

FERGUSON LEASE

104 ACRES ±

GIL 4162



N 10 E 874.5'

S 82 E 1732'

N 10-01 E 2223.23'

WACO WELL NO. 466

FERGUSON et. al.

HANLON

FERGUSON NO. 1A

S 9 W 2541'

N 28-30 E 1831.5'

NO. 1A WACO NO. 466

S 69-15 E 1666.14'

S 88 W 1435.5'

N 39 W 379.5'

N 81-30 W 330'

STALNAKER

18" RED MAPLE

REFERENCES

8" VIRGINIA PINE

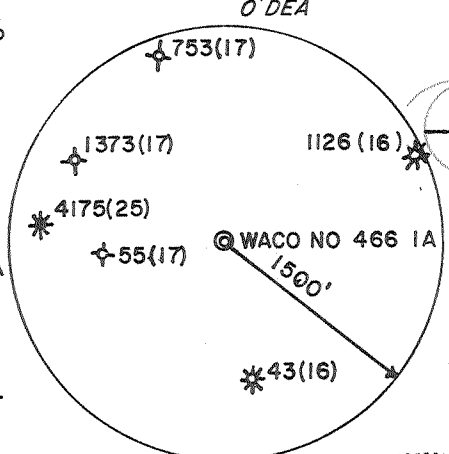
N 49-41 E 131.88'

NO. 1A WACO NO. 466

S 65-57 E 242.05'

28" BLACK GUM

1" = 200'

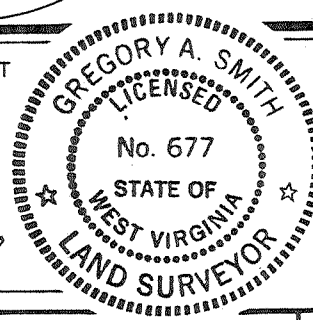


Handwritten notes: 2.455, 3.650, 2.455, 1.410

N 30-30 E 412.5'
N 49 W 165'



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.



L.L.S. 677 Gregory A. Smith

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
DATE DECEMBER 13, 19 86
OPERATORS WELL NO. WACO NO. 466 IA
API WELL NO. 47 - 021 - 4544
STATE COUNTY PERMIT

MINIMUM DEGREE OF ACCURACY 1 / 200 FILE NO. 1582 (20-38)
PROVEN SOURCE OF ELEVATION TOP OF KNOB 1182' SCALE 1" = 500'

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY OIL AND GAS DIVISION

WELL TYPE: OIL GAS LIQUID INJECTION WASTE DISPOSAL IF "GAS" PRODUCTION STORAGE DEEP SHALLOW

LOCATION: ELEVATION 1037' WATERSHED TRACE FORK DISTRICT DEKALB 2 COUNTY GILMER QUADRANGLE TANNER 7.5' 634

SURFACE OWNER L. FERGUSON HRS. ACREAGE 103.50 050
ROYALTY OWNER L. FERGUSON HRS. LEASE ACREAGE 104 NW1

PROPOSED WORK: DRILL CONVERT DRILL DEEPER REDRILL FRACTURE OR STIMULATE PLUG OFF OLD FORMATION PERFORATE NEW FORMATION PLUG AND ABANDON CLEAN OUT AND REPLUG OTHER
PHYSICAL CHANGE IN WELL (SPECIFY) _____ TARGET FORMATION BENSON
ESTIMATED DEPTH 5250 JAN 05 1986

WELL OPERATOR WACO OIL & GAS CO. INC. 933 DESIGNATED AGENT STEPHEN HOLLOWAY
ADDRESS P.O. BOX 397 GLENVILLE, WV 26351 ADDRESS P.O. BOX 397 GLENVILLE, WV 26351



Date Jan. 20 1987
 Operator's
 Well No. Waco # 466
 Farm Ferguson # 1A
 API No. 47 - 021 - 4544

State of West Virginia
 DEPARTMENT OF ENERGY
 Oil and Gas Division

FERC
 3/15/87

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: 1037' Watershed Trace Fork
 District: Dekalb County Gilmer Quadrangle Tanner 7.5'

COMPANY Waco Oil & Gas Co., Inc.
 ADDRESS P.O. Box 397 Glenville, W.V. 26351
 DESIGNATED AGENT Stephen E. Holloway
 ADDRESS P.O. Box 397 Glenville, WV 26351
 SURFACE OWNER L. Ferguson Hrs
 ADDRESS Smithville, WV
 MINERAL RIGHTS OWNER L. Ferguson Hrs
 ADDRESS Smithville, WV
 OIL AND GAS INSPECTOR FOR THIS WORK Craig
Duckworth ADDRESS Gassaway, WV
 PERMIT ISSUED December 30, 1986
 DRILLING COMMENCED January 2, 1987
 DRILLING COMPLETED January 7, 1987
 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"	241	241	surf
9 5/8			
8 5/8	1940	1940	45sks
7			
5 1/2			
4 1/2		6241	600sks
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Benson Depth 5250 feet
 Depth of completed well 6326' feet Rotary X / Cable Tools _____
 Water strata depth: Fresh 54', 136' feet; Salt 1165' feet
 Coal seam depths: None Is coal being mined in the area? no

OPEN FLOW DATA
 Producing formation Shale, Elk, Alexander, Benson Pay zone depth see treatment feet
 Gas: Initial open flow _____ Mcf/d Oil: Initial open flow _____ Bbl/d
 Final open flow 1443 Mcf/d Final open flow show Bbl/d
 Time of open flow between initial and final tests 4 hours
 Static rock pressure 1510 psig (surface measurement) after 48 hours shut in
 (If applicable due to multiple completion--)
 Second producing formation Riley, Balltown, Speechley Pay zone depth see treatment 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)

JUL 13 1987

0 21 4544. 19:2

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

- 1st stage: Shale (6210-1000) - 1000 gal 15% HCL, 37 ton CO₂, 684 MCF N₂
- 2nd stage: Elk, Alexander (5413-5000)-700 gal 15% HCL, 36 ton CO₂, 675 MCF N₂
- 3rd stage: Benson Riley (4767-4589) - 650 gal 15% HCL, 40 ton CO₂, 730 MCF N₂
- 4th stage: Riley (4503-4309) - 600 gal 15% HCL, 40 ton CO₂, 690 MCF N₂
- 5th stage: Balltown, Speechly (4115-3379) - 550 gal 15% HCL, 40 ton CO₂ 620 MCF N₂

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
clay			0	6	
sand @ shale			6	74	1/2" fresh H ₂ O @ 54'
sand, shale, @ Redrock			74	780	1/2" fresh H ₂ O @ 136'
sand and shale			780	1933	hole damp @ 1165'
little lime			1933	1950	
blue monday			1950	1979	
Big lime			1979	2042	
Big Injun			2042	2116	
Sand @ Shale			2116	3357	
Speechly Section			3357	3687	404 2350
Shale			3687	3748	813 3450
Balltown Section			3748	4307	
Riley Section			4307	4700	822 4700
Shale			4700	4762	825 4925
Benson			4762	4768	
Shale			4768	4989	830 5225
Alexander			4989	5042	835 6100
Shale			5042	5140	
Elk Section			5140	5414	
Shale			5414	6257	
Marcellus Shale			6257	6306	
Onondaga lime			6306	6326	

6206
327
3269

(Attach separate sheets as necessary)

Waco Oil & Gas Co., Inc.
Well Operator

By: Daniel R. Chapman Geologist

Date: January 20, 1987

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."

RECEIVED
 DEC 19 1986



1) Date: December 15, 19 86
 2) Operator's Well No. Waco 466-Ferguson 1A
 3) API Well No. 47 -021- 4544
 State County Permit

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

- 4) WELL TYPE: A Oil / Gas /
 B (If "Gas", Production / Underground storage / Deep / Shallow)
- 5) LOCATION: Elevation: 1037' / Watershed: Trace Fork
 District: Dekalb 033 2 / County: Gilmer 021 / Quadrangle: Tanner 7.5' 633
- 6) WELL OPERATOR Waco Oil & Gas CODE: 51800 7) DESIGNATED AGENT Stephen E. Holloway
 Address P.O. Box 397 / Address P.O. Box 397
 Glenville, WV 26351 / Glenville, WV 26351
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED Name Craig Duckworth
 Address Box 107, Davisson Rt. / Address P.O. Box 397
 Gassaway, WV 26624 / Glenville, WV 26351
- 9) DRILLING CONTRACTOR: Name I.L. Morris Well Service, Inc.
 Address P.O. Box 397 / Address P.O. Box 397
 Glenville, WV 26351 / Glenville, WV 26351
- 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, Benson 425
- 12) Estimated depth of completed well, 5250 feet
- 13) Approximate strata depths: Fresh, 165 feet; salt, none 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		Kinds	Sizes
Conductor										
Fresh water										
Coal										
Intermediate	85/8	ERW	20#	X		1112	1112	C.T.S. Per Rule 15.05		
Production	41/2	J55	10.5	X			5250	525		Depths set
Tubing										
Liners										Perforations: Top Bottom

OFFICE USE ONLY
 DRILLING PERMIT

Permit number 47-021-4544 Date December 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 December 30, 1988 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond: <input checked="" type="checkbox"/>	Agent: <input checked="" type="checkbox"/>	Plat: <input checked="" type="checkbox"/>	Casing: <input checked="" type="checkbox"/>	Fee: 1692 161	WACO: <input checked="" type="checkbox"/>	S&E: <input checked="" type="checkbox"/>	Other: <input type="checkbox"/>
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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.