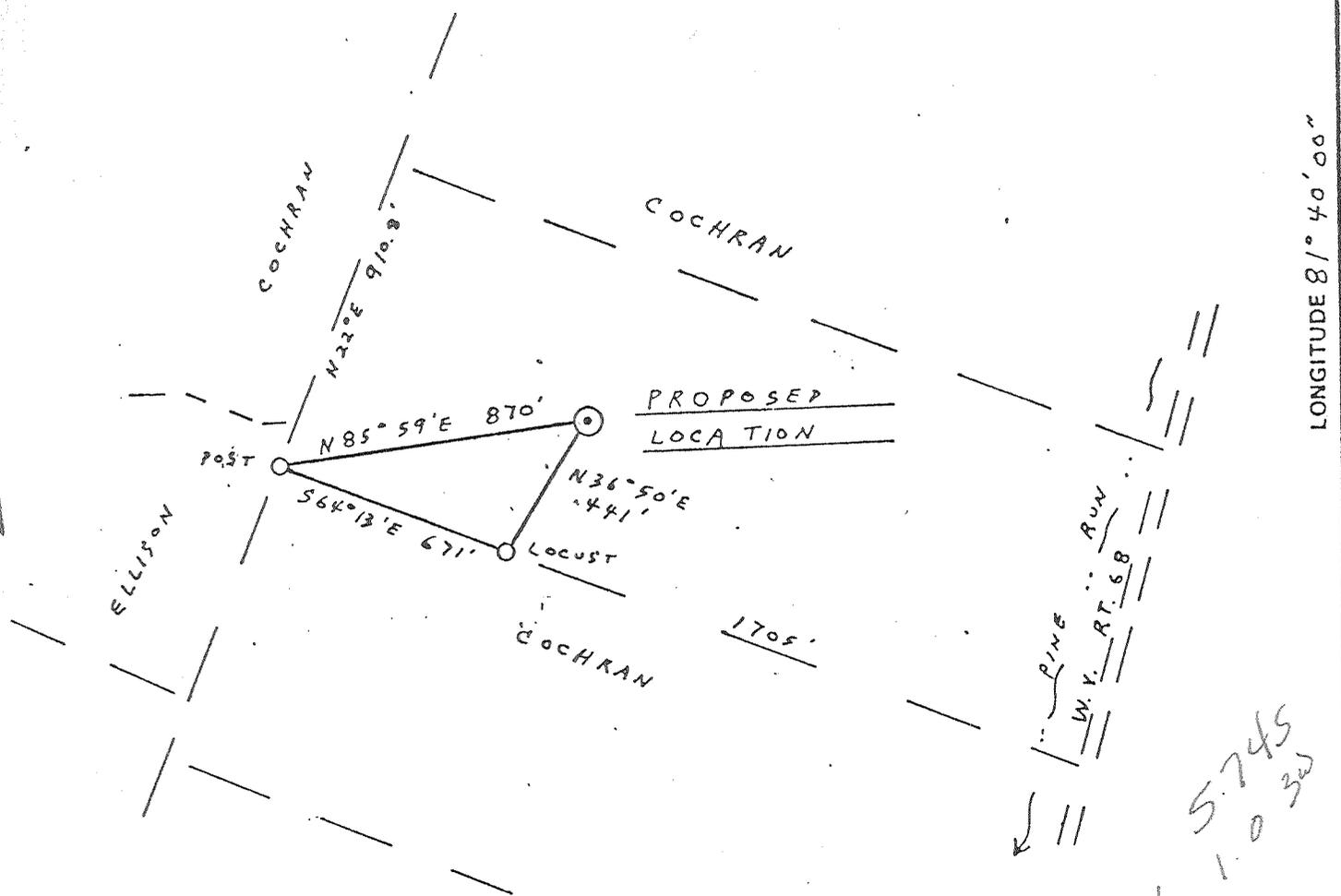


5,400' 39' 15"  
 LATITUDE 39° 12' 30"

LONGITUDE 81° 40' 00"

NORTH



5.745  
 1.030

**RECEIVED**  
 OCT 17 1986

DIVISION OF OIL & GAS  
 DEPARTMENT OF ENERGY

7.5 MIN.  
 2.865  
 1.030

N17 E 8

NO WELLS WITHIN 2,400 FEET

FILE NO. 5-68  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1" = 500'  
 MINIMUM DEGREE OF ACCURACY 1:200  
 PROVEN SOURCE OF ELEVATION HIGH POINT ELEVATION 998, 200' S.E. 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

VIRGINIA DEPARTMENT OF MINES  
 LICENSED  
 NO 664  
 STATE OF WEST VIRGINIA  
 PLACE SEAL HERE

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION



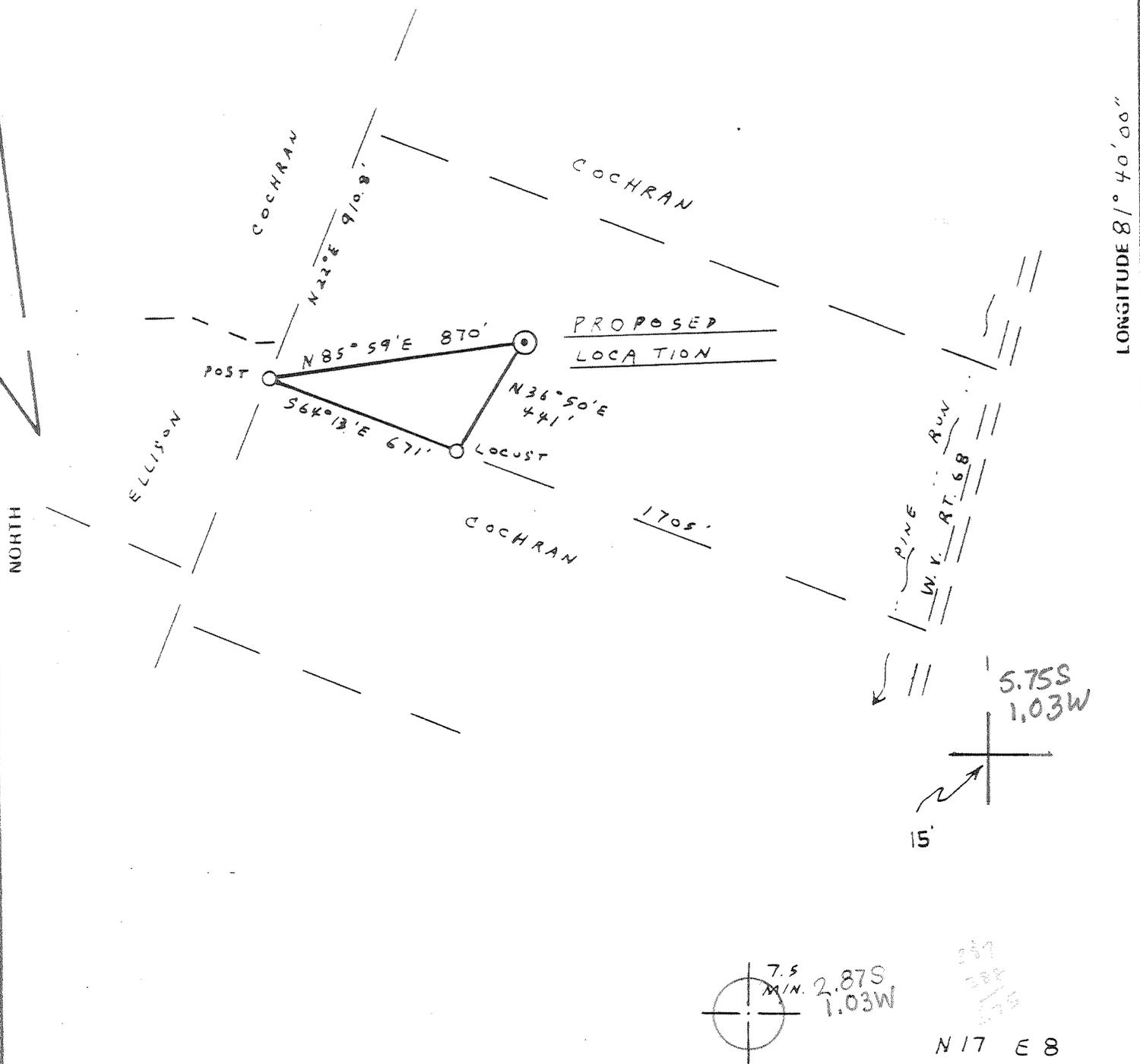
DATE MARCH 17, 1983  
 OPERATOR'S WELL NO. KEM 358  
 API WELL NO. 47-107-1245-F  
 STATE COUNTY PERMIT

(+) 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 936 WATER SHED PINE RUN  
 DISTRICT HARRIS 2 COUNTY WOOD  
 QUADRANGLE LUBECK 449 009 NW1  
 SURFACE OWNER MARY M. COCHRAN RADABAUGH ACREAGE 49  
 OIL & GAS ROYALTY OWNER MARY M. COCHRAN RADABAUGH LEASE ACREAGE 49  
 LEASE NO. 85-12-2618

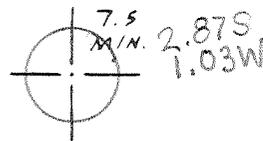
PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_ PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_

→ **DEEP WELLS**  
 PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_  
 TARGET FORMATION ORISKANY ESTIMATED DEPTH 4651' New England (296)  
 WELL OPERATOR KAISER EXPLOR. & MIN. CO. DESIGNATED AGENT KAISER EXPLORATION AND MINING CO.

OCT 27 1986



VO WELLS WITHIN 2,400 FEET



FILE NO. 5-68  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1" = 500'  
 MINIMUM DEGREE OF ACCURACY 1:200  
 PROVEN SOURCE OF ELEVATION HIGH POINT ELEVATION 998, 200' S.E. 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 MARCH 17, 1983  
 OPERATOR'S WELL NO. KEM 358  
 API WELL NO. \_\_\_\_\_  
47 - 107 - 1245-Rem.  
 STATE COUNTY PERMIT

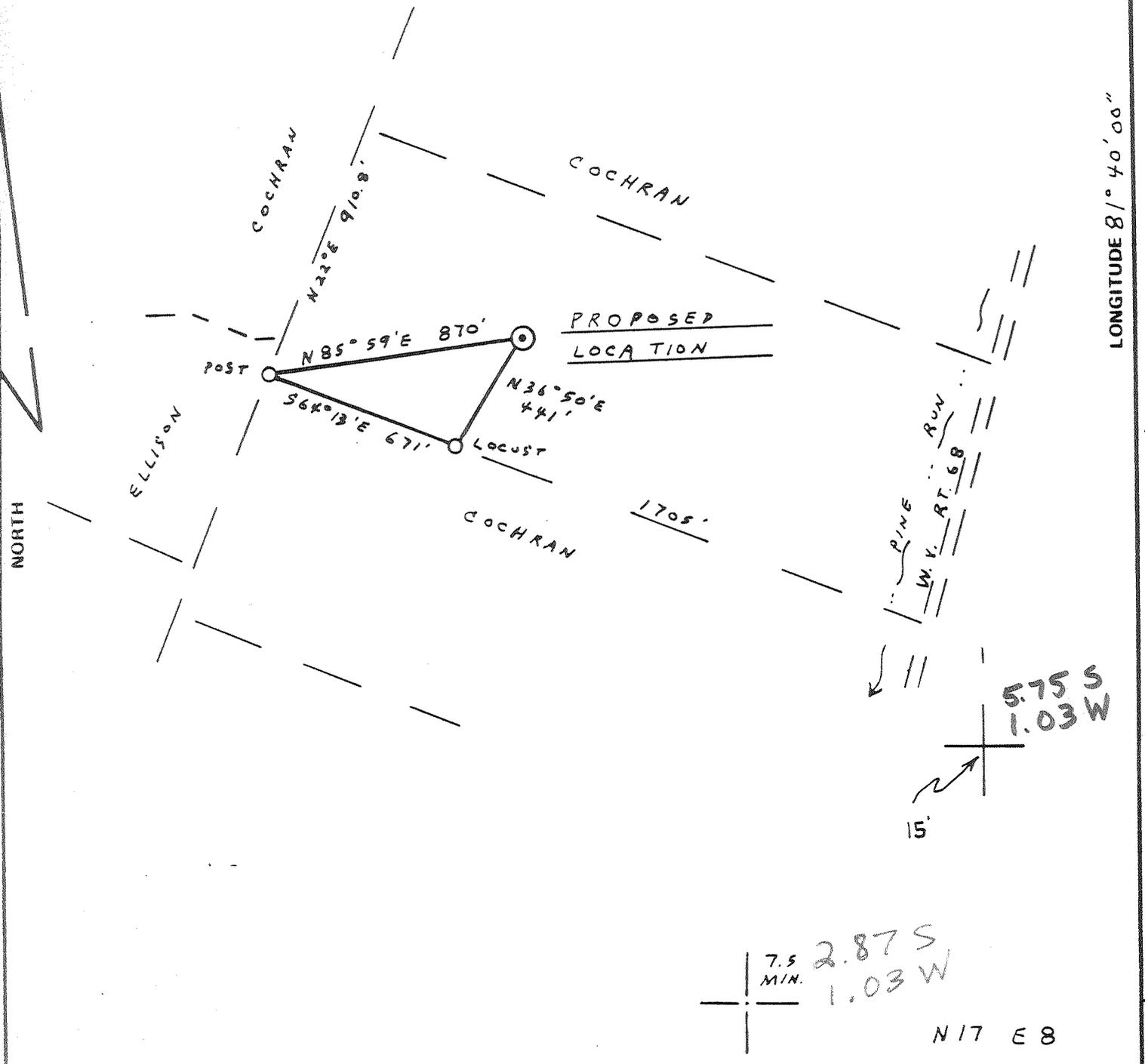
(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 WELL TYPE: OIL \_\_\_ GAS X LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS,") PRODUCTION X STORAGE \_\_\_ DEEP X SHALLOW \_\_\_  
 LOCATION: ELEVATION 936 WATER SHED PINE RUN  
 DISTRICT HARRIS 2 COUNTY WOOD  
 QUADRANGLE LUBECK 449 BELLYVILLE 15009 NW1  
 SURFACE OWNER MARY M. COCHRAN RADABAUGH ACREAGE 49  
 OIL & GAS ROYALTY OWNER MARY M. COCHRAN RADABAUGH LEASE ACREAGE 49  
 LEASE NO. 85-12-2618  
 PROPOSED WORK: DRILL X CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_ PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_

Re-Instated

PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_  
 TARGET FORMATION ORISKANY ESTIMATED DEPTH 4656' New England  
 WELL OPERATOR KAISER EXPLOR. & MIN. CO. DESIGNATED AGENT KAISER EXPLORATION AND MINING CO.  
 ADDRESS P.O. BOX 8 465 ADDRESS P.O. BOX 8  
RAVENSWOOD, W.V. 26164 RAVENSWOOD, W.V. 26164

FORM IV-6 (8/78)

WOOD 127 2000



7.5 MIN. 2.87 S 1.03 W  
N 17 E 8

NO WELLS WITHIN 2,400 FEET

FILE NO. 5-68  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1" = 500'  
 MINIMUM DEGREE OF ACCURACY 1:200  
 PROVEN SOURCE OF ELEVATION HIGH POINT ELEVATION 998, 200' S.E. 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 MARCH 17, 1983  
 OPERATOR'S WELL NO. KEM 358  
 API WELL NO. \_\_\_\_\_  
47 - 107 - 1245  
 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 936 WATER SHED PINE RUN  
 DISTRICT HARRIS COUNTY WOOD  
 QUADRANGLE LUBECK

CANCELLED

SURFACE OWNER MARY M. COCHRAN RADABAUGH ACREAGE 49  
 OIL & GAS ROYALTY OWNER MARY M. COCHRAN RADABAUGH LEASE ACREAGE 49  
 LEASE NO. 85-12-2618

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

JAN 3 1984

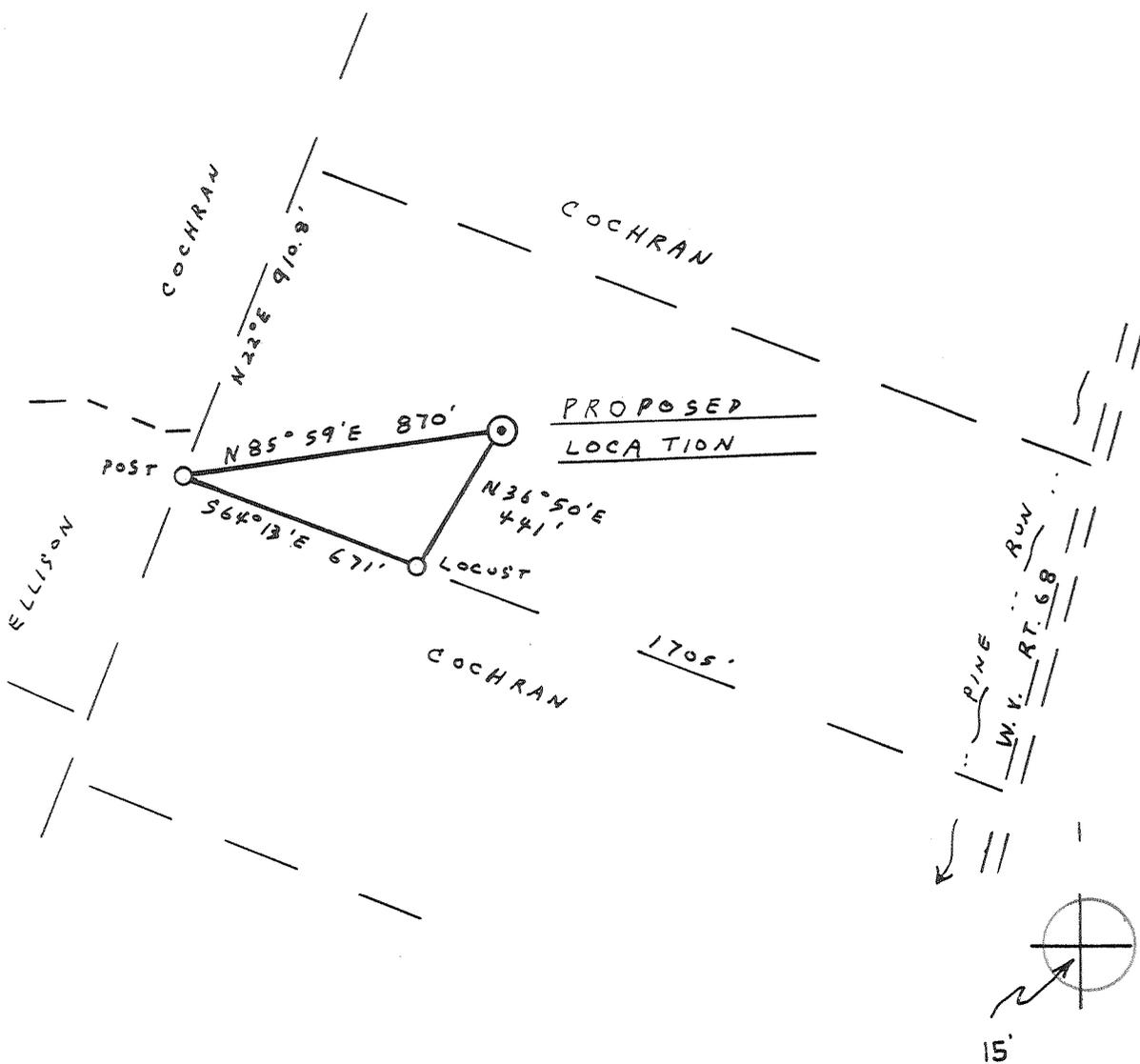
PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_  
 TARGET FORMATION ORISKANY ESTIMATED DEPTH 4656'  
 WELL OPERATOR KAISER EXPLOR. & MIN. CO. DESIGNATED AGENT KAISER EXPLORATION AND MINING CO.  
 ADDRESS P.O. BOX 8 ADDRESS P.O. BOX 8  
RAVENSWOOD, W. V. 26164 RAVENSWOOD, W. V. 26164

Plot

LATITUDE 39° 12' 30"

LONGITUDE 81° 40' 00"

NORTH



7.5  
MIN. 2.875  
1.03W  
N17 E 8

NO WELLS WITHIN 2,400 FEET

FILE NO. 5-68  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1" = 500'  
 MINIMUM DEGREE OF ACCURACY 1:200  
 PROVEN SOURCE OF ELEVATION HIGH POINT ELEVATION 998, 200' S.E. OF LOCATION

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(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 17, 1983  
 OPERATOR'S WELL NO. KEM 358  
 API WELL NO. \_\_\_\_\_

47 - 107 - 1245  
 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 936 WATER SHED PINE RUN

DISTRICT HARRIS COUNTY WOOD

QUADRANGLE LUBECK Belleisle 15' NW

SURFACE OWNER MARY M. COCHRAN RADABAUGH ACREAGE 49

OIL & GAS ROYALTY OWNER MARY M. COCHRAN RADABAUGH LEASE ACREAGE 49

LEASE NO. 85-12-2618

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

APR 18 1983

PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_

TARGET FORMATION ORISKANY ESTIMATED DEPTH 4656'

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 deep RAVENSWOOD, W. V. 26164

Wood 1245

FORM IV-6 (8-78)

H. T. HALL



1) Date: March 15, 1984  
 2) Operator's Well No. KEM #358  
 3) API Well No. 47 - 107 - 1245-REN  
 State                      County                      Permit                     

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

RENEW

- 4) WELL TYPE: A Oil            / Gas X /  
 B (If "Gas", Production X / Underground storage            / Deep X / Shallow           )
- 5) LOCATION: Elevation: 936 Watershed: Pine Run  
 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 Jerry Tephabock  
 Address Rt. 1, Box 101A  
Ripley, WV 25271
- 9) DRILLING CONTRACTOR: Name Clint Hurt  
 Address P. O. Box 388  
Elkview, WV
- 10) PROPOSED WELL WORK: Drill X / 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, 4656 feet  
 13) Approximate strata depths: Fresh,            feet; salt,            feet.  
 14) Approximate coal seam depths:            Is coal being mined in the area? Yes
- 15) CASING AND TUBING PROGRAM

**RECEIVED**  
 MAR 21 1984  
 OIL & GAS DIVISION  
 DEPT. OF MINES

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		250-375	375-250	150 sks class A	A to surface
Coal								65 sks 50/50	pozmix
Intermediate	7"			X		2110	2110	100 sks class A	
Production	4 1/2"			X		4656	4656	225 sks 50/50	pozmix
Tubing									
Liners									Perforations:
									Top Bottom

OFFICE USE ONLY  
 DRILLING PERMIT

Permit number 47-107-1245-REN Date May 1, 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 May 1, 1986 unless well work is commenced prior to that date and prosecuted with due diligence.

AGENT	Agent: <u>✓</u>	Plat: <u>MH</u>	Casing: <u>MH</u>	Fee: <u>966-699</u>
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*[Signature]*  
 Administrator, Office of Oil and Gas

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



IV-35  
(Rev 8-81)

State of West Virginia  
Department of Mines  
Oil and Gas Division

Date 7-17-84  
Operator's  
Well No. KEM #358 Cochran  
Farm Mary M. Cochran Radabaugh  
API No. 47 - 107 - 1245

REN

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      /)

LOCATION: Elevation: 936 Watershed PINE RUN  
District: HARRIS County WOOD Quadrangle LUBECK

COMPANY KAISER EXPLORATION & MINING COMPANY  
ADDRESS P.O. Box 8, RAVENSWOOD, WV 26164  
DESIGNATED AGENT R. A. PRYCE  
ADDRESS SAME  
SURFACE OWNER Mary M. Cochran Radabaugh  
ADDRESS Rt. 1 Box 153, New England, WV 26154  
MINERAL RIGHTS OWNER SAME  
ADDRESS SAME  
OIL AND GAS INSPECTOR FOR THIS WORK GLENN  
ROBINSON ADDRESS MINERAL WELLS  
PERMIT ISSUED       
DRILLING COMMENCED 6-11-84  
DRILLING COMPLETED 6-17-84  
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 <sup>3</sup> / <sub>4</sub> "	368'	368'	200 sx Cl
9 5/8			
8 5/8			
7	1876'	1876'	175 sx 50/50 pozmix
5 1/2			
4 1/2		4604'	220 sx 50/50 pozmix
3			12 5 #/sx Gilsonite
2			
Liners used			

GEOLOGICAL TARGET FORMATION ORISKANY Depth 4538 feet  
Depth of completed well 4625' (KB) 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

OPEN FLOW DATA

Producing formation ORISKANY Pay zone depth 4538 feet  
Gas: Initial open flow 10 Mcf/d Oil: Initial open flow 0 Bbl/d  
Final open flow 3600 Mcf/d Final open flow 0 Bbl/d  
Time of open flow between initial and final tests 72 hours  
Static rock pressure 1575 psig (surface measurement) after 4 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

AUG 20 1984

(Continue on reverse side)

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

- 6/20/84 YOUNG'S WIRELINE <sup>775</sup> PERF ORISKANY 20 holes (0.39 DIA) FROM 4538'-4544'.
- 6/22/84 BJ HUGHES FOAM FRAC. ORISKANY - DIDN'T BREAKDOWN.
- 6/26/84 YOUNG'S WIRELINE PERF. ORISKANY 20 holes (0.39 DIA.) FROM 4538'-4544'.
- 6/27/84 BJ HUGHES FOAM FRAC. ORISKANY - DROPPED 28% HCL. BREAKDOWN PRESSURE: 2720 psig. BREAKDOWN FLUID: FOAM. TREATING PRESSURE: 2130 psig. 30,000 lbs of 20/40 SAND. TOTAL N<sub>2</sub>: 380,000 SCF. TOTAL SAND LADEN FLUID: 129 Bbls. TOTAL FLUID: 204 Bbls. ISIP: 1620 psig. 5 min SIP: 1560 psig.

(N)

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fre and salt water, coal, oil and c
SOIL and SHALE			0	112	
SHALE and SILTSTONE			112	208	
SAND			208	222	
SHALE			222	481	
SAND			481	504	
SHALE			504	560	
SAND			560	582	
SHALE			582	662	
SAND			662	750	
SHALE and SILTSTONE			750	1206	
DUNKARD SAND			1206	1234	
SAND and SHALE			1234	1564	
SAND			1564	1612	
SHALE			1612	1704	
SALT SANDS			1704	1860	
SHALE			1860	2198	
COFFEE SHALE			2198	2220	
BEREA SAND			2220	2222	S/G
SHALE			2222	3370	S/G @ 2800
BROWN SHALE			3370	3878	S/G @ 3780
SHALE			3878	4110	
MARCELLUS SHALE			4110	4434	S/G @ 4250
ONONDAGA LIME			4434	4514	
ORISKANY SAND			4514	4555	S/G @ 4540
HELDERBERG LIME			4555	4638	
TOTAL DEPTH			4638		

(Attach separate sheets as necessary)

KAISER EXPLORATION AND MINING COMPANY

Well Operator

By: RA P

Date: July 17, 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

RECEIVED  
MAY 17 1987



RECEIVED  
MAY 07 1987

IV-35  
(Rev 8-81)

DIVISION OF OIL & GAS  
DEPARTMENT OF ENERGY

State of West Virginia

Department of Mines  
Oil and Gas Division

DATE OF REPORT December 16, 1986  
DEPARTMENT OF ENERGY  
Well No. KEM #358  
Farm Mary Cochran  
API No. 47 - 107 - 1245

DIVISION OF OIL & GAS  
DEPARTMENT OF ENERGY

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: 936 Watershed Pine Run  
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 Mary M. Cochran Radabaugh

ADDRESS Rt. 1, Box 153, New England, WV 26154

MINERAL RIGHTS OWNER Same

ADDRESS \_\_\_\_\_

OIL AND GAS INSPECTOR FOR THIS WORK Glen

Robinson ADDRESS Rt. 1, Mt. Pleasant Est.

PERMIT ISSUED Mineral Wells, WV

DRILLING COMMENCED 6/11/84

DRILLING COMPLETED 6/17/84

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"	368'	368'	200 sks Class A
9 5/8			
8 5/8			
7	1876	1876	175 sks 50/50 POZMIX
5 1/2			
4 1/2		4604'	220 sks 50/50 POZMIX
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Oriskany Depth 4538 feet

Depth of completed well 4625'(KB) 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

OPEN FLOW DATA Drilled on fluid, not known

Producing formation Devonian Brown Shale Pay zone depth 2760 - 3880 feet

Gas: Initial open flow -- Mcf/d Oil: Initial open flow -- Bbl/d

Final open flow \*500 Mcf/d Final open flow -- Bbl/d

Time of open flow between initial and final tests 4 hours

Static rock pressure \*1000 psig (surface measurement) after 72 hours shut in  
(If applicable due to multiple completion--)

Second producing formation Berea Sand Pay zone depth 2222 - 2224 feet

Gas: Initial open flow -- Mcf/d Oil: Initial open flow -- Bbl/d

Final open flow \*500 Mcf/d Oil: Final open flow -- Bbl/d

Time of open flow between initial and final tests 4 hours

Static rock pressure \*1000 psig (surface measurement) after 72 hours shut in

\*Commingled

MAY 11 1987  
(Continue on reverse side)

new zones completed

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

- 11/3/86 Young to perforate the Brown Shale from 3686' to 3880' with 19 shots.
- 11/4/86 NOWSCO 75% foam frac w/625,000 scf of nitrogen, 261 bbl of water at 1850 psig.  
ISIP: 1390 psig; 5 min SIP: 1170 psig
- 11/4/86 Young perforated the Grey Shale from 2760' to 2930' with 17 shots
- 11/4/86 NOWSCO 75% foam frac with 625,000 scf of nitrogen, 274 bbl of water at 1970 psig.  
ISIP: 770 psig; 5 min SIP: 730 psig
- 11/11/86 Young perforated the Berea Sand from 2222-2224' with 16 shots
- 11/13/86 NOWSCO 75% foam frac Berea Sand with 45,000# of 20/40 sand, 15,000# of 10/20 sand; 520,000 scf of nitrogen; 307 bbl of water at 1600 psig; ISIP: 1050 psig; 5 min SIP: 970 psig.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fr and salt water, coal, oil and
SEE ORIGINAL OG-10					

(Attach separate sheets as necessary)

KAISER EXPLORATION AND MINING COMPANY  
Well Operator

By:     K A R    

Date:     December 16, 1986    

Note: Regulation 2.02(i) provides as follows:  
"The term 'log' or 'well log' shall mean a systematic detailed geological re: all formations, including  
encountered in the drilling of a well."

7/85

DEPARTMENT OF ENERGY, OIL AND GAS



OCT 17 1988

- 1) Date: October 13, 1986  
 2) Operator's Well No. KEM #358  
 3) API Well No. 47 107 1245-Ren  
 State County Permit

STATE OF WEST VIRGINIA  
 DEPARTMENT OF ENERGY, 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: 936 Watershed: Pine Run  
 District: Harris County: Wood Quadrangle: Lubeck 449  
 6) WELL OPERATOR: Kaiser Exploration and Mining Company CODE: 25350 7) DESIGNATED AGENT: R. A. Pryce  
 Address: P. O. Box 8 Address: Same  
Ravenswood, WV 26164  
 8) OIL & GAS INSPECTOR TO BE NOTIFIED: Name Glen Robinson  
 Address: Rt. 1, Mt. Pleasant Estates  
Mineral Wells, WV 26150  
 9) DRILLING CONTRACTOR: Name KFMGAS  
 Address: \_\_\_\_\_

- 10) PROPOSED WELL WORK: Drill  / Drill deeper  / Redrill  / Stimulate   
 Plug off old formation  / Perforate new formation  / Set permanent bridge plug to  
 Other physical change in well (specify) isolate Oriskany, perf & stimulate Brown Shale & Berea Sandstone  
 11) GEOLOGICAL TARGET FORMATION, Brown Shale & Berea Sandstone & Berea Sandstone  
 12) Estimated depth of completed well, 3900' (PBP-TD) feet  
 13) Approximate true depths: Fresh, N/A feet; salt, N/A feet.  
 14) Approximate coal seam depths: None 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	J-55	32.75	X		378' (KB)	378 (KB)	200 sks	Sizes
Coal									
Intermediate	7"	J-55	20.0	X		1986' (KB)	1986' (KB)	175 sks	Depths set
Production	4 1/2"	N-80	11.6	X		4614' (KB)	4614' (KB)	220 sks	Perforations:
Tubing									Top Bottom
Links									

OFFICE USE ONLY  
 DRILLING PERMIT

Permit number 47-107-1245-F Date October 23 19 86

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 October 23, 1988 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>AS</u>	Casing: <u>AS</u>	Fee: <u>969.788</u>	WPCR: <u>NO 27</u>	S&E: <u>AS</u>	Other: _____
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NOTE: Keep one copy of this permit posted at the drilling location.

John N. Johnston  
 Director, Division of Oil and Gas  
D. Margaret J. Hesse  
 File

See the reverse side of the APPLICANT'S COPY for instructions to the well operator.



1) Date: March 21, 19 83  
 2) Operator's Well No. KEN 4358  
 3) API Well No. 47 State 107 County 1243 Permit

DRILLING CONTRACTOR:  
Clint Hurt & Associates

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: 936 Watershed: Pine Run Wood  
 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 Ravenswood, WV 26164 Address Same
- 7) OIL & GAS ROYALTY OWNER Mary M. Cochran Radabaugh 12) COAL OPERATOR None  
 Address Rt. 1, Box 153 New England, WV 26154 Address
- 8) SURFACE OWNER Same 13) COAL OWNER(S) WITH DECLARATION ON RECORD:  
 Address        Name None  
 Address
- 9) FIELD SALE (IF MADE) TO:  
 Address        Name         
 Address
- 10) OIL & GAS INSPECTOR TO BE NOTIFIED 14) COAL LESSEE WITH DECLARATION ON RECORD:  
 Name Samuel Hersman Name None  
 Address P. O. Box 66 Smithville, WV 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, 334' 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>250-325</u>	<u>250-375</u>	<u>150 sks class A to surface</u>	Sizes
Coal				<u>X</u>				<u>100 sks 50/50 puzmix</u>	Depths set
Intermediate	<u>7"</u>			<u>X</u>		<u>2110</u>	<u>2110</u>	<u>225 sks 50/50 puzmix</u>	Perforations:
Production	<u>4 1/2"</u>			<u>X</u>		<u>4656</u>	<u>4656</u>		Top Bottom
Tubing									
Liners									

- 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: \_\_\_\_\_ Signed: \_\_\_\_\_  
 My Commission Expires \_\_\_\_\_ Its: General Manager

OFFICE USE ONLY

Permit number 47-107-1243 DRILLING PERMIT Date       

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.** 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 December 11, 1983 unless drilling is commenced prior to that date and prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing	Fee
<u>      </u>				

Administrator, Office of Oil and Gas