



Production Department
Hobbs Division
North American Production

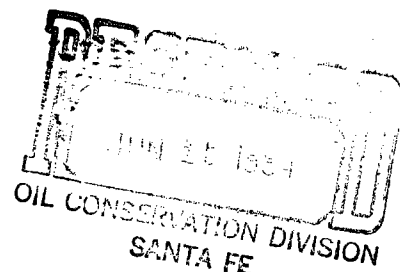
Conoco Inc.
P.O. Box 460
726 East Michigan
Hobbs, NM 88240
(505) 393-4141

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

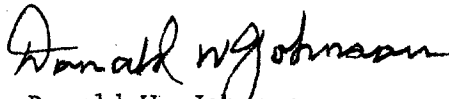
June 5, 1984

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 cursive script, appearing to read "Donald W. Johnson".

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~~ ~~perforations~~ tests
were on wells
representative of
each grouped area.
gfg

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

oil production ok

water production ok

Pod

County

2589

2589

Warren Tubb Oil

Lea

Operator
Conoco Inc.

Address

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

TYPE OF TEST - (X)

Scheduled ☐

Completion ☐

Special ☒

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

(Title)

June 1, 1984

(Date)

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

C-116
Revised 1-1-65

Operator Conoco Inc.		Pool Blinberry Oil and Gas		County Lea												
Address P. O. Box 460, Hobbs, New Mexico 88240				TYPE OF TEST - (X) ☒ 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 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.
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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.

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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. Tupper
(Signature)
Administrative Supervisor
(Title)

June 1, 1984
(Date)

NEW MEXICO OIL CONSERVATION COMMISSION GAS-OIL RATIO TESTS

C-116
Revised 1-1-65

Operator		Pool		County		Lea										
Conoco Inc.		Warren Tubb Oil														
Address P. O. Box 460, Hobbs, New Mexico 88240				TYPE OF TEST - (X)		Completion ☐ Special ☒										
LEASE NAME	WELL NO.	LOCATION			DATE OF TEST	SP. GRAV. 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	-

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David S. Jager
(Signature)
Administrative Supervisor
(Title)
June 1, 1984
(Date)

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

C-116
Revised 1-1-65

Operator Conoco Inc.		Pool Blinberry Oil and Gas		County Lea											
Address P. O. Box 460, Hobbs, New Mexico 88240				TYPE OF TEST - (X)											
				Scheduled ☐											
				Completion ☐											
				Special ☒											
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 BBLs.	GRAV. OIL		OIL BBLs.
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

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

David A. Jones
(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 ₃	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 ₄)	<u>34</u>	<u>1,625</u>	BARIUM (Ba)		
CARBONATE (CO ₃)			IRON (Mg/l) TOTAL	<u>DISS. 10.5</u>	
BICARBONATE (HCO ₃)	<u>1.2</u>	<u>73</u>	SUSPENDED SOLIDS		
HYDROXYL (OH)					

SCALING TENDENCIES

T°F	CaCO ₃ INTERPRETATION	T°F	CaSO ₄ INTERPRETATION	T°F	BaSO ₄ 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
Chamption 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 ₄)	<u>52</u>	<u>2,500</u>	BARIUM (Ba)		<u>0</u>
CARBONATE (CO ₃)			IRON (Mg/l) TOTAL	<u>DISS.3</u>	
BICARBONATE (HCO ₃)	<u>2.2</u>	<u>134</u>	SUSPENDED SOLIDS		
HYDROXYL (OH)					

SCALING TENDENCIES

T°F	CaCO ₃ INTERPRETATION	T°F	CaSO ₄ INTERPRETATION	T°F	BaSO ₄ 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



Champion Chemicals, Inc.

BOX 4513
ODESSA, TEXAS 79760

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 & 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.
CC		FORMATION	
COMPANY	Conoco, Inc.	DEPTH	
DRESS		SUBMITTED BY	Jay Brown
ENGINEER	Jay Brown		

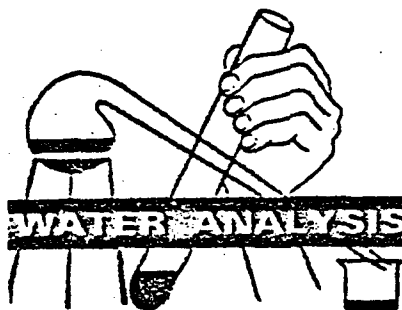
CHEMICAL ANALYSIS (AS PARTS PER MILLION)

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 ₃)						
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 ₃)	104	12.2	24	24	24	
Carbonate (CO ₃)						
Sulfate (SO ₄)	2,063	1,450	1,175	1,425	1,925	
Hydrogen Sulfide (H ₂ S)						
Specific Gravity	1.10	1.10	1.10	1.10	1.11	
Viscosity, 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

No 2476



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) 431-2581

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 : 10/90
CC		COUNTY	STATE N.M.
COMPANY	Conoco, Inc.	FORMATION	
ADDRESS	Jay Brown	DEPTH	
SERVICE 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)						
Total Hardness (Ca CO ₃)						
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 ₃)	79	24	37	24	24	
Carbonate (CO ₃)						
Sulfate (SO ₄)	1,713	1,750	1,250	1,375	1,725	
Hydrogen Sulfide (H ₂ S)						
Specific Gravity	1.10	1.11	1.10	1.11	1.11	
Density, 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



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

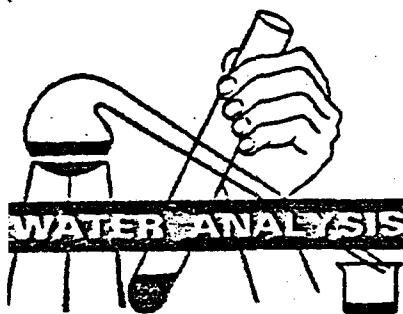
PORT FOR Elma Winter DATE SAMPLED 4/2/84
 CC Jerry Skidmore DATE REPORTED 4/9/84
 CC _____ FIELD, LEASE, OR WELL Warren Unit #55 Blinebry
 CC _____ COUNTY _____ STATE N.M.
 COMPANY Conoco, Inc. FORMATION _____
 ADDRESS _____ DEPTH _____
 SERVICE ENGINEER Jay Brown SUBMITTED BY Jay Brown

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 ₃)						
Sodium (Na)	6,280	6,240	6,320			
Magnesium (Mg)	2,381	2,381	2,527			
Bicarbonate (HCO ₃)	24	37	18			
Carbonate (CO ₃)						
Sulfate (SO ₄)	1,600	1,525	1,600			
Hydrogen Sulfide (H ₂ S)						
Specific Gravity	1.09	1.10	1.10			
Density, lb./gal.						
Beckman [] Strip []	7.2	7.0	7.05			
OS	128,699	136,046	140,931			

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS



No 2471

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

TECH SERVICE LABORATORY: Odessa, Texas Phone (915) 337-0055 & 563-0963

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

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

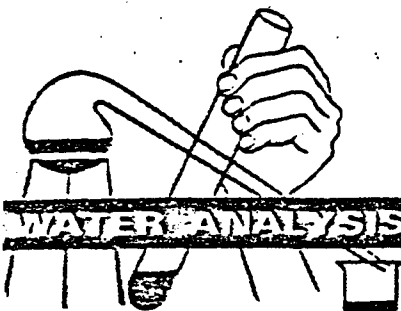
PORT FOR	Elma Winter	DATE SAMPLED	4/2/84
	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Warren Unit #55 Tubb
CC		COUNTY	STATE N.M.
CC		FORMATION	
COMPANY	Conoco, Inc.	DEPTH	
ADDRESS		SUBMITTED BY	Jay Brown
ENGINEER	Jay Brown		

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Chemical Component	Field, Lease, or Well					
	24 hrs.	48 hrs.	72 hrs.			
Chloride (Cl)	88,000	95,000	96,000			
Iron (Fe)						
Total Hardness (Ca CO ₃)						
Calcium (Ca)	7,240	7,240	7,320			
Magnesium (Mg)	2,527	2,527	2,649			
Bicarbonate (HCO ₃)	31	24	18			
Carbonate (CO ₃)						
Sulfate (SO ₄)	1,125	1,425	1,875			
Hydrogen Sulfide (H ₂ 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 & 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
	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Blinebry/Tubb : 90/10
CC		COUNTY	STATE N.M.
CC		FORMATION	
COMPANY	Conoco, Inc.	DEPTH	Jay Brown
ADDRESS	Jay Brown	SUBMITTED BY	
SERVICE ENGINEER			

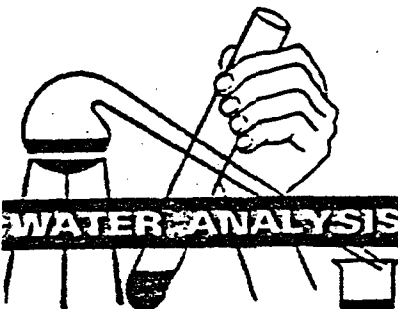
CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Field, Lease, or Well

Chemical Component	Theoretical B/T 90/10	Initial	24 hrs.	48 hrs.	72 hrs.
Chloride (Cl)	84,900	86,000	81,500	84,000	89,000
Iron (Fe)	3.75	2			
Hardness (Ca CO ₃)					
Calcium (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 ₃)	128	122	12.2	30	24
Carbonate (CO ₃)					
Sulfate (SO ₄)	2,413	1,850	1,450	1,625	2,025
Hydrogen Sulfide (H ₂ 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
TDS	140,579	141,862	133,475	137,833	146,669

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS

No 2467



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) 431-2581

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	Blinbry/Tubb : 70/30
CC		COUNTY	STATE N.M.
COMPANY	Conoco, Inc.	FORMATION	
ADDRESS		DEPTH	
SERVICE ENGINEER	Jay Brown	SUBMITTED BY	Jay Brown

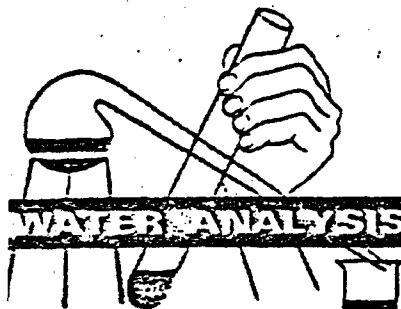
CHEMICAL ANALYSIS (AS PARTS PER MILLION)

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 ₃)						
Sodium (Na)	7.200	7.600	6.480	6.600	6.520	
Magnesium (Mg)	2.289	1.580	2.552	2.527	2.697	
Bicarbonate (HCO ₃)	116	134	24	37	24	
Carbonate (CO ₃)						
Sulfate (SO ₄)	2.238	1.900	1.475	1.475	1.875	
Hydrogen Sulfide (H ₂ S)						
Specific Gravity	1.10	1.10	1.10	1.10	1.10	
Acidity, lb./gal.						
- Beckman [] Strip []		7.19	6.7	6.8	6.8	
TDS	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

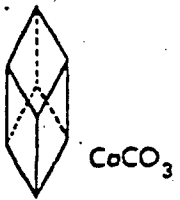
PORT FOR	Elma Winter	DATE SAMPLED	4/2/84
CC	Jerry Skidmore	DATE REPORTED	4/9/84
CC		FIELD, LEASE, OR WELL	Blaineby/lubb : 30/70
CC		COUNTY	STATE N. M.
COMPANY	Conoco, Inc.	FORMATION	
ADDRESS		DEPTH	
ENGINEER	Jay Brown	SUBMITTED BY	Jay Brown

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

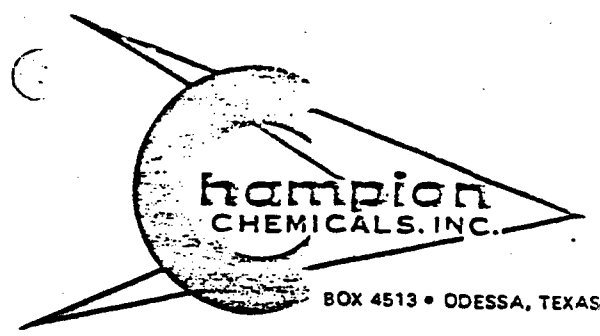
Field, Lease, or Well

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 ₃)						
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 ₃)	91	37	24	37	12.2	
Carbonate (CO ₃)						
Sulfate (SO ₄)	1,888	1,525	1,250	1,250	1,925	
Hydrogen Sulfide (H ₂ S)						
Specific Gravity	1.11	1.11	1.10	1.11	1.11	
Density, 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



SCALE ANALYSIS REPORT



BOX 4513 • ODESSA, TEXAS

CHEMICAL WITH SERVICE

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	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 Blinebry
cc		COUNTY	STATE N. M.
ANY	Conoco, Inc.	FORMATION	
SS		DEPTH	
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

SCALE COMPONENT	CHEMICAL ANALYSIS (AS WEIGHT PERCENT)				
	Field, Lease, or Well				
	Blinebry	Tubb	B/T 90%/10%	B/T 70%/30%	B/T 50%/50%
CaCO ₃	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



CaCO₃



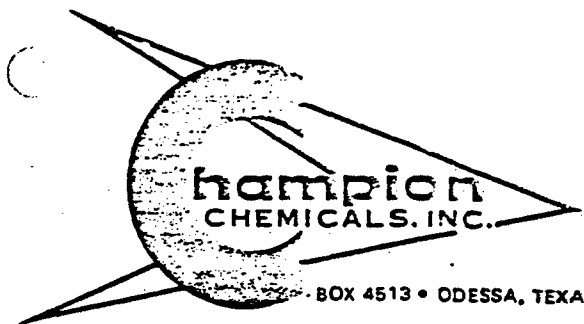
CaSO₄

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



BOX 4513 • ODESSA, TEXAS

CHEMICAL WITH SERVICE

FOR 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.
ANY 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

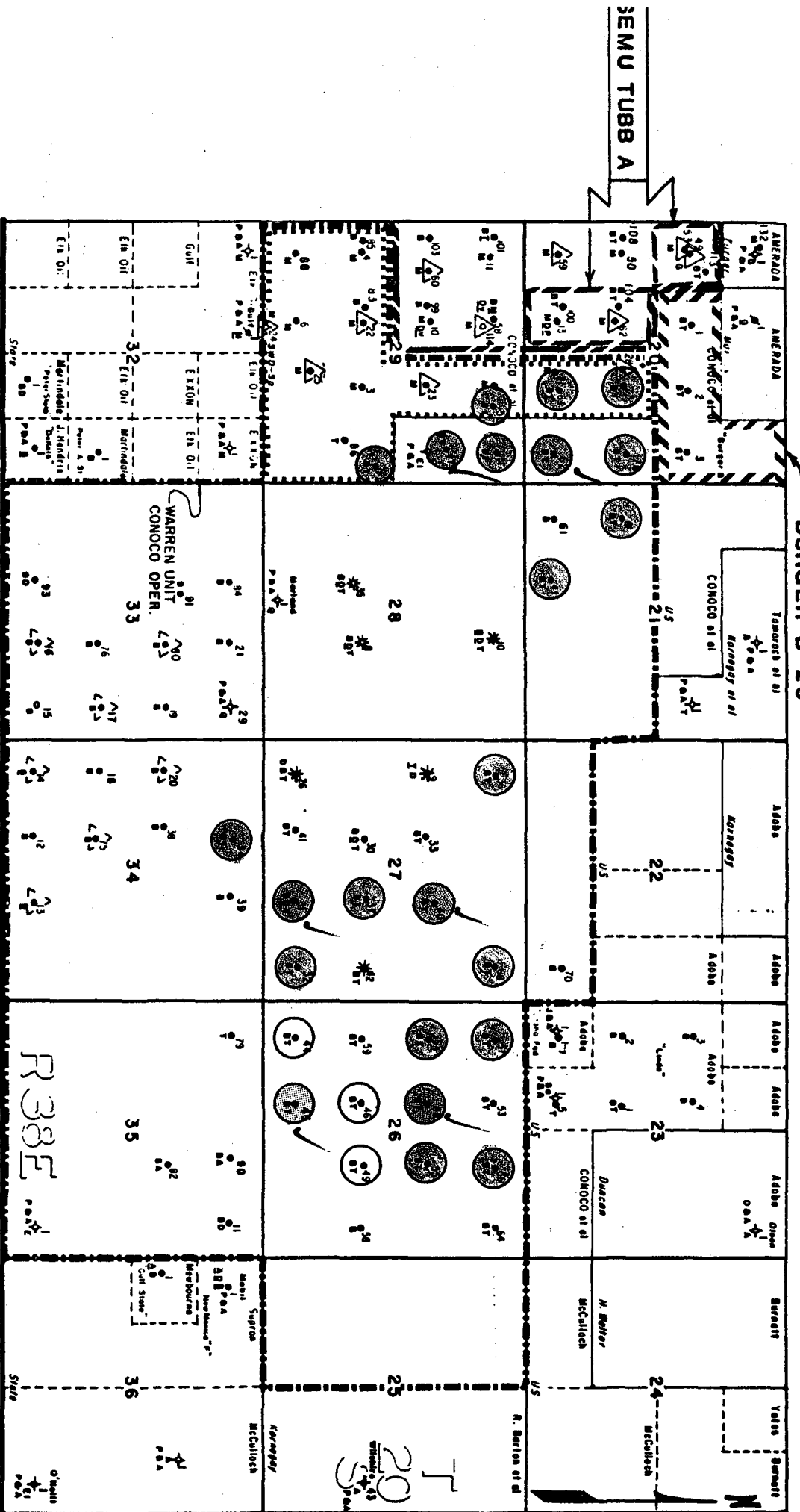
PAGE #2

CHEMICAL ANALYSIS (AS WEIGHT PERCENT)

SCALE COMPONENT	Field, Lease, or Well				
	B/T 30%/70%	B/T 10%/90%			
CaCO ₃	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

BURGER B-20



— LEGEND —

- Abo
- Blinberry
- Drinkard
- Devonian
- Ellenburger
- Grayburg
- Glorieta
- McKee
- Paddock
- Queen
- Simpson
- San Andres
- Tubb
- SI, TA, OR ZA.

• PROPOSED INJECTOR

PRODUCTION
DEPARTMENT

CONOCO

HOBBS
DIVISION

OWNERSHIP & COMPLETION MAP

PROPOSED D.H.C. WELLS

PROPOSED D.H.C. WELLS (BHP TAKE)

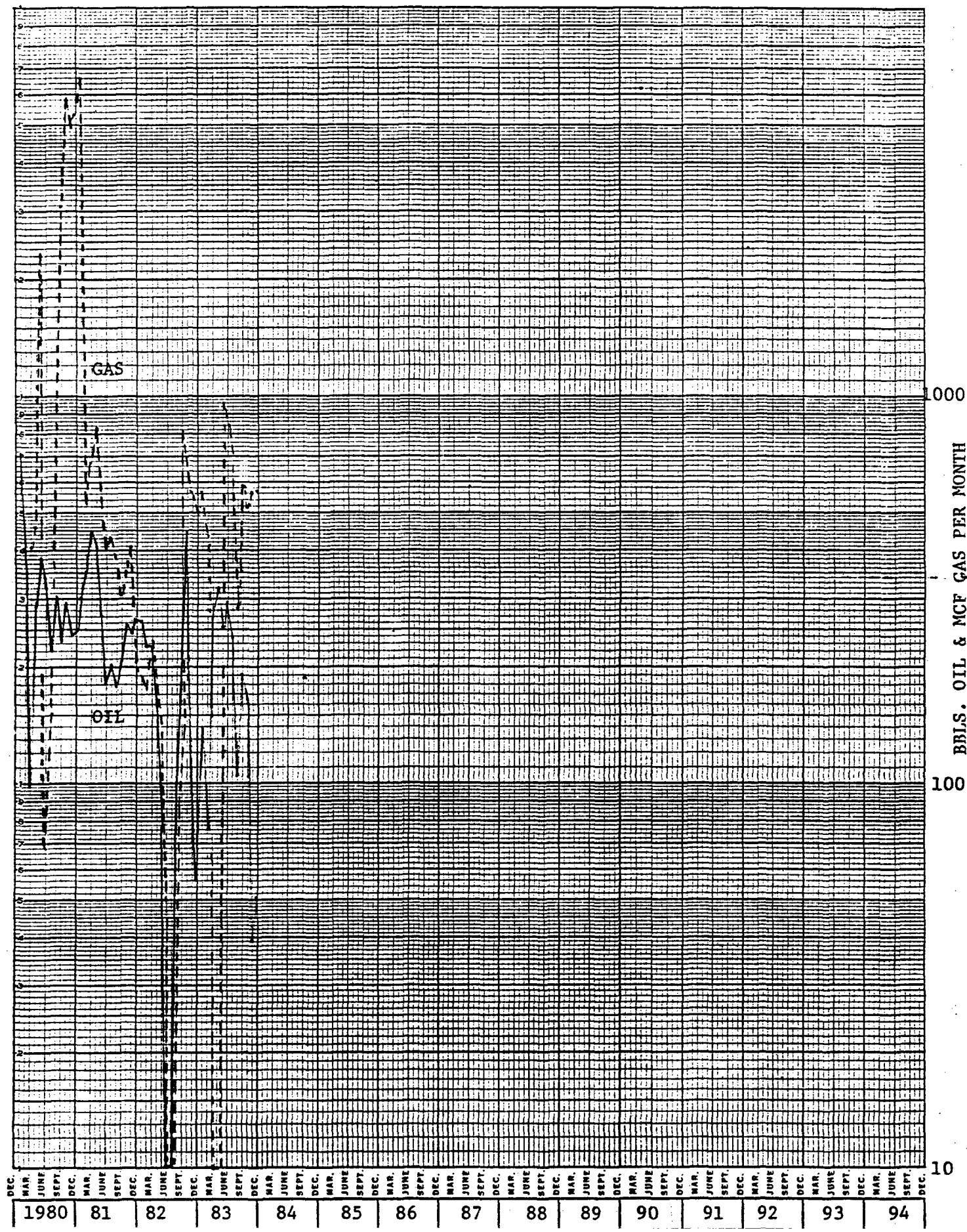
LEA COUNTY, NEW MEXICO

SCALE

0 1000' 2000'

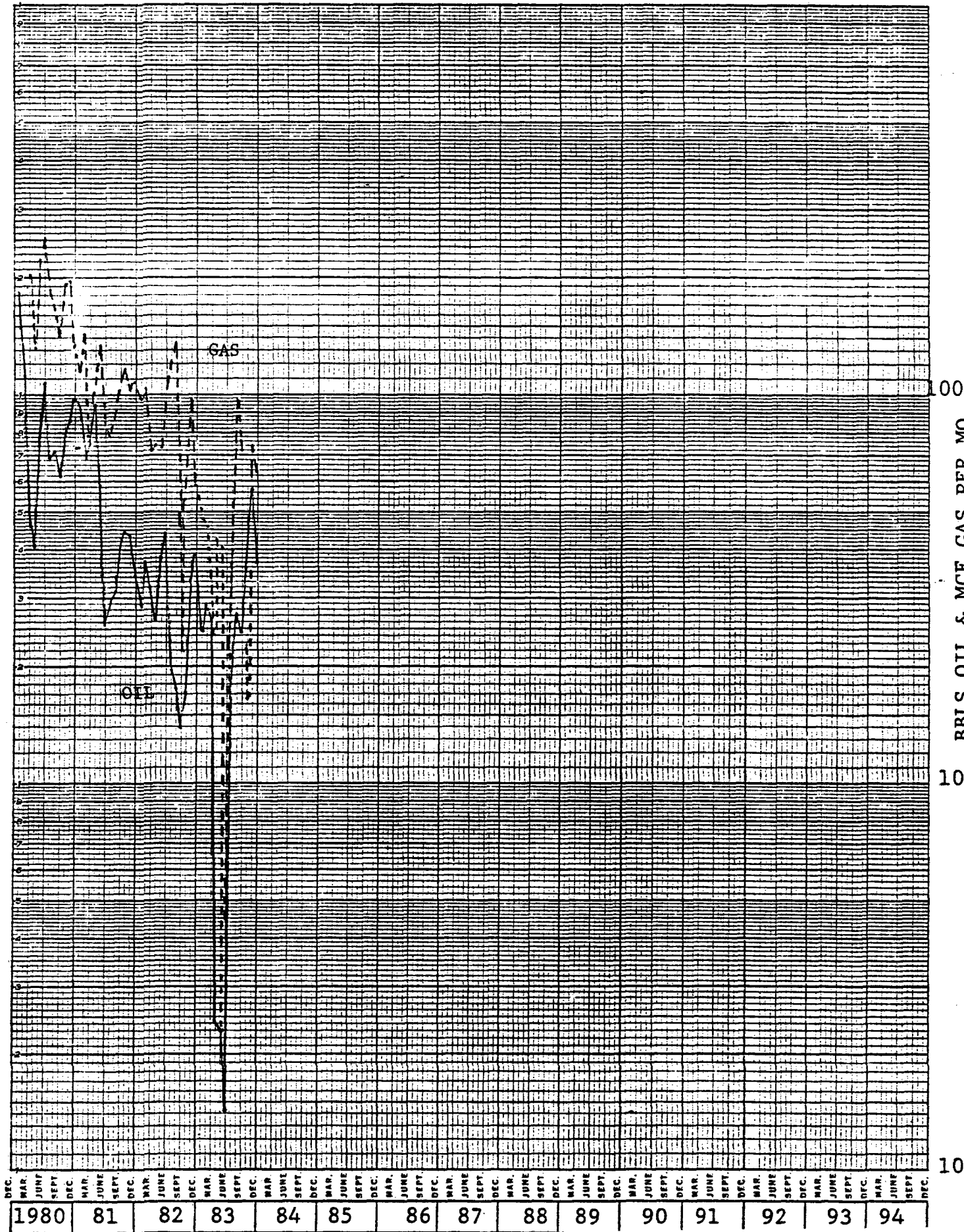
WARREN UNIT BLINEBRY NO. 78

GRAPH PAPER



WARREN TUBB POOL

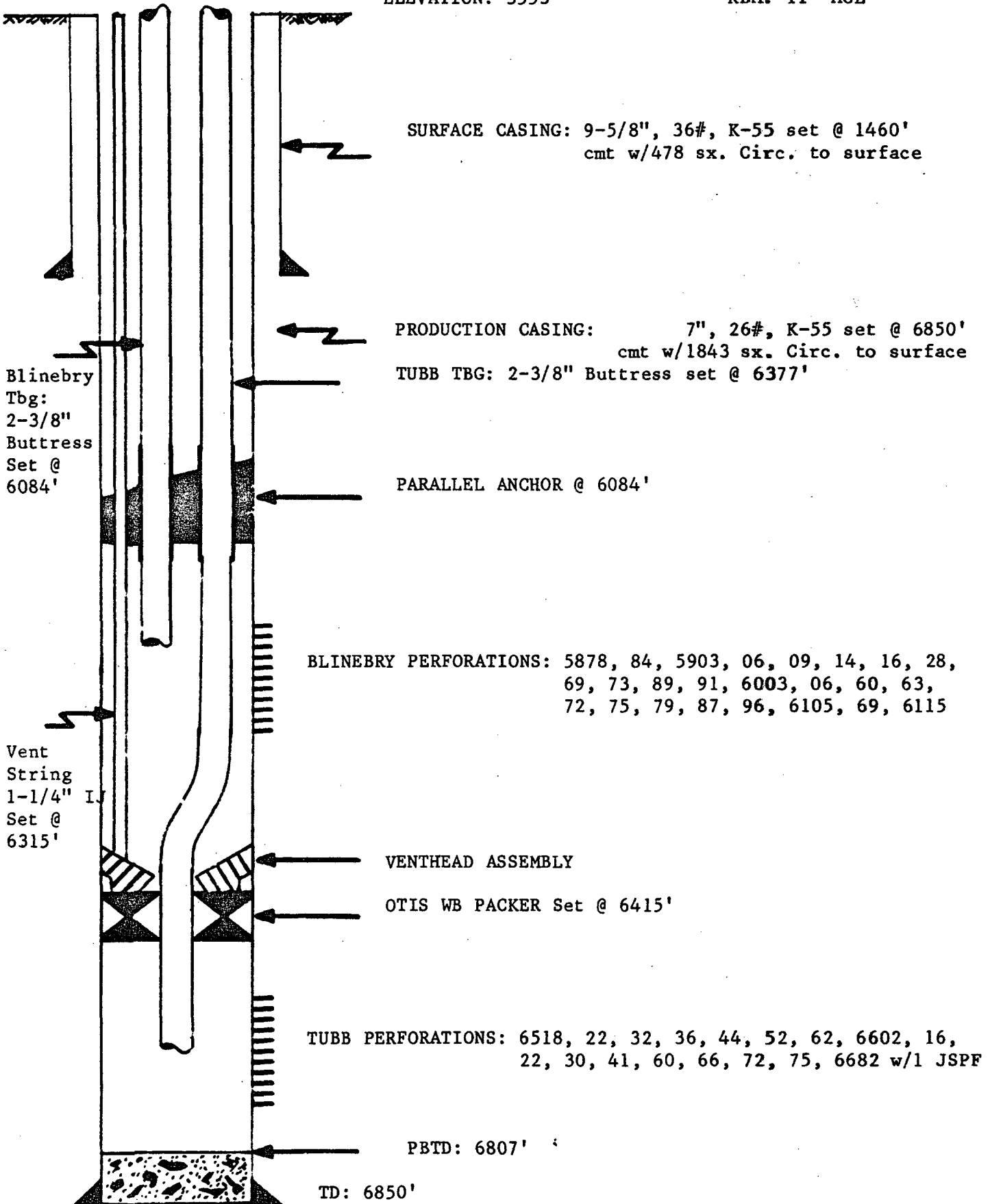
WARREN UNIT NO. 78



WARREN UNIT NO. 78
1980' FSL & 660' FEL
Sec. 20, T-20-S, R-38-E

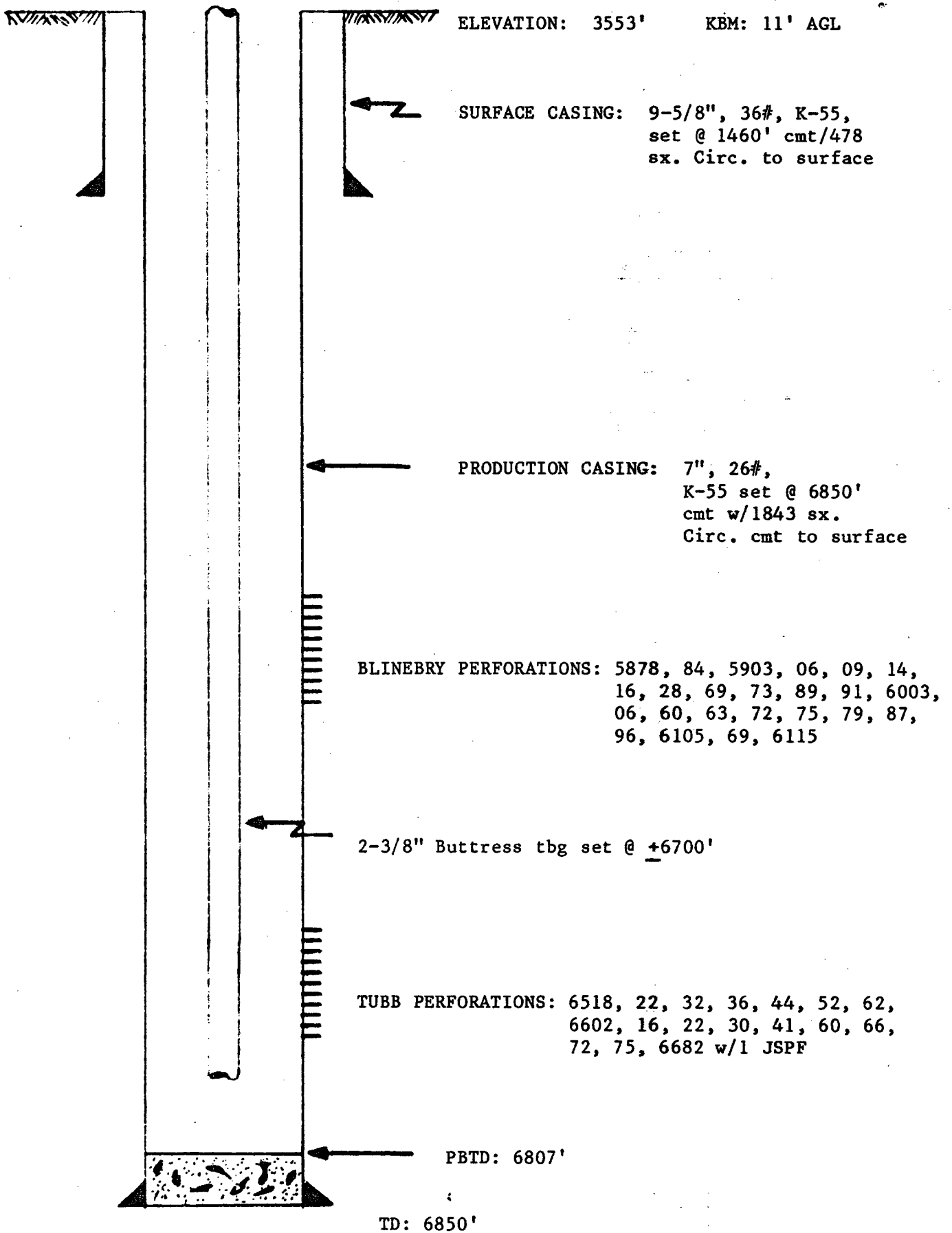
ELEVATION: 3553'

KBM: 11' AGL



PRESENT WELLBORE

WARREN UNIT NO. 78
1980' FSL & 660' FEL
Sec. 20, T-20-S, R-38-E



PROPOSED WELLBORE