

Compan: Cities Service Oil & Gas Corp.  
Address: P.O. Box 873-Charleston, WV 25323  
Surface: Mary Chaffin Heirs

Farm **COLE & CRANE R.E.T.**  
PART OF 12,096.64A

Tract **1** Acres **316.98** Lease No. **C-3917**

Well (Farm) No. **7** Serial No. **GW-1336**

Elevation (Spirit Level) **1415.67'**

Quadrangle **LOGAN 9 S-417 W-330**

County **LOGAN** District **LOGAN 2**

Engineer **R. B. Anderson**

Engineer's Registration No. **2074**

File No. \_\_\_\_\_ Drawing No. **W-3-61**

Date **MARCH 13 1961** Scale **1" = 400'**

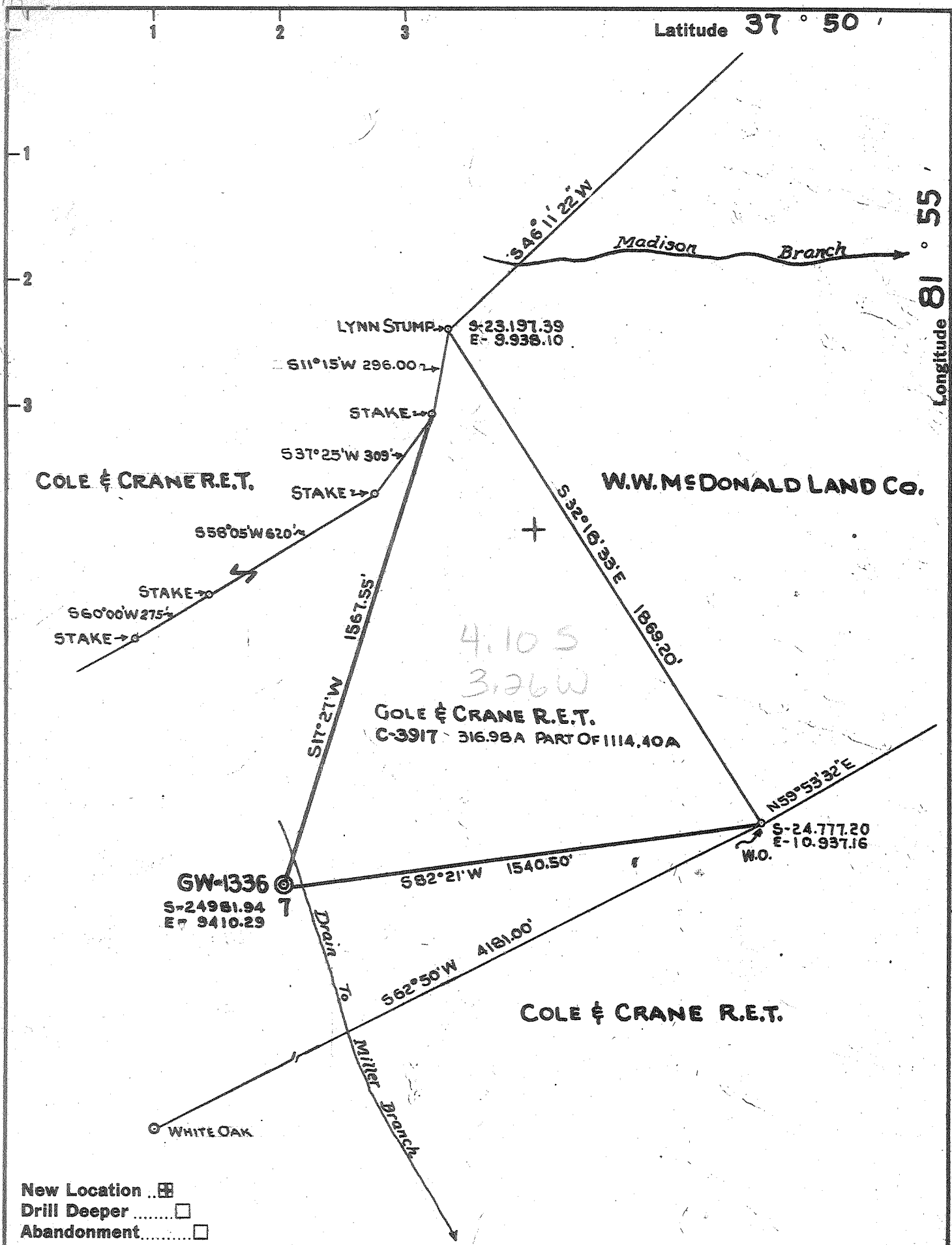
STATE OF WEST VIRGINIA  
DEPARTMENT OF MINES  
OIL AND GAS DIVISION  
• CHARLESTON

**WELL LOCATION MAP**  
FILE NO. **LOG-790-DD**

+ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown. FEB 23 1987

- Denotes one inch spaces on border line of original tracing.

47-045



Company **COLUMBIAN CARBON COMPANY**  
 Address **BOX 873 CHARLESTON W.VA.**  
 Farm **COLE & CRANE R.E.T.**  
 Tract **1** PART OF 120.96.64A Acres **316.98** Lease No. **C-3917**  
 Well (Farm) No. **7** Serial No. **GW-1336**  
 Elevation (Spirit Level) **1415.67'**  
 Quadrangle **LOGAN 9 S-417 W-330 SW**  
 County **LOGAN** District **LOGAN**  
 Engineer **R. B. Anderson**  
 Engineer's Registration No. **2074**  
 File No. \_\_\_\_\_ Drawing No. **W-3-61**  
 Date **MARCH 13 1961** Scale **1" = 400'**

STATE OF WEST VIRGINIA  
 DEPARTMENT OF MINES  
 OIL AND GAS DIVISION  
 CHARLESTON

WELL LOCATION MAP  
 FILE NO. **LOG-790-00**

+ Denotes location of well on United States Topographic Maps, scale 1 to 62,500, latitude and longitude lines being represented by border lines as shown.  
 - Denotes one inch spaces on border line of original tracing.



STATE OF WEST VIRGINIA  
DEPARTMENT OF MINES  
OIL AND GAS DIVISION 15

Quadrangle Logan 9 SW

Permit No. Log-790

WELL RECORD

Oil or Gas Well Gas  
(KIND)

Company Columbian Carbon Company  
Address Box 873, Charleston 23, W. Va.  
Farm Cole & Crane R/E Trust Acres 12, 096. 64  
Location (waters) Miller Branch  
Well No. 7 - GW-1336 Elev. 1415. 67'  
District Logan County Logan  
The surface of tract is owned in fee by Alus Steele  
Address Switzer, W. Va.

Mineral rights are owned by Cole & Crane R/E Trust  
815 Trans. Bldg. Address Cincinnati, Ohio

Drilling commenced 4-5-61  
Drilling completed 6-7-61  
Date Shot not shot From \_\_\_\_\_ To \_\_\_\_\_  
With \_\_\_\_\_

Open Flow 10 /10ths Water in \_\_\_\_\_ Inch  
10 /10ths Merc. in 7" 23# Inch  
Volume 4, 981, 000 Cu. Ft.  
Rock Pressure 720 lbs. 144 hrs.

Oil \_\_\_\_\_ bbls., 1st 24 hrs.  
WELL ACIDIZED not acidized

WELL FRACTURED not-fractured

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			
16" 64#	16'	16'	Kind of Packer _____
13 3/8" 48#	608'2"	76'8"	Anchor
10 3/4" 32#	801'10"	801'10"	Size of <u>13-3/8"</u>
8 1/4" 24#	2079'8"	2079'8"	Depth set <u>525'</u>
5 3/16"			
3"			Perf. top _____
2"			Perf. bottom _____
Liners Used			Perf. top _____
			Perf. bottom _____

CASING CEMENTED \_\_\_\_\_ SIZE \_\_\_\_\_ No. Ft. \_\_\_\_\_ Date \_\_\_\_\_  
see reverse side

COAL WAS ENCOUNTERED AT 35 FEET 36 INCHES  
223 FEET 24 INCHES 368 FEET 24 INCHES  
FEET INCHES FEET INCHES

RESULT AFTER TREATMENT

ROCK PRESSURE AFTER TREATMENT

Fresh Water 35-38' 310' 615' Feet Salt Water 830' 2438' Feet

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
Gravel			0	12			
Sand			12	35			
Coal			35	38	F. water	35-38'	hole full
Sand			38	85'			
Slate and Shells			85	129			
Sand			129	223			
Coal			223	225			
Slate and Shells			225	238			
Sand			238	368	F. water	310'	hole full
Coal			368	370			
Slate			370	396			
Sand			396	506			
Slate			506	525			
Sand			525	567			
Open Mine			567	575			
Sand			575	585			
Slate and Shells			585	605			
Sand			605	712	F. water	615'	hole full
Slate and Shells			712	750			
Sand			750	765	772'DLM=774'SLM		
Slate and Shells			765	830	S. water	830'	2-10" blr/hr.
Sand			830	890			
Slate			890	916			
Sand			916	990			
Slate and Shells			990	1199			
Sand			1199	1258			
Slate and Shells			1258	1289			

Formation	Color	Hard or Soft	Top 15'	Bottom	Oil, Gas or Water	Depth Found	Remarks
Sand			1289	1350			
Slate and Shells			1350	1371			
Sand			1371	1505			
Slate and Shells			1505	1550			
Sand			1550	1587			
Slate and Shells			1587	1657			
Sand			1657	1852			
Slate			1852	1877			
Sand			1877	2020			
Lime			2020	2067	2064'SLM=2049'DLM		
Slate and Shells			2067	2140			
Maxon Sand			2140	2212			
Slate and Shells			2212	2232			
Red Rock			2232	2290			
Slate and Shells			2290	2389			
Maxon Sand			2389	2436			
Slate and Shells			2436	2500	S. water	2438'	1-8"blr/hr.
Red Rock			2500	2518			
Big Lime			2518	2532			
Sand			2532	2600	2695'DLM=2695'SLM		
Big Lime			2600	2843			
Total Depth-----					2843'	Gas Pays: 2813' 90/10 W. 7" 23# = 4,050MCF 2815' 12/10 M. 7" 23# = 5,454 MCF	
<b>CASING RECORD</b>							
4-13-61	Ran 13-3/8" casing at 605'DLM. Pulled 531'6" - left in 76'8"						
4-16-61	Ran 10-3/4" casing at 772'DLM=774'SLM with shoe. Pumped in 125 sacks cement. Ran 10 bags Aquagel and 125 more sacks cement with 5 bags Gel Flake.						
5-15-61	Ran 8-5/8" casing at 2064'SLM=2049'DLM-Gelled with 12 sacks. Circulation and returns.						
5-30-61	Ran 7" casing at 2695'DLM=2695'SLM with shoe. Aquagelled with 8 sacks, Circulation and returns.						

Date July 18, 1961

APPROVED Columbian Carbon Company, Owner

By W. S. Moore, Mgr. of Prod.  
(Title)



STATE OF WEST VIRGINIA  
DEPARTMENT OF MINES  
OIL AND GAS DIVISION  
**DRILLED DEEPER  
WELL RECORD**

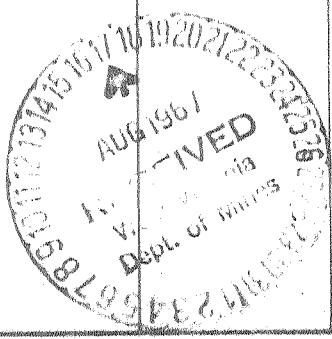
Rotary   
Spudder   
Cable Tools   
Storage

Quadrangle Log-9 SW  
Permit No. LOG-790-DD

Oil or Gas Well Gas  
(KIND)

Company <u>Cities Service Oil Company</u>	Casing and Tubing	Used in Drilling	Left in Well	Packers
Address <u>Box 873, Charleston, W. Va., 25323</u>	Size			Kind of Packer
Farm <u>Cole &amp; Crane R/E Trust</u> Acres <u>12,096</u>	16			Size of
Location (waters) <u>Miller Branch</u>	13	<u>no additional casing</u>		Depth set
Well No. <u>#7 - GW-1336</u> Elev <u>1427, 28'</u>	10	<u>run when deepened</u>		Perf. top
District <u>Logan</u> County <u>Logan</u>	8 1/4			Perf. bottom
The surface of tract is owned in fee by <u>Alus Steele</u>	6 3/4			Perf. top
Address <u>Switzer, W. Va.</u>	5 3/16			Perf. bottom
Mineral rights are owned by <u>Cole &amp; Crane R/E Trust</u>	4 1/2			
15 Trans. Bldg. Address <u>Cincinnati, Ohio</u>	3			
Drilling commenced <u>7-29-67</u>	2			
Drilling completed <u>8-12-67</u>	Liners Used			
Date Shot <u>not shot</u> From To				
With				
Open Flow /10ths Water in Inch	Attach copy of cementing record.			
/10ths Merc. in Inch	CASING CEMENTED SIZE No. Ft. Date			
Volume <u>146M</u> Cu. Ft.	Amount of cement used (bags)			
Rock Pressure lbs. hrs.	Name of Service Co. <u>none</u>			
Oil bbls., 1st 24 hrs.	COAL WAS ENCOUNTERED AT <u>none</u> FEET INCHES			
WELL ACIDIZED (DETAILS) <u>see below</u>	FEET INCHES FEET INCHES			
WELL FRACTURED (DETAILS) <u>not fractured</u>	FEET INCHES FEET INCHES			
RESULT AFTER TREATMENT (Initial open Flow or bbls.) <u>377 MCF (Big Lime)</u>				
ROCK PRESSURE AFTER TREATMENT HOURS				
Fresh Water Feet Salt Water Feet				
Producing Sand <u>Big Lime</u> Depth <u>2660-2845'</u>				

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
<u>Drilled deeper record (fished out tools in hole and deepened)</u>							
<u>Old Total depth</u>							
<u>Big Lime</u>			<u>2600</u>	<u>2843'</u>			
<u>Drilled deeper record</u>							
<u>Big Lime</u>			<u>2843</u>	<u>2845</u>			
<u>Big Injun</u>			<u>2845</u>	<u>2880</u>			
<u>Drilled deeper total depth-----</u>				<u>2880'</u>			
<u>Acidized Big Lime 8-1-67</u>							
<u>Acidized Big Lime with 2,000 gallons 28% acid. Well on vacuum. Flushed with 38 bbls. flush. Before acidizing gas gauged 146 MCFD. FOF after acidizing 377 MCFD</u>							
<u>Turned back into line 8-14-67.</u>							



Cities Service Oil Co. Operator  
by: L. D. Todd, District Sup't  
8-15-67



RECEIVED  
FEB 29 1988

State of West Virginia

DIVISION OF OIL & GAS  
DEPARTMENT OF ENERGY

DEPARTMENT OF ENERGY  
Oil and Gas Division

Date February 26, 1988  
Operator's  
Well No. A-7, GW-1336  
Farm Cole and Crane Trust  
API No. 47 - 045 - 0790-DD

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: 1427.28 Watershed Miller Branch  
District: Logan County Logan Quadrangle Logan

COMPANY Cities Service Oil and 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 Mary Chaffin Heirs; Mr. John Chaffin

ADDRESS Box 2195, Huntington, WV 25701

MINERAL RIGHTS OWNER Cole & Crane Trust, Mr. Bill Stark

ADDRESS 215 Fredrick Bldg., Huntington, WV 25701

OIL AND GAS INSPECTOR FOR THIS WORK Arthur St. Clair  
ADDRESS P.O. Box 468, Brenton, WV

PERMIT ISSUED 2-19-87

DEEPENING COMMENCED 10-29-87

DEEPENING COMPLETED 10-31-87

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.			
13-3/8"	608	77	
10-3/4"	801	801	250 sx cnt
8 5/8	2080	2080	
7	2715	2715	
5 1/2			
4 1/2 *	5431	5431	TOC @ 2050
3			
2			
Liners used			

GEOLOGICAL TARGET FORMATION Devonian Shale/Berea/Weir \*NEW TUBULARS Depth 2846-5415 feet

Depth of completed well 5443 feet Rotary X / Cable Tools

Water strata depth: Fresh None feet; Salt None feet

Coal seam depths: None Is coal being mined in the area? No

OPEN FLOW DATA

Producing formation Devonian Shale/Berea/Weir Pay zone depth 2967-5327 feet

Gas: Initial open flow \_\_\_\_\_ Mcf/d Oil: Initial open flow \_\_\_\_\_ Bbl/d

Final open flow 189 Mcf/d Final open flow \_\_\_\_\_ Bbl/d

Time of open flow between initial and final tests \_\_\_\_\_ hours

Static rock pressure 300 psig (surface measurement) after 132 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

(Continue on reverse side)

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

Devonian Shale 5327-5085 Frac'd w/ 50,000# 20/40 sd, 646 MSCF N2, TL&T 195, 50 BPM Foam  
 Devonian Shale 4802-4499 Frac'd w/ 75,000# 20/40 sd, 1137 MSCF N2, TL&T 190, 60 BPM Foam  
 Devonian Shale 4296-3601 Frac'd w/ 75,000# 20/40 sd, 912 MSCF N2, TL&T 192, 80 BPM Foam  
 Berea 3462-70 Frac'd w/ 75,000# 20/40 sd, 390 MSCF N2, TL&T 218, 20 BPM Foam  
 Weir 2967-74 Frac'd w/ 75,000# 20/40 sd, 285 MSCF N2, TL&T 218, 20 BPM Foam

**RECEIVED**  
 FEB 29 1988

DIVISION OF OIL & GAS  
 DEPARTMENT OF ENERGY

WELL LOG

FORMATION	COLOR	HARD OR SOFT	TOP FEET	BOTTOM FEET	REMARKS Including indication of all fresh and salt water, coal, oil and gas
Big Lime				2846	
Weir			2846	3105	
Sunbury Shale			3105	3430	
Berea			3430	3470	
Devonian Shale			3470	5415	
Onondaga			5415	5443	
					5443 - new TD 2880 - old TD 2563 - new ftg

(Attach separate sheets as necessary)

Cities Service Oil and Gas Corporation  
 Well Operator

By: Paul P. Phillips Operations Manager

Date: February 26, 1988

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 minerals, encountered in the drilling of a well."

January 26, 1987

- 1) Date: \_\_\_\_\_, 1987
- 2) Operator's Well No. Cole Crane Trust "A" #7
- 3) API Well No. 47 045 790-DD  
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 X /  
B (If "Gas", Production X / Underground storage \_\_\_\_\_ / Deep \_\_\_\_\_ / Shallow X /)
- 5) LOCATION: Elevation: 1427.28 Watershed: Miller Branch  
District: Logan County: Logan 045 Quadrangle: Logan 442
- 6) WELL OPERATOR Cities Service Oil & Gas Corp 7) DESIGNATED AGENT Paul D. Phillips  
Address P. O. Box 873 169 9800 Address P. O. Box 873  
Charleston, WV 25323 Charleston, WV 25323
- 8) OIL & GAS INSPECTOR TO BE NOTIFIED 9) DRILLING CONTRACTOR:  
Name Jerry Holcomb Name Not available  
Address Rural Route 1, Box 28 Address \_\_\_\_\_  
Hamlin, WV 25523
- 10) PROPOSED WELL WORK: Drill \_\_\_\_\_ / Drill deeper X / Redrill \_\_\_\_\_ / Stimulate X /  
Plug off old formation \_\_\_\_\_ / Perforate new formation X /  
Other physical change in well (specify) \_\_\_\_\_
- 11) GEOLOGICAL TARGET FORMATION, Devonian Shale
- 12) Estimated depth of completed well, 5450 feet
- 13) Approximate strata depths: Fresh, 35, 310, 615 feet; salt, 830, 2438 feet.
- 14) Approximate coal seam depths: 35, 223, 368 Is coal being mined in the area? Yes \_\_\_\_\_ / No X /

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		
Conductor	133/8		40			608' 2"	76' 8"	Kinds Anchor
Fresh water	10 3/4		32			801' 10"	801' 10"	250 sxs cmt
Coal	8 5/8		24			2079' 8"	2079' 8"	Sizes 13-3/8"
Intermediate	7		23			2714' 7"	2714' 7"	
Production	4 1/2	N-80	11.6			5450	5450	540 SKS OR Depths set 525
Tubing	2 3/8	J-55	4.6			5450	5450	AS REQUIRED BY Rule 15.01
Lin...								Perforations: N/A
								Top Bottom

OFFICE USE ONLY  
DRILLING PERMIT

Permit number 47-045-0790-DD

February 19 19 87  
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 February 19, 1989 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: <u>15</u>	Casing: <u>15</u>	Fee: <u>22061</u>	WPOP: <u>15</u>	S&E: <u>15</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.