



FILE NO. _____
 DRAWING NO. _____
 SCALE 1" = 1000'
 MINIMUM DEGREE OF ACCURACY 1:2500
 PROVEN SOURCE OF ELEVATION McDonald well A-16
From Well Plat Elev. 888.55'

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.
 (SIGNED) Donald J. Day
 R.P.E. _____ L.L.S. 247

PLACE SEAL HERE

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY OIL AND GAS DIVISION		DATE <u>Jan, 9</u> , 19 <u>88</u> OPERATOR'S WELL NO. <u>McDonald A-17</u> API WELL NO. <u>GW 1976</u>	
WELL TYPE: OIL ___ GAS <u>X</u> LIQUID INJECTION ___ WASTE DISPOSAL ___ (IF "GAS,") PRODUCTION <u>X</u> STORAGE ___ DEEP ___ SHALLOW ___		<u>47</u> - <u>045</u> - <u>1116</u> STATE COUNTY PERMIT	
LOCATION: ELEVATION <u>888.55'</u> WATERSHED <u>Sandlick Br. of Guyandotte River</u> DISTRICT <u>Triadelphia</u> <u>3 456 049</u> COUNTY <u>Logan</u> QUADRANGLE <u>Man 7.5'</u> <u>Gilbert 15' NC</u>		COUNTY NAME PERMIT	
SURFACE OWNER <u>W.W. McDonald Land Co.</u> ACREAGE <u>5,990.47 Acs.</u> OIL & GAS ROYALTY OWNER <u>W.W. McDonald Land Co.</u> LEASE ACREAGE <u>6084 Acs Pt. of 8666.505 Acs.</u> LEASE NO. _____			
PROPOSED WORK: DRILL <u>X</u> 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 <u>Devonian Shale</u> ESTIMATED DEPTH <u>6500(MO); 5090'(TVD)</u> WELL OPERATOR <u>Cities Service Oil & Gas Corp.</u> DESIGNATED AGENT <u>Paul D. Phillips</u> ADDRESS <u>P.O. Box 873, Charleston, WV. 25323</u> ADDRESS <u>P.O. Box 873, Charleston WV. 25323</u>			

H.T. HALL 43673 FORM WW-6

6-6 Gilbert (271) Directional well

RECORDED
OCT 27 1988

API # 47- 45-01116

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

Well Operator's Report of Well Work

Farm name: McDONALD, W. W. LAND CO. Operator Well No.: A-17 GW-1976

LOCATION: Elevation: 888.55 Quadrangle: MAN

District: TRIADELPHIA County: LOGAN
Latitude: 12050 Feet South of 37 Deg. 42Min. 30 Sec.
Longitude: 1999 Feet West of 81 Deg. 52 Min. 30 Sec.

Company: OXY USA, INC.
P. O. BOX 873
CHARLESTON, WV

Agent: DELBERT G. OLIVER

Inspector: ARTHUR ST. CLAIR
Permit Issued: 01/22/88
Well work Commenced: 3-29-88
Well work Completed: 5-12-88

Verbal Plussings
Permission granted on 1-22-88
Rotary X Cable Risk
Total Depth (feet) 4597 TVD, 6691 MD
Fresh water depths (ft) NA

Salt water depths (ft) NA

Is coal being mined in area (Y/N)? N
Coal Depths (ft): 112-116'; 195-198'

Size	Used in	Left	Cement
Conductor	Drillings	in Well	Fill Up
			Cu. Ft.
16"	42'	42'	Surface
Fresh Wtr			
11.75"	282'	282'	Surface
Intermediate			
8.625"	2409'	2409'	Surface
Production			
5.5"	6604'	6604'	567 cu ft
Tubing			
2.375"		6524'	

OPEN FLOW DATA

Producing formation Devonian Shale Pay zone depth (ft) 5917-6542'
Gas: Initial open flow 310 MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow 270 MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests 16 Hours
Static rock Pressure 390 TP psig (surface pressure) after 16 Hours
410 CP

Second producing formation _____ Pay zone depth (ft) _____
Gas: Initial open flow _____ MCF/d Oil: Initial open flow _____ Bbl/d
Final open flow _____ MCF/d Final open flow _____ Bbl/d
Time of open flow between initial and final tests _____ Hours
Static rock Pressure _____ psig (surface pressure) after _____ Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

OCT 28 1988

Delbert G. Oliver
For: OXY USA, INC.
By: *Delbert G. Oliver*
Date: October 25, 1988

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

6360-6542' MD with 26 holes. Fracture stimulated with 109,000 lbs. 20/50 sand, 1-3 ppg, in 90 quality nitrogen foam.

5917-6165' MD with 35 holes and 6182-6161' with 10 holes. Fracture stimulated with 114,000 lbs. 20/50 sand, 1-3 ppg, in ~~85-90~~ quality nitrogen foam.

WELL LOG

<u>FORMATION</u>	<u>TOP (FEET)</u>	<u>BOTTOM (FEET)</u>	<u>REMARKS</u>
Sand, Clay	0	110	
Sand	110	140	Coal 112'-116'
Clay, Shale	140	146	
Sand	146	168	
Salt Sand	168	203	Coal 195'-198'
Sand	203	258	
Shale	258	289	
Sand	289	295	
Shale	295	320	
White Sand	320	402	
Shale	402	446	
White Sand	446	492	
Shale	492	600	
White Sand	600	639	
Shale	639	716	
Salt Sand	716	1318	
Shale	1318	1642	
1st Maxon Sand	1642	1738	
Shale	1738	1909	
2nd Maxon Sand	1909	2005	
Shale	2005	2133	
3rd Maxon Sand	2133	2196	
Shale	2196	2254	
Little Lime	2254	2336	
Shale	2336	2356	
Big Lime	2356	2924	
Siltstone	2924	3243	
Weir	3243	3472	
Shale	3472	4167	
Sunbury	4167	4212	
Berea Sand	4212	4262	
Devonian Shale	4262	5915	
Lower Huron	5915	6558	
Shale	6558	6691	
TOTAL DEPTH	<u>6691</u>		

RECEIVED
OCT 27 1988

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

ALL INTERVAL TOPS AND BOTTOMS ARE MEASURED DEPTHS.

directional well

OCT 28 1988

4/1/88

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

- 1) Well Operator: Cities Service Oil and Gas Corporation **9800, 3, 456**
- 2) Operator's Well Number: McDonald Land Co. A-17, GW-1976 3) Elevation: 888.55
- 4) Well type: (a) Oil / or Gas /
(b) If Gas: Production / Underground Storage /
Deep / Shallow /
- 5) Proposed Target Formation(s): Devonian Shale
- 6) Proposed Total Depth: 6500 MD; 5090 TVD feet
- 7) Approximate fresh water strata depths: 130'
- 8) Approximate salt water depths: 900'
- 9) Approximate coal seam depths: 80-82'; 189-192'
- 10) Does land contain coal seams tributary to active mine? Yes / No /
From logs 507, 853, 1099
- 11) Proposed Well Work: PLANNED HIGH ANGLE DIRECTIONAL WELL
- 12)

CASING AND TUBING PROGRAM

TYPE	SPECIFICATIONS			FOOTAGE INTERVALS		CEMENT
	Size	Grade	Weight per ft.	For drilling	Left in well	Fill-up (cu. ft.)
Conductor	16	H-40	65	45	45 <i>CTS</i>	<i>38CSR18-113</i> 15 cu ft
Fresh Water	11-3/4	K-55	47	280	280 <i>CTS</i>	<i>38CSR18-112</i> 121 cu ft
Coal						
Intermediate	8-5/8	K-55	32	2450 MD 2140 TVD	2450 MD 2140 TVD	<i>38CSR18-111</i> 515 cu ft
Production	5-1/2	K-55	17	6500 MD 5090 TVD	6500 MD 5090 TVD	730 cu ft
Tubing	2-7/8"	J-55	6.5	6500 MD 5090 TVD	6500 MD 5090 TVD	
Liners						

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JAN 21 1988

PACKERS : Kind _____
Sizes _____
Depths set _____

DIVISION OF OIL & GAS
For Division of Oil and Gas Use Only DEPARTMENT OF ENERGY

22000
 Fee(s) paid: Well Work Permit Reclamation Fund WPCP
 Plat WW-9 WW-2B Bond 50 Blanket Agent
 (Type)

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1) Date: January 11, 1988
2) Operator's well number
McDonald Land Co. A-17, GW-1976
3) API Well No: 47 - 045 - 1116
State - County - Permit

DIVISION OF OIL & GAS
DEPARTMENT OF ENERGY

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY, DIVISION OF OIL AND GAS

NOTICE AND APPLICATION FOR A WELL WORK PERMIT

- 4) Surface Owner(s) to be served:
- (a) Name W.W. McDonald Land Co.
Address P. O. Box 1170
Logan, WV 25601
 - (b) Name _____
Address _____
 - (c) Name _____
Address _____
- 5) (a) Coal Operator:
Name Powellton Coal Co.
Address Mallory, WV 25634
Attn: Dino Paletti
- (b) Coal Owner(s) with Declaration
Name W.W. McDonald Land Co.
Address P. O. Box 1170
Logan, WV 25601
- Name _____
Address _____
- (c) Coal Lessee with Declaration
Name _____
Address _____
- 6) Inspector Mr. Arthur St. Clair
Address P. O. Box 468
Brenton, WV 24818
Telephone (304)- 732-6227

TO THE PERSON(S) NAMED ABOVE TAKE NOTICE THAT:

_____ Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil and gas OR
X Included is the information required by Chapter 22B, Article 1, Section 8(d) of the Code of West Virginia (see page 2)

I certify that as required under Chapter 22B of the West Virginia Code I have served copies of this notice and application, a location plat, and accompanying documents pages 1 through 3 on the above named parties, by:

- X Personal Service (Affidavit attached)
- _____ Certified Mail (Postmarked postal receipt attached)
- _____ Publication (Notice of Publication attached)

I have read and understand Chapter 22B and 38 CSR 11-18, and I agree to the terms and conditions of any permit issued under this application.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator Cities Service Oil and Gas Corporation
By: Paul D. Phillips *Paul D. Phillips*
Its: Operations Manager
Address P. O. Box 873
Charleston, WV 25323
Telephone (304) 344-8383

Subscribed and sworn before me this 13 day of January, 1988

Donald J. Bay
My commission expires June 11, 1989
Commissioner
Notary Public