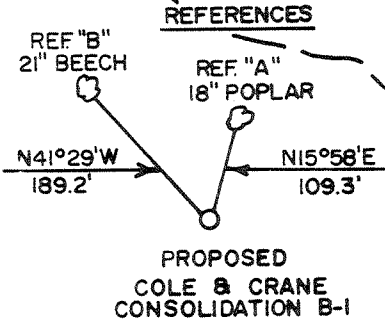


NOTE:  
 NO OTHER ADJOINERS SHOWN ON TAX MAP WITHIN 2500' OF WELL.  
 SURVEY BEARINGS BASED ON MAGNETIC OF SURVEY PERFORMED 6/21/85.

W.P. COAL COMPANY GRID SYSTEM FROM STA. 1 & STA. 14  
 S - 50,704.6467  
 E - 11,015.0736



FILE NO. \_\_\_\_\_  
 DRAWING NO. \_\_\_\_\_  
 SCALE 1"=1000'  
 MINIMUM DEGREE OF ACCURACY 1:2500  
 PROVEN SOURCE OF ELEVATION BM. No. 97 NW of PROPOSED WELL/ELEV. 1202.82

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) Frederick A. Kell  
 R. P. E. 6999 L. L. S. \_\_\_\_\_

PLACE SEAL HERE

(+) DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS  
 FORM IV-6  
 (8-78)



DATE JUNE 21, 1985  
 OPERATOR'S WELL NO. NO. COLE & CRANE CONSOLIDATION B-2  
 API WELL NO. 47-045-1101  
 STATE COUNTY PERMIT

Department of Mines  
 Oil & Gas Division

WELL TYPE: OIL \_\_\_ GAS  LIQUID INJECTION \_\_\_ WASTE DISPOSAL \_\_\_  
 (IF "GAS", PRODUCTION  STORAGE \_\_\_ DEEP \_\_\_ SHALLOW   
 LOCATION: ELEVATION 1324.66' WATER SHED CONLEY BRANCH  
 DISTRICT ISLAND CREEK COUNTY LOGAN  
 QUADRANGLE MAN 456 049 NW, Gilbert  
 SURFACE OWNER COLE & CRANE REAL ESTATE TRUST ACREAGE 425 ACS.  
 OIL & GAS ROYALTY OWNER COLE & CRANE CONSOLIDATION A-14(B-2) LEASE ACREAGE 10,992.24 ACS.  
 LEASE NO. WV313(WU)  
 PROPOSED WORK: DRILL  CONVERT \_\_\_ DRILL DEEPER \_\_\_ REDRILL \_\_\_ FRACTURE OR STIMULATE \_\_\_ PLUG OFF OLD FORMATION \_\_\_ PERFORATE NEW FORMATION \_\_\_ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) \_\_\_\_\_

PLUG AND ABANDON \_\_\_ CLEAN OUT AND REPLUG \_\_\_  
 TARGET FORMATION BIG LIME, DEVONIAN SHALE ESTIMATED DEPTH 5,250'  
 WELL OPERATOR Cities Service Oil and Gas Corp. DESIGNATED AGENT Paul Phillips  
 ADDRESS P.O. Box 873 169 ADDRESS P.O. Box 873  
Charleston, WV 25323 Charleston, WV 25323

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JUN 30 1986



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W. VA. OIL & GAS CONSERVATION COMMISSION  
CONFIDENTIAL

Date June 25, 1986  
Operator's Well No. "B" #2  
Farm Cole Crane Consolidation  
API No. 47 - 045 - 1101

State of West Virginia

DEPARTMENT OF ENERGY

Oil and Gas Division

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 X / Shallow      /)

LOCATION: Elevation: 1330.61 Watershed Conley Branch  
District: Island Creek County Logan Quadrangle Man

COMPANY Cities Service Oil & Gas Corporation  
ADDRESS P. O. Box 873, Charleston, WV 25323  
DESIGNATED AGENT Paul D. Phillips  
ADDRESS P. O. Box 873, Charleston, WV 25323  
SURFACE OWNER Cole Crane Trust  
ADDRESS 215 Frederick Bldg., Huntington, WV 25701  
MINERAL RIGHTS OWNER Cole Crane Trust  
ADDRESS 215 Frederick Bldg., Huntington, WV 25701  
OIL AND GAS INSPECTOR FOR THIS WORK Jerry Holcomb  
ADDRESS P.O. Box 159, Hamlin, WV 25523  
PERMIT ISSUED November 1, 1985  
DRILLING COMMENCED 12-16-85  
DRILLING COMPLETED 1-1-86

Casing & Tubing	Used in Drilling	Left in Well	Cement fill up Cu. ft.
Size <u>20-1/8" 16"</u>	28' Set @ 36' KB	28' Set @ 36' KB	14 Cu. Ft. cement to surface
Cond. <u>11-3/4" 13-1/8"</u>	322' Set @ 333' KB	322' Set @ 333' KB	210 cuft Cmt to Surf.
<u>9 5/8</u>			
<u>8 5/8</u>	2528' Set @ 2538'	2528' Set @ 2538'	1073 cuft Cmt to Surf.
<u>7</u>			
<u>5 1/2</u>			
<u>4 1/2</u>	5393' Set @ 5403'	5393' Set @ 5403'	781 cuft TOC 1920'
<u>3</u>			
Tubing <u>23/8"</u>	N/A	5322'	N/A
Liners used			

IF APPLICABLE: PLUGGING OF DRY HOLE ON CONTINUOUS PROGRESSION FROM DRILLING OR REWORKING. VERBAL PERMISSION OBTAINED ON N/A

GEOLOGICAL TARGET FORMATION Onondaga Depth 5352 feet  
Depth of completed well 5420' feet Rotary X / Cable Tools       
Water strata depth: Fresh 40' feet; Salt 1580' feet  
Coal seam depths: 61'-62' Is coal being mined in the area? Yes  
Open Mine 122'-130' 5168'-5350' 3539' - 3621'  
4530'-4740'

OPEN FLOW DATA  
Producing formation Devonian Shale Pay zone depth      feet  
Gas: Initial open flow      Mcf/d Oil: Initial open flow      Bbl/d  
Final open flow 215 Mcf/d Final open flow      Bbl/d  
Time of open flow between initial and final tests      hours

Static rock pressure 625 psig (surface measurement) after 572 hours shut in  
(If applicable due to multiple completion--)  
Second producing formation Big Lime Pay zone depth 2782'-94' feet  
2804'-08'  
Gas: Initial open flow      Mcf/d Oil: Initial open flow      Bbl/d  
Final open flow 327 Mcf/d Oil: Final open flow      Bbl/d  
Time of open flow between initial and final tests      hours  
Static rock pressure 17 psig (surface measurement) after 572 hours shut in

215  
327  
542  
Mcf  
FOR  
for  
well

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(Continue on reverse side)

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

1. Perforated devonian shale @ 5168'-5350' (19 holes) - Broke down shale w/500 gallons 15% HCL. Frac w/50,000# 20/50 sand & 935 MCF N2. ISIP-2700 psi, 15 Min. SIP-2400 psi, Max. TP 4900 psi, Avg. TP 3800 psi, Min. TP 3200 psi. Max. inj. rate 60 BPM, air 54 BPM, Min. 40 BPM.
2. Perforated devonian shale @ 4530'-4740' (22 holes) - Broke down shale w/500 gallons 15% HCL. Frac w/50,000# 20/50 sand & 710 MCF N2. ISIP 2000 psi, 15 Min. SIP 1500#. Max TP 4100#, Avg. TP 3900#, Min. TP 2200#, Max Inj rate 70 BPM, Avg. 60 BPM, Min. 32 BPM.
3. Perforate devonian shale @ 3539'-3621' (15 holes) - Broke down shale w/500 gallons 15% HCL. Frac w/50,000# 20/50 sand and 864 MCF N2. ISIP 1800 psi, 15 Min. SIP 1500 psi, Max TP 3200 psi, Avg. TP 3000 psi, Min TP 2900, Max Inj rate 50 BPM, Avg. 42 BPM, Min. 40 BPM.
4. Perforate Big Lime 2782'-2808' (32 Holes) - 24 Bbls 15% HCL, 47 bbls 15% gelled acid, 24 bbls 15% HCL acid, 96 bbls gelled acid, flush 12 bbls 2% KCLW. Rate 7.5 BPM, 0 psi treating pressure, ISIP 0 psi.

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS
					Including indication of all fresh and salt water, coal, oil and gas
Rock			0	36	
Rock & Shale			36	180	40' hole damp. Coal 60'-61' Open mine 122'-130'
Rock, Sand & Shale			180'	352'	
Sand			352'	510'	
Sand & Shale			510'	775'	
Sand & Shale			775'	780'	
Sand			780'	885'	780' hole damp
Sand & Shale			885'	1260'	
Sand			1260'	1638'	
Sand w/shale			1638'	1852'	SW @ 1580'
Ravencliff			1852'	1912'	
Upper Maxon			1912'	2040'	
Maxon Sand & Shale			2040'	2115'	
Red Rock & Shale			2115'	2240'	
Maxon Sand			2240'	2368'	
Shale w/Streaks of Sand			2368'	2522'	
Big Lime			2522'	2820'	
Injun Sand			2820'	2870'	
Shale & Sand			2870'	3013'	Gas check @ 3013' - 55 MCF/D
Shale			3013'	3417'	
Berea Sand			3417'	3438'	
Devonian Shale			3438'	5352'	Gas check @ 5000' - 120 MCF/D
Onondaga			5352'	5380'	
Onondaga & Sand			5380'	5420'	

5420  
5352

(Attach separate sheets as necessary)

68 expl dtg

Paul D. Phillips  
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."



1) Date: October 21, 1985  
 2) Operator's Well No. Cole Crane Consolidation B-2  
 3) API Well No. 47 State 045 - 1101

**RECEIVED**  
 OCT 25 1985

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

DIVISION OF OIL & GAS  
**DEPT. OF ENERGY**

4) WELL TYPE: A Oil \_\_\_\_\_ / Gas X /  
 B (If "Gas", Production X / Underground storage \_\_\_\_\_ / Deep X / Shallow \_\_\_\_\_)  
 5) LOCATION: Elevation: 1324.66' Watershed: Conley Branch  
 District: Island Creek 169 County: Logan Quadrangle: Man  
 6) WELL OPERATOR Cities Service Oil & Gas Corp. 7) DESIGNATED AGENT Paul D. Phillips  
 Address P. O. Box 873 9800 Address P. O. Box 873  
Charleston, WV 25323 Charleston, WV 25323  
 8) OIL & GAS INSPECTOR TO BE NOTIFIED Name Arthur St. Clair  
 Address P. O. Box 157  
Brenton, WV 24818  
 9) DRILLING CONTRACTOR: Name Unknown  
 Address \_\_\_\_\_

10) PROPOSED WELL WORK: Drill X / Drill deeper \_\_\_\_\_ / Redrill \_\_\_\_\_ / Stimulate \_\_\_\_\_  
 Plug off old formation \_\_\_\_\_ / Perforate new formation \_\_\_\_\_  
 Other physical change in well (specify): \_\_\_\_\_  
 11) GEOLOGICAL TARGET FORMATION, Big Lime, Devonian Shale 401  
 12) Estimated depth of completed well, 5250' feet  
 13) Approximate strata depths: Fresh, 147', 261', 450'; salt, 1425', 2267' feet.  
 14) Approximate coal seam depths: 108', 111', 115', 117' coal being mined in the area? Yes X / No \_\_\_\_\_

15) CASING AND TUBING PROGRAM 141' - 144', 398' - 400', 469' - 473'

CASING OR TUBING TYPE	SPECIFICATIONS				FOOTAGE INTERVALS		CEMENT FILL-UP OR SACKS (Cubic feet)	PACKERS
	Size	Grade	Weight per ft.	New	Used	For drilling		
Conductor	16"	H-40	65#	X		30'	30'	10 cu ft <u>PKMS</u>
Fresh water								
<del>XXX</del> Surface	11 3/4"	H-40	42#	X		300'	300'	157 cu ft <u>SFS</u>
Intermediate	8-5/8"	K-55	24#	X		2500'	2500'	731 cu ft <u>CTS</u>
Production	4-1/2"	N-80	11.6#	X		5250'	5250'	828 cu ft
Tubing	2-3/8"	J-55	4.7#	X		5250'	5250'	
Liners								

OFFICE USE ONLY  
 DRILLING PERMIT

Permit number 47-045-1101 Date November 1 19 85

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 November 1, 1987 unless well work is commenced prior to that date and prosecuted with due diligence.

Bond:	Agent:	Plat:	Casing	Fee	WPCP	S&E	Other
	<u>AS</u>	<u>MH</u>	<u>MX</u>	<u>93138</u>	<u>MD</u>	<u>MD</u>	

[Signature]  
 Director, Division of Oil and Gas

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