

OIL AND GAS WELL SUMMARY REPORT

API No.: 45-101-20591

VDMR Well Rep. No.

Div. Gas & Oil File No.: LE-134

Operator: CONTROLLED RESOURCES OIL & GAS (PENN VIRGINIA RESOURCES CORP.)

Farm: LOWE/WOLLIVER

County: LEE

Co. Well No.: 101

Quadrangle: COLEMAN GAP - 7-1/2'

Location (UTM): N 4,054,740; E 287,420 UTM Zone: 17

Field: ROSE HILL Province: VALLEY AND RIDGE

Elev. (specify): 1540 GR TD: 4200 Formation at TD: KNOX

Initial Gas Flow: Age: ORDOVICIAN

Date compl. or abandoned: JULY 26, 1984

Result: GAS WELL

Gas Shows: 740-1300, 1300-1435, 1435-1775, 3310-4110

Gas Pays: 2586-2604, 3171-3402

Main Production Producing Formation: LENOIR, KNOX

Final Gas Flow: 249,000 CU. FT. Age: ORDOVICIAN

Treatment: KNOX-3909'-3912' - 4 HOLES, 4056'-6 HOLES, KNOX 3171'-3402'- 30 HOLES, LENOIR-2586'-2604' - 12 HOLES.

Initial Oil Production:

Final Production:

Oil Shows: 3909-3912, 3171-3402

Water	FW:	at:	at	at
	SW:	at:	at	at

Coal:

Plat Plotted Completion Report: X

Drillers Log: X

Geologic Log

Samples

Interval Sheet

Sample Interval

Geophysical Logs

S.P.

Res

Gamma:

Neutron:

Density: Sonic

Other:

Stratigraphic Data Source: WILLIAM W. KELLY

<u>Formation</u>	<u>Top</u>	<u>Datum (Subsea)</u>	<u>Thickness</u>
CAMBRO-ORDOVICIAN	0	1540	75
PINE MTN. FAULT	75	1465	5
SEQUATCHIE	80	1460	372
REEDSVILLE	452	1088	322
TRENTON	774	766	620
FAULT	1394	146	
TRENTON	1394	146	82
EGGLESTON	1476	64	125
MOCCASIN	1601	61	53
FAULT	1654	- 114	
EGGLESTON	1654	- 114	90
MOCCASIN	1744	- 204	258
LOWVILLE	2002	- 462	561
LENOIR	2563	-1023	123
MOSHEIM	2686	-1146	118
MURFREESBORO	2804	-1264	92
KNOX	2896	-1356	1304

Remarks:

References:

Released to Open File: Completion: JULY 26, 1986
Samples: NONE

(Note: UTM measurements in meters, all others in feet)

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FW
SW:

at
at:

at
at

at
at

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Plat

Plotted

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Drillers Log: X

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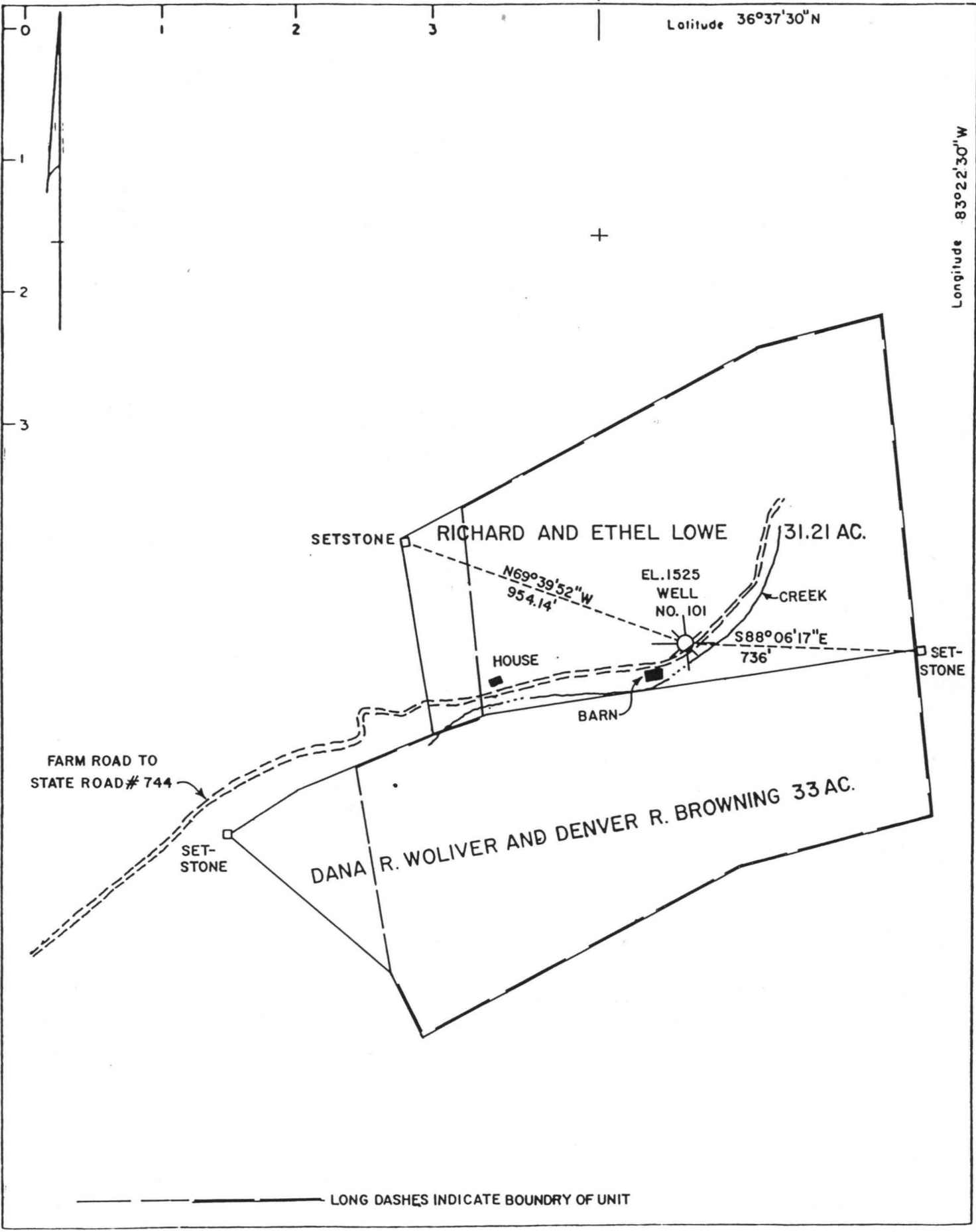
(Note: UTM measurements in meters, all others in feet)

6000'

Latitude 36°37'30"N

Longitude 83°22'30"W

3200'



LONG DASHES INDICATE BOUNDARY OF UNIT

LE-134

(FOR OFFICE USE ONLY: API Well No. 45 - 105 - 20951
State County Permit

Date: July 15, 1983

Operator's Well No. 101

VIRGINIA OIL AND GAS INSPECTOR
DEPARTMENT OF LABOR AND INDUSTRY
DIVISION OF MINES
219 Wood Avenue
Big Stone Gap, Virginia 24219-1799
Phone 703-523-0335

WELL PLAT

* Denotes location of well on United States Topographic Maps, scale 1 to 24,000. Latitude and longitude lines are represented by border lines as shown.

This plat is new / updated /

This plat is / is not / based on a mine coordinate system established for the areas of the well location.

Well operator CONTROLLED RESOURCES OIL & GAS CORPORATION

Address P.O. BOX 43 - DUFFIELD, VIRGINIA 24244
Farm Lowe/Woliver-Browning Unit
Tract Acres 57.09 Lease No.
Elevation 1525'
Quadrangle COLEMAN GAP
County LEE District WHITE SHOALS
Registered Engineer Registration No. 11439
Certified Land Surveyor Cert. No.
File No. Drawing No.
Date July 15, 1983 Scale 1"=400'

Certification of Well Plat

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 of the Virginia Well Review Board.

Jack J. Gembach, Jr. #11439
Registered Engineer or Certified Land Surveyor
in Charge

~~LE-135~~
LE-134

Date: August 16, 1984

~~CONTROLLED RESOURCES OIL & GAS~~
~~CHANCE & MONTGOMERY COAL CO~~
~~104~~
LOWE/WOLLIVER

Operator's
Well No. 101

~~ROSE HILL #1~~
COLEMAN GAP - 7 1/2'
EL. ~~1664.50~~
~~1525.~~
1540

VIRGINIA OIL AND GAS INSPECTOR
DEPARTMENT OF LABOR AND INDUSTRY
OIL AND GAS SECTION
205 W. Main Street
Abingdon, Virginia 24210
Phone 703 628-8115

REPORT OF COMPLETION OF WELL WORK

Pursuant to Regulation 4.06 of the Regulations under the Virginia Oil and Gas Act, the undersigned well operator reports completion of the type(s) of well work specified below on the referenced well in White Shoals District, Lee County, Virginia on 26th day, July Month, 1984.

WELL TYPE: Oil / Gas x / Enhanced recovery / Waste disposal /
If "Gas", Production x / Underground storage /

Exempt by Code § 45.1-300.B.1 from general oil and gas conservation law: Yes / No x /

WELL WORK: Drill x / Deepen / Redrill / Stimulate x /
Plug off old formation / Perforate new formation x /
Plug / Replug /
Other physical change in well (specify)

The well work was done as shown in the Appendix(es) applicable to the type(s) of well work involved.

CONFIDENTIALITY STATUS UNDER CODE OF VIRGINIA § 45.1-332:

 Ninety days from the filing of this report,

or

x Two years from July 26, 1984, the date on which the referenced well was completed, the well being an exploratory well as defined in Code of Virginia § 45.1-288.21.

APPLICANT: Penn Virginia Resources Corporation

By 
Its Vice President - Exploration

Address: P.O. Box 386, Duffield, VA 24244

Telephone: 703-431-2831

OTHER GENERAL INFORMATION

An electric log survey was ___ / was not X / conducted pursuant to Code of Virginia § 45.1-333.B.2, at the coal owner's or operator's request.

An electric log survey was X / was not ___ / run for other purposes. This survey did ___ / did not X / disclose the vertical location of a coal seam.

Note: If a coal seam was located, the part of the survey from the surface through the coal is attached in accordance with Code of Virginia § 45.1-333.B.3.

Deviation surveys were ___ / were not X / required under Code of Virginia § 45.1-333.C "to the bottom of the lowest published coal seam depth".

Note: If deviation surveys were required, the survey results are attached.

A continuous survey was ___ / was not X / required under Code of Virginia § 45.1-333.C.

Note: If a continuous directional survey was required, the survey results are attached.

CHANGES IN THE PERMITTED WELL WORK

The well operator did ___ / did not X / make any change(s) in the permitted well work, verbally approved by the Inspector or Assistant Inspector under Regulation 4.03 of the Regulations under the Virginia Oil and Gas Act, for the purpose of insuring successful completion of the well work.

Note: The nature and purpose of each such change, if any, is set out below or on additional sheets if such are required.

N/A

CONTROLLED RESOURCES OIL & GAS CORPORATION
WELL NO. 101

Surface elevation \pm 1540'

Projected Formation Depths:

<u>Formation</u>	<u>Lithology</u>	<u>Top</u>	<u>Bottom</u>	<u>Thickness</u>
Cambro-Ordovician	dolomite	0'	210'	210'
Pine Mountain Fault		210'		
Sequatchie	mudstone	210'	310'	100'
Reedsville	limestone/shale	310'	740'	430'
Trenton	limestone	740'	1300'	560
Eggleston	limestone	1300'	1435'	135'
Moccasin	limestone	1435'	1775'	340'
Middle Ordovician	limestone	1775'	3310'	1535'
Knox	dolomite	3310'	4110'	4110'

Casing Program

13-3/8" conductor	\pm 40'	Cemented to surface
9-5/8" surface	\pm 300'	Cemented to surface
7" intermediate	\pm 1300'	Optional - Run only if hole problems encountered. Cemented back into 9-5/8".
4-1/2" production	\pm 1800'	If well is drilled through Moccasin to be completed in shallow zone: T.D. \pm 1825'. Cemented up over pay zones.
4-1/2" production	\pm 4100'	If well drilled into Knox: T.D. \pm 4110'. Cemented up over pay zones.

Logging Program

GR-Litho Density and FIL logs to be run at T.D. - (FIL log to be run in fluid.)

Other Procedures

1. Straight hole test: Every 200' to T.D.
Maximum deviation from vertical between surveys: 1
Maximum deviation from vertical at T.D.: 10
2. Collect cuttings samples: Every 10' below conductor casing.

APPENDIX TO NOTICE AND APPLICATION
IF THE WELL WORK INVOLVES DRILLING, REDRILLING OR DEEPENING

Note: The data in this Appendix are estimates only. Actual data must be submitted on Form 18 ("Report of Completion of Well Work").

DRILLING CONTRACTOR (IF KNOWN) Not yet known

Address

Telephone

GEOLOGICAL TARGET FORMATION KNOX

DEPTH OF COMPLETED WELL 4110 feet (actual / estimated x /)

DRILLING RIG Rotary x / Cable tool /

GEOLOGICAL DATA DEPTH THICKNESS
Top Bottom

Fresh water: not known

Salt water: not known

MINING IN AREA?

Coal seams: n/a Name Yes No Mined Out

Oil and gas: Name
740 - 1300 Trenton
1300 - 1435 Eggleston
1435 - 1775 Moccasin
3310 - 4110 Knox

The data on depth of strata is based on the source(s) checked below:

- Applicant's own drilling experience in the area
- Information supplied by the coal operator in that area
- x Information already in the possession of the Inspector
- x As follows: Information from other wells in the area

Date August 16, 1984

Operator's Well No. 101

APPENDIX TO REPORT OF COMPLETION OF WELL WORK
ON A WELL DRILLED IN SEARCH OF OIL OR GAS

DISCOVERY OF OIL OR INDICATIONS THEREOF

Indicated potential flow before stimulation Show BOD
Gravity and grade Not analyzed

DISCOVERY OF GAS OR INDICATIONS THEREOF

Indicated potential flow before stimulation Show MCFD
Rock pressure: not gauged psig _____ hour test

RECORD OF STIMULATION (See attached)

Full description of stimulation:

Zone 1: Knox Formation: 3909'-3912' 4 holes, 4056'-4061' 6 holes

Breakdown _____ psig; Avg. Injection _____ psig; Avg. Injection Rate _____ BPM;
ISIP _____ psig; 15-Min. Shut-In _____ psig.

Zone 2: Knox Formation: 3171'-3402' 30 holes

Breakdown _____ psig; Avg. Injection _____ psig; Avg. Injection Rate _____ BPM;
ISIP _____ psig; 15-Min. Shut-In _____ psig.

Zone 3: Lenoir Formation: 2586'-2604' 12 holes

Breakdown _____ psig; Avg. Injection _____ psig; Avg. Injection Rate _____ BPM;
ISIP _____ psig; 15-Min. Shut-In _____ psig.

Final production (check one) () after stimulation, () natural.

	BOD	MCFD	Hours Tested	Rock pressure psig.	Hours Tested
Zone 1	<u>0</u>	<u>0</u>	<u> </u>	<u> </u>	<u> </u>
Zone 2	<u>0</u>	<u>146</u>	<u>8</u>	<u>1090</u>	<u>192</u>
Zone 3	<u>0</u>	<u>103</u>	<u>8</u>	<u>360</u>	<u>192</u>

Final production if gas zones are comingled: _____ MCFD,
_____ hours tested; _____ psig, _____ hours tested.

DRILLER'S LOG

Compiled by William W. Kelly, Jr.

<u>Geologic Age</u>	<u>Formation</u>	<u>General Lithology</u>	<u>Color</u>	<u>Depth (feet)</u>		<u>Thickness</u>	<u>Remarks</u>
				<u>Top</u>	<u>Bottom</u>		
Cambro-Ordovician		Dolomite	Tan	0'	75'	75'	Overthrust
	Pine Mt. Fault Zone	Variable		75'	80'	5'	
Ordovician (Upper)	Sequatchie	Calcareous Siltstone	Green/Red	80'	452'	372'	
	Reedsville	Shale & Limestone	Dk.-Med. Gray	452'	774'	322'	
Ordovician (Middle)	Trenton	Limestone	Med.Gray-Tan	774'	1394'	620	Fault in bentonite bed resulted in repetition of section from 1394-1432'
	Fault			1394'			
	Trenton	Limestone	Med.Gray-Tan	1394'	1476'	82	
	Eggleston	Limestone	Tan	1476'	1601'	125'	
	Moccasin	Limestone	Med.Gray	1601'	1654'	53'	
	Fault			1654'			
	Eggleston	Limestone	Tan	1654'	1744'	90'	
	Moccasin	Limestone	Med.Gray	1744'	2002'	258'	
	Lowville	Limestone	Med.Gray	2002'	2563'	561'	
Ordovician (Lower)	Lenoir	Limestone	Med.Gray	2563'	2686'	123'	Gas pay 2586'-2604'
	Mosheim	Limestone	Med.Gray	2686'	2804'	118'	
	Murfreesboro	Limestone	Med.Gray-Tan	2804'	2896'	92'	
	Knox Group	Dolomite	Tan	2896'	4200' (T.D.)	1304'	Gas Pay 3171'-3402'

(Complete on supplemental sheets as necessary.)

CASING AND TUBING PROGRAM

PRELIMINARY INFORMATION

Is the subject well underlaid by the red shales? Yes ___ / No x /
If "Yes", was a coal protection string set to the red shales? Yes ___ / No x /

PROGRAM DETAILS

Size	Top	Bottom	Length	Perforated	
				From	To
Conductor 13-3/8"	0'	30'	30'	N/A	

Casing circulated and cemented in to the surface:

9-5/8"	0'	323'	323'	N/A	
--------	----	------	------	-----	--

Cemented with 100 sks 8-13-83

Coal protection casing set under the special rule of Code of Virginia § 45.1-334.B:

N/A

Other casing and tubing left in the well:

4-1/2"	0'	4181'	4181'	2586' - 2604'	12 holes
Cemented up to 3092'	8-31-83			3171' - 3402'	30 holes
Cemented up to 2458'	10-20-83			3909' - 3912'	4 holes
2-7/8"	0'	3220'	3220'	4056' - 4061'	6 holes
				See perforation log for details	

Liners left in well, under Code of Virginia § 45.1-336 or otherwise:

N/A

Other casing used in drilling but not left in the well:

N/A

Packers or bridge plugs:

Kind	Size	Set At
Bridge Plug	Permanent 3.71 O.D.	3600'
Bridge Plug	Permanent 3.71 O.D.	3090' (Drilled out after cement job)
Packer	Halliburton R-4	3046' on 2-7/8" EUE tubing

REMARKS (SHUT DOWN DEPTHS, DATES; FISHING JOB DEPTHS, DATES; CAVING; ETC.)

Cement job on 4 1/2" casing 8-31-83 left 2700' of cement inside pipe. Had to drill this out back to T.D. with power sub and tubing.

SAMPLES AND CUTTINGS

will x / will not ___ / be available for examination by a member of the Virginia Geological Survey;
will x / will not ___ / be furnished the Virginia Geological Survey upon request;
will ___ / will not x / require sacks to be furnished by the Survey.

COMPLETION SUMMARY - WELL NO. 101

9-30-83 Run GR-Bond cement log from 4180'-2400'. Perforate
Zone 1 4-1/2" casing with 3-1/8" Densi-Jets 3909'-3912' 4 holes,
4056'-61' 6 holes. Dump 4 bbl. 15% Hcl, load hole with 42 bbl. 2%
Ammonium Chloride water, attempt to breakdown but failed. Pressure
went to 3300 psi. Swabbed fluid back out of hole.

10-01-83 Pump 500 gal. 28% Hcl and 42 bbl. 2% Ammonium Chloride
Zone 1 water. Get breakdown and pump 40 bbl. of 7-1/2% Hcl.
Dropped 12 perf. balls. Breakdown 2800 psi, Average Treatment 2650
psi, A.I.R. 3.5 BPM, I.S.I.P. 2450 psi, 15 min S.I.P. 1800 psi.
Results: Estimated 100 BPD of fresh water with iron sulphide
precipitate and show of oil. Could not exhaust water by swabbing.

10-11-83 Set 3.71 O.D. permanent bridge plug @ 3600'. Perforate
Zone 2 4-1/2" casing with 3-1/8" Densi-Jets 3171'-83' 5 holes,
3190'-94' 3 holes, 3225'-37' 5 holes, 3275'-85' 4 holes, 3290'-3302'
4 holes, 3351'-60' 4 holes, 3390-3402' 5 holes. Total of 30 holes.
Pump 6 bbl. 28% Hcl, 50 bbl. KCl water and get breakdown. Pump 54 bbl.
7-1/2% Hcl and drop 30 perf. balls. Balled out zone. Breakdown 2700
psi, Average Treatment 2900 psi, A.I.R. 6 BPM, I.S.I.P. 2300 psi,
10 min. S.I.P. 1800 psi. Results: Oil and gas shows after cleanup.

10-17-83 Attempt water frac on Knox 3171'-3402' 30 holes. Pump
Zone 2 68 bbl. gel pad, breakdown @ 2300 psi, pump 60 bbl. sand
laden fluid at 1/2 ppg. 20/50 sand, pump 67 bbl. sand laden fluid at
1 ppg. 20/50 sand, screened out @ 3100 psi. Flowed back and attempted
to resume pumping gel pad two times, and second time lost pressure on
casing and pressure increased on annulus indicating probable
circulation above cement top behind pipe. Results: Oil and gas
shows after cleanup.

10-20-83 Run 3.7 O.D. Bridge Plug and set @ 3090'. Perforate
3 holes @ 3060' just above cement top. Cement 4-1/2" casing on up to
2458'.

10-24-83 Run cement bond log from 2930'-2400'. Perforate 4-1/2"
Zone 3 casing with 3-1/8" Densi-Jets from 2586'-2590' 5 holes,
2592'-2604' 7 holes.

10-25-83 Acidize Lenoir limestone with 500 gal. 28% Hcl, 4500
Zone 3 gal. gelled 15% Hcl, dropped 12 perf. balls and balled
out. Breakdown 1900 psi, Average Treatment 2100 psi, A.I.R. 5 BPM,
I.S.I.P. 1500 psi, 15 min. S.I.P. 1300 psi. Results: After
cleanup, gas gauged @ 200 Mcf.

6-01-84 Drilled out cement and bridge plug from 2930'-3090'.
to 6-7-84

6-18-84 Acidized Knox formation 3171'-3402' 30 holes. Run
Zone 2 2-3/8" EUE tubing with R-4 packer to 3090' and set R-4
packer @ 3060'. Pump 8 bbl.. 28% SGA Acid and 80 bbl. 15% SGA acid.
Dropped 26 perf. balls. Breakdown 2200 psi, Average Treatment 2600
psi, A.I.R. 4 BPM, I.S.I.P. 2250 psi, 15 min. S.I.P. 1800 psi.
Results: After cleanup, zone gauging @ 150 Mcf gas, no oil.

6-27-84 Run 2-7/8" EUE tubing with Halliburton R-4 packer to
3220' and set packer @ 3046' to separate zones 2 and 3. Shut well in.
Completed.