



FILE NO. _____
 DRAWING NO. _____
 SCALE 1" = 500'
 MINIMUM DEGREE OF ACCURACY 1:200
 PROVEN SOURCE OF ELEVATION SPOT ELEV. 602 AT ROAD INTERSECTION

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) Dennis L. Fisher
 R.P.E. _____ L.L.S. #670

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS
 FORM IV-6 (8-78)



DATE JUNE 16, 1981
 OPERATOR'S WELL NO. KEM 108
 API WELL NO. 47 - 035 - 1586
 STATE COUNTY PERMIT

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION ___ STORAGE ___ DEEP X SHALLOW ___
 LOCATION: ELEVATION 662 WATER SHED WASHINGTON RUN
 DISTRICT GRANT COUNTY JACKSON
 QUADRANGLE PORTLAND, DA10 / W VA 7.5 MIN. 15" SE
 SURFACE OWNER ELENORE COLEMAN MARIEN, ETAL ACREAGE 55
 OIL & GAS ROYALTY OWNER ELENORE COLEMAN MARIEN, ETAL LEASE ACREAGE 63.17
 LEASE NO. _____
 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 CRISKANY ESTIMATED DEPTH 4180
 WELL OPERATOR KAISER EXPLORATION & MINING DESIGNATED AGENT KAISER EXPLORATION & MINING COMPANY
 ADDRESS PO BOX #8 RAVENSWOOD, WEST VIRGINIA 26164 COMPANY ADDRESS PO BOX #8 RAVENSWOOD, WEST VIRGINIA 26164

JUL 9 1981

666 Doopwell (192) Elk-Poca (Sissonville)

[08-78]

WELL OPERATOR'S REPORT
OF

DEVELOPMENT, THE WELLS AND/OR STEIN LATTING, OF EXISTING CHANGE

1586

WELL TYPE: Oil / Gas / Liquid Injection / Waste Disposal
(If "Gas", Production / Underground storage / Test / Shallow

LOCATION: Elevation: 662 Watershed: Washington Run
District: Grant County: Jackson Subdivision: Portland, O-WV

WELL OPERATOR Kaiser Exploration and Mining Co. DESIGNATED AGENT SAME
Address P. O. Box 8 Address _____
Ravenswood, WV 26164

PERMITTED WORK: Drill / Convert / Drill deeper Re-drill
Plug off old formation / Perforate new formation
Other physical change in well (specify) _____

RECEIVED

FEB 9 - 1982

OIL AND GAS DIVISION
WV DEPARTMENT OF MINES

PERMIT ISSUED ON July 3, 1981

OIL & GAS INSPECTOR FOR THIS WORK:

(IF APPLICABLE: PLUGGING OF DRY HOLE OR CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED

Name Richard Morris (354-7259)

Address Box 372
Grantsville, WV

GEOLOGICAL TARGET FORMATION: Oriskany Sandstone Depth 4192 feet
Depth of completed well, 4321 feet Rotary / Cable Tools
Water strata depth: Fresh, -- feet; salt, -- feet.
Coal seam depths: NONE Is coal being mined in the area? NO
Work was commenced July 4, 1981, and completed July 10, 1981

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	10 3/4	H	32.75	X		257(KB)	257(KB)	150sks Class	Winds
Fresh water									
Seal	7	K	20	X		1831(KB)	1831(KB)	65sks Pozmix 100sks Class	Sizes
Intermediate	4 1/2	N	11.6	X			4305(KB)	275sks Pozmix	
Production									Depths set
Tubing									
Liners									Perforations:
									Top Bottom
									4211 4216(KB)
									4225 4232(KB)

OPEN FLOW DATA

Producing formation Oriskany Sandstone Pay zone depth 4225-4232 feet

Gas: Initial open flow, N/A Mcf/d Oil: Initial open flow, 0 Bbl/d
Final open flow, 125 Mcf/d Final open flow, 0 Bbl/d

Time of open flow between initial and final tests, N/A hours

Static rock pressure, 1075 psig (surface measurement) after 24 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 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.

AUG 2 1982

[08-78]

DETAILS OF PERFORATED INTERVALS; FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.
 7/14/81: Perforated Oriskany 4211' to 4215' and 4225' to 4232' (KB) w/ total 27 3 1/2" ceramic jet charges. (Basin Survey).
 7/15/81: Hydrafracture Oriskany w/15,000# 80/100 sand, 45,000# 20/40 and 133,000 SCF of Nitrogen. Treated at 33 BPM and 2670 psig with 740 bbls of water. Shut in pressure 2000 psig. (Halliburton and BJ Huhges)

WELL LOG

FORMATION	Color	Hard or Soft	Top Feet	Bottom Feet	Remarks Including indication of all gas and salt water, coal, oil and
Soil & Shale			0	77	
Sand			77	126	
Siltstone			126	200	
Shale			200	218	
Siltstone			218	254	
Shale			254	272	
Siltstone			272	284	
Shale			284	336	
Sand			336	380	
Shale			380	413	
Sand			413	435	
Shale			435	472	
Sand			472	505	
Shale			505	574	
Sand			574	590	
Red Rock			590	1036	
Sand			1036	1060	
Shale			1060	1110	
Sand			1110	1175	
Shale			1175	1254	
Sand			1254	1270	
Shale			1270	1407	
Sand			1407	1476	
Big Lime (Greenbrier)			1476	1505	
Shale			1505	1966	
Coffee Shale (Sunbury)			1966	1984	
Berea Sand			1984	1988	
Shale			1988	3106	Gas show at 2607
Brown Shale			3106	3596	Gas show at 3490, 3538
Shale			3596	3903	
Marcellus Shale			3903	4126	Gas show at 4041
Onondaga Lime			4126	4210	Gas show at 4140
Oriskany Sand			4210	4254	
Helderberg Lime			4254	4323	
Total Depth			4323		

(Attach separate sheets to complete as necessary)

KAISER EXPLORATION AND MINING COMPANY

Well Operator

By Paul A. P.

Its General Manager

NOTE: Regulation 8.02(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."



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

Oil and Gas Division

OIL AND GAS WELL PERMIT APPLICATION

TO THE DEPARTMENT OF MINES,
Charleston, W. Va.

DATE June 23, 1981

Surface Owner Elenore Coleman Marien, et al

Company Kaiser Exploration and Mining Company

Address 316 Fitzhugh, Ravenswood, WV 26164

Address P. O. Box 8, Ravenswood, WV 26164

Mineral Owner Same as above

Farm Elenore Coleman Marien Acres 55

Address _____

Location (waters) Washington Run

Coal Owner Same as above

Well No. KEM #108 Elevation 662

Address _____

District Grant County Jackson

Coal Operator None

Quadrangle Portland, O/WV

Address _____

THIS PERMIT MUST BE POSTED AT THE WELL SITE

All provisions being in accordance with Chapter 22, of the W. Va. Code, the location is hereby approved for drilling

INSPECTOR
TO BE NOTIFIED Richard Morris

This permit shall expire if operations have not commenced by 3-3-82

ADDRESS P. O. Box 372, Grantsville, WV

[Signature]
Deputy Director - Oil & Gas Division

PHONE 354-7259

GENTLEMEN:

The undersigned well operator is entitled to drill upon the above named farm or tract of land for oil and gas, having fee title thereto, (or as the case may be) under grant or lease dated May 6 1980 by Elenore C. Marien et al made to Kaiser Exploration and Mining Company and recorded on the 29 day of May 1980, in Jackson County, Book 156 Page 208

NEW WELL DRILL DEEPER REDRILL FRACTURE OR STIMULATE
OIL AND GAS WELL ORIGINALLY DRILLED BEFORE JUNE 5, 1969.

The enclosed plat was prepared by a registered engineer or licensed land surveyor and all coal owners and/or operators have been notified as of the above date.

The above named coal owners and/or operator are hereby notified that any objection they wish to make, or are required to make by Section 3 of the Code, must be received by, or filed with the Department of Mines within ten (10) days.

Copies of this notice and the enclosed plat were mailed by registered mail, or delivered to the above named coal operators or coal owners at their above shown respective address _____ day _____ before, or on the same day with the mailing or delivery of this copy to the Department of Mines at Charleston, West Virginia.

PLEASE SUBMIT COPIES OF ALL GEOPHYSICAL LOGS DIRECTLY TO:

Very truly yours,
(Sign Name) [Signature]
Well Operator
Kaiser Exploration and Mining Company
P. O. Box 8
Street
Ravenswood
City or Town
West Virginia 26164
State

WEST VIRGINIA GEOLOGICAL AND ECONOMIC SURVEY
P. O. BOX 879
MORGANTOWN, WEST VIRGINIA 26505
AC-304 - 292-6331

RECEIVED

JUN 29 1981

BLANKET BOND

*SECTION 3 . . . If no objections are filed or found by the Department of mines, within said period of ten days from the receipt of notice and plat by the department of mines, to _____ shall forthwith issue to the well operator a permit reciting the filing of such plat, that no objections have been made by the coal operators or found thereto by the department and that the same is approved and the well operator authorized to proceed.

PROPOSED WORK ORDER TO X DRILL DEEPEN FRACTURE-STIMULATE
 DRILLING CONTRACTOR: (If Known) RESPONSIBLE AGENT:
 NAME Clint Hunt & Associates, Inc. NAME Robert A. Pryce
 ADDRESS P. O. Box 388, Elkview, WV 25071 ADDRESS P. O. Box 8, Ravenswood, WV 26104
 TELEPHONE 273-5371 TELEPHONE 273-5371
 ESTIMATED DEPTH OF COMPLETED WELL: 4315' ROTARY X CABLE TOOLS
 PROPOSED GEOLOGICAL FORMATION: Criskany
 TYPE OF WELL: OIL GAS X COMB. STORAGE DISPOSAL
 RECYCLING WATER FLOOD OTHER

TENTATIVE CASING PROGRAM:

CASING AND TUBING SIZE	USED FOR DRILLING	LIFT IN WELL	CEMENT FILL UP OR SACKS - CUBIC FT.
20 - 16			
13 - 10 10 3/4"	250'	250'	150 sks class A
9 - 5/8			
8 - 5/8			65 sks 50/50 pozmix
7	1840'	1840'	100 sks Class A
5 1/2			
4 1/2	4315'	4315'	225 sks 50/50 pozmix
3			Perf. Top
2			Perf. Bottom
Liners			Perf. Top
			Perf. Bottom

APPROXIMATE FRESH WATER DEPTHS FEET SALT WATER FEET
 APPROXIMATE COAL DEPTHS
 IS COAL BEING MINED IN THE AREA? None BY WHOM?

TO DRILL:

SUBMIT FIVE (5) COPIES OF OG - 1, \$100.00 PERMIT FEE, PERFORMANCE BOND AND PERMANENT COPY OF PLAT

TO DRILL DEEPER OR REDRILL:

SUBMIT FIVE (5) COPIES OF OG - 1, SHOWING ORIGINAL PERMIT NUMBER AND PERFORMANCE BOND. ON WELLS DRILLED PRIOR TO 1929, A PERMANENT COPY OF THE PLAT AND THE ORIGINAL WELL RECORD MUST ALSO BE SUBMITTED.

TO FRACTURE - STIMULATE:

OIL AND/OR GAS WELL ORIGINALLY DRILLED BEFORE JUNE 5, 1929, FIVE (5) COPIES OG - 1, PERFORMANCE BOND, PERMANENT PLAT AND ORIGINAL WELL RECORD.

OIL AND/OR GAS WELL ORIGINALLY DRILLED ON AND/OR AFTER JUNE 5, 1929, FIVE COPIES OG - 1, SHOWING ORIGINAL PERMIT NUMBER, AND PERFORMANCE BOND.

Required forms must be filed within ninety (90) days of completion for bond release. Inspector to be notified twenty-four (24) hours in advance.

The following waiver must be completed by the coal operator if the permit is to be issued within ten days of receipt thereof.

WAIVER: I the undersigned, Agent for Coal Company, Owner or Operator of the coal under this lease have examined and place on our mine maps this proposed well location.

We the Coal Company have no objections to said well being drilled at this location, providing operator has complied with all rules and regulations in Articles 4, 5, and 7, Chapter 22 of the West Virginia Code.

For Coal Company

Official Title