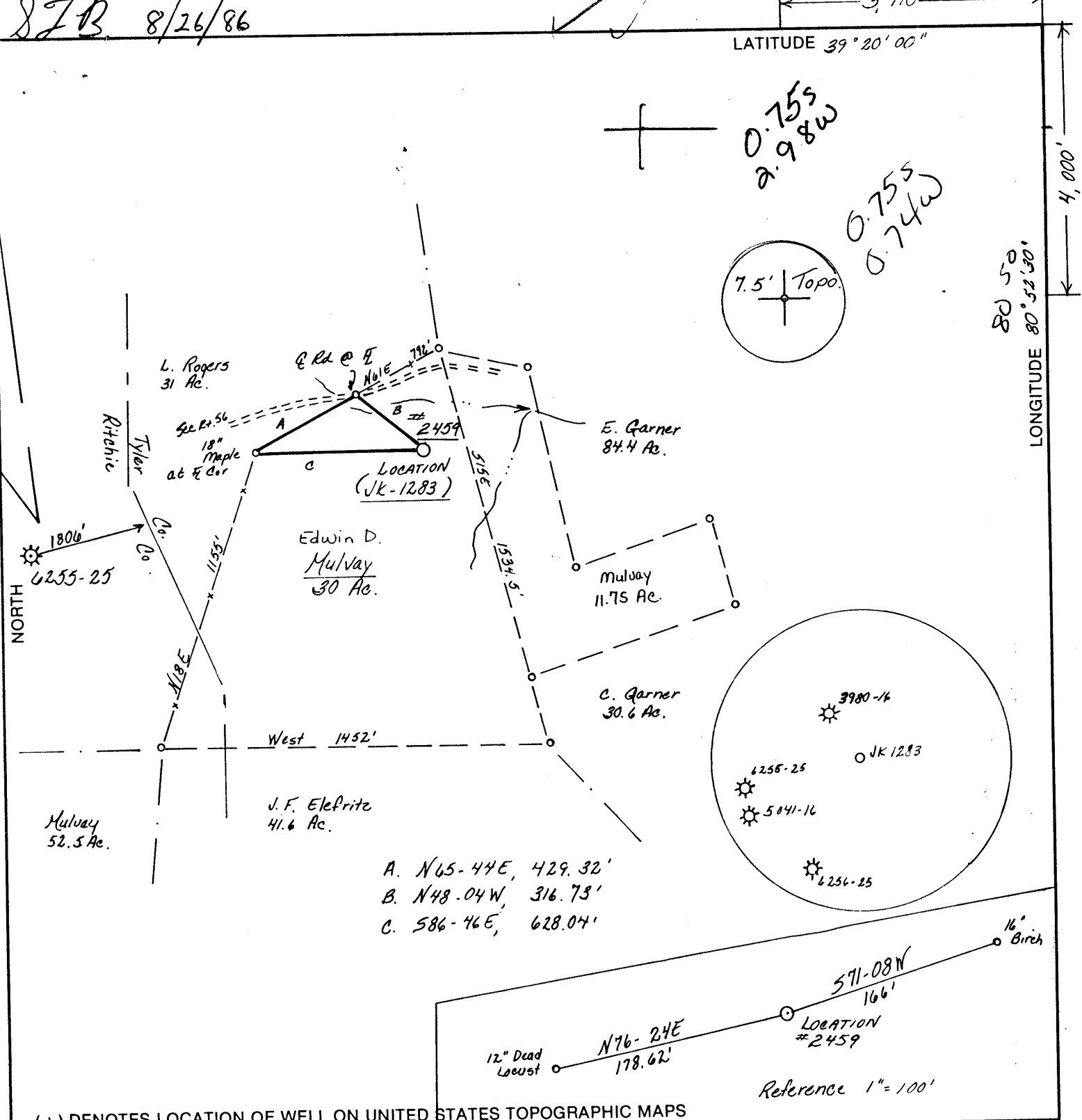


87B 8/26/86

LATITUDE 39° 20' 00"

LONGITUDE 80° 52' 30"



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

FILE NO. 346.01  
 DRAWING NO. 86-12  
 SCALE 1" = 500'  
 MINIMUM DEGREE OF ACCURACY 1 in 200  
 PROVEN SOURCE OF ELEVATION 4565 BM 841' on North Fork, USGS Pennsboro Road.

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) Richard J. Natoradas  
 R.P.E. Buckhannon, WV L.L.S. 555

PLACE SEAL HERE

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION



DATE June 16, 1986  
 OPERATOR'S WELL NO. (JK-1283) 2459  
 API WELL NO.

WELL TYPE: OIL  GAS  LIQUID INJECTION  WASTE DISPOSAL   
 (IF "GAS,") PRODUCTION  STORAGE  DEEP  SHALLOW   
 LOCATION: ELEVATION 1070' WATER SHED Short Run  
 DISTRICT Centerville COUNTY Tyler  
 QUADRANGLE Pennsboro S39 West Union 133 SC9  
 SURFACE OWNER Edwin D. + Patricia L. Mulvay ACREAGE 30  
 OIL & GAS ROYALTY OWNER Edwin D. + Patricia L. Mulvay LEASE ACREAGE 41  
 LEASE NO. WV-2156  
 PROPOSED WORK: DRILL  CONVERT  DRILL DEEPER  REDRILL  FRACTURE OR STIMULATE  PLUG OFF OLD FORMATION  PERFORATE NEW FORMATION  OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_

COUNTY NAME  
 PERMIT

PLUG AND ABANDON  CLEAN OUT AND REPLUG   
 TARGET FORMATION Alexander ESTIMATED DEPTH 5400'  
 WELL OPERATOR Union Drilling, Inc. DESIGNATED AGENT JOSEPH C. PETTEY  
 ADDRESS P.O. DRAWER 40 ADDRESS P.O. DRAWER 40  
Buckhannon WV 26201 893 Buckhannon WV 26201

SEP 8 1986

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

6-6 Stanley (90)

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NOV 13 1986  
REV 8-81



DIVISION OF OIL & GAS  
DEPARTMENT OF ENERGY

State of West Virginia  
Department of Mines  
Oil and Gas Division

Date November 10, 1986  
Operator's  
Well No. 1 - 2459  
Farm Edwin Mulvay #1  
API No. 47 - 095 - 1151

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 \_\_\_ / Underground Storage \_\_\_ / Deep \_\_\_ / Shallow xx /)

LOCATION: Elevation: 1070' Watershed Short Run  
District: Centerville County Tyler Quadrangle Pennshoro

COMPANY Union Drilling, Inc.  
ADDRESS P.O. Drawer 40, Buckhannon, WV 26201  
DESIGNATED AGENT Joseph C. Pettey  
ADDRESS P.O. Drawer 40, Buckhannon, WV 26201  
SURFACE OWNER Edwin D. & Patricia Mulvay  
ADDRESS Star Route, West Union, WV 26456  
MINERAL RIGHTS OWNER same as surface  
ADDRESS \_\_\_\_\_  
OIL AND GAS INSPECTOR FOR THIS WORK \_\_\_\_\_  
Robert Lowther ADDRESS Gen. Del., Middleborne, WV 26149  
PERMIT ISSUED 8/29/86  
DRILLING COMMENCED 9/9/86  
DRILLING COMPLETED 9/14/86

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size 20-16 Cord.			
13-10"			
9 5/8			
8 5/8	1244.40'	1244.40'	324 cf
7			
5 1/2			
4 1/2		5245.00'	457 cf
3			
2			
Liners used	1.5" Tubing	5150.55'	

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

GEOLOGICAL TARGET FORMATION Alexander Depth 5400' feet  
Depth of completed well 5330' feet Rotary xxx / Cable Tools \_\_\_\_\_  
Water strata depth: Fresh 110' feet; Salt \_\_\_\_\_ feet  
Coal seam depths: none Is coal being mined in the area? no

OPEN FLOW DATA  
Producing formation Riley, Benson, & Alexander Pay zone depth 5197' feet  
Gas: Initial open flow 84 Mcf/d Oil: Initial open flow \_\_\_\_\_ Bbl/d  
Final open flow 958 Mcf/d Final open flow \_\_\_\_\_ Bbl/d  
Time of open flow between initial and final tests 4 hours  
Static rock pressure 1475# 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 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.

Halliburton - 3 stage Foam Frac - 9/24/86

4509/14 - Riley - 50,000# sand, 380 bbls water and 60,800 scf nitrogen  
 4519/21  
 4537/40

4902/06 - Benson - 35,000# sand, 415 bbls water and 63,000 scf nitrogen

5190/95 - Alexander - 40,000# sand, 455 bbls water and 72,000 scf nitrogen  
 5197/5200

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Sand & Shale			0	1686	1/2" stream water @110'
Maxon			1686	1752	
Little Lime			1803	1830	
Big Lime			1846	1949	
Injun			1956	2009	
Gantz			2044	2077	
Upper Weir			2254	2276	
Lower Weir			2326	2369	
5th Sand			2676	2694	
Riley			4501	4555	
Benson			4900	4908	
✓Alexander			5190	5216	
				5450 TD	Gas Check @TD 4/10ths thru 2" w/w = 84 mc

(Attach separate sheets as necessary)

Union Drilling, Inc.

Well Operator

By:

*Josep C. Pettey*

Date: Josep C. Pettey, Vice President of Production

11/10/86

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."

FILE COPY  
**RECEIVED**  
AUG 25 1986



1) Date: July 10, 19 86  
2) Operator's Well No. 2459 (JK-1283)  
3) API Well No. 47 095 -1151  
State County Permit

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

- 4) WELL TYPE: A Oil        / Gas XX /  
B (If "Gas", Production XX / Underground storage        / Deep        / Shallow XX /)
- 5) LOCATION: Elevation: 1070' Watershed: Short Run  
District: Centerville County: Tyler Quadrangle: Pennsboro 538
- 6) WELL OPERATOR Union Drilling 893 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 Name Robert Lowther  
Address General Delivery  
Middlebourne, WV 26149
- 9) DRILLING CONTRACTOR: Name S. W. Jack Drilling Co.  
Address Post Office Box 48  
Buckhannon, WV 26201
- 10) PROPOSED WELL WORK: Drill XX / Drill deeper        / Redrill        / Stimulate XX /  
Plug off old formation        / Perforate new formation         
Other physical change in well (specify)
- 11) GEOLOGICAL TARGET FORMATION, Alexander 439
- 12) Estimated depth of completed well, 5400 feet  
13) Approximate strata depths: Fresh, 65 feet; salt,        feet.  
14) Approximate coal seam depths: 100 to 450 Is coal being mined in the area? Yes        / No XX
- 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	H40	42	X		30	0		Kinds
Fresh water									
Coal									Sizes
Intermediate	8-5/8	ERW	23	X		1170	1170	to surface	Per Rule 15.05 Depths set
Production	4-1/2	J55	10 1/2	X		5400	5350	as required	
Tubing								by rule 15.01 or 530 SKS	Perforations: Top Bottom
Lin.									

OFFICE USE ONLY  
DRILLING PERMIT

Permit number 47-095-1151 August 29 19 86  
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. (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 August 29, 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: <input checked="" type="checkbox"/> <u>MS</u>	Casing: <input checked="" type="checkbox"/> <u>MS</u>	Fee: <u>48261</u> <u>141</u>	WPCP: <input checked="" type="checkbox"/> <u>MS</u>	S&E: <input checked="" type="checkbox"/> <u>MS</u>	Other
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NOTE: Keep one copy of this permit posted at the drilling location.

Director, Division of Oil and Gas

File

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