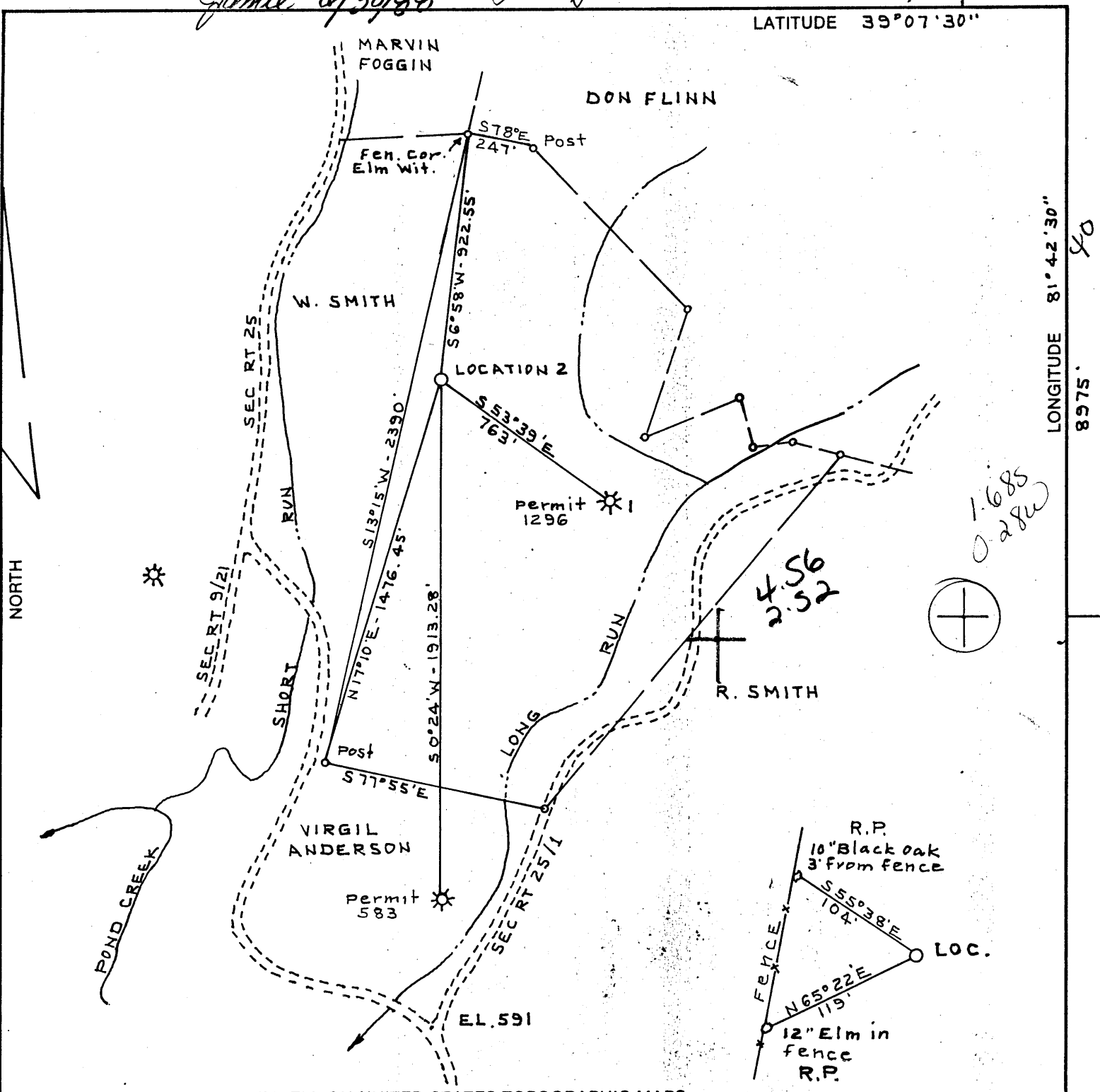


Jamie 6/30/88

10 1550

LATITUDE 39°07'30"



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

FILE NO. BK 112 PG 26
 DRAWING NO. _____
 SCALE 1" = 500
 MINIMUM DEGREE OF ACCURACY 1:200
 PROVEN SOURCE OF ELEVATION Road forks S1°W 2387' from location El. 591

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 ENERGY.
 (SIGNED) C. J. Volley Jr.
 R.P.E. L.S. 92

PLACE SEAL HERE

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENERGY
 OIL AND GAS DIVISION



DATE JUNE 21, 1988
 OPERATOR'S WELL NO. HARTSHORN #2
 API WELL NO.

47 - 107 - 1436
 STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
 LOCATION: ELEVATION 745.2 WATERSHED LONG RUN OF POND CREEK
 DISTRICT HARRIS COUNTY WOOD
 QUADRANGLE POND CREEK 553 009 4 Belleville WC
 SURFACE OWNER GLENN A. HARTSHORN ACREAGE 60
 OIL & GAS ROYALTY OWNER GLENN A. HARTSHORN LEASE ACREAGE 60

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

PLUG AND ABANDON ___ CLEAN OUT AND REPLUG ___
 TARGET FORMATION DEVONIAN SHALE ESTIMATED DEPTH 4500'
 WELL OPERATOR H.D. WELLS OIL & GAS EXP. DEV. DESIGNATED AGENT H.D. WELLS
 ADDRESS P.O. BOX 1785 ADDRESS P.O. BOX 1785
CHARLESTON, WV 25326 943 CHARLESTON WV 25326

COUNTY NAME PERMIT

6-6 New England

(296)

JUN 11 1988



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DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

State of West Virginia
DEPARTMENT OF ENERGY
Oil and Gas Division

Date August 16, 1988
Operator's
Well No. Hartshorn #2
Farm Hartshorn
API No. 47 - 107 - 1436

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: 745.2 Watershed Long Run of Pond Creek
District: Harris County Wood Quadrangle Pond Creek

COMPANY H. D. Wells Oil & Gas Exp. & Dev., Inc.

ADDRESS P.O. Box 1785, Charleston, WV 25326

DESIGNATED AGENT H. D. Wells, III

ADDRESS same

SURFACE OWNER Glen A. Hartshorn

ADDRESS Belleville, WV

MINERAL RIGHTS OWNER same

ADDRESS _____

OIL AND GAS INSPECTOR FOR THIS WORK Glen P.

Robinson ADDRESS Mineralwells, WV

PERMIT ISSUED 7/5/88

DRILLING COMMENCED 7/21/88

DRILLING COMPLETED 7/31/88

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	748'	748'	to surface
7			
5 1/2			
4 1/2	2,171	2,171	280 sks
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Berea Depth 2055 feet

Depth of completed well 2123 feet Rotary x / Cable Tools _____

Water strata depth: Fresh 85 feet; Salt 1,050 feet

Coal seam depths: n/a Is coal being mined in the area? no

OPEN FLOW DATA

Producing formation Berea Pay zone depth 2055-2056 feet

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

Final open flow 125 Mcf/d Final open flow 0 Bbl/d

Time of open flow between initial and final tests 8 hours

Static rock pressure 485 psig (surface measurement) after 4 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

SEP 09 1988

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

Perf: Berea 2055-2056-14 holes

Foam Frac 50,000 lbs. 20/40 sand
 1000 gal. methanol
 500,000 scf. nitrogen

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Clay Red			0	20	
Shale Dark			20	90	Fresh Water @ 85'
Sand & Shale			90	450	
Red Rock			450	724	
Shale			724	1100	
Sand-Salt			1100	1200	
Shale			1200	1600	
Injun Sand			1600	1675	
Shale			1675	2055	
✓Berea			2055	2056	
Shale			2056	2123	Total Depth

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 DEPARTMENT OF ENERGY

(Attach separate sheets as necessary)

H. D. Wells Oil & Gas Exploration & Development, Inc.
 Well Operator

By: *H. D. Wells*
 Date: August 16, 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 coal, encountered in the drilling of a well."

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

52900, 2, 552

- 1) Well Operator: H. D. Wells Oil & Gas Exp. & Dev., Inc.
- 2) Operator's Well Number: Hartshorn #2 3) Elevation: 745.2
- 4) Well type: (a) Oil or Gas
(b) If Gas: Production Underground Storage
Deep Shallow
- 5) Proposed Target Formation(s): Berea
- 6) Proposed Total Depth: 2,600 feet
- 7) Approximate fresh water strata depths: 50', 210', 505', 491, 516', 602', 703'
From Fresh Water map, special FWH map.
- 8) Approximate salt water depths: 1000', 1159', 1,250', 1,390', 1,593'
Wood. 421, 478, 583, 588, 712, 796
- 9) Approximate coal seam depths: OK N/A
- 10) Does land contain coal seams tributary to active mine? Yes No
- 11) Proposed Well Work: Drill
- 12)

CASING AND TUBING PROGRAM

TYPE	SPECIFICATIONS		FOOTAGE INTERVALS		CEMENT	
	Size	Grade	Weight per ft.	For drilling	Left in well	Fill-up (cu. ft.)
Conductor				733'	733'	Cement to surface
Fresh Water	8-5/8			380'	380'	cir. to surface per Rule 45.05
Coal						38CSR18-11.3
Intermediate						
Production	4-1/2			2,600'	2,600'	280 sks or as required by Rule 45.05
Tubing						38CSR18-11.1
Liners						

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PACKERS : Kind _____
Sizes _____
Depths set _____

4901
20
Fee(s) paid: 1 Well Work Permit 1 Reclamation Fund 1 WPCP
Plat 1 WW-9 1 WW-2B 1 Bond 50 Blm Ket Agent 1
(Type)

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

For Division of Oil and Gas Use Only

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JUN 28 1988

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

1) Date: June 27, 1988
2) Operator's well number
Hartshorn #2
3) API Well No: 47 - 107 - 1436
State - County - Permit

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

NOTICE AND APPLICATION FOR A WELL WORK PERMIT

4) Surface Owner(s) to be served:
(a) Name Glen A. Hartshorn
Address Belleville, WV

(b) Name _____
Address _____

(c) Name _____
Address _____

5) (a) Coal Operator:
Name N/A
Address _____

(b) Coal Owner(s) with Declaration
Name _____
Address _____

Name _____
Address _____

6) Inspector Glen P. Robinson
Address Rt 1, #6 Mt. Pleasant Estate
Mineralwells, WV 26150
Telephone (304)-489-9162

(c) Coal Lessee with Declaration
Name _____
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)

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 H. D. Wells Oil & Gas Exp. & Dev., Inc.
By: [Signature]
Its: President
Address P.O. Box 1785
Charleston, WV 25326
Telephone (304) 346-2829

Subscribed and sworn before me this 27th day of June, 1988

[Signature] Notary Public
My commission expires November 20, 1995