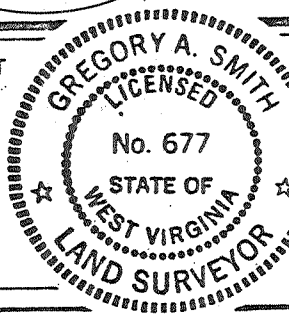


I THE UNDERSIGNED, HEREBY CERTIFY THAT THIS PLAT IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF AND SHOWS ALL THE INFORMATION REQUIRED BY LAW AND THE REGULATIONS ISSUED AND PRESCRIBED BY THE DEPARTMENT OF ENERGY.

L.L.S. *Gregory A. Smith*



(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS.
 DATE DECEMBER 13, 19 86
 OPERATORS WELL NO. WACO NO. 469 4A
 API WELL NO. 47-021-4545
 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 1087' WATERSHED TRACE FORK DISTRICT DEKALB 2 COUNTY GILMER QUADRANGLE TANNER 7.5'
 SURFACE OWNER L. FERGUSON HRS. ACREAGE 103.50
 ROYALTY OWNER L. FERGUSON HRS. LEASE ACREAGE 104

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 5300'

WELL OPERATOR WACO OIL & GAS CO. INC. DESIGNATED AGENT STEPHEN HOLLOWAY
 ADDRESS P.O. BOX 397 GLENVILLE, WV 26351 ADDRESS P.O. BOX 797 GLENVILLE, WV 26351

LONGITUDE 80-57-30
2090'
COUNTY NAME
PERMIT



FERC
3/15/87

State of West Virginia
DEPARTMENT OF ENERGY
Oil and Gas Division

Date Jan. 29, 1987
Operator's
Well No. Waco #469
Farm Ferguson #4A
API No. 47 - 021 - 4545

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: 1087 Watershed Trace Fork
District: DeKalb County Gilmer Quadrangle Tanner 7.5

COMPANY WACO OIL & GAS CO., INC.
ADDRESS PO BOX 397, Glenville, WV 26351
DESIGNATED AGENT Stephen E. Holloway
ADDRESS PO 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 26624
PERMIT ISSUED December 30, 1986
DRILLING COMMENCED January 9, 1987
DRILLING COMPLETED January 14, 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"			
9 5/8			
8 5/8	1225	1225	surf.
7			
5 1/2			
4 1/2		6305	690 sks
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Benson Depth 5300 feet
Depth of completed well 6365 feet Rotary X / Cable Tools ___
Water strata depth: Fresh None feet; Salt 1970 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 1719 Mcf/d Final open flow show Bbl/d
Time of open flow between initial and final tests 4 hours
Static rock pressure 1560 psig (surface measurement) after 48 hours shut in
(If applicable due to multiple completion--)
Second producing formation Riley, Balltown, Benson 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)

021 4545

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

- 1st Stage: Shelp (6268-5846) 1000 gal 15% HCL, 40 ton CO₂, 600 MCF N₂
- 2nd Stage: Elk, Alexander (5442-5033) 500 gal 15% HCL, 40 ton CO
- 3rd Stage: Benson, Riley (4795-4463) 500 gal 15% HCL, 50 ton CO₂, 550 MCF N₂
- 4th Stage: Riley, Balltown, (4335-3869) 500 gal 15% HCL, 40 ton CO₂, 550 MCF N₂
- 5th Stage: Speechly (3418-3378) 500 gal 15% HCL, 40 ton CO₂, 450 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
Fill			0	8	
Shale & Redrock			8	28	
Clay			28	33	
Sand, Shale, Redrock			33	1007	
Sand & Shale			1007	1951	
Little Lime			1951	1968	
Blue Monday			1968	1988	Hole dump @ 1970
Big Lime			1988	2036	
Big Injun			2036	2133	
Sand & Shale			2133	3377	404 2375
Speechly Section			3377	3704	
Shale			3704	3766	813 3475
Balltown Section			3766	4334	822 4725
Riley Section			4334	4738	
Shale			4738	4792	825 4950
Benson			4792	4798	
Shale			4798	5016	830 5250
Alexander			5016	5070	
Shale			5070	5165	835 6125
Elk Station			5165	5447	
Shale			5447	6302	
Marcellus Shale			6302	6345	
Onondaga lime			6345	6365	T. D.

6365
1000
5299

(Attach separate sheets as necessary)

Waco Oil & Gas Co., Inc.

Well Operator

By: Daniel R. Chapman Geolist

Date: January 29, 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."

JUL 13 1987

RECEIVED
DEC 19 1986



1) Date: December 15, 19 86
 2) Operator's Well No. Waco 469-Ferguson 4A
 3) API Well No. 47 - 021 - 4545
 State County Permit

STATE OF WEST VIRGINIA
 DEPARTMENT OF ENERGY, OIL AND GAS DIVISION
 DIVISION OF OIL & GAS
 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: 1087' Watershed: Trace Fork
 District: Dekalb 0232 County: Gilmer 021 Quadrangle: Tanner 7.5' 633
- 6) WELL OPERATOR Waco Oil & Gas CODE: Inc. 7) DESIGNATED AGENT Stephen E. Holloway
 Address P.O. Box 397 51800 Address P.O. Box 397
Glenville, WV 26351 Glenville, WV 26351
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED 9) DRILLING CONTRACTOR:
 Name Craig Duckworth Name I.L. Morris Well Service, Inc.
 Address Box 107, Davisson Rt. Address P.O. Box 397
Gassaway, WV 26624 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 435
- 12) Estimated depth of completed well, 5300 feet
- 13) Approximate strata depths: Fresh, 215 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		
Conductor									Kinds
Fresh water									Sizes
Coal									Per Rules, 05
Intermediate	85/8	ERW	20#	X		1219	1219	C.T.S.	Depths set
Production	41/2	J55	10.5	X			5250	550	Perforations:
Tubing									Top Bottom
Liners									

OFFICE USE ONLY
 DRILLING PERMIT

Permit number 47-021-4545 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: <u>ASB</u>	Plat: <u>ASB</u>	Casing: <u>ASB</u>	Fee: <u>1692</u> <u>161</u>	WPCP: <u>ASB</u>	S&E: <u>ASB</u>	Other: <input type="checkbox"/>
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NOTE: Keep one copy of this permit posted at the drilling location.

[Signature]
 Director, Division of Oil and Gas

File