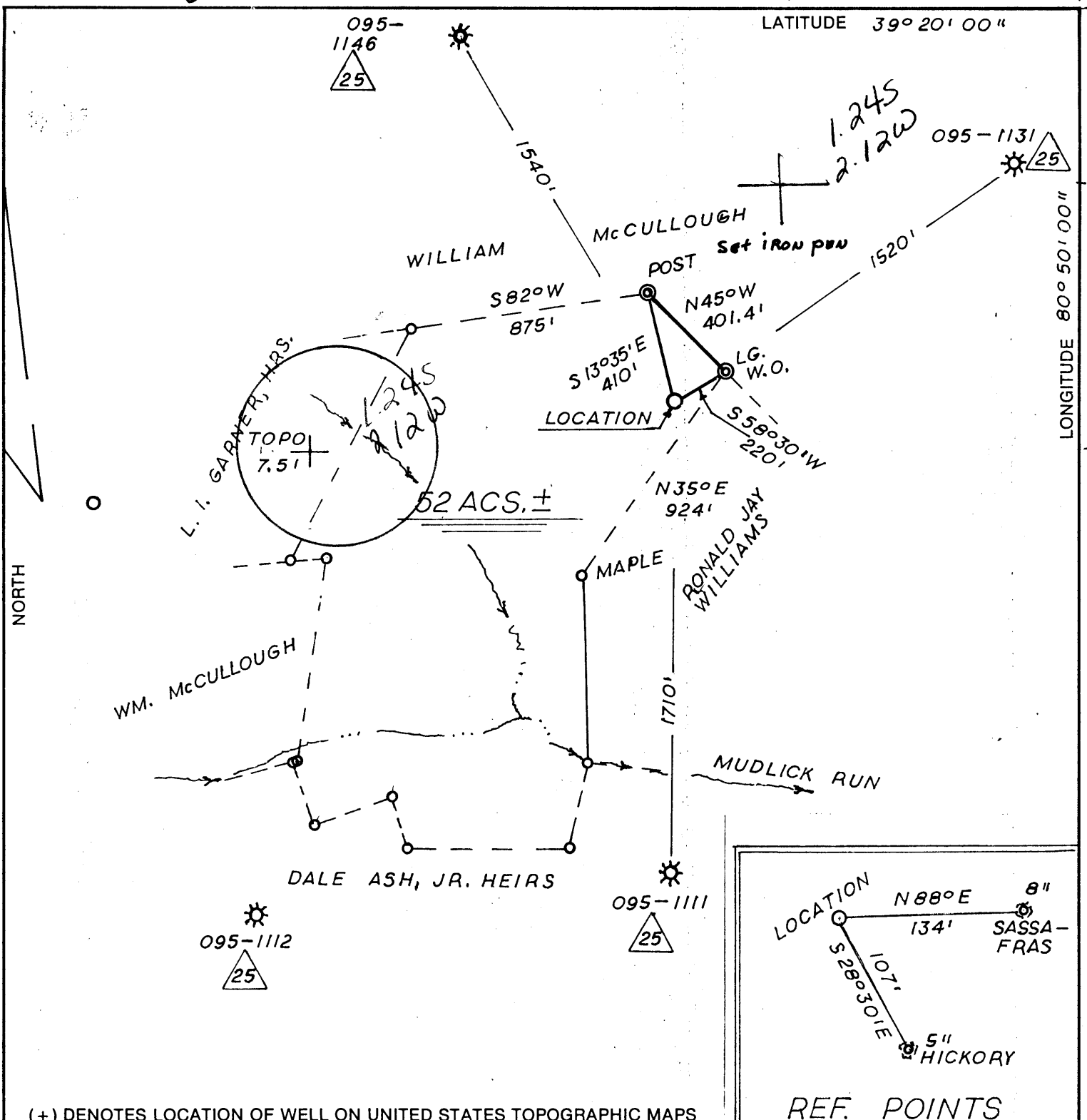


11,220' LATITUDE 39° 20' 00"



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

FILE NO. U. D. I. - 4 - 51
 DRAWING NO. 86-19
 SCALE 1" = 500'
 MINIMUM DEGREE OF ACCURACY 1 IN 200
 PROVEN SOURCE OF ELEVATION NOB 2100' N.W. OF LOC., EL. 1308

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 ENERGY.
 (SIGNED) Thomas F. Weaver, Jr.
 R.P.E. _____ L.L.S. 410

PLACE SEAL HERE

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENERGY
 OIL AND GAS DIVISION



DATE AUG. 27, 19 86
 OPERATOR'S WELL NO. 2470
 API WELL NO. 47-095-1165
 STATE COUNTY PERMIT

WELL TYPE: OIL ___ GAS X LIQUID INJECTION ___ WASTE DISPOSAL ___
 (IF "GAS,") PRODUCTION X STORAGE ___ DEEP ___ SHALLOW X
 LOCATION: ELEVATION 1145 WATERSHED MUDLICK RUN
 DISTRICT CENTERVILLE I COUNTY TYLER
 QUADRANGLE WEST UNION 7.5' 671 133 SCg
 SURFACE OWNER L. I. GARNER OR HIS HEIRS ACREAGE 71
 OIL & GAS ROYALTY OWNER JANICE HASSIG LEASE ACREAGE 52
 LEASE NO. JJ - 2146
 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 ALEXANDER ESTIMATED DEPTH 5300'
 WELL OPERATOR UNION DRILLING, INC. DESIGNATED AGENT JOSEPH C. PETTEY
 ADDRESS P. O. DRAWER 40 ADDRESS SAME
BUCKHANNON WV 26201

NOV 03 1986

6-6 Stanley (90)

FORM WW-6 H.T. HALL 48673

COUNTY NAME TYLER PERMIT



IV-35
(Rev 8-81)

Date May 19, 1987
Operator's JK-1274
Well No. JK-1274
Farm Hassig
API No. 47 - 095 - 1165

RECEIVED
State of West Virginia
Department of Mines
Oil and Gas Division
MAY 26 1987

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: 1145 Watershed Mudlick Run
District: centerville County Tyler Quadrangle West Union 7.5'

COMPANY J & J Enterprises, Inc/
ADDRESS P.O. Box 48, Buckhannon, WV 26201
DESIGNATED AGENT Oliver L. Hawkins, 111
ADDRESS P.O. Box 48, Buckhannon, WV 26201
SURFACE OWNER Lovie E. Garner
ADDRESS 104 14th. St. S.W. Massillon, OH 44646
MINERAL RIGHTS OWNER Same as surface
ADDRESS
OIL AND GAS INSPECTOR FOR THIS WORK Robert Lowther
ADDRESS General Delivery Middlebourne, WV 26149

| Casing & Tubing | Used in Drilling | Left in Well | Cement fill up Cu. ft. |
|------------------|------------------|--------------|------------------------|
| Size 20-16 Cond. | | | |
| 13-10" | 30 | 0 | 0 sks. |
| 9 5/8 | | | |
| 8 5/8 | 1308 | 1308 | 290 sks. |
| 7 | | | |
| 5 1/2 | | | |
| 4 1/2 | 5443.33 | 5433.33 | 280 sks. |
| 3 | | | |
| 2 | | | |
| Liners used | | | |

PERMIT ISSUED 10/30/86
DRILLING COMMENCED 4/23/87
DRILLING COMPLETED 4/28/87

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

GEOLOGICAL TARGET FORMATION Alexander Depth 5304-12 feet
Depth of completed well 5465 feet Rotary 0 / Cable Tools
Water strata depth: Fresh 145,715 feet; Salt 0 feet
Coal seam depths: None Is coal being mined in the area? No

OPEN FLOW DATA
Producing formation Alexander Pay zone depth 5304-12 feet
Gas: Initial open flow Mcf/d Oil: Initial open flow Bbl/d
Final open flow 822 Mcf/d Final open flow Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 1450 psig (surface measurement) after 96 hours shut in
(If applicable due to multiple completion--)
Second producing formation Benson & Riley Pay zone depth 5014-16 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.

Alexander: Perforations: 5304-12 (12 Holes)
Fracturing: 400 sks. 20/40 sand: 400 Bbls. sluid.

Benson: Perforations: 5014-16 (8 holes)
Fracturing: 400 sks. 20/40 sand:500 gal. acid.

Riley: Perforations: 4612-40 (11 holes)
Fracturing: 500 sks. 20/40 sand: 500 gal. acid: Foam frac.

$Pf = Pwe^{XGLS}$

$t = 60 + (0.0075 \times 5443) + 459.7 = 561$
 $X = 53.35 \times 561 = 29929$
 $= 0.000033$
 $Pf = 1450 \times 2.72^{(0.000033)}$
 $(0.695)(4962)(0.9) = 1450 \times 2.72^{0.1} = 1450 \times 1.1$ WELL LOG

Pf=1595 psi

| FORMATION | COLOR | HARD OR SOFT | TOP FEET | BOTTOM FEET | REMARKS Including indication of all fr and salt water, coal, oil and |
|------------------------|-------|--------------|----------|-------------|--|
| Top Soil | | | 0 | 10 | |
| Red rock & shale | | | 10 | 108 | |
| Shale & sand | | | 108 | 199 | Wet @ 145' |
| Shale & red rock | | | 199 | 316 | |
| Sandy shale & red rock | | | 316 | 750 | 1/2" stream @ 715' |
| Sand & sandy shale | | | 750 | 1028 | |
| Sand, shale & red rock | | | 1028 | 1122 | Damp @ 1580' |
| Red rock, shale & sand | | | 1122 | 1247 | |
| Sand & sandy shale | | | 1247 | 1525 | Gas ck @ 4006 No show |
| Sand & sandy shale | | | 1525 | 1905 | |
| Sand | | | 1905 | 1995 | Gas ck @ 4440 2/10-2" w/water 60,000 cu.ft. |
| Big Liem | | | 1995 | 2130 | |
| Sand & shale | | | 2130 | 2673 | |
| Sand & shale | | | 2673 | 3197 | Gas ck @ T.D. 6/10-2" w/water 103,000 cu.ft. |
| Sand & shale | | | 3197 | 3477 | |
| Sand & shale | | | 3477 | 4612 | |
| Riley | | | 612 | 4640 | |
| Sand & shale | | | 4640 | 5014 | |
| Benson | | | 5014 | 5016 | |
| Sand & shale | | | 5016 | 5304 | |
| Alexander | | | 5304 | 5312 | |
| Sand & shale | | | 5312 | 5465 | |
| | | | | T.D. | |

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MAY 26 1981

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

(Attach separate sheets as necessary)

J&J Enterprises, Inc.

Well Operator

By:

Date:

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 sand, encountered in the drilling of a well."

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1) Date: October 6, 1986
 2) Operator's Well No. 2470
 3) API Well No. 47 095-1165
 State County Permit

7/85

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OCT 14 1986

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY, OIL AND GAS DIVISION

APPLICATION FOR A WELL WORK PERMIT

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

- 4) WELL TYPE: A Oil / Gas /
 B (If "Gas", Production / Underground storage / Deep / Shallow)
- 5) LOCATION: Elevation: 1145 / Watershed: Mudlick Run
 District: Centerville / County: Tyler / Quadrangle: West Union 7.5' 670
- 6) WELL OPERATOR Union Drilling CODE: 50550 7) DESIGNATED AGENT Joseph C. Pettey
 Address Post Office Drawer 40 / Address Post Office Drawer 40
Buckhannon, WV 26201 / Buckhannon, WV 26201
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED 9) DRILLING CONTRACTOR:
 Name Robert Lowther / Name S. W. Jack Drilling Co.
 Address General Delivery / Address Post Office Box 48
Middlebourne, WV 26149 / Buckhannon, WV 26201
- 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, Alexander
- 12) Estimated depth of completed well, 5300 feet
- 13) Approximate trata depths: Fresh, _____ feet; salt, _____ feet.
- 14) Approximate coal seam depths: _____ 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 | 11 3/4 | 1140 | 42 | X | | 30 | 0 | | Kinds |
| Fresh water | | | | | | | | | |
| Coal | | | | | | | | | Sizes |
| Intermediate | 8 5/8 | ERW | 25 | X | | 1170 | 1170 | to surface | Per Rule 15.05 |
| Production | 4 1/2 | J55 | 10.5 | X | | 5300 | 5300 | as required | Depths set |
| Tubing | | | | | | | | by Rule 15.01 | OR 5308KS |
| Lin. | | | | | | | | | Perforations: |
| | | | | | | | | | Top Bottom |

OFFICE USE ONLY
DRILLING PERMIT

Permit number 47-095-1165 Date October 30 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 30, 1988 unless well work is commenced prior to that date and prosecuted with due diligence.

| | | | | | | | |
|-------|------------|-----------|-----------|----------------------------|-----------|-----------|-------|
| Bond: | Agent: | Plat: | Casing | Fee | WPCP | S&E | Other |
| | <u>ALB</u> | <u>AS</u> | <u>AS</u> | <u>49811</u> <u>149</u> | <u>AS</u> | <u>AS</u> | |

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

[Signature]
Director, Division of Oil and Gas

File

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

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