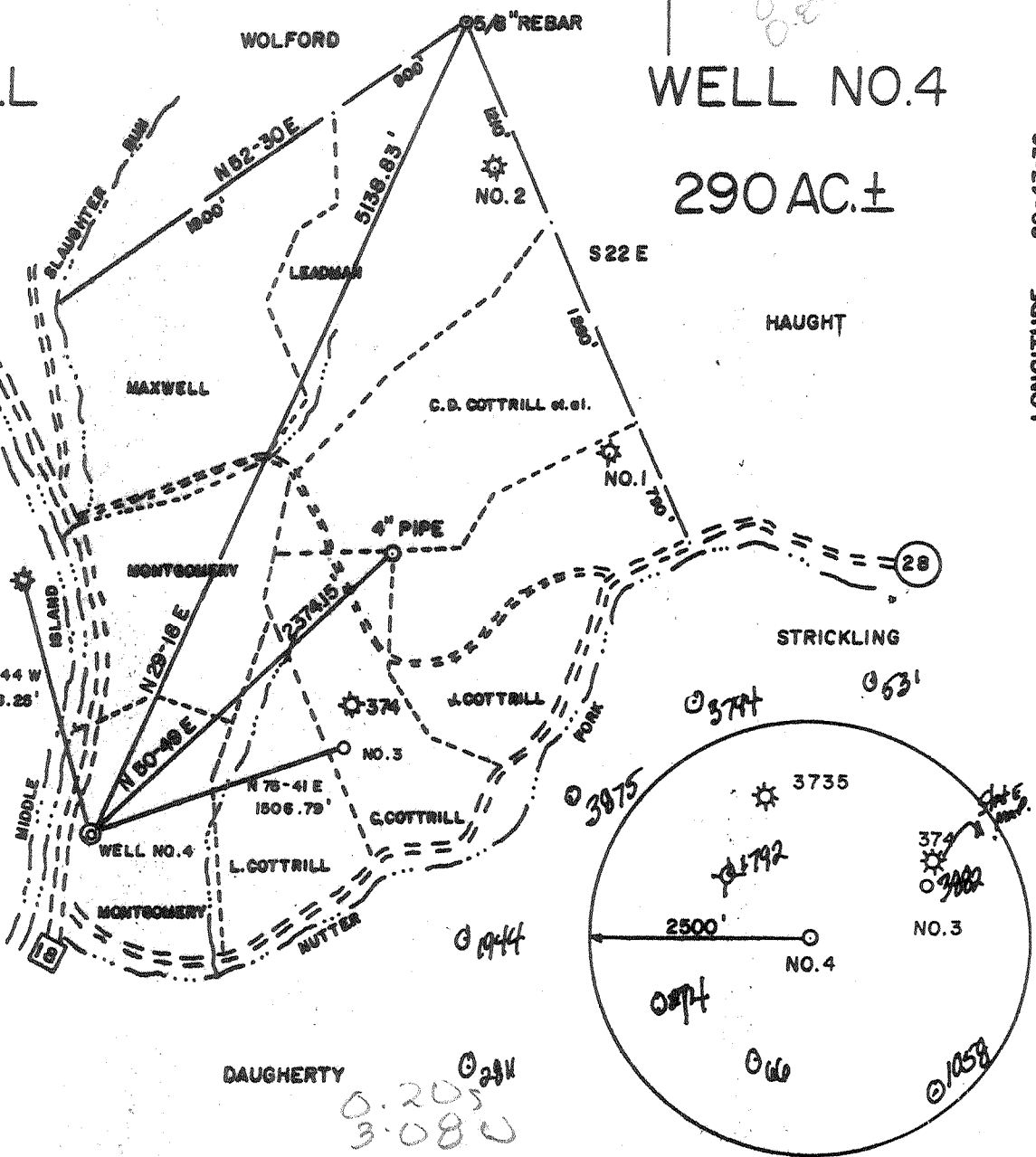
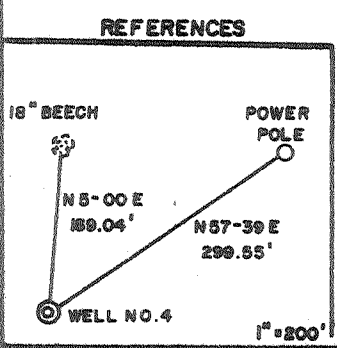
4,450'

COTTRILL
LEASE

WELL NO.4
290 AC.±

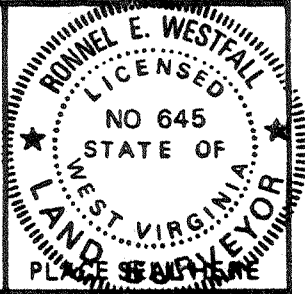
LONGITUDE 80-47-30

NORTH



FILE NO. _____
DRAWING NO. _____
SCALE 1" = 1000'
MINIMUM DEGREE OF ACCURACY 1/200
PROVEN SOURCE OF ELEVATION JUNCT. OF ROADS
ELEV. 765'

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 ISSUED AND PRESCRIBED BY THE DEPARTMENT OF MINES.
(SIGNED) Ronnel E. Westfall
R.P.E. _____ L.L.S. 645



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
FORM IV-6
(8-78)



DATE FEB. 10, 19 91
OPERATOR'S WELL NO. COTTRILL NO. 4
API WELL NO. _____
47 - 017 - 3883 - F
STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
(IF "GAS,") PRODUCTION ___ STORAGE ___ DEEP ___ SHALLOW X
LOCATION: ELEVATION 845' WATER SHED MIDDLE ISLAND CREEK
DISTRICT WEST UNION COUNTY RODDRIDGE
QUADRANGLE WEST UNION 7.5'
SURFACE OWNER BERTHA MONTGOMERY ACREAGE 28.64 of 290
OIL & GAS ROYALTY OWNER MARY WELCH ADMIX LEASE ACREAGE 290
LEASE NO. _____
PROPOSED WORK: DRILL X CONVERT ___ DRILL DEEPER ___ REDRILL ___ FRACTURE OR STIMULATE X PLUG OFF OLD FORMATION ___ PERFORATE NEW FORMATION ___ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____

PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
TARGET FORMATION ALEXANDER ESTIMATED DEPTH 5400'
WELL OPERATOR'S ADDRESS: Term Energy Corporation DESIGNATED AGENT: Jean Freeland
713 East Main Street ADDRESS: Same Address
Harrisville, wva. 26362- PH: 304-643-3500

JUN 27 1991

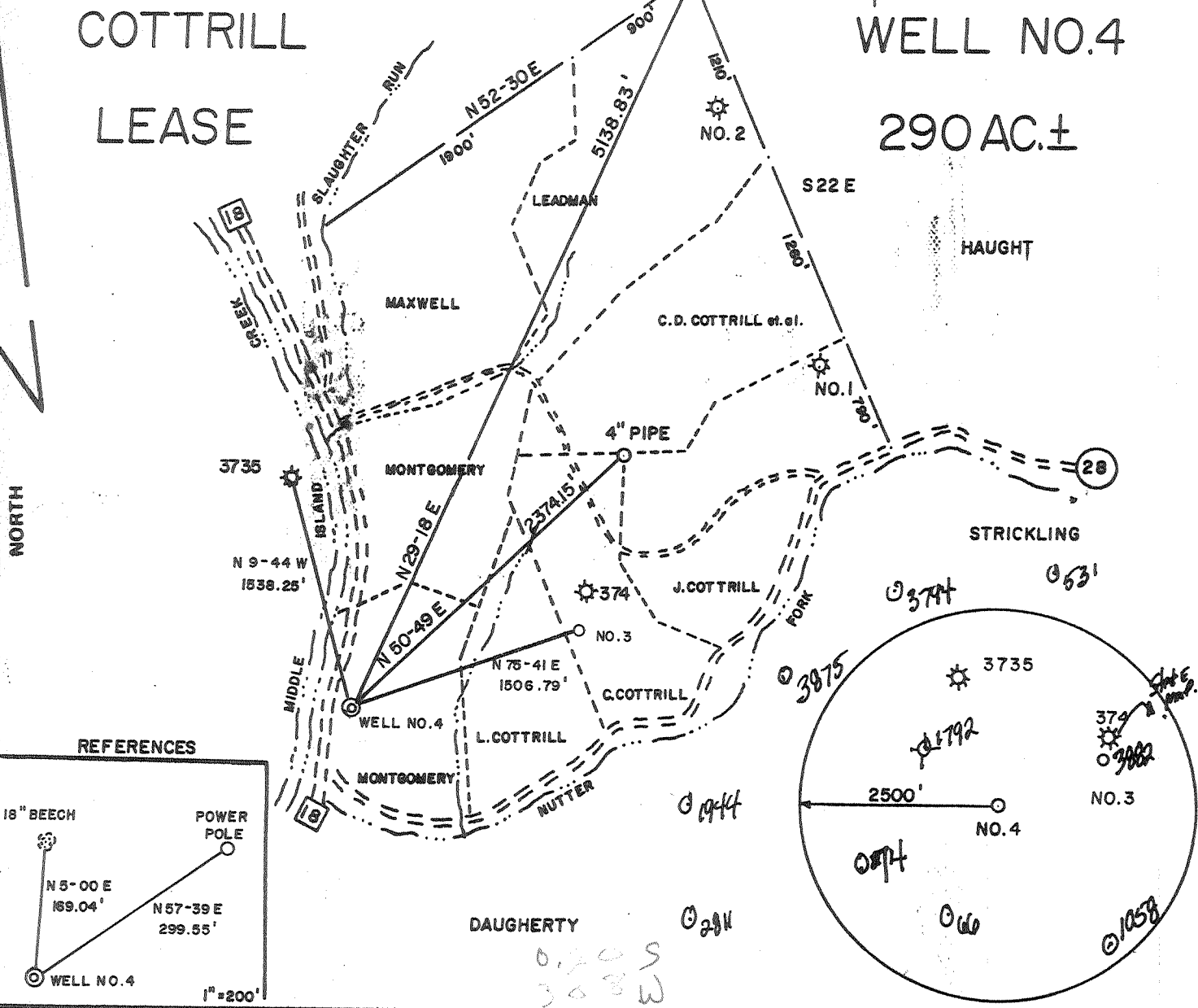
*Janil
3/22/91*

LATITUDE 39-20-00

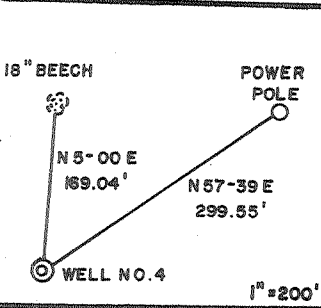
WELL NO.4

290 AC.±

LONGITUDE 80-47-30

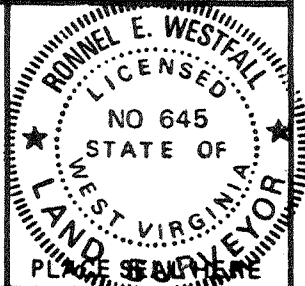


REFERENCES



FILE NO. _____
 DRAWING NO. _____
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY 1/200
 PROVEN SOURCE OF ELEVATION JUNCT. OF ROADS
 ELEV. 765'

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 ISSUED AND PRESCRIBED BY THE DEPARTMENT OF MINES.
 (SIGNED) *Joseph C. Westfall*
 R.P.E. _____ L.L.S. 645



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 FORM IV-6 (8-78)



DATE FEB. 10, 19 91
 OPERATOR'S WELL NO. COTTRILL NO. 4
 API WELL NO. _____
47 - 017 - 3883
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION ___ STORAGE ___ DEEP ___ SHALLOW X
 LOCATION: ELEVATION 845' WATER SHED MIDDLE ISLAND CREEK
 DISTRICT WEST UNION 8 COUNTY DODDRIDGE
 QUADRANGLE WEST UNION 7.5' 415 SB
 SURFACE OWNER BERTHA MONTGOMERY ACREAGE 28.64 of 290
 OIL & GAS ROYALTY OWNER MARY WELCH ADMIX. LEASE ACREAGE 290
 LEASE NO. _____

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

PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
 TARGET FORMATION ALEXANDER ESTIMATED DEPTH 5400'
 WELL OPERATOR TERM ENERGY CORP. DESIGNATED AGENT JEAN FREELAND
 ADDRESS 713 E MAIN ST. 886 ADDRESS 713 E MAIN ST.
HARRISVILLE, WV 26362 HARRISVILLE, WV 26362

APR 8 1991

6-6 Wilbur (092)

RECEIVED
 WV Division of
 Environmental Protection

NOV 02 1994

Permitting
 Office of Oil & Gas

16-Jun-94
 API # 47- 17-03883 F

State of West Virginia
 Division of Environmental Protection
 Section of Oil and Gas

Well Operator's Report of Well Work

Farm name: MONTGOMERY, BERTHA Operator Well No.: COTTRILL #4

LOCATION: Elevation: 845.00 Quadrangle: WEST UNION

District: WEST UNION County: DODDRIDGE
 Latitude: 1150 Feet South of 39 Deg. 20Min. 0 Sec.
 Longitude 4450 Feet West of 80 Deg. 47 Min. 30 Sec.

Company: TERM ENERGY CORP.
 713 EAST MAIN STREET
 HARRISVILLE, WV 26362-0000

Agent: JEAN FREELAND

Inspector: MIKE UNDERWOOD
 Permit Issued: 06/16/94
 Well work Commenced: 09/20/94
 Well work Completed: 10/04/94
 Verbal Plugging
 Permission granted on: _____
 Rotary Cable Rig
 Total Depth (feet) 5156 actual
 Fresh water depths (ft) 41
 Salt water depths (ft) None

Is coal being mined in area (Y/N)? N
 Coal Depths (ft): _____

Casing & Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
11 3/4"	17'	0	0
8 5/8"	909.85'	909.85'	306.8
4 1/2"	5156.25'	5156.25'	513.4

OPEN FLOW DATA

Producing formation Alexander, Benson, Bradford Pay zone depth (ft) 4340-5060.5
 Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
 Final open flow 103 MCF/d Final open flow 0 Bbl/d
 Time of open flow between initial and final tests _____ Hours
 Static rock Pressure 130 psig (surface pressure) after 24 Hours

Comingled Production

Second producing formation Gordon, Weir, Big Inj Ray zone depth (ft) 1819-2463
 Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
 Final open flow 411 MCF/d Final open flow show Bbl/d
 Time of open flow between initial and final tests _____ Hours
 Static rock Pressure 225 psig (surface pressure) after 24 Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: Jean Freeland
 TERM ENERGY CORP.

By: Designated Agent
 Date: 11-1-94

COTTRILL #4

10-04-94

PERFORATED:	GORDON:	2461 - 2463;	6	HOLES .39
	WEIR:	2069 - 2125;	14	HOLES .39
	BIG INJUN:	1819 - 1889;	20	HOLES .39

SET SMALL MOUTH PLUG AT 2478'
SET WIDE MOUTH PLUG AT 1900'

TWO STAGE ENERGIZE WATER FRAC

- GORDON & WEIR: MAX TR PRESS 3080; AVG RATE 26; AVG PRESS 3006;
40,000# 20/40; MAX CONC 4; TOTAL ACID 750 GAL; ISIP
1750; 10 MIN SIP 1470; TOTAL NITROGEN 83,000 SCF;
TOTAL FLUIDS 585 BBLs.
- BIG INJUN: MAX TR PRESS 2800; AVG RATE 28; AVG PRESS 2675;
40,000# 20/40; MAX CONC 4; TOTAL ACID 500 GAL; ISIP
1750; 10 MIN SIP 1390; TOTAL NITROGEN 75,000 SCF;
TOTAL FLUIDS 545 BBLs.

19329

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

Well Operator's Report of Well Work

Farm name: MONTGOMERY BERTHA Operator Well No.: COTRILL 4

LOCATION: Elevation: 845.00 Quadrangle: WEST UNION

District: WESTUNION County: DODDRIDGE
Latitude: 1150 Feet South of 39 Deg. 20Min. 0 Sec.
Longitude 4450 Feet West of 80 Deg. 47 Min. 30 Sec.

Company: TERM ENERGY CORP.
713 EAST MAIN STREET
HARRISVILLE, WV 26362-0000

Casing & Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
11 3/4"	17'	0	0
8 5/8"	909.85'	909.85'	306.8
4 1/2"	5156.25'	5156.25'	293

Agent: JEAN FREELAND

Inspector: MIKE UNDERWOOD
Permit Issued: 04/01/91
Well work Commenced: 7/8/91
Well work Completed: 7/18/91
Verbal Plugging
Permission granted on:
Rotary xx Cable _____ Rig
Total Depth (feet) 5175'
Fresh water depths (ft) 41'
Salt water depths (ft) None

Is coal being mined in area (Y/N)? N
Coal Depths (ft): _____

OPEN FLOW DATA

Producing formation Alexander Pay zone depth (ft) 5024'-5060'
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

COMINGLED PRODUCTION

Second producing formation Benson & Bradford Pay zone depth (ft) 4736.5'
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow 300 MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure 1075 psig (surface pressure) after 12 Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: TERM ENERGY CORP.

By: Jean Freeland Agent
Date: July 22, 1991

SEP 16 1991

TOTTRILL #4

07/18/91	PERFORATED ALEXANDER	5024 - 5060.5; 14 HOLES .39
	BENSON	4733 - 4736.5; 8 HOLES .39
	BRADFORD	4340 - 4341; 3 HOLES .39

TWO STAGE ENERGIZED WATER FRAC

- ALEXANDER: MAX TR PRESS 3800; AVG RATE 23.9; AVG PRESS 3512;
50,000# 20/40; 5,000# 80/100; MAX CONC 4;
TOTAL ACID 500 GAL; ISIP 1600; 5 MIN SIP 1470;
TOTAL NITROGEN 98,850 SCF; TOTAL FLUIDS 761 BBLs.

- BENSON & BRADFORD: MAX TR PRESS 2800; AVG RATE 20.1; AVG PRESS 2716;
30,000# 20/40; 5,000# 80/100; MAX CONC 3.5;
TOTAL ACID 750 GAL; ISIP 1610; 5 MIN SIP 1470;
10 MIN SIP 1450; TOTAL NITROGEN 68,000 SCF; TOTAL
FLUIDS 635 BBLs.

<u>WELL LOG</u>	<u>TOP</u>	<u>BOTTOM</u>	<u>WATER</u>
SAND, SHALE & RR	0	1669	41' - 1/4" STREAM
LITTLE LIME	1669	1681	
SHALE	1681	1694	
BIG LIME	1694	1822	
BIG INJUN	1822	1901	
SAND & SHALE	1901	5175	

<u>GEOPHYSICAL LOG</u>	<u>TOP</u>	<u>BOTTOM</u>
BIG LIME	1733	1810
BIG INJUN	1810	1897
WEIR	2046	2152
BEREA	2251	2256
GORDON	2454	2508
WARREN	3114	3202
SPEECHLY	3238	3750
BALLTOWN	4060	4217
BRADFORD	4278	4354
BENSON	4732	4737
ALEXANDER	4982	5067

12021

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

Issued 04/01/91
Expires 04/01/93

- 1) Well Operator: 826 TERM Energy Corporation 49105 (8) 670
- 2) Operator's Well Number: Cottrill #4 3) Elevation: 845'
- 4) Well type: (a) Oil / or Gas X /
(b) If Gas: Production X / Underground Storage /
Deep / Shallow X /
- 5) Proposed Target Formation(s): 439 Alexander
- 6) Proposed Total Depth: 5300 feet
- 7) Approximate fresh water strata depths: 140'
- 8) Approximate salt water depths: 1250'
- 9) Approximate coal seam depths: None
- 10) Does land contain coal seams tributary to active mine? Yes / No X /
- 11) Proposed Well Work: Drill & Stimulate new 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"	J-55	42#	17'	0	38 CSR 11.3
Fresh Water	8 5/8"	J-55	20#	945'	945'	CTS 38 CSR 11.2.2
Coal						
Intermediate						
Production	4 1/2"	J-55	11.6 10.5	84 5101	84 5101	250 38 CSR 11.1
Tubing						
Liners						

RECEIVED
Division of Energy

PACKERS : Kind _____
Sizes _____
Depths set _____

MAR 15 91

Permitting
Oil and Gas Section

For Division of Oil and Gas Use Only

1800
Fee(s) paid: Well Work Permit Reclamation Fund WPCP
 Plat WW-9 WW-2B Bond Blanket letter Agent
(Type)

- 1) Date: March 7, 1991
- 2) Operator's well number
Cottrill #4
- 3) API Well No: 47 - 07 - 3883
State - County - Permit

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

RECEIVED
Division of Energy

NOTICE AND APPLICATION FOR A WELL WORK PERMIT

MAR 15 91

- 4) Surface Owner(s) to be served:
 - (a) Name Bertha Montgomery
Address Rt. 18N
West Union, WV 26456
 - (b) Name _____
Address _____
 - (c) Name _____
Address _____
- 5) (a) Coal Operator:
 - Name x N/A
Address _____
 - (b) Coal Owner(s) with Declaration
Name _____
Address _____
 - Name N/A
Address _____
 - (c) Coal Lessee with Declaration
Name _____
Address _____
- 6) Inspector Mike Underwood
Address Rt. 2 Box 135
Salem, WV 26426
Telephone (304)- 782-1043

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
 _____ 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)
- 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 TERM Energy Corporation
 By: Jean Freeland
 Its: Agent
 Address 713 E. Main St.
Harrisville, WV 26362
 Telephone 304-643-4500

Subscribed and sworn before me this 7th day of MARCH, 1991

Rodney L. Windom
 My commission expires June 12, 1994 Notary Public

017 3883 Frac

RECEIVED
WV Dept. of Energy
Environmental Protection

FORM WW-2B

Page of

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

Issued 06/16/94

Expires 06/16/96

19329

Well Operator: Term Energy Corporation 49105 ⁸⁸⁶ (8) ⁶⁷¹

Operator's Well Number: Cottrill #4 47-017-3883F 3) Elevation: 845'

Well type: (a) Oil or Gas

(b) If Gas: Production Underground Storage
Deep Shallow

5) Proposed Target Formation(s): Weir/ Big Injun ³⁸⁰

6) Proposed Total Depth: 5156 Actual feet

7) Approximate fresh water strata depths: 140'

8) Approximate salt water depths: 1250'

9) Approximate coal seam depths: None

10) Does land contain coal seams tributary to active mine? Yes / No

11) Proposed Well Work: Set Bridge plug at 2260', perf and squeeze cement from 2250' to 1650'. Set small mouth frac plug at 2150', frac weir.

12) Set wide mouth plug at 1900', frac Big Injun comingle with lower
CASING AND TUBING PROGRAM Production

TYPE	SPECIFICATIONS			FOOTAGE INTERVALS		CEMENT
	Size	Grade	Weight per ft.	For drilling	Left in well	Fill-up (cu. ft.)
Conductor	11 3/4"	J-55	42#	17	0	
Fresh Water	8 5/8"	J-55	20#	945'	945'	CTS 306.8
Coal						
Intermediate	4 1/2"	J-55	11.6# 10.5#	84' 5072'	84' 5072'	293
Production						
Tubing						
Liners						

PACKERS : Kind _____
Sizes _____
Depths set _____

For Division of Oil and Gas Use Only

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

33/19

1) Date: 2 May 5, 1994
2) Operator's well number
Cottrill #4
3) API Well No: 47 - 017 - 3883 Frac
State - County - Permit

STATE OF WEST VIRGINIA
DIVISION OF ENVIRONMENTAL PROTECTION, OFFICE OF OIL AND GAS

NOTICE AND APPLICATION FOR A WELL WORK PERMIT

4) Surface Owner(s) to be served:
(a) Name Bertha Montgomery
Address Rt. 18N
West Union, WV 26456
(b) Name _____
Address _____
(c) Name _____
Address _____
6) Inspector Mike Underwood
Address Rt. 2 Box 135
Salem, WV 26426
Telephone (304)-782-1043

5) (a) Coal Operator:
Name N/a
Address _____
(b) Coal Owner(s) with Declaration
Name N/A
Address _____
Name _____
Address _____
(c) Coal Lessee with Declaration
Name N/A
Address _____

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

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

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- 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 _____ Term Energy Corporation
By: Alan Ireland Jean Freeland
Its: Designated Agent
Address 713 E. Main St.
Harrisville, WV 26362
Telephone (304) 643-4500



OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
JUDITH ISNER
Rt. 1 Box 60
Cairo, WV 26337
My Comm. Expires Sept. 15, 2003

Subscribed and sworn before me this 11th day of May, 1994

Judith Isner

Notary Public

My commission expires September 15, 2003