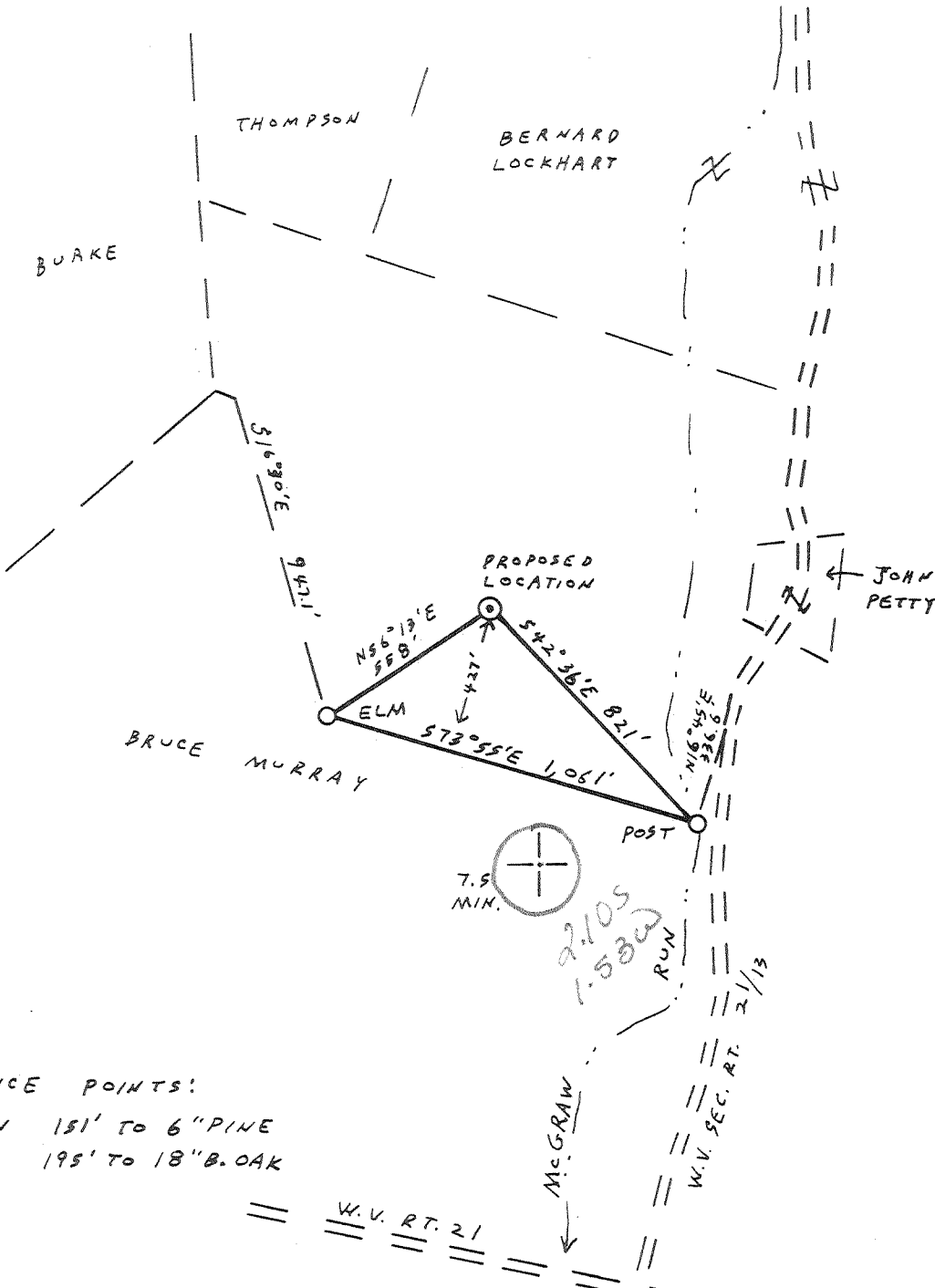


NORTH

LONGITUDE 81°35'11"



REFERENCE POINTS:
 N44°48'W 151' TO 6" PINE
 N74°07'E 195' TO 18" B. OAK

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

FILE NO. 7-46
 DRAWING NO. _____
 SCALE 1" = 500'
 MINIMUM DEGREE OF ACCURACY 1:200
 PROVEN SOURCE OF ELEVATION B.M. "T102" ELEV. 617, 1860' SOUTH OF LOCATION

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 JUNE 8, 1984
 OPERATOR'S WELL NO. KEM 589
 API WELL NO. _____

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION ___ STORAGE ___ DEEP X SHALLOW ___
 LOCATION: ELEVATION 819 WATERSHED McGraw Run
 DISTRICT GRANT COUNTY JACKSON
 QUADRANGLE LIVER POOL 439 Ripley NC2
 SURFACE OWNER BERNARD AND WILDA LOCKHART ACREAGE 44.526
 OIL & GAS ROYALTY OWNER BERNARD AND WILDA LOCKHART LEASE ACREAGE 44.526
 LEASE NO. 86-04-611

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 ORISKANY ESTIMATED DEPTH 5209' R.A. PRYCE
 WELL OPERATOR KAISER EXPLORATION AND MINING CO. DESIGNATED AGENT KAISER EXPLOR. AND MINING CO.
 ADDRESS P.O. BOX 8, RAVENSWOOD, W.V. 26164 ADDRESS P.O. BOX 8, RAVENSWOOD, W.V. 26164

deep well
 6-6 Elk-Poca (Sissonville) (192)

FORM IV-6 (8-78)
 H.L. HALL

COUNTY NAME
 PERMIT

JUL 23 1984

IV-35
(Rev 8-81)



State of West Virginia
Department of Mines
Oil and Gas Division

Date 11/02/84
Operator's
Well No. KEM 589
Farm Bernard Lockart
API No. 47 - 035 - 1978

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: 819 Watershed McGraw Run
District: Grant County Jackson Quadrangle Liverpool

COMPANY Kaiser Exploration and Mining Co.
ADDRESS P. O. Box 8 Ravenswood, WV 26164
DESIGNATED AGENT R. A. Pryce
ADDRESS Same
SURFACE OWNER Bernard and Wilda Lockart
ADDRESS
MINERAL RIGHTS OWNER Bernard and Wilda Lockart
ADDRESS
OIL AND GAS INSPECTOR FOR THIS WORK Jerry
Tephabock ADDRESS Ripley, WV 25271
PERMIT ISSUED 7/16/84
DRILLING COMMENCED 8/09/84
DRILLING COMPLETED 8/17/84
IF APPLICABLE: PLUGGING OF DRY HOLE ON
CONTINUOUS PROGRESSION FROM DRILLING OR
REWORKING. VERBAL PERMISSION OBTAINED
ON

Casing & Tubing Size Cond.	Used in Drilling	Left in Well	Cement fill up Cu. ft.
20-16			
13-10 ^{3/4}	772	772	310 sks class A
9 5/8			
8 5/8			
7	2317	2317	175 sks 50/50 poz 100 sks class A
5 1/2			
4 1/2	5289	5289	225 sks 50/50 poz
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Oriskany Sandstone Depth 5210-5290 feet
Depth of completed well 5313 feet Rotary x / Cable Tools
Water strata depth: Fresh N/A feet; Salt N/A feet
Coal seam depths: N/A Is coal being mined in the area? NO
Drilled on fluid - not known

OPEN FLOW DATA

Producing formation Devonian Brown Shale Pay zone depth 4147-4376 feet
Gas: Initial open flow 0 Mcf/d Oil: Initial open flow 0 Bbl/d
Final open flow 216.5 Mcf/d Final open flow 0 Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 1180 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

DEC 31 1984

(Continue on reverse side)

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

Oriskany Sandstone was water wet; well was plugged back and completed in the Devonian Brown Shale.
 8/27/84 NL McCullough set permanent plug at 4510 and perf Brown Shale 20 holes (.39" dia) from 4147-4376. *Huron*
 8/28/84 NOWSCO foam frac Brown Shale. Used: 60,000 lbs 20/40 sand; 680 mscf total N₂; 310 bbls total fluid.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Shale and Siltstone			0	515	
Sand			515	550	
Shale and Siltstone			550	722	
Sand			722	775	
Shale and Siltstone			775	1290	
Dunkard Sands			1290	1745	
Shale			1745	1820	
Salt Sands			1820	1905	
Big Lime (Greenbrier)			1905	2040	
Shale			2040	2074	
Big Injun Sand			2074	2165	
Shale			2165	2500	
Coffee Shale (Sunbury)			2500	2522	
Berea Horizon			2522		No Sand
Shale			2522	3769	
Brown Shale			3769	4382	S/G @ 4220
Shale			4382	5094	
Onondaga Limestone			5094	5210	
Oriskany Sandstone			5210	5298	Salt Water @ 5215
Helderberg Limestone			5298	5334	
Total Depth			5334		4147 2522 <hr/> 1625

(Attach separate sheets as necessary)

Kaiser Exploration and Mining Company
Well Operator

By: E. A. P.

Date: November 2, 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."



1) Date: June 11, 1984
 2) Operator's Well No. KEM 589
 3) API Well No. 47 - 035 - 1978
 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 /
 B (If "Gas", Production / Underground storage / Deep / Shallow)
- 5) LOCATION: Elevation: 819' / Watershed: McGraw Run (03636)
 District: Grant / County: Jackson / Quadrangle: Liverpool
- 6) WELL OPERATOR Kaiser Expl. & Mining Co. / 7) DESIGNATED AGENT R. A. Pryce
 Address P.O. Box 8 / Address P.O. Box 8
Ravenswood, WV 26164 / Ravenswood, WV 26164
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED / 9) DRILLING CONTRACTOR:
 Name Jerry Tephobock / Name Clint Hurt
 Address Rt. 1, Box 101A / Address P.O. Box 388
Ripley, WV 25271 / Elkview
- 10) PROPOSED WELL WORK: Drill / Drill deeper / Redrill / Stimulate /
 Plug off old formation / Perforate new formation /
 Other physical change in well (specify) _____
- 11) GEOLOGICAL TARGET FORMATION, Oriskany
- 12) Estimated depth of completed well, 5209 feet
- 13) Approximate strata depths: Fresh, _____ feet; salt, _____ feet.
- 14) Approximate coal seam depths: _____ Is coal being mined in the area? Yes / No

RECEIVED
 JUN 27 1984
 OIL & GAS DIVISION
 DEPT. OF MINES

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		Kinds	Sizes
Conductor										
Fresh water	10 3/4"			X		250 350	250 350	150 sks Class A (to surface)		
Coal										
Intermediate	7"			X		2309	2309	65 sks 50/50 pozmix	100sk Class	
Production	4 1/2"			X		5209	5209	225 50/50 pozmix	200sk set	
Tubing										
Liners										

OFFICE USE ONLY
 DRILLING PERMIT

Permit number 47-035-1978 / Date July 16, 19 84

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 July 16, 1986 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: BLANKET	Agent: <u>LD</u>	Plat: <u>MD</u>	Casing: <u>MH</u>	Fee: <u>967-633</u>
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Margaret J. Hesse
 Administrator, Office of Oil and Gas