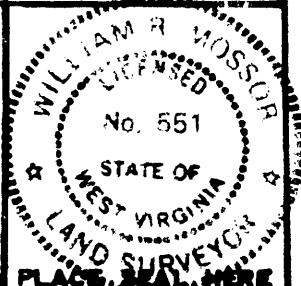


FILE NO. \_\_\_\_\_  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1"=500'  
 MINIMUM DEGREE OF ACCURACY 1:200  
 PROVEN SOURCE OF ELEVATION RD. INT. ELEV. 685'

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) *William R. Mossor*  
 R.P.E. \_\_\_\_\_ L.L.S. 551



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 FORM IV-6  
 (8-79)



DATE 20 APRIL, 19 82  
 OPERATOR'S WELL NO KERNS #2  
 API WELL NO. 47-085-5683  
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION

WELL TYPE: OIL  GAS  LIQUID INJECTION \_\_\_\_\_ WASTE DISPOSAL \_\_\_\_\_  
 (IF "GAS", PRODUCTION  STORAGE \_\_\_\_\_ DEEP \_\_\_\_\_ SHALLOW   
 LOCATION: ELEVATION 840' WATER SHED SOUTH FORK OF HUGHES RIVER  
 DISTRICT GRANT 2 450 COUNTY RITCHIE  
 QUADRANGLE MAC FARLAN 7 1/2 QUAD, Harrisville 15' WC 057  
 SURFACE OWNER M.C. KERNS ACRES 104  
 OIL & GAS ROYALTY OWNER M.C. KERNS, ET AL. LEASE ACRES 105  
 LEASE NO. \_\_\_\_\_  
 PROPOSED WORK: DRILL  CONVERT \_\_\_\_\_ DRILL DEEPER \_\_\_\_\_ REDRILL \_\_\_\_\_ FRACTURE OR STIMULATE \_\_\_\_\_ PLUS OFF OLD FORMATION \_\_\_\_\_ PERFORATE NEW FORMATION \_\_\_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_  
 PLUG AND ABANDON \_\_\_\_\_ CLEAN OUT AND REPLUG \_\_\_\_\_  
 TARGET FORMATION MARCELLUS SHALE ESTIMATED DEPTH 5500' JUN 14 1982  
 WELL OPERATOR HIGHLAND RESOURCES DESIGNATED AGENT STEPHEN T. LANDVOIGT  
 ADDRESS STAR ROUTE ADDRESS GENERAL DELIVERY  
 ELLENBORO, W.VA. 26346 HIGHLAND, W.VA. 26371

6-6 MacFarlan (119)



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

Well Fraced From <sup>up to</sup> 2280 <sup>to Ann.</sup> 4990 using a three stage N<sub>2</sub> & CO<sub>2</sub> treatment, 2 Mscf of N<sub>2</sub> and 80,000 lbs of CO<sub>2</sub>  
100 - .39" holes at random spacing in pay zone

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Surface, sands & shales			0	1540	
Big Lime			1540	1620	
Big Injun			1620	1810	show oil
Wier Sand			1850	1890	
Berea Sand			2170	2190	
Gantz Sand			2280	2300	show oil & gas
Gordon			2680	2704	
Devonian Shale			2704	5700	Various shows oil & gas

**RECEIVED**  
FEB 16 1988

DIVISION OF OIL & GAS  
DEPARTMENT OF ENERGY

349  
840  
53

(Attach separate sheets as necessary)

HIGHLAND RESOURCES, INC.  
Well Operator  
By: Alphonse Anderson, President  
Date: 2/8/88

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."

345



Operator's Well No. KERNs #2

API Well No. 47 - 085 - 5683  
State County Permit

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

WELL TYPE: Oil X / Gas X /  
(If "Gas", Production X / Underground storage \_\_\_\_\_ / Deep \_\_\_\_\_ / Shallow X /)

LOCATION: Elevation: 840' Watershed: South Fork of Hughes River  
District: Grant County: Ritchie Quadrangle: MacFarlan 7 1/2 Quad.

WELL OPERATOR HIGHLAND RESOURCES, INC. DESIGNATED AGENT Stephen T. Landvoigt  
Address Box 56 Address Box 56  
Ellenboro, WV 26346 Ellenboro, WV 26346

OIL & GAS ROYALTY OWNER M.C.Kerns et. al.  
Address 1315 16th St.  
Parkersburg, WV 26101

COAL OPERATOR N.A.  
Address \_\_\_\_\_

Acreage 104 ac.

COAL OWNER(S) WITH DECLARATION ON RECORD:

SURFACE OWNER M.C. Kerns  
Address Same as mineral owners

Name M.C. Kerns et. al.  
Address Same as mineral owners

Acreage 104 ac.

Name \_\_\_\_\_  
Address \_\_\_\_\_  
**RECEIVED**  
MAY - 7 1982

FIELD SALE (IF MADE) TO:  
Address N.A.

COAL LESSEE WITH DECLARATION ON RECORD:  
Name None  
Address \_\_\_\_\_

OIL & GAS INSPECTOR TO BE NOTIFIED  
Name Deo Mace  
Address Rt. 1, Box 5  
Sandridge, WV 25274

The undersigned well operator is entitled to operate for oil or gas purposes at the above location under a deed \_\_\_\_\_ / lease X other contract \_\_\_\_\_ / dated Dec. 23, 19 81, to the undersigned well operator from Petroleum Services, Inc.  
(If said deed, lease, or other contract has been recorded:)

Recorded on Dec. 31, 19 81, in the office of the Clerk of the County Commission of Ritchie County, West Va., in Lease Book 140 at page s 349-50 permit is requested as follows:

PROPOSED WORK: Drill X / 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 or delivery of this Permit Application to the Department of Mines at Charleston, West Virginia.

PLEASE SUBMIT COPIES OF ALL GEOPHYSICAL LOGS DIRECTLY TO:  
WEST VIRGINIA OIL AND GAS CONSERVATION COMMISSION  
1615 WASHINGTON STREET EAST  
CHARLESTON, WV 25311  
TELEPHONE: (304) 348-3092

HIGHLAND RESOURCES, INC.  
Well Operator  
By [Signature]  
Its President

PROPOSED WORK ORDER

THIS IS AN ESTIMATE ONLY  
ACTUAL INFORMATION MUST BE SUBMITTED ON FORM IV-3S UPON COMPLETION

DRILLING CONTRACTOR (IF KNOWN) N.A.

Address \_\_\_\_\_

GEOLOGICAL TARGET FORMATION, Marcellus Shale

Estimated depth of completed well, 5990 feet Rotary X / Cable tools \_\_\_\_\_ /

Approximate water strata depths: Fresh, 30 feet; salt, 1800 feet.

Approximate coal seam depths: N.A. Is coal being mined in the area? Yes \_\_\_\_\_ / No \_\_\_\_\_ /

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	11 3/4"			X			40'		Kinds
Fresh Water	8 5/8"						200	CTS	
Coal									Sizes
Intermediate	8 5/8"			X			2000'	200 sk	
Production	4 1/2"			X			5990'	200 sk	Depths set
Tubing									
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 or stimulating is to be part of the work for which a permit is sought and is noted as such on the Form IV-2 filed in connection therewith.

THIS PERMIT MUST BE POSTED AT THE WELL SITE.

ALL PROVISIONS BEING IN ACCORDANCE WITH CHAPTER 22,

ARTICLE 4 OF THE W. VA. CODE, THE LOCATION IS HEREBY

APPROVED FOR drilling. THIS PERMIT SHALL EXPIRE

IF OPERATIONS HAVE NOT COMMENCED BY 2-9-83.

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.

WAIVER

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 \_\_\_\_\_