



Production Department  
Hobbs Division  
North American Production

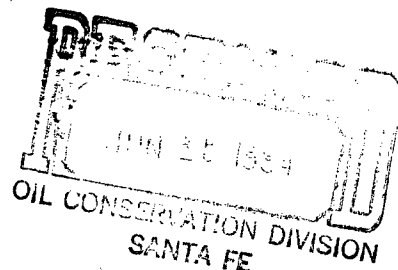
Conoco Inc.  
P.O. Box 460  
726 East Michigan  
Hobbs, NM 88240  
(505) 393-4141

June 5, 1984

New Mexico Oil Conservation Division  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Attention Mr. Gilbert Quintana

Gentlemen:



Conoco respectfully requests an exception to Division Rule 303-A to allow downhole commingling of the Warren Tubb and Blinebry Oil and Gas pools in 26 wells in the Warren Unit. Prior to this time, the Tubb and Blinebry had different windfall profit tax tiers; it was not possible for us to downhole commingle even though we had several wells which were candidates. Recently, the tax tiers for these pools have become the same; thus, we are submitting these 26 wells together in one application. The wells and their locations are listed on Table No. 1. Also, the following items are attached for each well.

- a) A lease plat.
- b) C-116's showing tests. Due to the large number of wells, all tests are not within a 30 day period; however, they are as recent as possible and will be representative of current and past production rates.
- c) Decline curves for both zones.
- d) Existing and proposed wellbore diagrams.

Bottom-hole pressure tests for these wells were discussed with Jerry Sexton of the Hobbs District Office. He suggested that if reasonably consistent bottom-hole pressures were recorded in each well tested, we could group the wells and get a bottom-hole pressure test from one well in each group. Table No. 2 gives the actual bottom-hole pressures and the attached map shows the wells tested and their groups.

The fluids from the Tubb and Blinebry will not be incompatible in the well-bore. Oil gravity for all wells is 40° API. Also, an analysis was made of the water from each zone to test their compatibility. The results of these tests are attached for your review. Because there is a possibility of downhole scaling indicated, the Tubb will be chemically inhibited to prevent any problems.

The value of the production will not be reduced by the commingling because the oil from both zones is sweet and valued at \$30.00 per bbl.

NMOCD

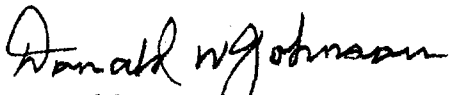
June 5, 1984

Page 2

Our proposed formulas for allocating production to each zone are listed on Table No. 3. These formulas are based on the ratio of production reflected by the wells tests.

By copy of this letter we are notifying the BLM and all offset operators (see attached address list).

Yours very truly,

A handwritten signature in dark ink, appearing to read "Donald W. Johnson". The signature is fluid and cursive, with the first name "Donald" and last name "Johnson" clearly distinguishable.

Donald W. Johnson  
Division Manager

DDP:cyp

TABLE I  
WARREN UNIT WELLS  
PROPOSED FOR DOWNHOLE COMMINGLING  
TOWNSHIP 20S, RANGE 38E

<u>Well No.</u>	<u>Unit</u>	<u>Section</u>	<u>Well No.</u>	<u>Unit</u>	<u>Section</u>
31	O	27	50	B	29
32	P	27	51	A	29
34	C	34	52	I	29
36	D	27	54	E	26
37	J	27	55	G	26
40	G	27	56	B	26
43	N	21	57	D	26
44	M	26	62	P	20
45	N	26	63	O	20
46	K	26	68	A	27
47	H	29	77	J	20
48	F	26	78	I	20
49	J	26	81	L	21

TABLE NO. 2  
BOTTOM-HOLE PRESSURES  
WARREN UNIT

Wells #	Measured BHP at Mid-point of perfs			Over/Underbalance of Blinebry BHP corrected to midpoint of Tubb Perforations
	TUBB	BLINEBRY		
31	540 psi	448 psi		+213 psi
40	474 psi	409 psi		+135 psi
45	1011 psi	735 psi	OK!	- 60 psi
47	604 psi	370 psi		+ 69 psi
48	941 psi	584 psi		- 78 psi
62	791 psi	367 psi		-164 psi

Pressures are  
within 50%  
limitation and  
~~some~~ ~~performance~~ tests  
were on wells  
representative of  
each grouped area.  
gpp

TABLE 3  
RECOMMENDED PRODUCTION ALLOCATION  
WARREN UNIT

Well No.	<u>Percent Total Production</u>			
	Blinebry		Tubb	
	Oil	Gas	Oil	Gas
31 ✓	24	34	76	66 ✓
32 ✓	58	62	42	38
34 ✓	62	76	38	24
36 ✓	23	0	77	100
37 ✓	53	52	47	48
40 ✓	55	33	45	67
43 ✓	86	38	14	62
44 ✓	48	84	52	16
45 ✓	11	55	89	45
46 ✓	47	66	53	34
47 ✓	56	66	44	34
48 ✓	49	31	51	69
49 ✓	39	70	61	30
50 ✓	50	45	50	55
51 ✓	21	32	79	68
52 ✓	81	89	19	11
54 ✓	50	100	50	0
55 ✓	58	100	42	0
56 ✓	47	100	53	0
57 ✓	54	99	46	1
62 ✓	29	35	71	65
63 ✓	22	18	78	82
68 ✓	55	80	45	20
77 ✓	81	82	19	18
78 ✓	41	40	59	60
81 ✓	86	100	14	0

Address List

Tamarack Petroleum Co.  
P. O. Box 2046  
Midland, TX 79701

Adobe Oil & Gas Corp.  
1100 Western United Life Bldg.  
Midland, TX 79701

Amerada Hess  
P. O. Box 840  
Seminole, TX 79360

Bureau of Land Mangagement  
P. O. Box 1778  
Carlsbad, NM 88220

**NEW MEXICO OIL CONSERVATION COMMISSION  
GAS-OIL RATIO TESTS**

C-116  
Revised 1-1-65

*off production or*

*2589*

*water production or*

*2589*

Operator

Conoco Inc.

Address

P. O. Box 460, Hobbs, New Mexico 88240

Warren Tubb Oil

County  
Lea

TYPE OF  
TEST - (X)

Scheduled ☐

Completion ☐

Special ☒

LEASE NAME	WELL NO.	LOCATION				DATE OF TEST	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST				GAS - OIL RATIO CU.FT./BBL
		U	S	T	R						WATER BBLs.	GRAV. OIL	OIL BBLs.	GAS M.C.F.	
Warren Unit	31	O	27	20	38	3-20-84	-	NA	27	24	3 ✓	40	16 ✓	136	8,500
Warren Unit	32	P	27	20	38	3-28-84	-	NA	9	24	0	40	8 ✓	44	5,500
Warren Unit	34	C	34	20	38	4-19-84	-	NA	6	24	0	40	5 ✓	46	9,200
Warren Unit	36	D	27	20	38	3-04-84	-	NA	12	24	0	40	10 ✓	71	7,100
Warren Unit	37	J	27	20	38	4-07-84	-	NA	8	24	1 ✓	40	7 ✓	51	7,286
Warren Unit	40	G	27	20	38	3-23-84	-	NA	11	24	0	40	5 ✓	98	19,600
Warren Unit	43	N	21	20	38	4-14-84	-	NA	14	24	0	40	2 ✓	21	10,500
Warren Unit	44	M	26	20	38	4-01-84	-	NA	11	24	0	40	11 ✓	30	2,727
Warren Unit	45	N	26	20	38	3-18-84	-	NA	10	24	1 ✓	40	8 ✓	10	1,250
Warren Unit	46	K	26	20	38	3-19-84	-	NA	9	24	0	40	8 ✓	27	3,375
Warren Unit	47	H	29	20	38	3-04-84	-	NA	13	24	1 ✓	40	7 ✓	20	2,857
Warren Unit	48	F	26	20	38	3-23-84	-	NA	19	24	0	40	19 ✓	255	13,421
Warren Unit	49	J	26	20	38	4-03-84	-	NA	16	24	0	40	11 ✓	30	2,727
Warren Unit	50	B	29	20	38	4-09-84	-	NA	13	24	1 ✓	40	10 ✓	16	1,600
Warren Unit	51	A	29	20	38	3-07-84	-	NA	34	24	0	40	19 ✓	28	1,474
Warren Unit	52	I	29	20	38	3-09-84	-	NA	8	24	0	40	3 ✓	8	2,667

No well will be assigned an allowable greater than the amount of oil produced on the official test.

During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

*David J. Jager*  
(Signature)

Administrative Supervisor

June 1, 1984

(Date)

**NEW MEXICO OIL CONSERVATION COMMISSION  
GAS-OIL RATIO TESTS**

C-116  
Revised 1-1-65

Operator <b>Conoco Inc.</b>		Pool <b>Blaine Oil and Gas</b>		County <b>Lea</b>												
Address <b>P. O. Box 460, Hobbs, New Mexico 88240</b>				TYPE OF TEST - (X) <input type="checkbox"/> Scheduled <input type="checkbox"/> Completion <input type="checkbox"/> Special <input checked="" type="checkbox"/>												
LEASE NAME	WELL NO.	LOCATION				DATE OF TEST	SP. GR. (P)	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST				GAS - OIL RATIO CU.FT./BBL
		U	S	T	R							WATER BBL.	GRAV. OIL	OIL BBL.	GAS M.C.F.	
Warren Unit	52	I	29	20	38	3-08-84	P	-	NA	21	24	10	40	13	67	5,154
Warren Unit	54	E	26	20	38	4-02-84	P	-	NA	2	24	3	40	5	98	19,600
Warren Unit	55	G	26	20	38	4-03-84	P	-	NA	9	24	0	40	7	70	10,000
Warren Unit	56	B	26	20	38	3-22-84	P	-	NA	3	24	17	40	8	50	6,250
Warren Unit	57	D	26	20	38	3-21-84	P	-	NA	6	24	53	40	20	141	7,050
Warren Unit	62	P	20	20	38	3-24-84	P	-	NA	21	24	2	40	7	22	3,143
Warren Unit	63	O	20	20	38	3-11-84	P	-	NA	11	24	1	40	5	13	2,600
Warren Unit	68	A	27	20	38	4-03-84	P	-	NA	8	24	2	40	6	20	3,333
Warren Unit	77	J	20	20	38	3-13-84	P	-	NA	54	24	1	40	22	81	3,682
Warren Unit	78	I	20	20	38	3-01-84	P	-	NA	10	24	1	40	7	17	2,429
Warren Unit	81	L	21	20	38	3-04-84	P	-	NA	52	24	22	40	18	35	1,944

No well will be assigned an allowable greater than the amount of oil produced on the official test.  
 During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.  
 Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

*David S. Jones*  
(Signature)

Administrative Supervisor

(Title)

June 1, 1984

(Date)



**NEW MEXICO OIL CONSERVATION COMMISSION  
GAS-OIL RATIO TESTS**

C-116  
Revised 1-1-65

Operator <b>Conoco Inc.</b>		Pool <b>Warren Tubb Oil</b>		County <b>Lea</b>												
Address <b>P. O. Box 460, Hobbs, New Mexico 88240</b>				Type of Test - (X) <input type="checkbox"/> Scheduled <input type="checkbox"/> Special <input checked="" type="checkbox"/>												
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	TYPE OF TEST	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST			GAS - OIL RATIO CU.FT./BBL		
		U	S	T							R	WATER BBL.S.	GRAV. OIL		OIL BBL.S.	GAS M.C.F.
Warren Unit	54	E	26	20	38	4-02-84	P	-	NA	5	24	0	40	5	TSTM	-
Warren Unit	55	G	26	20	38	4-03-84	P	-	NA	6	24	0	40	5	TSTM	-
Warren Unit	56	B	26	20	38	3-22-84	P	-	NA	25	24	7	40	9	TSTM	-
Warren Unit	57	D	26	20	38	3-05-84	P	-	NA	14	24	3	40	17	2	118
Warren Unit	62	P	20	20	38	3-10-84	P	-	NA	24	24	0	40	17	40	2,353
Warren Unit	63	O	20	20	38	3-13-84	P	-	NA	28	24	6	40	18	61	3,389
Warren Unit	68	A	27	20	38	3-17-84	P	-	NA	10	24	2	40	5	5	1,000
Warren Unit	77	J	20	20	38	3-14-84	P	-	NA	15	24	0	40	5	18	3,600
Warren Unit	78	I	20	20	38	4-06-84	P	-	NA	10	24	1	40	10	25	2,500
Warren Unit	81	L	21	20	38	3-09-84	P	-	NA	7	24	0	40	3	TSTM	-

No well will be assigned an allowable greater than the amount of oil produced on the official test.  
During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

*Dwight S. Juma*  
(Signature)

Administrative Supervisor

June 1, 1984

(Date)

**NEW MEXICO OIL CONSERVATION COMMISSION  
GAS-OIL RATIO TESTS**

C-116  
Revised 1-1-65

Operator <b>Conoco Inc.</b>		Pool <b>Blinberry Oil and Gas</b>		County <b>Tela</b>												
Address <b>P. O. Box 460, Hobbs, New Mexico 88240</b>		TYPE OF TEST - (X)		Completion <input type="checkbox"/> Special <input checked="" type="checkbox"/>												
LEASE NAME	WELL NO.	LOCATION				DATE OF TEST	5 INCHES TEST	CHOKE SIZE	TBG. PRESS.	DAILY ALLOW-ABLE	LENGTH OF TEST HOURS	PROD. DURING TEST				GAS - OIL RATIO CU.FT./BBL.
		U	S	T	R							WATER BBL.	GRAV. OIL	OIL BBL.	GAS M.C.F.	
Warren Unit	31	O	27	20	38	3-30-84	P	-	NA	10	24	0	40	5	71	14,200
Warren Unit	32	P	27	20	38	3-28-84	P	-	NA	11	24	1	40	11	72	6,545
Warren Unit	34	C	34	20	38	3-23-84	P	-	NA	10	24	1	40	8	149	18,625
Warren Unit	36	D	27	20	38	3-04-84	P	-	NA	2	24	0	40	3	TSTM	-
Warren Unit	37	J	27	20	38	3-17-84	P	-	NA	6	24	1	40	8	56	7,000
Warren Unit	40	G	27	20	38	4-08-84	P	-	NA	-	24	1	40	6	49	8,167
Warren Unit	43	N	21	20	38	3-05-84	P	-	NA	8	24	1	40	12	13	1,083
Warren Unit	44	M	26	20	38	3-01-84	P	-	NA	8	24	0	40	10	154	15,400
Warren Unit	45	N	26	20	38	3-17-84	P	-	NA	9	24	0	40	1	12	12,000
Warren Unit	46	K	26	20	38	3-19-84	P	-	NA	5	24	1	40	7	52	7,429
Warren Unit	47	H	29	20	38	4-25-84	P	-	NA	13	24	21	40	9	38	4,222
Warren Unit	48	F	26	20	38	3-23-84	P	-	NA	17	24	0	40	18	114	6,333
Warren Unit	49	J	26	20	38	4-03-84	P	-	NA	16	24	1	40	7	70	10,000
Warren Unit	50	B	29	20	38	3-06-84	P	-	NA	5	24	2	40	10	13	1,300
Warren Unit	51	A	29	20	38	3-07-84	P	-	NA	21	24	3	40	5	13	2,600

No well will be assigned an allowable greater than the amount of oil produced on the official test.  
During gas-oil ratio test, each well shall be produced at a rate not exceeding the top unit allowable for the pool in which well is located by more than 25 percent. Operator is encouraged to take advantage of this 25 percent tolerance in order that well can be assigned increased allowables when authorized by the Commission.

Gas volumes must be reported in MCF measured at a pressure base of 15.025 psia and a temperature of 60° F. Specific gravity base will be 0.60.

Report casing pressure in lieu of tubing pressure for any well producing through casing.

Mail original and one copy of this report to the district office of the New Mexico Oil Conservation Commission in accordance with Rule 301 and appropriate pool rules.

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

*David A. Jager*  
(Signature)

Administrative Supervisor

(Title)

June 1, 1984

(Date)



**Champion  
Chemicals, Inc.**

P.O. BOX 2187  
HOBBS, NEW MEXICO 88240

(505) 393-7726

March 30, 1984

Conoco, Inc.  
Post Office Box 460  
Hobbs, New Mexico 88240  
Attn: Elma Winter

Dear Ms. Winter:

Water samples of the Warren Unit #55 from the Tubb and Blinebry were mixed at 3 ratios. The production figures indicate that the waters will mix close to half and half.

The waters were combined at 75-25, 50-50, and 25-75%; Tubb and Blinebry respectively. The water mixtures were observed immediately after mixing and showed no haziness.

Millipores were run on each mixture and the 2 separate waters after 2 weeks. The results follow:

	Tubb	Blinebry	75-25	50-50	25-75
CaCO <sub>3</sub>	77%	82.5%	87%	67%	70.5%
Acid Insol.	23%	8%	0%	9.6%	0%

These numbers show that the co-mingling of the two at the above ratios should not cause any worse conditions as the each water separate.

If you have any questions, please contact us.

Regards,

Joe Edwards  
Tech Service Representative



**Champion  
Chemicals, Inc.**

P.O. BOX 2187  
HOBBS, NEW MEXICO 88240

(505) 393-7726

April 9, 1984

Conoco, Inc.  
Post Office Box 460  
Hobbs, New Mexico 88240  
Attention: Elma Winter

Dear Ms. Winter:

Attached are the results of the water compatibility study on the Warren Unit #55 Tubb-Blinbry. The waters were caught, mixed and analyzed in the field initially. They were then brought to the lab and kept at 120°F for 72 hours. At 24, 48, and 72 hours, the waters were again analyzed. At the end of the 72 hour period, a millipore was run on each water.

These results are comparable to the first millipore run on March 30, 1984. It appears there will be no significant change in the scaling tendency by co-mingling the two waters.

If you have any questions, please contact us.

Regards,

Joe Edwards  
Technical Services Representative

JE/gr

attachments

# WATER ANALYSIS REPORT

CONOCO, INC.  
HOBBS DIVISION  
HOBBS, NEW MEXICO

IDENTIFICATION Warren Unit #55

POOL \_\_\_\_\_ FORMATION Tubb

SAMPLE POINT \_\_\_\_\_ DEPTH \_\_\_\_\_

DATE COLLECTED \_\_\_\_\_ ON SITE ANALYSIS Partial

BOTTOM HOLE TEMP °F \_\_\_\_\_ ANALYSIS BY Joe Edwards  
Champion Chemicals, Inc.

## ANALYSIS RESULTS

SPECIFIC GRAVITY 1.109 pH 7.12

RESISTIVITY AT \_\_\_\_\_ °F \_\_\_\_\_ OHM METER

	Meq/l	Mg/l		Meq/l	Mg/l
TOTAL SALTS		<u>152,548</u>	SODIUM (Na)	<u>2,046</u>	<u>47,063</u>
HYDROGEN SULFIDE	<u>0.3</u>	<u>5.1</u>	MAGNESIUM (Mg)	<u>179</u>	<u>2,187</u>
CHLORIDE (Cl)	<u>2,620</u>	<u>93,000</u>	CALCIUM (Ca)	<u>430</u>	<u>8,600</u>
SULFATE (SO <sub>4</sub> )	<u>34</u>	<u>1,625</u>	BARIUM (Ba)		
CARBONATE (CO <sub>3</sub> )			IRON (Mg/l) TOTAL	<u>DISS. 10.5</u>	
BICARBONATE (HCO <sub>3</sub> )	<u>1.2</u>	<u>73</u>	SUSPENDED SOLIDS		
HYDROXYL (OH)					

## SCALING TENDENCIES

T° F	CaCO <sub>3</sub> INTERPRETATION	T° F	CaSO <sub>4</sub> INTERPRETATION	T° F	BaSO <sub>4</sub> INTERPRETATION
60	<u>+0.38 yes</u>	60	<u>yes</u>	60	
80	<u>+0.60 yes</u>	80	<u>yes</u>	80	
100	<u>+0.85 yes</u>	100	<u>no</u>	100	
140	<u>+1.49 yes</u>	140	<u>yes</u>	140	
160	<u>+1.87 yes</u>	160	<u>yes</u>	160	

# WATER ANALYSIS REPORT

CONOCO, INC.  
HOBBS DIVISION  
HOBBS, NEW MEXICO

IDENTIFICATION Warren Unit #55

POOL \_\_\_\_\_ FORMATION Blinebry

SAMPLE POINT \_\_\_\_\_ DEPTH \_\_\_\_\_

DATE COLLECTED \_\_\_\_\_ ON SITE ANALYSIS Partial

BOTTOM HOLE TEMP °F \_\_\_\_\_ ANALYSIS BY Joe Edwards  
Champion Chemicals, Inc.

## ANALYSIS RESULTS

SPECIFIC GRAVITY 1.10 pH 7.44

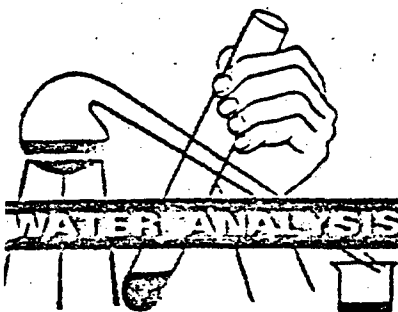
RESISTIVITY AT \_\_\_\_\_ °F \_\_\_\_\_ OHM METER

	Meq/l	Mg/l		Meq/l	Mg/l
TOTAL SALTS		<u>139,249</u>	SODIUM (Na)	<u>1,899</u>	<u>43,682</u>
HYDROGEN SULFIDE	<u>0.3</u>	<u>5</u>	MAGNESIUM (Mg)	<u>191</u>	<u>2,333</u>
CHLORIDE (Cl)	<u>2,366</u>	<u>84,000</u>	CALCIUM (Ca)	<u>330</u>	<u>6,600</u>
SULFATE (SO <sub>4</sub> )	<u>52</u>	<u>2,500</u>	BARIUM (Ba)		<u>0</u>
CARBONATE (CO <sub>3</sub> )			IRON (Mg/l) TOTAL	<u>DISS.3</u>	
BICARBONATE (HCO <sub>3</sub> )	<u>2.2</u>	<u>134</u>	SUSPENDED SOLIDS		
HYDROXYL (OH)					

## SCALING TENDENCIES

T°F	CaCO <sub>3</sub> INTERPRETATION	T°F	CaSO <sub>4</sub> INTERPRETATION	T°F	BaSO <sub>4</sub> INTERPRETATION
60	<u>+0.74 yes</u>	60	<u>yes</u>	60	
80	<u>+0.94 yes</u>	80	<u>yes</u>	80	
100	<u>+1.17 yes</u>	100	<u>yes</u>	100	
140	<u>+1.80 yes</u>	140	<u>yes</u>	140	
160	<u>+2.17 yes</u>	160	<u>yes</u>	160	

No 2481



## WATER ANALYSIS REPORT

Champion  
Chemicals, Inc.BOX 4513  
ODESSA, TEXAS 79760

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 &amp; 563-0663

RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2561

PLANT: Odessa, Texas Phone (915) 337-0055

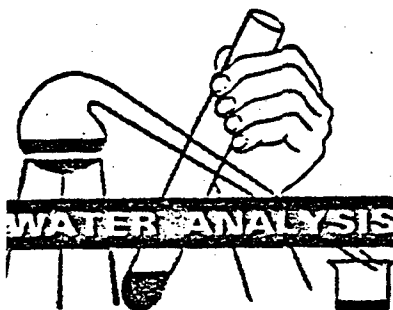
PORT FOR	Elma Winter	DATE SAMPLED	4/2/84
	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Blinebry/Tubb : 50/50
CC		COUNTY	STATE N.M.
COMPANY	Conoco, Inc.	FORMATION	
DRESS		DEPTH	
ENGINEER	Jay Brown	SUBMITTED BY	Jay Brown

## CHEMICAL ANALYSIS (AS PARTS PER MILLION)

## Field, Lease, or Well

Chemical Component	Theoretical B/T 50/50	Initial	24 hrs.	48 hrs.	72 hrs.	
Chloride (Cl)	88,500	88,000	84,000	88,000	90,000	
Iron (Fe)						
Hardness (Ca CO <sub>3</sub> )						
Calcium (Ca)	7,600	6,880	6,640	6,520	6,960	
Magnesium (Mg)	2,260	2,309	2,697	2,673	2,600	
Bicarbonate (HCO <sub>3</sub> )	104	12.2	24	24	24	
Carbonate (CO <sub>3</sub> )						
Sulfate (SO <sub>4</sub> )	2,063	1,450	1,175	1,425	1,925	
Hydrogen Sulfide (H <sub>2</sub> S)						
Specific Gravity	1.10	1.10	1.10	1.10	1.11	
Density, lb./gal.						
Beckman [ ] Strip [ ]		7.00	6.8	6.6	7.0	
DS	145,899	144,104	136,796	143,823	147,840	

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS



## WATER ANALYSIS REPORT

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 & 563-0863  
RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2581  
PLANT: Odessa, Texas Phone (915) 337-0055

No 2476



# Champion Chemicals, Inc.

BOX 4513  
ODESSA, TEXAS 79760

PORT FOR	Elma Winter	DATE SAMPLED	4/2/84
CC	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Blinebry/Tubb : 10/90
CC		COUNTY	STATE N.M.
COMPANY	Conoco, Inc.	FORMATION	
DRESS		DEPTH	
ENGINEER	Jay Brown	SUBMITTED BY	Jay Brown

### CHEMICAL ANALYSIS (AS PARTS PER MILLION)

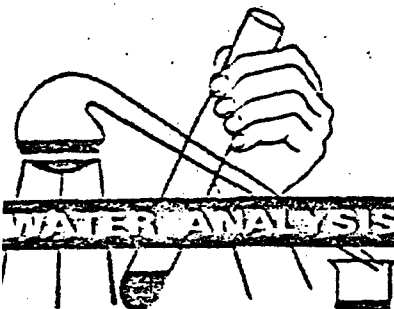
#### Field, Lease, or Well

Chemical Component	Theoretical B/T 10/90	Initial	24 hrs.	48 hrs.	72 hrs.	
Chloride (Cl)	92,100	91,000	89,000	92,000	96,000	
Iron (Fe)						
Hardness (Ca CO <sub>3</sub> )						
Calcium (Ca)	8,400	8,400	7,200	7,040	7,160	
Magnesium (Mg)	2,202	1,823	2,527	2,843	2,697	
Bicarbonate (HCO <sub>3</sub> )	79	24	37	24	24	
Carbonate (CO <sub>3</sub> )						
Sulfate (SO <sub>4</sub> )	1,713	1,750	1,250	1,375	1,725	
Hydrogen Sulfide (H <sub>2</sub> S)						
Specific Gravity	1.10	1.11	1.10	1.11	1.11	
Viscosity, lb./gal.						
Beckman [ ] Strip [ ]		7.00	6.7	6.8	6.8	
TDS	151,218	149,696	145,246	150,119	157,318	

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS



No 2474



# WATER ANALYSIS REPORT



## Champion Chemicals, Inc.

BOX 4513  
ODESSA, TEXAS 79760

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 & 563-0863

RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2561

PLANT: Odessa, Texas Phone (915) 337-0055

ORDER FOR Elma Winter DATE SAMPLED 4/2/84  
 CC Jerry Skidmore DATE REPORTED 4/9/84  
 CC \_\_\_\_\_ FIELD, LEASE, OR WELL Warren Unit #55 Blinbry  
 CC \_\_\_\_\_ COUNTY \_\_\_\_\_ STATE N.M.  
 COMPANY Conoco, Inc. FORMATION \_\_\_\_\_  
 ADDRESS \_\_\_\_\_ DEPTH \_\_\_\_\_  
 SERVICE ENGINEER Jay Brown SUBMITTED BY Jay Brown

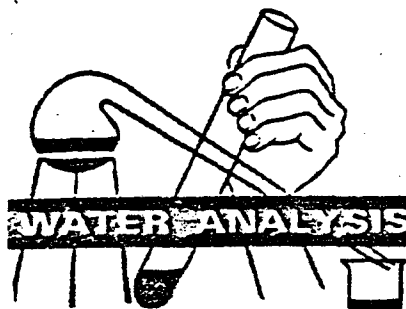
### CHEMICAL ANALYSIS (AS PARTS PER MILLION)

#### Field, Lease, or Well

Chemical Component	24 hrs.	48 hrs.	72 hrs.			
Chloride (Cl)	78,500	83,000	86,000			
Iron (Fe)						
Hardness (Ca CO <sub>3</sub> )						
Calcium (Ca)	6,280	6,240	6,320			
Magnesium (Mg)	2,381	2,381	2,527			
Bicarbonate (HCO <sub>3</sub> )	24	37	18			
Carbonate (CO <sub>3</sub> )						
Sulfate (SO <sub>4</sub> )	1,600	1,525	1,600			
Hydrogen Sulfide (H <sub>2</sub> S)						
Specific Gravity	1.09	1.10	1.10			
Beckman [ ] Strip [ ]	7.2	7.0	7.05			
Sp	128,699	136,046	140,931			

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS

No. 2471



# WATER ANALYSIS REPORT



**Champion  
Chemicals, Inc.**

BOX 4513  
ODESSA, TEXAS 79760

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 & 563-0863  
RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2561  
PLANT: Odessa, Texas Phone (915) 337-0055

REPORT FOR	Elma Winter	DATE SAMPLED	4/2/84
CC	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Warren Unit #55 Tubb
CC		COUNTY	STATE N.M.
COMPANY	Conoco, Inc.	FORMATION	
ADDRESS		DEPTH	
SERVICE ENGINEER	Jay Brown	SUBMITTED BY	Jay Brown

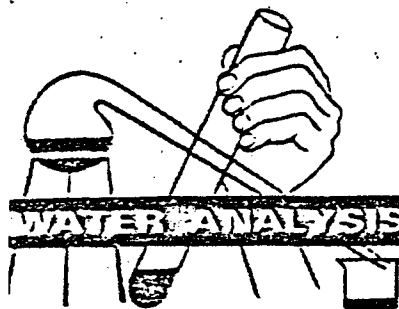
## CHEMICAL ANALYSIS (AS PARTS PER MILLION)

### Field, Lease, or Well

Chemical Component	24 hrs.	48 hrs.	72 hrs.			
Chloride (Cl)	88,000	95,000	96,000			
Iron (Fe)						
Total Hardness (Ca CO <sub>3</sub> )						
Calcium (Ca)	7,240	7,240	7,320			
Magnesium (Mg)	2,527	2,527	2,649			
Bicarbonate (HCO <sub>3</sub> )	31	24	18			
Carbonate (CO <sub>3</sub> )						
Sulfate (SO <sub>4</sub> )	1,125	1,425	1,875			
Hydrogen Sulfide (H <sub>2</sub> S)						
Specific Gravity	1.10	1.11	1.11			
Density, lb./gal.						
- Beckman [ ] Strip [ ]	6.6	6.6	6.9			
TDS	143,394	155,376	157,549			

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS

No 2468



## WATER ANALYSIS REPORT

Champion  
Chemicals, Inc.BOX 4513  
ODESSA, TEXAS 79760

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 &amp; 563-0663

RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2561

PLANT: Odessa, Texas Phone (915) 337-0055

PORT FOR	Elma Winter	DATE SAMPLED	4/2/84
CC	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Blinebry/Tubb : 90/10
CC		COUNTY	STATE N.M.
COMPANY	Conoco, Inc.	FORMATION	
ADDRESS	Jay Brown	DEPTH	Jay Brown
ENGINEER		SUBMITTED BY	Jay Brown

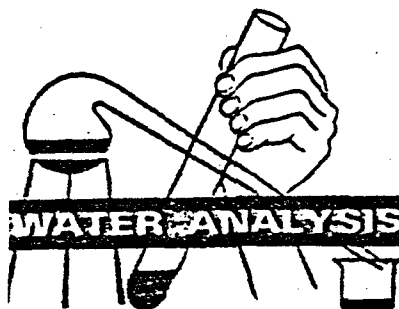
## CHEMICAL ANALYSIS (AS PARTS PER MILLION)

32

## Field, Lease, or Well

Chemical Component	Theoretical B/T 90/10	Initial	24 hrs.	48 hrs.	72 hrs.	
Calc (Cl)	84,900	86,000	81,500	84,000	89,000	
(Fe)	3.75	2				
Hardness (Ca CO <sub>3</sub> )						
Calc (Ca)	6,159	7,200	6,200	6,640	7,240	
Magnesium (Mg)	2,318	1,920	2,333	2,309	2,187	
Bicarbonate (HCO <sub>3</sub> )	128	122	12.2	30	24	
Sulfate (SO <sub>4</sub> )	2,413	1,850	1,450	1,625	2,025	
Hydrogen Sulfide (H <sub>2</sub> S)						
Specific Gravity	1.10	1.10	1.095	1.099	1.10	
Density, lb./gal.						
Beckman [ ] Strip [ ]		7.21	6.8	6.95	6.9	
DS	140,579	141,862	133,475	137,833	146,669	

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS



No 2467

**Champion  
Chemicals, Inc.**BOX 4513  
ODESSA, TEXAS 79760

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 &amp; 563-0863

RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2561

PLANT: Odessa, Texas Phone (915) 337-0055

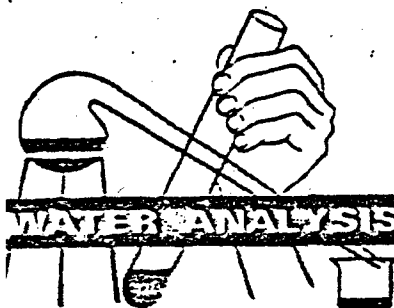
PORT FOR	Elma Winter	DATE SAMPLED	4/2/84
CC	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Blinebry/Tubb : 70/30
CC		COUNTY	STATE N.M.
COMPANY	Conoco, Inc.	FORMATION	
ADDRESS		DEPTH	
SERVICE ENGINEER	Jay Brown	SUBMITTED BY	Jay Brown

**CHEMICAL ANALYSIS (AS PARTS PER MILLION)****Field, Lease, or Well**

Chemical Component	Theoretical B/T 70/30	Initial	24 hrs.	48 hrs.	72 hrs.	
Chloride (Cl)	86.700	87.000	82.000	85.000	89.000	
Iron (Fe)	5.2	4				
Total Hardness (Ca CO <sub>3</sub> )						
Calcium (Ca)	7.200	7.600	6.480	6.600	6.520	
Magnesium (Mg)	2.289	1.580	2.552	2.527	2.697	
Bicarbonate (HCO <sub>3</sub> )	116	134	24	37	24	
Carbonate (CO <sub>3</sub> )						
Sulfate (SO <sub>4</sub> )	2,238	1,900	1,475	1,475	1,875	
Hydrogen Sulfide (H <sub>2</sub> S)						
Specific Gravity	1.10	1.10	1.10	1.10	1.10	
Density, lb./gal.						
Beckman ( ) Strip ( )		7.19	6.7	6.8	6.8	
DS	143,239	143,828	134,124	137,433	146,117	

**OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS**

Nº 2480



# WATER ANALYSIS REPORT



## Champion Chemicals, Inc.

BOX 4513  
ODESSA, TEXAS 79760

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 & 563-0863

RESEARCH LABORATORY: Houston, Texas Phone (713) 431-2561

PLANT: Odessa, Texas Phone (915) 337-0055

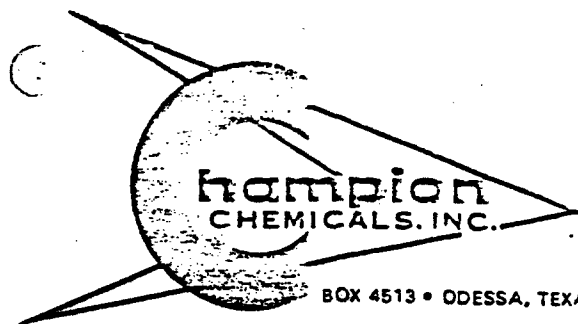
PORT FOR	Elma Winter	DATE SAMPLED	4/2/84
CC	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Blaine/Hubb : 30/70
CC		COUNTY	STATE N. M.
COMPANY	Conoco, Inc.	FORMATION	
DRESS		DEPTH	
VICE ENGINEER	Jay Brown	SUBMITTED BY	Jay Brown

### CHEMICAL ANALYSIS (AS PARTS PER MILLION)

#### Field, Lease, or Well

Chemical Component	Theoretical B/T 30/70	Initial	24 hrs.	48 hrs.	72 hrs.
Chloride (Cl)	90,300	90,000	87,500	91,000	93,000
Iron (Fe)					
Hardness (Ca CO <sub>3</sub> )					
Calcium (Ca)	8,000	7,640	7,040	7,000	7,000
Magnesium (Mg)	2,231	2,211	2,454	2,552	2,673
Bicarbonate (HCO <sub>3</sub> )	91	37	24	37	12.2
Carbonate (CO <sub>3</sub> )					
Sulfate (SO <sub>4</sub> )	1,888	1,525	1,250	1,250	1,925
Hydrogen Sulfide (H <sub>2</sub> S)					
Specific Gravity	1.11	1.11	1.10	1.11	1.11
Viscosity, lb./gal.					
Beckman [ ] Strip [ ]		7.13	6.7	6.75	6.8
DS	148,558	147,528	142,851	148,543	152,708

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS



BOX 4513 • ODESSA, TEXAS

CHEMICAL WITH SERVICE

**SCALE ANALYSIS REPORT**

SERVICE LABORATORY: Odessa, Texas • Ph.: 362-2353 &amp; 563-0863

RESEARCH LABORATORY: Houston, Texas • Ph.: (713) 433-6771

PLANT: Odessa, Texas • Ph.: 362-2353 &amp; 563-0863

OR Elma Winter DATE SAMPLED 4/2/84  
cc Jerry Skidmore DATE REPORTED 4/6/84  
cc \_\_\_\_\_ FIELD, LEASE OR WELL Warren Unit #55 Tubb and  
cc \_\_\_\_\_ Blinebry  
cc \_\_\_\_\_ COUNTY \_\_\_\_\_ STATE N. M.  
BY Conoco, Inc. FORMATION \_\_\_\_\_  
SS \_\_\_\_\_ DEPTH \_\_\_\_\_  
E ENGINEER Jay Brown SUBMITTED BY Joe Edwards

**OTHER DESCRIPTION**


Millipore analysis of 5 ratio blends of the waters from the Tubb and Blinebry formations from Warren Unit #55

PAGE #1


**CHEMICAL ANALYSIS (AS WEIGHT PERCENT)**

SCALE COMPONENT	Field, Lease, or Well				
	Blinebry	Tubb	B/T 90%/10%	B/T 70%/30%	B/T 50%/50%
CaCO <sub>3</sub>	50%	57.2%	68.3%	69.9%	73.4%
FeS	18.4%	42.8%	28.3%	25.8%	26.6%
Acid Insolubles	31.6%	0	3.4%	4.3%	0
Suspended Solids (Mg/L)	213	180	145	186	194
TOTAL	100%	100%	100%	100%	100%

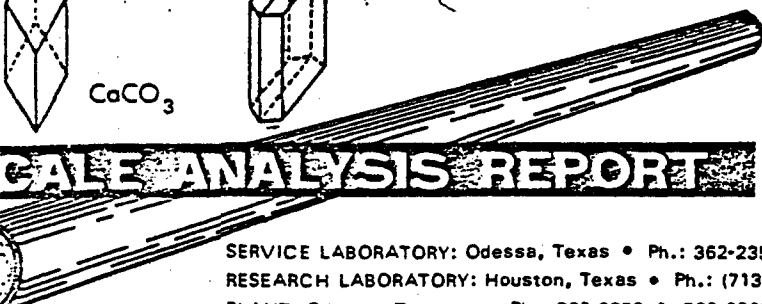
REMARKS AND RECOMMENDATIONS

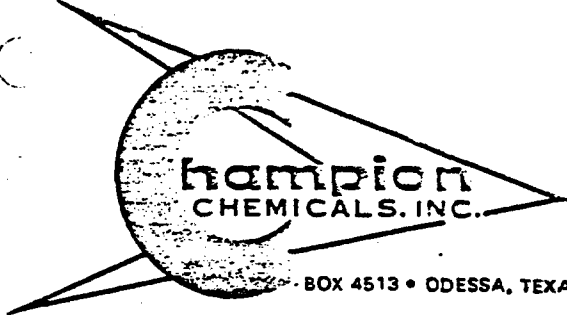


CaCO<sub>3</sub>



CaSO<sub>4</sub>





**Champion**  
CHEMICALS, INC.

BOX 4513 • ODESSA, TEXAS

**CHEMICAL WITH SERVICE**

# SCALE ANALYSIS REPORT

SERVICE LABORATORY: Odessa, Texas • Ph.: 362-2353 & 563-0863  
 RESEARCH LABORATORY: Houston, Texas • Ph.: (713) 433-6771  
 PLANT: Odessa, Texas • Ph.: 362-2353 & 563-0863

FOR <u>Elma Winter</u> CC <u>Jerry Skidmore</u> CC _____ CC _____ ANY <u>Conoco, Inc.</u> ESS _____ IE ENGINEER <u>Jay Brown</u>	DATE SAMPLED <u>4/2/84</u> DATE REPORTED <u>4/6/84</u> FIELD, LEASE OR WELL <u>Warren Unit #55 Tubb and Blinebry</u> COUNTY _____ STATE <u>N.M.</u> FORMATION _____ DEPTH _____ SUBMITTED BY <u>Joe Edwards</u>
--	---

## OTHER DESCRIPTION

Millipore analysis of 5 ratio blends of the waters from the Tubb and Blinebry formations from Warren Unit #55

CHEMICAL ANALYSIS (AS WEIGHED (CONT))					
SCALE COMPONENT	Field, Lease, or Well				
	B/T 30%/70%	B/T 10%/90%			
CaCO3	67.1%	52.4%			
FeS	32.9%	47.6%			
Acid Insolubles	0	0			
Suspended Solids (Mg/L)	146	145			
TOTAL	100%	100%			

## REMARKS AND RECOMMENDATIONS

1	Abbo	2	McKee
3	Blinsbry	4	Paddock
5	Drinkard	6	Queen
7	Devonian	8	Simpson
9	Ellenburger	10	San Andres
11	Grayburg	12	Tubb
13	Glorieta	14	St, TA, Or ZA.



1510

**PROPOSED D.H.C. WELLS**

PROPOSED D.H.C. WELLS (BHP TAKE  
LEA COUNTY, NEW MEXICO

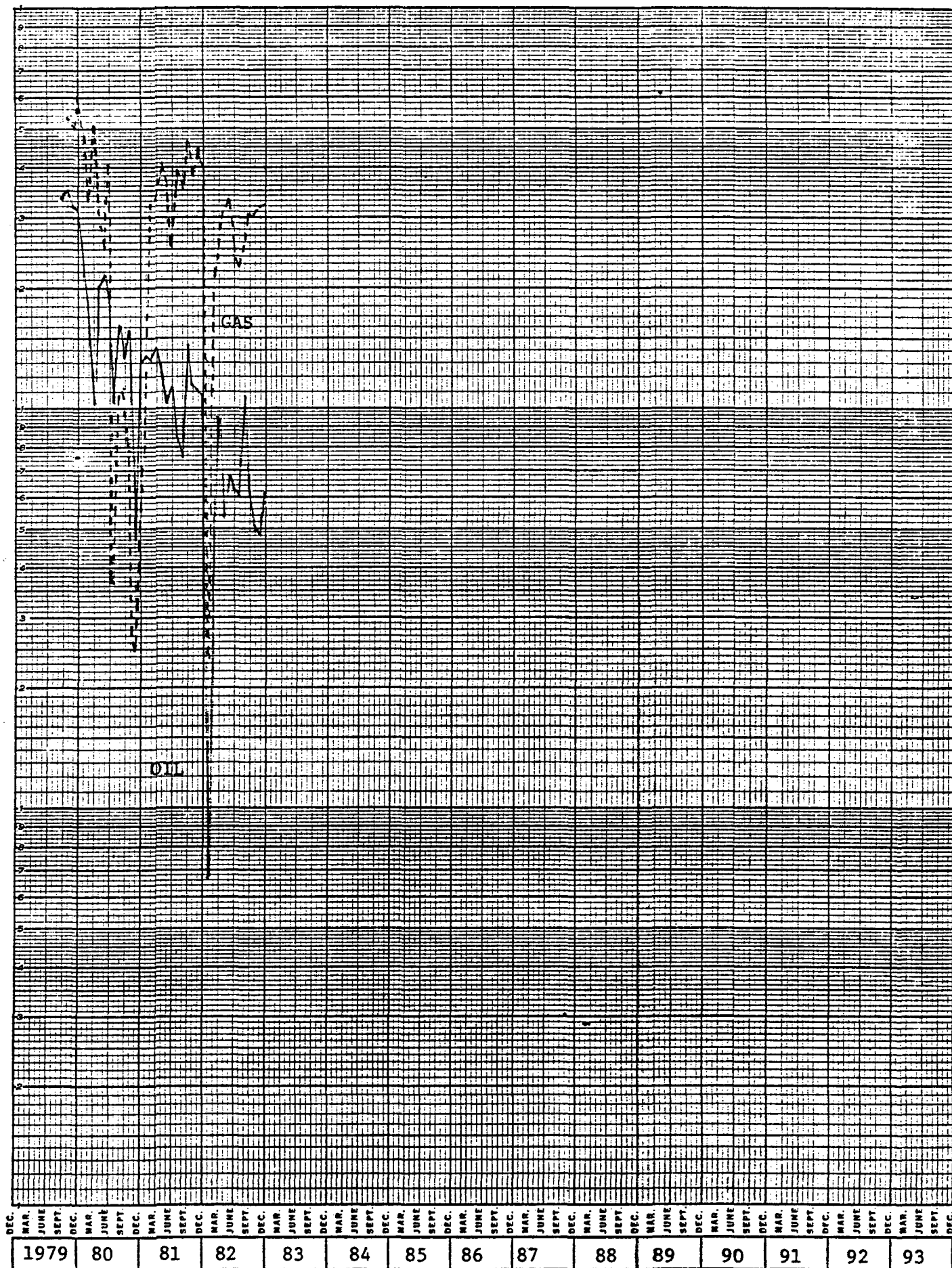
**SCALE**

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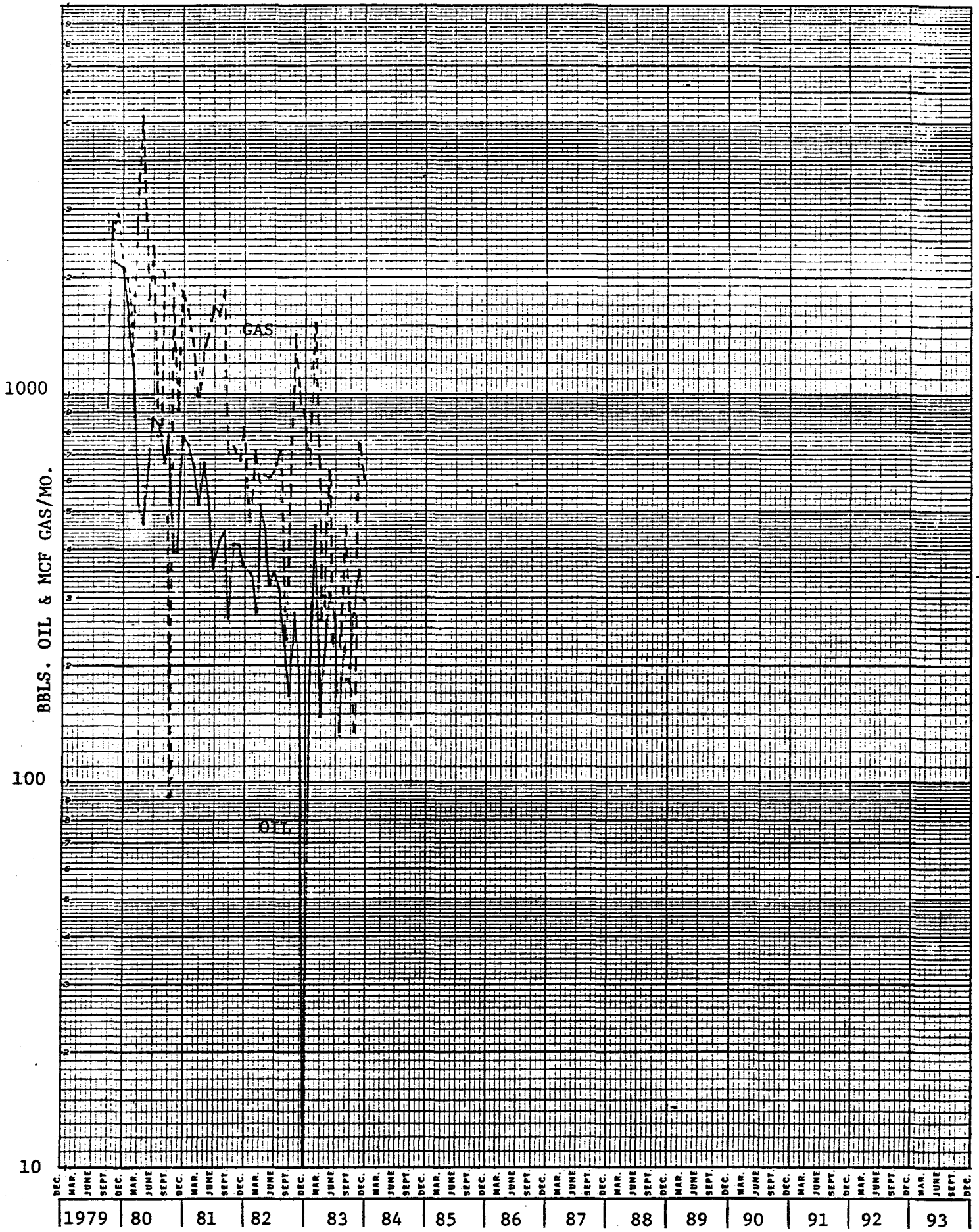
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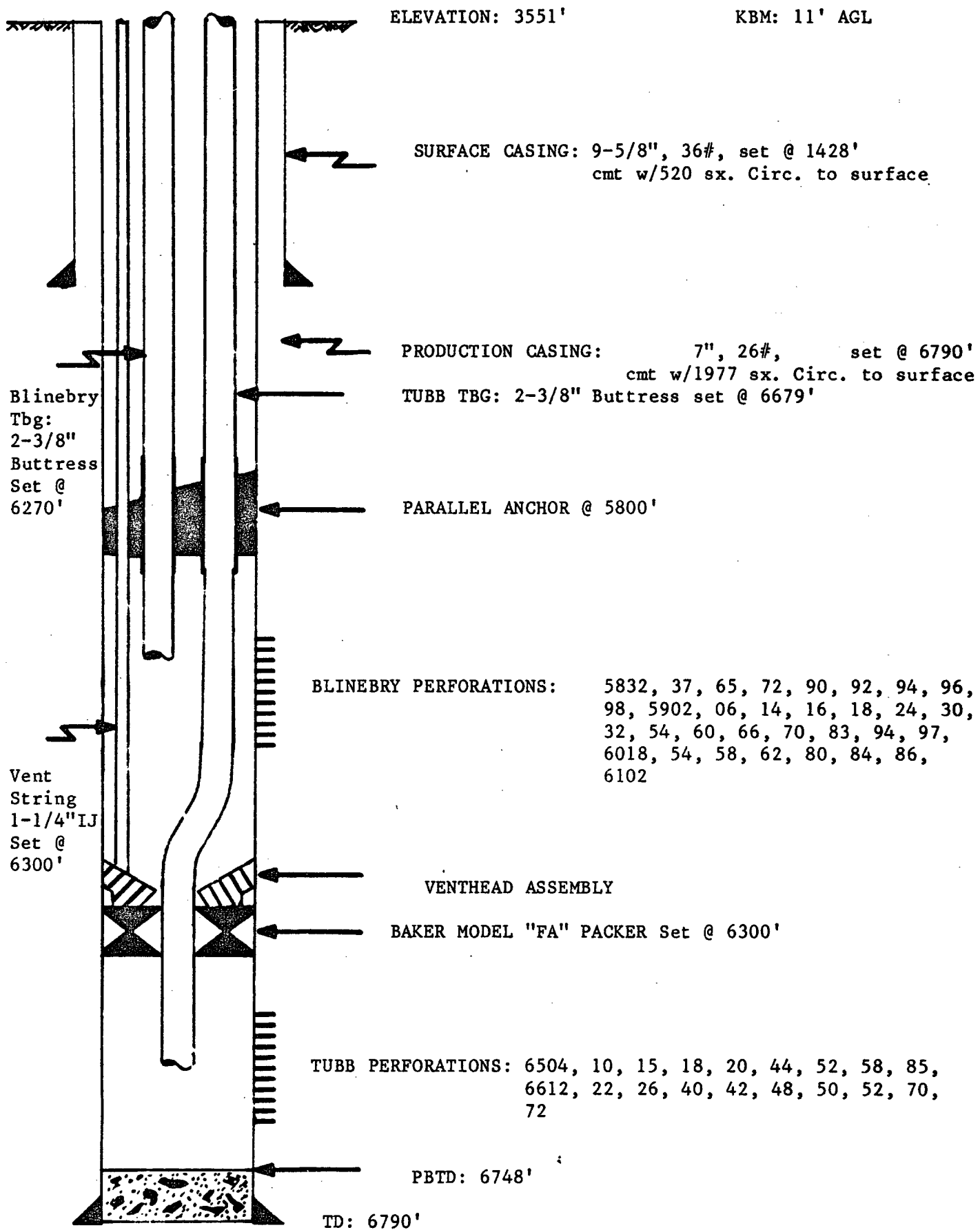
BLINEBRY POOL  
WARREN UNIT #77



WARREN UNIT NO. 77



WARREN UNIT NO. 77  
 1980' FSL & 1980' FEL  
 Sec. 20, T-20-S, R-38-E



PRESENT WELLBORE

WARREN UNIT NO. 77  
1980' FSL & 1980' FEL  
Sec. 20, T-20-S, R-38-E

