



FILE NO. _____
 DRAWING NO. _____
 SCALE 1"=1000'
 MINIMUM DEGREE OF ACCURACY 1:200
 PROVEN SOURCE OF ELEVATION SPOT ELEV. 975 ON RIDGE WEST OF PROPOSED LOC.

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) Donnis 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)



STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION

DATE OCTOBER 6, 1981
 OPERATOR'S WELL NO. KEM 176
 API WELL NO. 47-035-1622
 STATE COUNTY PERMIT
FRAC

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION X STORAGE ___ DEEP X SHALLOW ___
 LOCATION: ELEVATION 815 WATER SHED. BAILEY RUN
 DISTRICT GRANT COUNTY JACKSON
 QUADRANGLE POND CREEK Bellemeille 15' WC
 SURFACE OWNER KENNETH A. SHAW ACREAGE 179.4
 OIL & GAS ROYALTY OWNER KENNETH A. SHAW LEASE ACREAGE 179.4
 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 DRISKANY ESTIMATED DEPTH 4500 DOWN 6-6 (200)
 WELL OPERATOR KAISER EXPLORATION & MINING DESIGNATED AGENT KAISER EXPLORATION & MINING COMPANY
 ADDRESS PO BOX 8, RAVENSWOOD, WEST VIRGINIA 26164 ADDRESS PO BOX 8, RAVENSWOOD, WEST VIRGINIA 26164



IV-35
Rev 8-81)

State of West Virginia
Department of Mines
Oil and Gas Division

Date October 5, 1983
Operator's
Well No. KEM #126
Farm Kenneth Shaw
API No. 47 - 035 - 1622

REVISED ✓

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: 815 Watershed Pond Creek
District: Grant County Jackson Quadrangle Pond Creek

COMPANY Kaiser Exploration and Mining Company

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

DESIGNATED AGENT R. A. Pryce

ADDRESS Same

SURFACE OWNER Ken Shaw

ADDRESS 700 McIntosh Avenue, Ravenswood, WV

MINERAL RIGHTS OWNER Same

ADDRESS _____

OIL AND GAS INSPECTOR FOR THIS WORK Homer

Dougherty ADDRESS Linden Rt., Box 3A

PERMIT ISSUED 10/21/81
Looneyville, WV

DRILLING COMMENCED 11/05/81

DRILLING COMPLETED 11/10/81

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.			
13-10"			
9 5/8			
8 5/8	SAME AS ORIGINAL		0G-10
7			
5 1/2			
4 1/2			
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION _____ Depth _____ feet

Depth of completed well _____ feet Rotary _____ / Cable Tools _____

Water strata depth: Fresh _____ feet; Salt _____ feet

Coal seam depths: _____ Is coal being mined in the area? _____

OPEN FLOW DATA

Producing formation Brown Shale Pay zone depth 3588-3762 feet

Gas: Initial open flow Trace Mcf/d Oil: Initial open flow N/A Bbl/d

Final open flow 342 Mcf/d Final open flow -- Bbl/d

Time of open flow between initial and final tests -- hours

Static rock pressure 800 psig (surface measurement) after -- 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

(Continue on reverse side)

new zone completed 10/21/83

DETAILS OF PERIODIC INTERVALS, FRACTURING OR STIMULATION, PHYSICAL CHANGE, ETC.

9/20/83 Permanent plug set at 3820' to plug off Oriskany Sandstone. Young's Wireline perforated the Brown Shale with 20 .41" holes from 3762' to 3588'.

9/27/83 ^{Huron} Nowsco & B. J. Hughes foam fractured the Brown Shale using 60,000# of 20/40 sand with concentrations from 2-10 ppg. Brokedown formation with foam at 3350 psig. Treating fluid was 75 quality foam at a treating pressure of 2250 psig. H₂O rate 10 bbl/min; nitrogen rate: 25 MSCF/min; foam rate: 40 bbl/min; total nitrogen: 780,000 SCF; sand ladened fluid: 240 bbl; total fluid: 310 bbls. ISIP: 1060 psig; 5 minute shut in: 920 psig.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOITOM FEET	REMARKS Including indication of all fresh and salt water, gas, oil and gas
SAME AS ORIGINAL		OG-10			

(Attach separate sheets as necessary)

KAISER EXPLORATION AND MINING COMPANY

Well Operator

By: E. A. P.

Date: October 5, 1983

te: Regulation 2.02(i) provides as follows:

"The term 'log' or 'well log' shall mean a systematic detailed geological record of all formations, including

[08-78]

WELL OPERATOR'S REPORT
OF

REWORKING, PLUGGING AND/OR STIMULATING, OR OTHER CHANGE

WELL TYPE: Oil ___ / Gas X / Liquid Injection ___ / Waste Disposal ___
(If "Gas", Production X / Underground storage ___ / Feet X / Shallow ___)
LOCATION: Elevation: 815' (gl) Watershed: Pond Creek
District: Grant County: Jackson Subdivide: Pond Creek

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

PERMITTED WORK: Drill X / Convert ___ / Drill deeper ___ / Re-drill ___ / Fracture or stimulate X
Plug off old formation ___ / Perforate new formation ___
Other physical change in well (specify) _____
RECEIVED
FEB 9 - 1982

PERMIT ISSUED ON October 21, 1981
(IF APPLICABLE: PLUGGING OF DRY HOLE OR CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED _____, 19____)
OIL & GAS INSPECTOR FOR THIS WORK: Richard Morris
Name _____
Address Box 372
Grantsville, WV

GEOLOGICAL TARGET FORMATION: Oriskany Sandstone Depth 4406 feet
Depth of completed well, 4511 feet Rotary X / Cable Tools ___
Water strata depth: Fresh, ___ feet; salt, ___ feet.
Coal seam depths: NONE Is coal being mined in the area? NO
Work was commenced November 5, 1981, and completed November 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		
Conductor								Minds
Fresh water	10 3/4	H	32.75	X		263	263(KB)	150sks Class A
Coal								Sizes
Intermediate	7"	K		X		1969	1969(KB)	65sks Pozmix 100sks Class A
Production	4 1/2	N		X			4473(KB)	225sks Pozmix
Tubing	2 3/8'	K		X			4407(KB)	Depth set
Liners								Perforations:
								Top Bottom
								4406' 4416'(KB)

OPEN FLOW DATA

Producing formation Oriskany Sandstone Pay zone depth 4406 - 4416 feet
Gas: Initial open flow, 30 Mcf/d Oil: Initial open flow, 0 bbl/d
Final open flow, 200 Mcf/d Final open flow, 0 bbl/d
Time of open flow between initial and final tests, N/A hours
Static rock pressure, 1200 psig (surface measurement) after 24 hours shut in
[If applicable due to multiple completion--]
Second producing formation N/A 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
DEC 13 1982

[08-78]

DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC.
 11/13/81: Perforated the Oriskany Sandstone with 41 shots, from 4406' to 4416'(KB), using 3½" ceramic jet charges.
 11/16/81: Hydrafractured the Oriskany interval using 15,000# of 80/100 sand, 45,000# of 20/40 sand, and 172,000 SCF of nitrogen. Formation breakdown occurred at 1500 psig and treated at an average rate of 29 BPM with an average pressure of 2700 psig. ISIP: 1800 psig.

WELL LOG

FORMATION	Color	Hard or Soft	Top Feet	Bottom Feet	Remarks Including indication of all free and salt water, coal, oil and gas
Soil & Shale			0	32	
Siltstone			32	104	
Shale			104	241	
Sand			241	308	
Shale			308	378	
Sand			378	394	
Shale			394	435	
Sand			435	465	
Shale			465	541	
Sand			541	555	
Shale			555	638	
Sand			638	664	
Shale			664	730	
Sand			730	755	
Shale			755	960	
Sand			960	975	
Shale			975	1042	
Sand			1042	1085	
Shale			1085	1112	
Sand			1112	1147	
Shale			1147	1222	
Sand			1222	1258	
Salt Sand			1258	1470	
Shale			1470	1571	
Big Lime (Greenbrier)			1571	1629	
Shale			1629	1665	
Coffee Shale (Sunbury)			1665	2116	
Berea Sand			2116	2138	
Shale			2138	2142	Gas show @ 2140
Brown Shale			2142	3280	
Shale			3280	3773	Gas show @ 3720, 3759
Marcellus Shale			3773	4105	
Onondaga Lime			4105	3413	Gas show @ 4211, 4218
Oriskany Sand			4313	4405	Gas show @ 4359, 4390
Helderberg Lime			4405	4430	Gas show @ 4410
<u>Total Depth</u>			4430	4511	
			4511		

(Attach separate sheets to complete as necessary)

KAISER EXPLORATION AND MINING COMPANY
 Well Operator
 By Kath A. P.
 Its Operation 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."



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES

RECEIVED

OCT 13 1981

Oil and Gas Division

OIL AND GAS DIVISION
WV DEPARTMENT OF MINES

OIL AND GAS WELL PERMIT APPLICATION

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

DATE October 8, 1981

Surface Owner Ken Shaw

Company Kaiser Exploration and Mining Company

Address 700 McIntosh Avenue, Ravenswood, WV

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

Mineral Owner Same

Farm Ken Shaw Acres 179.4

Address _____

Location (waters) Pond Creek

Coal Owner Same

Well No. KEM #12G Elevation 815'

Address _____

District Grant County Jackson

Coal Operator None

Quadrangle Pond Creek

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. This permit shall expire if
operations have not commenced by 6-21-82

INSPECTOR

TO BE NOTIFIED Richard Morris

ADDRESS P. O. Box 372, Grantsville, WV

PHONE 354-7259

J. J. Muzzy
Deputy Director - Oil & Gas Division

GENTLEMEN:

The undersigned well operator is entitled to drill upon the above named farm or tract of land for oil and gas, having fee
therein, (or as the case may be) under grant or lease dated December 15 1981 by Kenneth A. Shaw
Shaw made to Kaiser Exploration and Mining Company and recorded on the 1st day of October
9, 81 in Jackson County, Book 164 Page 725

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
and 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
GEOLOGICAL AND GEOPHYSICAL LOGS DIRECTLY TO:

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

Very truly yours,

(Sign Name)

E. A. P.

Well Operator
Kaiser Exploration and Mining Company
P. O. Box 8

Address
of
Well Operator

Street

Ravenswood

City or Town

West Virginia 26164

State

*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 said proposed location, the department 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.

BLANKET BOND

47-035-1622

PERMIT NUMBER

PROPOSED WORK ORDER TO X DRILL _____ DEEPEN _____ FRACTURE-STIMULATE _____
 DRILLING CONTRACTOR: (If Known) _____ RESPONSIBLE AGENT: _____
 NAME Unknown at this time _____ NAME Robert A. Pryce _____
 ADDRESS _____ ADDRESS P. O. Box 8, Ravenswood, WV 26164 _____
 TELEPHONE _____ TELEPHONE 273-5371 _____
 ESTIMATED DEPTH OF COMPLETED WELL: 4500' _____ ROTARY X _____ CABLE TOOLS _____
 PROPOSED GEOLOGICAL FORMATION: Oriskany _____
 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			
9 - 5/8 10 3/4"	250'	250'	150 sks class A
8 - 5/8			
7	2000'	2000'	65 sks 50/50 pozmix
5 1/2			100 sks class A
4 1/2	4500'	4500'	225 sks class A
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