

FILE NO 5-72
 DRAWING NO. _____
 SCALE 1"=500'
 MINIMUM DEGREE OF ACCURACY 1:200
 PROVEN SOURCE OF ELEVATION W-409

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



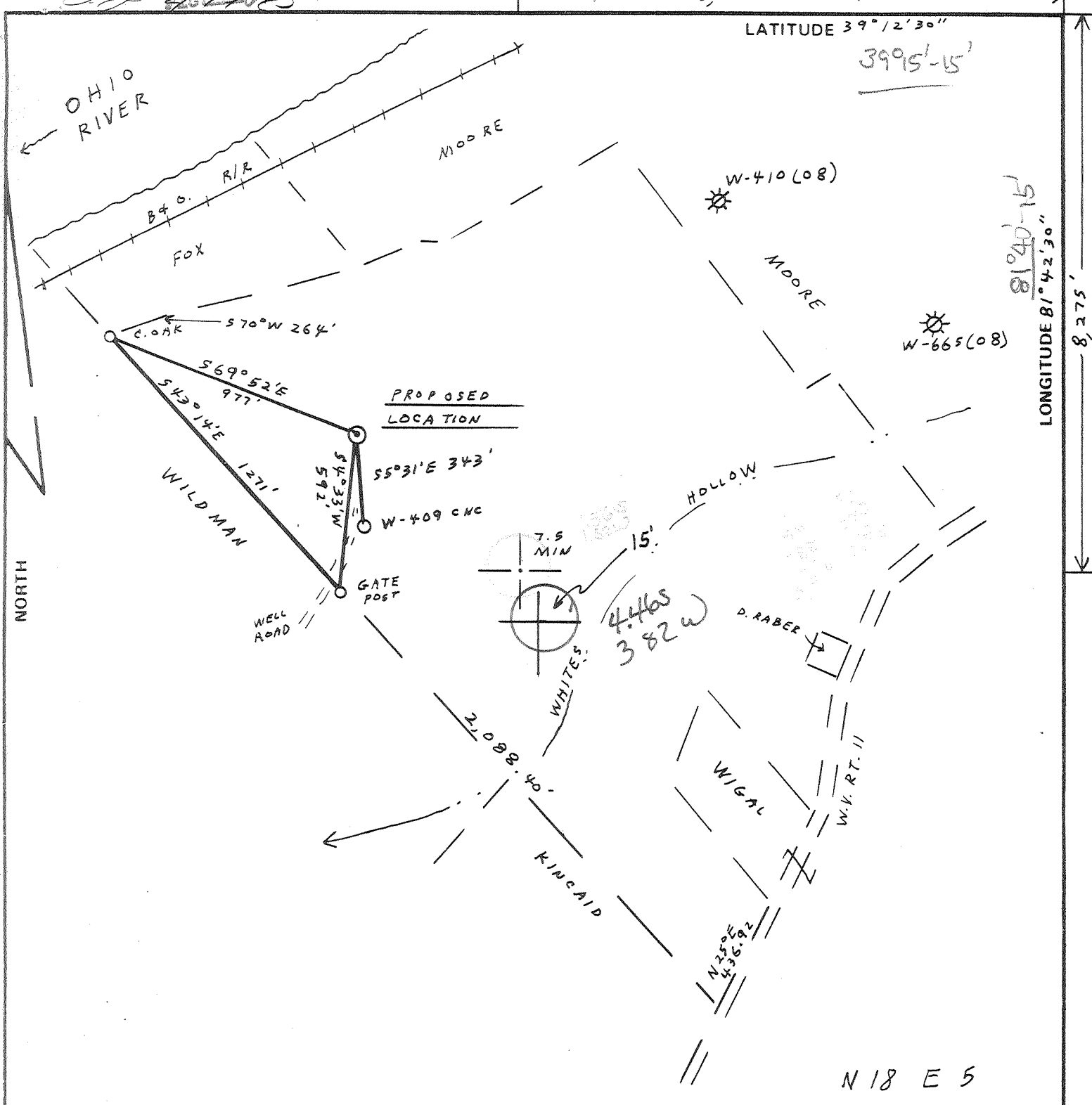
DATE MARCH 30, 1983
 OPERATOR'S WELL NO KEM 372
 API WELL NO _____
47 - 107 - 1252 ^{Frac}
 STATE COUNTY PERMIT

(H) 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 789 WATERSHED WHITES HOLLOW
 DISTRICT HARRIS COUNTY WOOD
 QUADRANGLE LUBECK
 SURFACE OWNER ROY E. HARRIS, ET AL. ACREAGE 106
 OIL & GAS ROYALTY OWNER ROY E. HARRIS, ET AL. LEASE ACREAGE 106
 LEASE NO. 86-02-1915
 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 4314.66 New England (296)
 WELL OPERATOR KAISER EXPLOR. & MIN. CO. DESIGNATED AGENT KAISER EXPLORATION AND MINING CO.
 ADDRESS P.O. BOX 8 DEEP WELL ADDRESS P.O. BOX 8
OWWD RAVENSWOOD, W. V. 26164 RAVENSWOOD, W. V. 26164

MAY 06 1985

WOOD 1252



8,000'

LATITUDE 39°12'30"

39°51'-15'

81°40'-15"

LONGITUDE 81°42'30"

8,275'

NORTH

FILE NO. 5-72
 DRAWING NO. _____
 SCALE 1"=500'
 MINIMUM DEGREE OF ACCURACY 1:200
 PROVEN SOURCE OF ELEVATION W-409

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 MARCH 30, 1983
 OPERATOR'S WELL NO. KEM 372
 API WELL NO. _____
47 - 107 - 1252
 STATE COUNTY PERMIT

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION ___ STORAGE X DEEP X SHALLOW ___
 LOCATION: ELEVATION 789 WATER SHED WHITES HOLLOW
 DISTRICT HARRIS COUNTY WOOD
 QUADRANGLE LUBECK Belleville 15' NW
 SURFACE OWNER ROY E. HARRIS, ET AL. ACREAGE 106
 OIL & GAS ROYALTY OWNER ROY E. HARRIS, ET AL. LEASE ACREAGE 106
 LEASE NO. 86-02-1915

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 ___ DEEP WELL - (296) deep well
 TARGET FORMATION ORISKANY ESTIMATED DEPTH 4314'
 WELL OPERATOR KAISER EXPLOR. & MIN. CO. DESIGNATED AGENT KAISER EXPLORATION AND MINING CO.
 ADDRESS P.O. BOX 8 ADDRESS P.O. BOX 8
RAVENSWOOD, W. V. 26164 RAVENSWOOD, W. V. 26164

WOOD 1252

FORM IV-6 (8/78)

H. P. HALL



IV-35
(Rev 8-81)

RECEIVED
MAY 21 1984

OIL & GAS DIVISION
DEPT. OF MINES

State of West Virginia
Department of Mines
Oil and Gas Division

Date May 2, 1984
Operator's
Well No. KEM 372-Harris
Farm Howard Nutter
API No. 47 - 107 - 1252

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: 789 ^{797 K} Watershed Whites Hollow
District: Harris County Wood Quadrangle Lubeck

COMPANY Kaiser Exploration and Mining Company
ADDRESS P.O. Box 8, Ravenswood, WV, 26164
DESIGNATED AGENT Same
ADDRESS Same
SURFACE OWNER Roy E. Harris
ADDRESS Box 27, New England, WV
MINERAL RIGHTS OWNER Same
ADDRESS
OIL AND GAS INSPECTOR FOR THIS WORK Homer Daugherty ADDRESS Looneyville, WV
PERMIT ISSUED
DRILLING COMMENCED Dec. 1, 1983
DRILLING COMPLETED Dec. 5, 1983
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.			
10 3/4" 13-10"	3318' KB	3318' KB	200 sx Class 3% CaCl 1/4#sx flocc
9 5/8			
8 5/8			
7	1736' KB	1736' KB	100 sx 50/50 10% salt
5 1/2			100 sx Class 3% CaCl
4 1/2		4271' KB	225 sx 50/50 10% salt
3			12 1/2 #/sx g/l s
2			
Liners used			

GEOLOGICAL TARGET FORMATION Oriskany Depth 4292' KB feet
Depth of completed well 4271' KB feet Rotary x / Cable Tools
Water strata depth: Fresh N/A feet; Salt N/A feet
Coal seam depths: None Is coal being mined in the area? No

OPEN FLOW DATA
Producing formation Oriskany Pay zone depth 4200'-4204' KB feet
Gas: Initial open flow ---- Mcf/d Oil: Initial open flow ---- Bbl/d
Final open flow 400 Mcf/d Final open flow --- Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 1100 psig (surface measurement) after 72 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

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

12/13/83 MCCULLOUGH Perf. Oris. 4 shot/ft, 4200'-4204' 16 shots (.41" dia.)
 4/13/84 BJ HUGHES frac. Breakdown fluid was gas at 1900 psig. Treating pressure 3160 psig. Used Nitrogen 1,312,000 SCF. ISIP 2100 psig. SIP 2060 psig. Flow back through 1/2" choke.

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	130	
Sand			130	214	
Siltstone and Shale			214	395	
Shale			395	490	
Sand			490	572	
Shale and Siltstone			572	860	
Shale			860	952	
Sand and Shale			952	1138	
Shale			1138	1186	
Little Dunkard Sand			1186	1270	
Shale and Siltstone			1270	1478	
Salt Sands			1478	1642	
Shale			1642	1968	
el Coffee Shale (Sunbury)			1968	1986	
el Berea Sand			1986	1989	
Shale			1989	3120	s/g @ 2744'
Brown Shale			3120	3595	s/g @ 3547'
Shale			3595	3914	
Marcellus Shale			3914	4107	s/g @ 3962', 4020'
el Onondaga Lime			4107	4199	
el Oriskany Sand			4199	4223	s/g @ 4120', 4199'
el Helderberg Lime			4223	4302	
Total Depth			4302		

from X-ray log	sp	thickness
up to sand	1989	1131
up to Helderberg	3120	475
up to Berea	3595	127
up to Marcellus	3722	195
up to Onondaga	3917	147
up to Oriskany	4064	32
up to Helderberg	4096	8
up to Onondaga	4107	

(Attach separate sheets as necessary)

Kaiser Exploration and Mining Company
Well Operator

By: RA P

Date: May 5, 1984

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."



IV-35
(Rev 8-81)

*Love
filing*

Date May 30, 1985
Operator's
Well No. KEM #372
Farm Roy Harris
API No. 47 - 107 - 1252
FRAC

State of West Virginia
Department of Mines
Oil and Gas Division

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: 789'^{797K} Watershed White's Hollow
District: Harris County Wood Quadrangle Lubeck

COMPANY Kaiser Exploration and Mining Company
ADDRESS P. O. Box 8, Ravenswood, WV 26164
DESIGNATED AGENT R. A. Pryce
ADDRESS Same
SURFACE OWNER Roy E. Harris
ADDRESS Box 27, New England, WV
MINERAL RIGHTS OWNER Same
ADDRESS
OIL AND GAS INSPECTOR FOR THIS WORK Homer Daugherty
ADDRESS Looneyville, WV
PERMIT ISSUED
DRILLING COMMENCED December 1, 1983
DRILLING COMPLETED December 5, 1983 *05 10 85*
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	Content fill up Cu. ft.
Size 20-16 Cond.			
10 3/4" 12.750"	331'KB	331'KB	200 sks class
9 5/8			
8 5/8			100 sks 50/50p
7	1736'KB	1736'KB	100 sks class
5 1/2			
4 1/2		4271'KB	225 sks 50/50 pozmix
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Oriskany Depth 4292'KB feet
Depth of completed well 4271'KB feet Rotary x / Cable Tools
Water strata depth: Fresh N/A feet; Salt feet
Coal seam depths: Is coal being mined in the area? No

OPEN FLOW DATA
Producing formation Brown Shale Pay zone depth 3424'-3595' feet
Gas: Initial open flow Mcf/d Oil: Initial open flow Bbl/d
Final open flow 500 combined Mcf/d Final open flow Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 1100 combined psig (surface measurement) after hours shut in
(If applicable due to multiple completion--)
Second producing formation Berea Pay zone depth 1986'-1990' feet
Gas: Initial open flow Mcf/d Oil: Initial open flow Bbl/d
Final open flow 500 combined Mcf/d Oil: Final open flow Bbl/d
Time of open flow between initial and final tests 4 hours *558 24 1986*
Static rock pressure 1100 combined psig (surface measurement) after hours shut in

(Continue on reverse side)

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

- 12/13/83 McCullough perforated the Oriskany with 4 shots/ft from 4200'-4204', 16 shots (.41" dia).
- 4/13/84 Hughes frac: breakdown fluid was gas at 1900 psig. Treating pressure - 3160 psig, used nitrogen 1,312 MSCF. ISIP: 2100 psig SIP: 2060 psig. Flow back through 1/2" choke.
- 5/9/85 Young's Wireline perforated the Berea Sandstone from 1986'-1990', 4 holes/ft, 16 holes. also perforated the Brown Shale with 19 (.39") perfs from 3424'-~~Huron~~ 3595'. Set Alpha permanent plug at (3730'), set Alpha big mouth frac plug at 2060'.
- 5/10/85 BJ/Tital frac Brown Shale with 75 quality foam frac. Breakdown pressure: 1820 psig, treating pressure 2050 psig, total sand: 60,000# 20/40, total nitrogen: 712,500 SCF, total sand ladened fluid: 267 bbl, total fluid: 314 bbl, ISIP: 1260 psig, SIP (5-min): 980 psig, flow back through 1/4" choke. BEREA - 75% quality, breakdown pressure: 1800 psig, treating pressure: 1550 psig, sand: 45,000# 20/40 and 15,000# ~~WELL LOG~~ total nitrogen: 737,500 scf, total sand ladened fluid: 286 bbl, total fluid: 378 bbl, ISIP: 930 psig, 5-min: 890 psi

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
					flow back through 1/2" choke.
Shale and Sand			0	400	
Shale			400	490	
Sand			490	572	
Shale and Siltstone			572	810	
Sand			810	860	
Shale and Sand			860	1185	
Sand			1185	1270	
Shale			1270	1478	
Salt Sands			1478	1640	
Shale			1640	1968	
Coffee Shale (Sunbury)			1968	1986	
Berea Sandstone			1986	1990	
Shale			1990	3120	
Brown Shale			3120	3595	S/g at 3548'
Shale			3595	3915	
Marcellus Shale			3915	4107	
Onondaga Limestone			4107	4195	
Oriskany Sandstone			4195	4222	S/g at 4200'
Helderberg Limestone			4222	4292	
Total Depth			4292		

(Attach separate sheets as necessary)

KAISER EXPLORATION AND MINING COMPANY

Well Operator

By: R. A. P.

Date: May 30, 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 coal, encountered in the drilling of a well."



1) Date: April 24, 19 85
 2) Operator's Well No. KEM #372
 3) API Well No. 47 107 1252 Frac
 State County Permit

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

- 4) WELL TYPE: A Oil _____ / Gas X /
 B (If "Gas", Production X / Underground storage _____ / Deep _____ / Shallow X /)
- 5) LOCATION: Elevation: 789' Watershed: Whites Hollow
 District: Harris County: Wood Quadrangle: Lubeck
- 6) WELL OPERATOR Kaiser Exploration and Mining Co. 7) DESIGNATED AGENT R. A. Pryce
 Address P. O. Box 8 Address Same
Ravenswood, WV 26164
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED Name Homer Daugherty
 Address Looneyville, WV
- 9) DRILLING CONTRACTOR: Name Unknown
 Address _____
- 10) PROPOSED WELL WORK: Drill _____ / Drill deeper _____ / Redrill _____ / Stimulate X /
 Plug off old formation _____ / Perforate new formation X /
 Other physical change in well (specify) _____
- 11) GEOLOGICAL TARGET FORMATION, Devonian Shale/Berea
- 12) Estimated depth of completed well, _____ feet
 13) Approximate trata depths: Fresh, _____ feet; salt, _____ feet.
 14) Approximate coal seam depths: None Is coal being mined in the area? Yes _____ / No X /

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"			X		331'	331'		200 sks class A
Coal									
Intermediate	7"			X		1736'	1736'		100 sks 50/50 pozmix 100 sks class A
Production	4 1/2"			X		4271'	4271'		225 sks 50/50 pozmix
Tubing									
Liners									Perforations: Top Bottom

OFFICE USE ONLY
 DRILLING PERMIT

Permit number 47-107-1252 Frac Date May 1 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 May 1, 1987 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: <u>86</u>	Agent: <u>MH</u>	Plat: <u>MH</u>	Casing: <u>MH</u>	Fee: <u>968-786</u>
-----------------	------------------	-----------------	-------------------	---------------------

Margaret J. Hasse
 Administrator, Office of Oil and Gas

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



1) Date: April 13, 19 83
 2) Operator's Well No. KEM 372
 3) API Well No. 47 107 1252
 State County Permit

DRILLING CONTRACTOR:

Clint Hurt

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: 789 Watershed: Whites 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 Roy E. Harris, et al 12) COAL OPERATOR None
 Address Rt. 1, Box 27 Address _____
New England, WV
 Acreage 106
- 8) SURFACE OWNER Same 13) COAL OWNER(S) WITH DECLARATION ON RECORD:
 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
- 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, 4334 feet
- 18) Approximate water strata depths: Fresh, 287 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>325</u>	<u>325</u>	<u>160 sks class A to surface</u>	
Coal				<u>X</u>				<u>65 sks 50/50</u>	Sizes
Intermediate	<u>7"</u>			<u>X</u>		<u>1984</u>	<u>1984</u>	<u>100 sks class A</u>	
Production	<u>4 1/2"</u>			<u>X</u>		<u>4334</u>	<u>4334</u>	<u>225 sks 50/50</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: General Manager
 Its: _____

OFFICE USE ONLY
DRILLING PERMIT

Permit number 47-107-1252 Date April 13 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 _____ unless drilling is commenced prior to that date and prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing	Fee

Administrator, Office of Oil and Gas