

LONGITUDE 81°42'30"

FILE NO. 6-4  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1"=1,000'  
 MINIMUM DEGREE OF ACCURACY 1:200  
 PROVEN SOURCE OF ELEVATION INTERSECTION W.V. RT. 11 AND 1/6, ELEV. = 644

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) Vincent W. Wood  
 R.P.E. \_\_\_\_\_ L.L.S. 664

PLACE SEAL HERE

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION



DATE APRIL 21, 19 83  
 OPERATOR'S WELL NO. KEM 355  
 API WELL NO. \_\_\_\_\_  
47 - 107 - 1258-Frac  
 STATE COUNTY PERMIT

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS,") PRODUCTION X STORAGE \_\_\_ DEEP X SHALLOW \_\_\_  
 LOCATION: ELEVATION 769 WATER SHED STILLWELL HOLLOW  
 DISTRICT HARRIS COUNTY WOOD  
 QUADRANGLE LUBECK  
 SURFACE OWNER WILBERT G. AND CLARA L. HOFMANN ACREAGE 189.69  
 OIL & GAS ROYALTY OWNER WILBERT G. AND CLARA L. HOFMANN LEASE ACREAGE 195  
 LEASE NO. 86-02-1998  
 PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_ PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_

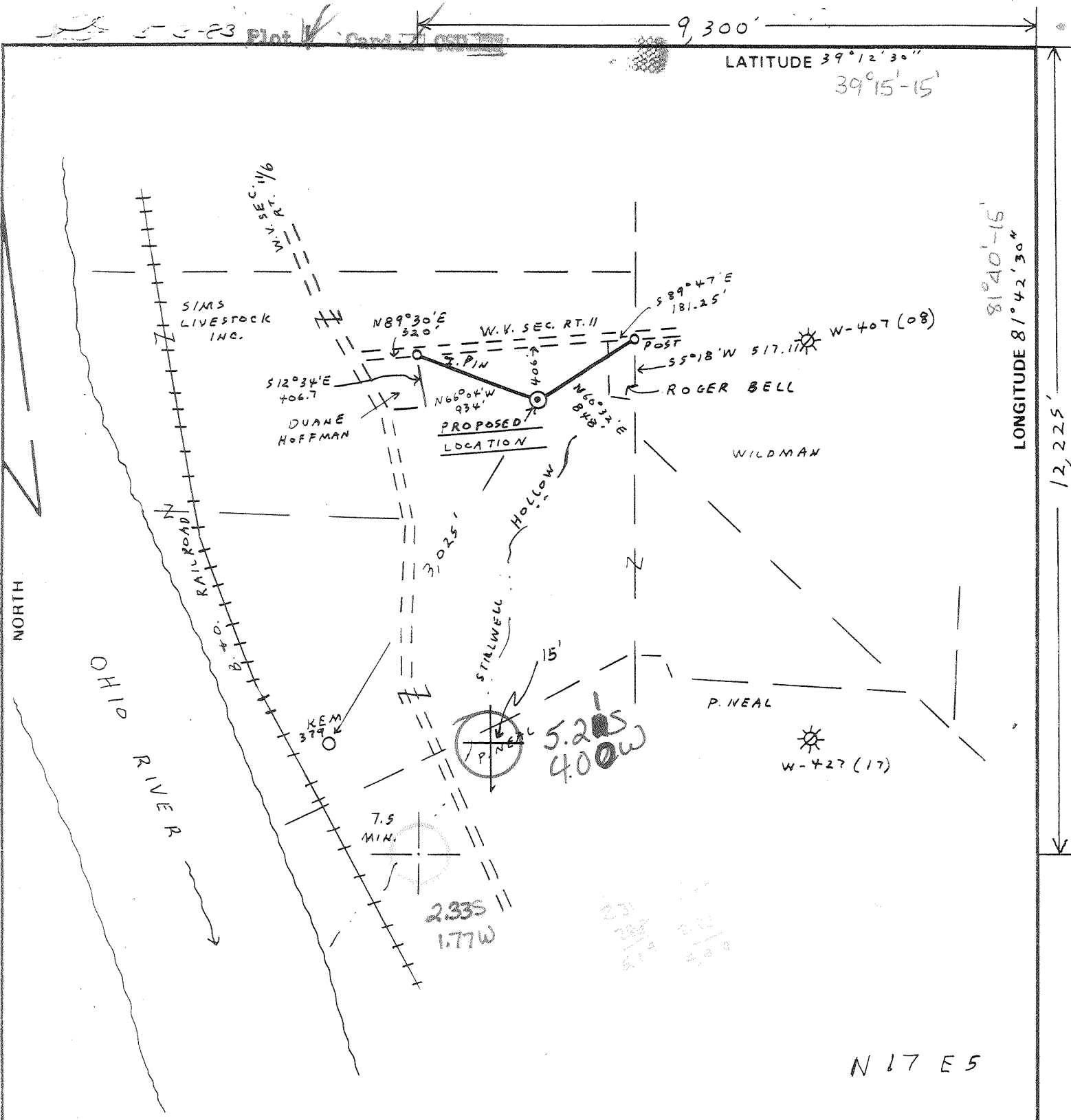
PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_  
 TARGET FORMATION ORISKANY ESTIMATED DEPTH 4274'  
 WELL OPERATOR KAISER EXPLOR. & MIN. CO. DESIGNATED AGENT KAISER EXPLORATION AND MINING CO.  
 ADDRESS P.O. BOX 8 ADDRESS P.O. BOX 8  
DEEPWELL RAVENSWOOD, W.V. 26164 RAVENSWOOD, W.V. 26164

SEP 16 1985

OWWD, 6-6 New England (296)

FORM IV-6 (8-78)

WOOD 1258



FILE NO. 6-4  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1" = 1,000'  
 MINIMUM DEGREE OF ACCURACY 1:200  
 PROVEN SOURCE OF ELEVATION INTERSECTION W.V. RT. 11 AND 1/6, ELEV. = 644

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) Vincent W. Wood  
 R.P.E. \_\_\_\_\_ L.L.S. 664

PLACE SEAL HERE

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION



DATE APRIL 21, 1983  
 OPERATOR'S WELL NO. KEM 355  
 API WELL NO. \_\_\_\_\_

47 - 107 - 1258  
 STATE COUNTY PERMIT

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS.") PRODUCTION X STORAGE \_\_\_ DEEP X SHALLOW \_\_\_  
 LOCATION ELEVATION 769 WATER SHED STILLWELL HOLLOW  
 DISTRICT HARRIS COUNTY WOOD  
 QUADRANGLE LUBECK Belleville 15' NW  
 SURFACE OWNER WILBERT G. AND CLARA L. HOFMANN ACREAGE 189.69  
 OIL & GAS ROYALTY OWNER WILBERT G. AND CLARA L. HOFMANN LEASE ACREAGE 195  
 LEASE NO. 86-02-1938

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

DEEPWELL  
 PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_  
 TARGET FORMATION ORISKANY ESTIMATED DEPTH 6 ft. New England (296) deep  
 WELL OPERATOR KAISER EXPLOR. & MIN. CO. DESIGNATED AGENT KAISER EXPLORATION AND MINING CO.  
 ADDRESS P.O. BOX 8 RAVENSWOOD, W.V. 26164 ADDRESS P.O. BOX 8 RAVENSWOOD, W.V. 26164

FORM IV-6 (8-78)

WOOD 1258



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

9/1/83 - Oriskany Sandstone Perforation: 4184' - 4191', 3 holes/ft., 21 holes, 0.50" diameter.

9/6/83 - Oriskany Sandstone Fracture: 75 quality foam. Breakdown pressure = 1500 psig. 45,000# of 20/40 sand. Treating pressure = 2210 psig w/3 BPM & 10,000 SCF/min N<sub>2</sub>. Total water of 276 bbls. 5 minute SI = 1790 psig.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Soil and Shale			0	159	
Sand			159	205	
Siltstone and Shale			205	477	
Sand			477	564	
Shale			564	772	
Sand and Shale			772	847	
Shale			847	1024	
Sand (broken)			1024	1114	
Shale			1114	1180	
Little Dunkard Sand			1180	1238	
Shale			1238	1274	
Big Dunkard Sand			1274	1356	
Shale and Siltstone			1356	1471	
Salt Sands			1471	1600	
Shale			1600	1952	
Coffee Shale			1952	1970	
Berea Sand			1970	1973	S/G
Shale			1973	3101	
Brown Shale			3101	3573	S/G
Shale			3573	4082	
Onondaga Lime			4082	4170	
Oriskany Sand			4170	4202	S/G
Helderberg Lime			4202	4277	
Total Depth			4277		

(Attach separate sheets as necessary)

KAISER EXPLORATION AND MINING COMPANY

Well Operator

By: R. A. P.

Date: General Manager

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."

7/85



1) Date: August 14, 1985  
 2) Operator's Well No. KEM #355  
 3) API Well No. 47-107-1258 Frac  
 State County Permit

*Handwritten:* AUG 22 1985

STATE OF WEST VIRGINIA

DEPARTMENT OF ENERGY, OIL AND GAS DIVISION  
 DEPARTMENT OF ENERGY APPLICATION FOR A WELL WORK PERMIT

- 4) WELL TYPE: A Oil  Gas  B (If "Gas", Production  Underground storage  Deep  Shallow )
- 5) LOCATION: Elevation: 769' Watershed: Stillwell Hollow  
 District: Harris County: Wood Quadrangle: Lubeck
- 6) WELL OPERATOR: Kaiser Exploration and Mining Company CODE: 25330  
 Address: P. O. Box 8 Ravenswood, WV 26164
- 7) DESIGNATED AGENT: R. A. Pryce  
 Address: Same
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED: Name: Glen Robinson  
 Address: Rt. 1, #6 Mineral Wells, WV
- 9) DRILLING CONTRACTOR: Name: Kaiser Exploration and Mining Co.  
 Address: P. O. Box 8 Ravenswood, WV 26164
- 10) PROPOSED WELL WORK: Drill  / Drill deeper  / Redrill  / Stimulate  / Plug off old formation  / Perforate new formation  / Set permanent bridge plug at 3650'; cased on top of plug; Other physical change in well (specify) \_\_\_\_\_
- 11) GEOLOGICAL TARGET FORMATION, Brown Shale/Berea 401 frac Brown Shale; squeeze 4 1/2" casing over Berea
- 12) Estimated depth of completed well, 3650' feet
- 13) Approximate trata depths: Fresh, \_\_\_\_\_ feet; salt, \_\_\_\_\_ feet.
- 14) Approximate coal seam depths: \_\_\_\_\_ Is coal being mined in the area? Yes  / No

15) 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									Kinds
Fresh water	10 3/4"			Y		297'	297'	200 sks class A	Sizes
Coal									
Intermediate	7"			X		1707'	1707'	100 sks class A, 100 sks pozmix	
Production	4 1/2"			X		4252'	4252'	235 sks <del>class A</del> 50/50 pozmix	
Tubing									
Liners									Perforations: Top Bottom

OFFICE USE ONLY  
DRILLING PERMIT

Permit number 47-107-1258 Frac Date September 3 19 85

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. Notification must be given to the District Oil and Gas Inspector. (Refer to No. 8) Prior to the construction of roads, locations and pits for any permitted work. In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

The permitted work is as described in the Notice and Application, plat, and reclamation plan, subject to any modifications and conditions specified on the reverse hereof.

Permit expires September 3, 1987 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: <input checked="" type="checkbox"/>	Agent: <u>ALB</u>	Plat: <u>MMMN</u>	Casing Fee: <u>969001</u>	WPCP: <input checked="" type="checkbox"/>	S&E: <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
			<u>969000</u>			

NOTE: Keep one copy of this permit posted at the drilling location.

*Signature:* R. A. Pryce  
 Director, Division of Oil and Gas



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

- 10/9/85: Young Wireline set Alpha permanent bridge plug in 4 1/2" casing at 3700'(KB); dumped 2 dump bailers of calseal on top of plug. *Huron.*
- 10/17/85: Young Wireline perforated Brown Shale interval 3350'-3570' (KB), 19 holes; also perforated Berea Sandstone 1974'-1976' (KB), 8 holes; set Alpha frac plug at 2080'KB).
- 10/18/85: NOWSCO performed 2 stage frac treatment in Brown Shale and Berea Sandstone (75 quality foam); Brown Shale: used 500 gal of 15% HCL acid, 60,000# 20/40 sand, 636,300 scf of nitrogen, 283 bbl water; breakdown was 1950 psig; 2150 psig avg. treating pressure; ISIP: 1300 psig, 5 min SIP: 1180 psig (40 BPM foam rate). BEREa: used 45,000# 20/40 sand, 15,000# 10/20 sand, 618,500 scf of nitrogen, 306 bbl water, 20 bbl/min foam rate; 1420 psig breakdown; 1670 psig avg treating pressure: 1100 psig ISIP; 960 psig 5 min SIP.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Same as previously submitted					

(Attach separate sheets as necessary)

KAISER EXPLORATION AND MINING COMPANY  
 Well Operator  
 By:     *R A P*      
 Date:     November 6, 1985    

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



1) Date: April 29, 19 83  
 2) Operator's Well No. KEM #355  
 3) API Well No. 47 107 1258  
 State County Permit

DRILLING CONTRACTOR:

Clint Hurt  
Elkview, WV

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

OIL AND GAS WELL PERMIT APPLICATION

- 4) WELL TYPE: A Oil \_\_\_\_\_ / Gas X /  
 B (If "Gas", Production X / Underground storage \_\_\_\_\_ / Deep X / Shallow \_\_\_\_\_)
- 5) LOCATION: Elevation: 769 Watershed: Stillwell Hollow  
 District: Harris County: Wood Quadrangle: Lubeck
- 6) WELL OPERATOR Kaiser Exploration and Mining Co. 11) DESIGNATED AGENT R. A. Pryce  
 Address P. O. Box 8 Address Same  
Ravenswood, WV 26164
- 7) OIL & GAS ROYALTY OWNER Wilbert G & Clara L. Hofmann 12) COAL OPERATOR None  
 Address Rt. 1, Box 46 Address \_\_\_\_\_  
New England, WV
- 8) SURFACE OWNER Same 13) COAL OWNER(S) WITH DECLARATION ON RECORD:  
 Address \_\_\_\_\_ Name None  
 Address \_\_\_\_\_
- 9) FIELD SALE (IF MADE) TO:  
 Address \_\_\_\_\_
- 10) OIL & GAS INSPECTOR TO BE NOTIFIED  
 Name Homer Dougherty  
 Address Linden Rt., Box 3A  
Looneyville, WV
- 14) COAL LESSEE WITH DECLARATION ON RECORD:  
 Name None  
 Address \_\_\_\_\_
- 15) PROPOSED WORK: Drill X / Drill deeper \_\_\_\_\_ / Redrill \_\_\_\_\_ / Fracture or stimulate \_\_\_\_\_  
 Plug off old formation \_\_\_\_\_ / Perforate new formation \_\_\_\_\_  
 Other physical change in well (specify) \_\_\_\_\_
- 16) GEOLOGICAL TARGET FORMATION, Oriskany
- 17) Estimated depth of completed well, \_\_\_\_\_ feet  
 18) Approximate water strata depths: Fresh, 269 feet; salt, \_\_\_\_\_ feet.  
 19) Approximate coal seam depths: \_\_\_\_\_ Is coal being mined in the area? Yes \_\_\_\_\_ / No \_\_\_\_\_

20) 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									Kinds
Fresh water	<u>10 3/4"</u>			<u>X</u>		<u>300</u>	<u>300</u>	<u>150 sks class A to surface</u>	
Coal								<u>65 sks 50/100 pozmix</u>	Sizes
Intermediate	<u>7"</u>			<u>X</u>		<u>1900</u>	<u>1900</u>	<u>225 100 sks class A</u>	
Production	<u>4 1/2"</u>			<u>X</u>		<u>4275</u>	<u>4275</u>	<u>225 sks 50/100 pozmix</u>	Depths set
Tubing									
Liners									Perforations: Top Bottom

- 21) EXTRACTION RIGHTS  
 Check and provide one of the following:  
 Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil or gas.  
 The requirement of Code 22-4-1-(c) (1) through (4). (See reverse side for specifics.)
- 22) ROYALTY PROVISIONS  
 Is the right to extract, produce or market the oil or gas based upon a lease or other continuing contract or contracts providing for flat well royalty or any similar provision for compensation to the owner of the oil or gas in place which is not inherently related to the volume of oil or gas so extracted, produced or marketed? Yes  No
- If the answer above is No, nothing additional is needed. If the answer is Yes, you may use Affidavit Form IV-60.
- 23) Required Copies (See reverse side.)
- 24) 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.

Notary: \_\_\_\_\_  
 My Commission Expires \_\_\_\_\_

Signed: [Signature]  
 Its: General Manager

OFFICE USE ONLY  
DRILLING PERMIT

Permit number 47-107-1258 Date May 4 19 83

This permit covering the well operator and well location shown below is evidence of permission granted to drill in accordance with the pertinent legal requirements subject to the conditions contained herein and on the reverse hereof. **Notification must be given to the District Oil and Gas Inspector. (Refer to No. 10) Prior to the construction of roads, locations and pits for any permitted work.** In addition, the well operator or his contractor shall notify the proper district oil and gas inspector 24 hours before actual permitted work has commenced.)

Permit expires January 4, 1984 unless drilling is commenced prior to that date and prosecuted with due diligence.

Bond: <u>BB</u>	Agent: <u>[initials]</u>	Plat: <u>[initials]</u>	Casing: <u>[initials]</u>	Fee: <u>[initials]</u>
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Administrator, Office of Oil and Gas