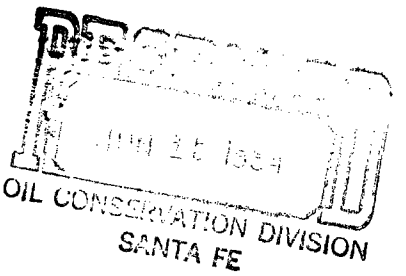
Production Department
Hobbs Division
North American Production

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.

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,

Donald W. Johnson

Donald W. Johnson
Division Manager

DDP:cyp

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

Well No.	Unit	Section	Well No.	Unit	Section
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	- 60 psi
47	604 psi	370 psi	+ 69 psi
48	941 psi	584 psi	- 78 psi
62	791 psi	367 psi	-164 psi

ok!

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

GPP

TABLE 3
RECOMMENDED PRODUCTION ALLOCATION
WARREN UNIT

Well No.	Percent Total Production			
	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

oil production on 9589

NEW MEXICO OIL CONSERVATION COMMISSION
GAS – OIL RATIO TESTS

water production on 9589

C-116
Revised 1-1-65

Operator: Conoco Inc.
Pool: Warren Tubb Oil
County: Lea
Address: P. O. Box 460, Hobbs, New Mexico 88240
TYPE OF TEST – (X): Scheduled ☐ Completion ☐ Special ☒

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

Address	TYPE OF TEST – (X)			
P. O. Box 460, Hobbs, New Mexico 88240	Scheduled ☐	Completion ☐	Special ☒

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS – OIL RATIO CU.FT/BBL.
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 L. Lugar
(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
Conoco Inc.	Warren Tubb Oil	Lea

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

TYPE OF TEST – (X): Scheduled ☐ Completion ☐ Special ☒

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS – OIL RATIO CU.FT/BBL.
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.

David L. Logan
(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
Conoco Inc.	Blinebry Oil and Gas	Lea

Address	TYPE OF TEST – (X)	Scheduled ☐	Completion ☐	Special X
P. O. Box 460, Hobbs, New Mexico 88240				

LEASE NAME	WELL NO.	LOCATION U	S	T	R	DATE OF TEST	STATUS	CHOKE SIZE	TBG. PRESS.	DAILY ALLOWABLE	LENGTH OF TEST HOURS	PROD. DURING TEST WATER BBLS.	GRAV. OIL	OIL BBLS.	GAS M.C.F.	GAS – OIL RATIO CU.FT./BBL.
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 L. Logan
(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
CaCO3	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-Blinebry. 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		152,548	SODIUM (Na)	2,046	47,063
HYDROGEN SULFIDE	0.3	5.1	MAGNESIUM (Mg)	179	2,187
CHLORIDE (Cl)	2,620	93,000	CALCIUM (Ca)	430	8,600
SULFATE (SO_4)	34	1,625	BARIUM (Ba)		
CARBONATE (CO_3)			IRON (Mg/1) TOTAL		DISS. 10.5
BICARBONATE (HCO_3)	1.2	73	SUSPENDED SOLIDS		
HYDROXYL (OH)					

SCALING TENDENCIES

T°F	$CaCO_3$ INTERPRETATION	T°F	$CaSO_4$ INTERPRETATION	T°F	$BaSO_4$ INTERPRETATION
60	+0.38 yes	60	yes	60	
80	+0.60 yes	80	yes	80	
100	+0.85 yes	100	no	100	
140	+1.49 yes	140	yes	140	
160	+1.87 yes	160	yes	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		139,249	SODIUM (Na)	1,899	43,682
HYDROGEN SULFIDE	0.3	5	MAGNESIUM (Mg)	191	2,333
CHLORIDE (Cl)	2,366	84,000	CALCIUM (Ca)	330	6,600
SULFATE (SO_4)	52	2,500	BARIUM (Ba)		0
CARBONATE (CO_3)			IRON (Mg/l) TOTAL		DISS. 3
BICARBONATE (HCO_3)	2.2	134	SUSPENDED SOLIDS		
HYDROXYL (OH)					

SCALING TENDENCIES

T°F	$CaCO_3$ INTERPRETATION	T°F	$CaSO_4$ INTERPRETATION	T°F	$BaSO_4$ INTERPRETATION
60	+0.74 yes	60	yes	60	
80	+0.94 yes	80	yes	80	
100	+1.17 yes	100	yes	100	
140	+1.80 yes	140	yes	140	
160	+2.17 yes	160	yes	160	

№ 2481

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

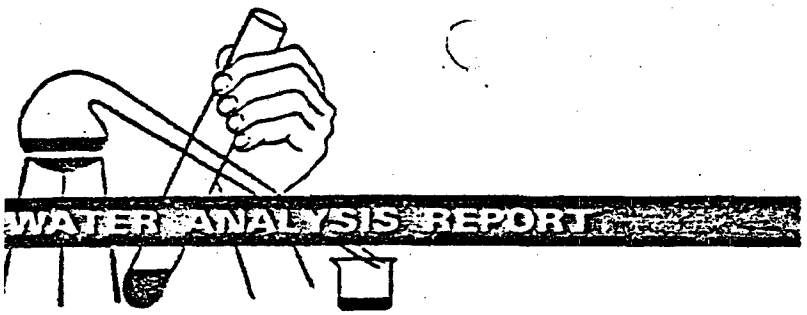
REPORT FOR: Elma Winter
CC: Jerry Skidmore
CC:
CC:
COMPANY: Conoco, Inc.
ADDRESS:
SERVICE ENGINEER: Jay Brown

DATE SAMPLED: 4/2/84
DATE REPORTED: 4/9/84
FIELD, LEASE, OR WELL: Blinebry/Tubb : 50/50
COUNTY: STATE: N.M.
FORMATION:
DEPTH:
SUBMITTED BY: Jay Brown

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Chemical Component	Field, Lease, or Well					
	Theoretical B/T 50/50	Initial	24 hrs.	48 hrs.	72 hrs.	
ride (Cl)	88,500	88,000	84,000	88,000	90,000	
(Fe)						
l Hardness ($CaCO_3$)						
ium (Ca)	7,600	6,880	6,640	6,520	6,960	
nesium (Mg)	2,260	2,309	2,697	2,673	2,600	
rbonate (HCO_3)	104	12.2	24	24	24	
onate (CO_3)						
ate (SO_4)	2,063	1,450	1,175	1,425	1,925	
rogen Sulfide (H_2S)						
ific Gravity	1.10	1.10	1.10	1.10	1.11	
sity, lb./gal.						
Beckman [ ] Strip [ ]		7.00	6.8	6.6	7.0	
TDS	145,899	144,104	136,796	143,823	147,840	

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS



WATER ANALYSIS REPORT

№ 2476

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

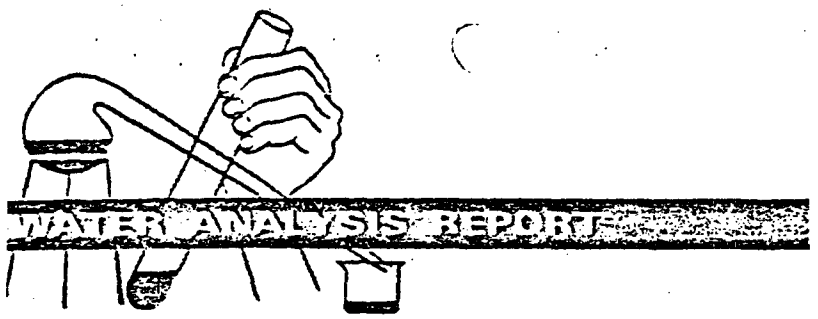
REPORT FOR: Elma Winter
CC: Jerry Skidmore
CC:
CC:
COMPANY: Conoco, Inc.
ADDRESS:
SERVICE ENGINEER: Jay Brown

DATE SAMPLED: 4/?/84
DATE REPORTED: 4/9/84
FIELD, LEASE, OR WELL: Blinebry/Tubb : 10/90
COUNTY: STATE: N.M.
FORMATION:
DEPTH:
SUBMITTED BY: Jay Brown

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Chemical Component	Field, Lease, or Well: Theoretical B/T 10/90	Initial	24 hrs.	48 hrs.	72 hrs.	
ride (Cl)	92,100	91,000	89,000	92,000	96,000	
(Fe)						
l Hardness ($CaCO_3$)						
ium (Ca)	8,400	8,400	7,200	7,040	7,160	
nesium (Mg)	2,202	1,823	2,527	2,843	2,697	
rbonate (HCO_3)	79	24	37	24	24	
onate (CO_3)						
ate (SO_4)	1,713	1,750	1,250	1,375	1,725	
rogen Sulfide (H_2S)						
ific Gravity	1.10	1.11	1.10	1.11	1.11	
sity, 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



№ 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

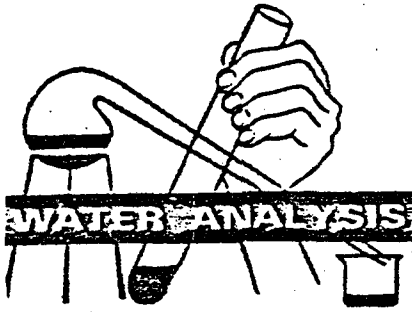
PORT FOR Elma Winter
CC Jerry Skidmore
CC
CC
MPANY Conoco, Inc.
DRESS
RVICE ENGINEER Jay Brown

DATE SAMPLED 4/2/84
DATE REPORTED 4/9/84
FIELD, LEASE, OR WELL Warren Unit #55 Blinebry
COUNTY STATE N.M.
FORMATION
DEPTH
SUBMITTED BY Jay Brown

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Chemical Component	Field, Lease, or Well					
	24 hrs.	48 hrs.	72 hrs.			
ride (Cl)	78,500	83,000	86,000			
(Fe)						
Hardness ($CaCO_3$)						
ium (Ca)	6,280	6,240	6,320			
nesium (Mg)	2,381	2,381	2,527			
rbonate (HCO_3)	24	37	18			
onate (CO_3)						
ate (SO_4)	1,600	1,525	1,600			
rogen Sulfide (H_2S)						
ific Gravity	1.09	1.10	1.10			
ity, lb./gal.						
Beckman [ ] Strip [ ]	7.2	7.0	7.05			
DS	128,699	136,046	140,931			

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS



WATER ANALYSIS REPORT

№ 2471

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
CC: Jerry Skidmore
CC:
CC:
COMPANY: Conoco, Inc.
ADDRESS:
SERVICE ENGINEER: Jay Brown

DATE SAMPLED: 4/2/84
DATE REPORTED: 4/9/84
FIELD, LEASE, OR WELL: Warren Unit #55 Tubb
COUNTY: STATE: N.M.
FORMATION:
DEPTH:
SUBMITTED BY: 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 ($CaCO_3$)						
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_2S)						
Specific Gravity	1.10	1.11	1.11			
Density, lb./gal.						
pH Beckman [ ] Strip [ ]	6.6	6.6	6.9			
TDS	143,394	155,376	157,549			

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS

№ 2468

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

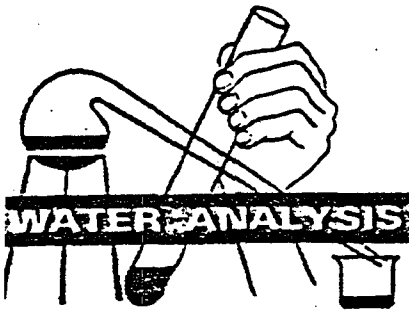
REPORT FOR: Elma Winter
CC: Jerry Skidmore
CC:
CC:
COMPANY: Conoco, Inc.
ADDRESS:
SERVICE ENGINEER: Jay Brown

DATE SAMPLED: 4/2/84
DATE REPORTED: 4/9/84
FIELD, LEASE, OR WELL: Blinebry/Tubb : 90/10
COUNTY: STATE: N.M.
FORMATION:
DEPTH:
SUBMITTED BY: Jay Brown

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Chemical Component	Field, Lease, or Well					
	Theoretical B/T 90/10	Initial	24 hrs.	48 hrs.	72 hrs.	
ride (Cl)	84,900	86,000	81,500	84,000	89,000	
(Fe)	3.75	2				
. Hardness ($CaCO_3$)						
ium (Ca)	6,159	7,200	6,200	6,640	7,240	
nesium (Mg)	2,318	1,920	2,333	2,309	2,187	
rbonate (HCO_3)	128	122	12.2	30	24	
onate (CO_3)						
ate (SO_4)	2,413	1,850	1,450	1,625	2,025	
rogen Sulfide (H_2S)						
ific Gravity	1.10	1.10	1.095	1.099	1.10	
sity, 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



WATER ANALYSIS REPORT

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

№ 2467

Champion Chemicals, Inc.
BOX 4513
ODESSA, TEXAS 79760

PORT FOR Elma Winter
CC Jerry Skidmore
CC
CC
OMPANY Conoco, Inc.
DDRESS
RVICE ENGINEER Jay Brown

DATE SAMPLED 4/2/84
DATE REPORTED 4/9/84
FIELD, LEASE, OR WELL Blinebry/Tubb : 70/30
COUNTY STATE N.M.
FORMATION
DEPTH
SUBMITTED BY Jay Brown

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Chemical Component	Field, Lease, or Well					
	Theoretical B/T 70/30	Initial	24 hrs.	48 hrs.	72 hrs.	
ride (Cl)	86,700	87,000	82,000	85,000	89,000	
(Fe)	5.2	4				
l Hardness ($Ca\ CO_3$)						
ium (Ca)	7,200	7,600	6,480	6,600	6,520	
nesium (Mg)	2,289	1,580	2,552	2,527	2,697	
rbonate (HCO_3)	116	134	24	37	24	
onate (CO_3)						
ate (SO_4)	2,238	1,900	1,475	1,475	1,875	
rogen Sulfide (H_2S)						
ific Gravity	1.10	1.10	1.10	1.10	1.10	
sity, 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

№ 2480

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

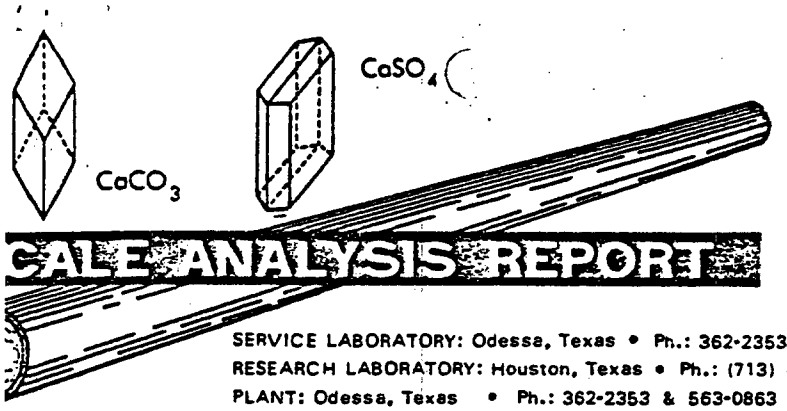
ORT FOR Elma Winter
CC Jerry Skidmore
CC
CC
MPANY Conoco, Inc.
DRESS
VICE ENGINEER Jay Brown

DATE SAMPLED 4/2/84
DATE REPORTED 4/9/84
FIELD, LEASE, OR WELL Blinebry/Tubb : 30/70
COUNTY STATE N.M.
FORMATION
DEPTH
SUBMITTED BY Jay Brown

CHEMICAL ANALYSIS (AS PARTS PER MILLION)

Chemical Component	Field, Lease, or Well					
	Theoretical B/T 30/70	Initial	24 hrs.	48 hrs.	72 hrs.	
ride (Cl)	90,300	90,000	87,500	91,000	93,000	
(Fe)						
Haroness ($Ca\ CO_3$)						
um (Ca)	8,000	7,640	7,040	7,000	7,000	
esium (Mg)	2,231	2,211	2,454	2,552	2,673	
ponate (HCO_3)	91	37	24	37	12.2	
onate (CO_3)						
te (SO_4)	1,888	1,525	1,250	1,250	1,925	
ogen Sulfide (H_2S)						
ific Gravity	1.11	1.11	1.10	1.11	1.11	
ity, 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

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

hampton CHEMICALS, INC.
BOX 4513 • ODESSA, TEXAS
CHEMICAL WITH SERVICE

FOR: Elma Winter
cc: Jerry Skidmore
cc:
cc:
ANY: Conoco, Inc.
ESS:
E ENGINEER: Jay Brown

DATE SAMPLED: 4/2/84
DATE REPORTED: 4/6/84
FIELD, LEASE OR WELL: Warren Unit #55 Tubb and Blinebry
COUNTY: STATE: N. M.
FORMATION:
DEPTH:
SUBMITTED BY: Joe Edwards

OTHER DESCRIPTION

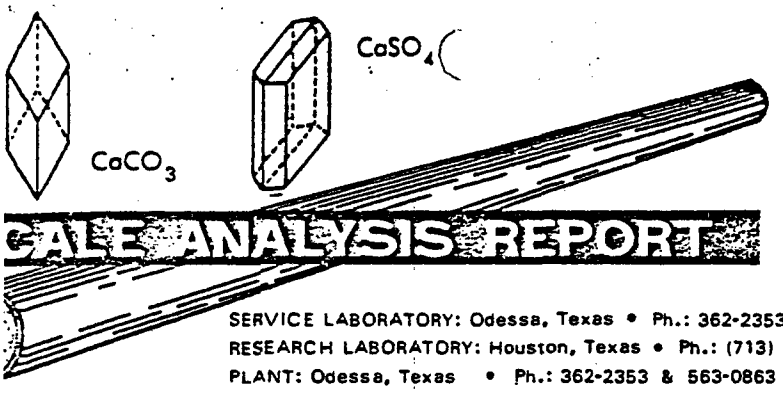
Millipore analysis of 5 ratio blends of the waters from the Tubb and Blinebry formations from Warren Unit #55

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%
CaCO3	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



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

hampton CHEMICALS, INC.
BOX 4513 • ODESSA, TEXAS
CHEMICAL WITH SERVICE

FOR: Elma Winter
cc: Jerry Skidmore
cc:
cc:
ANY: Conoco, Inc.
SS:
E ENGINEER: Jay Brown

DATE SAMPLED: 4/2/84
DATE REPORTED: 4/6/84
FIELD, LEASE OR WELL: Warren Unit #55 Tubb and Blinebry
COUNTY: STATE: N.M.
FORMATION:
DEPTH:
SUBMITTED BY: Joe Edwards

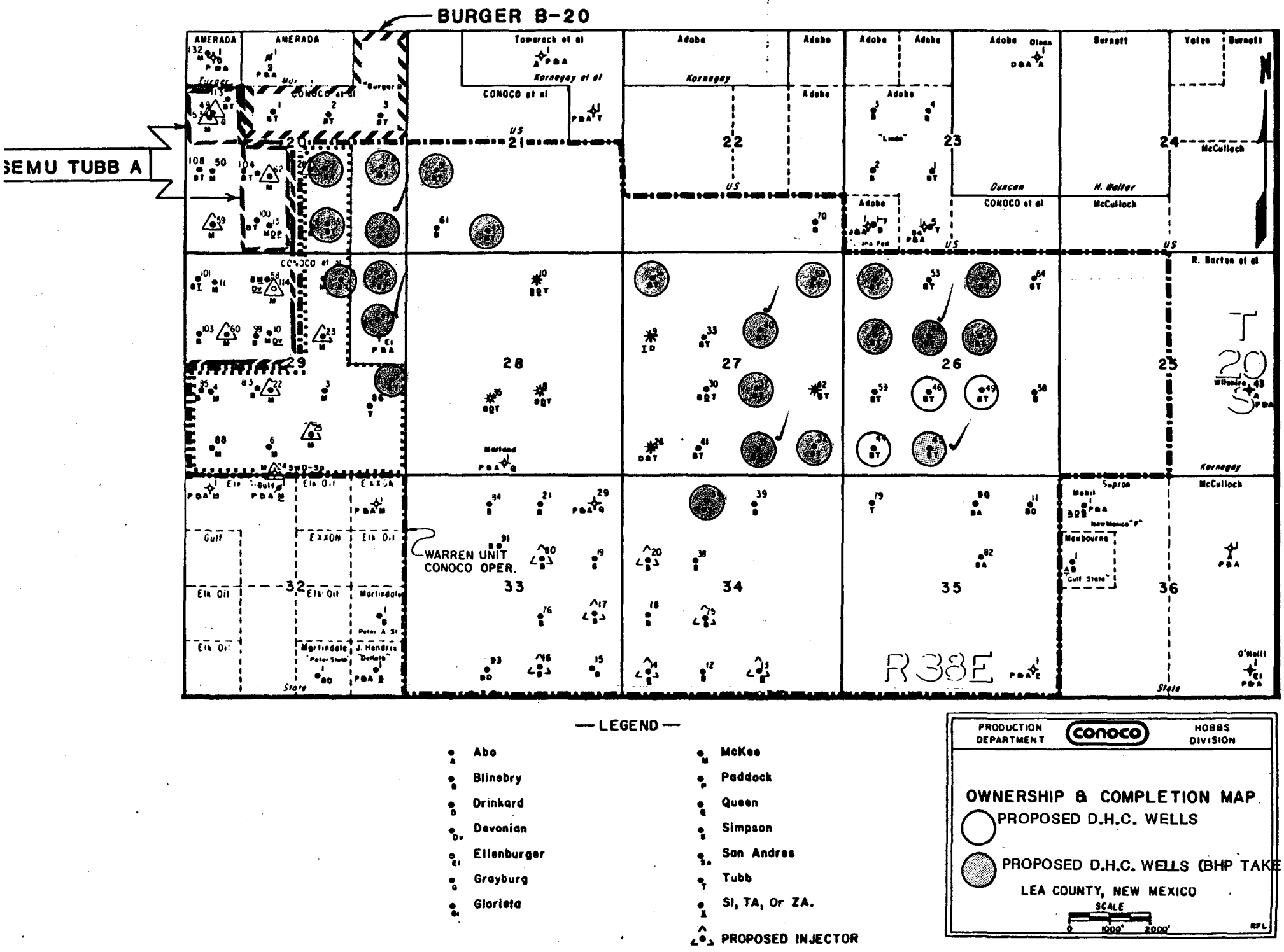
OTHER DESCRIPTION

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

CHEMICAL ANALYSIS (AS WEIGHT PERCENT)

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



— LEGEND —

- Abo
- Blinebry
- 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

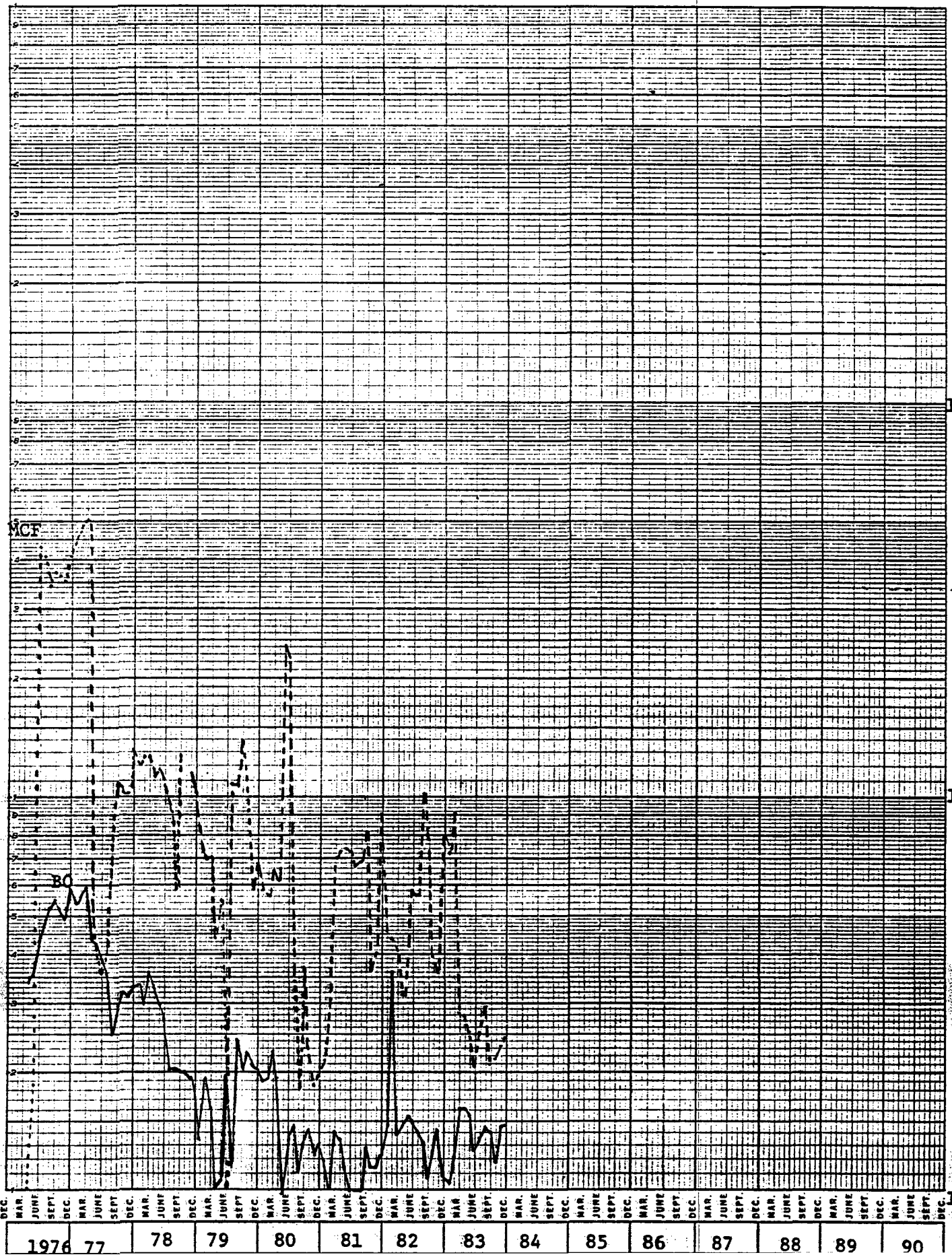
PROPOSED D.H.C. WELLS (BHP TAKE

LEA COUNTY, NEW MEXICO

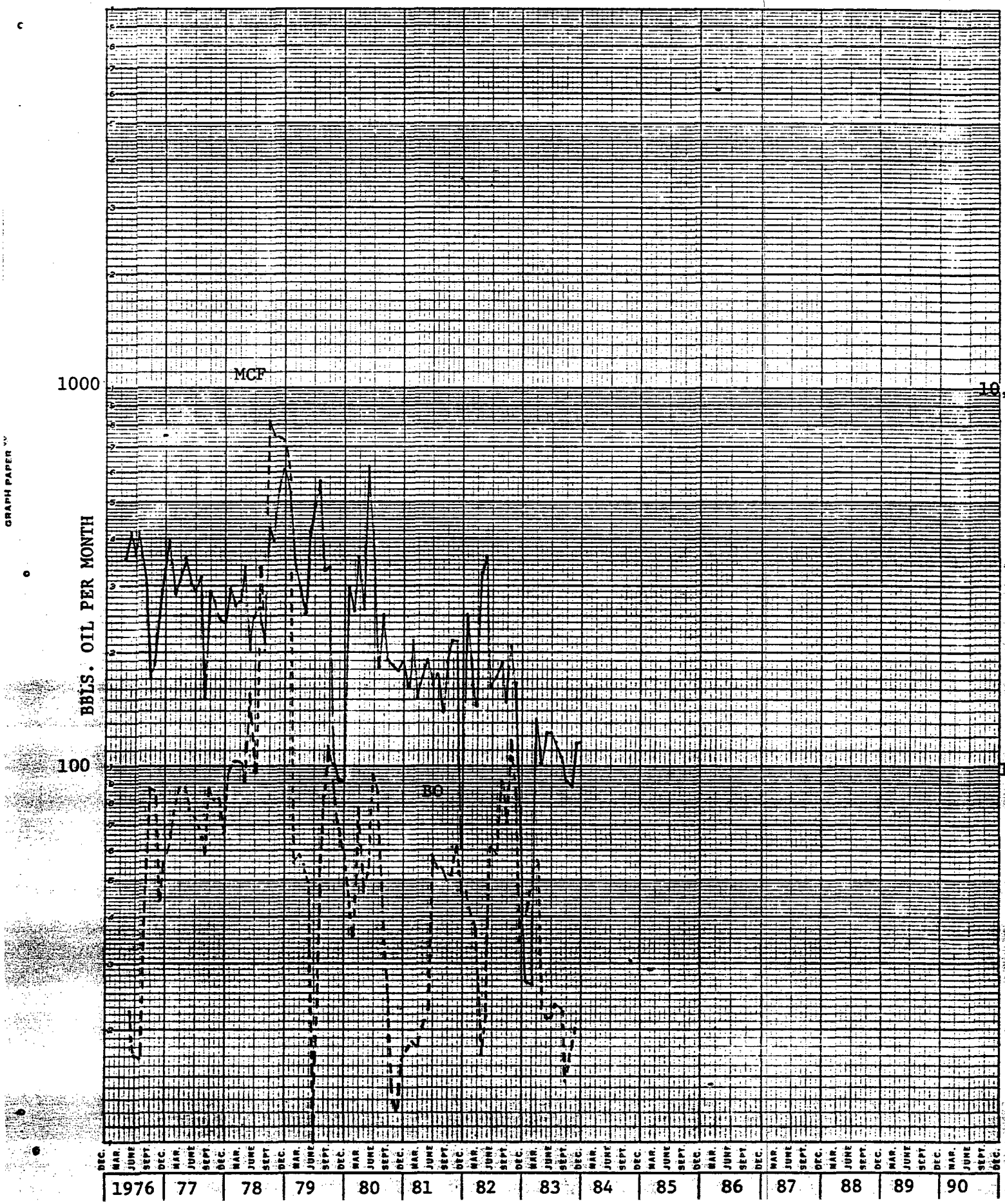
SCALE 0 1000' 2000'

RPL

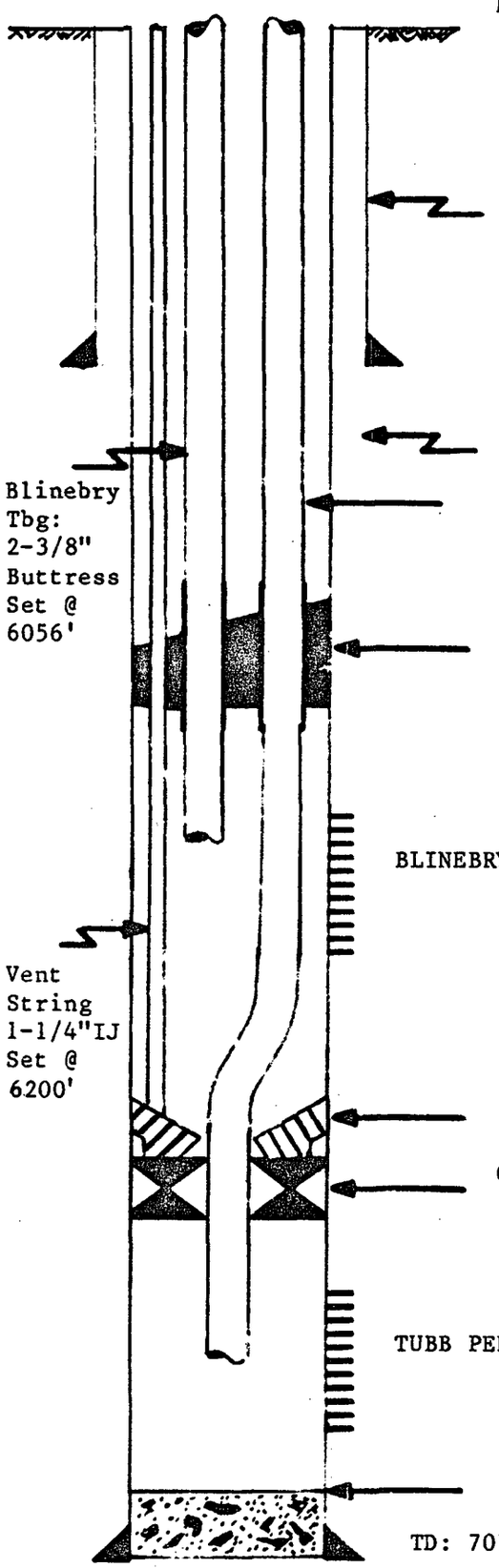
BLINEBRY POOL
WARREN UNIT NO. 40



WARREN TUBB POOL
WARREN UNIT NO. 40

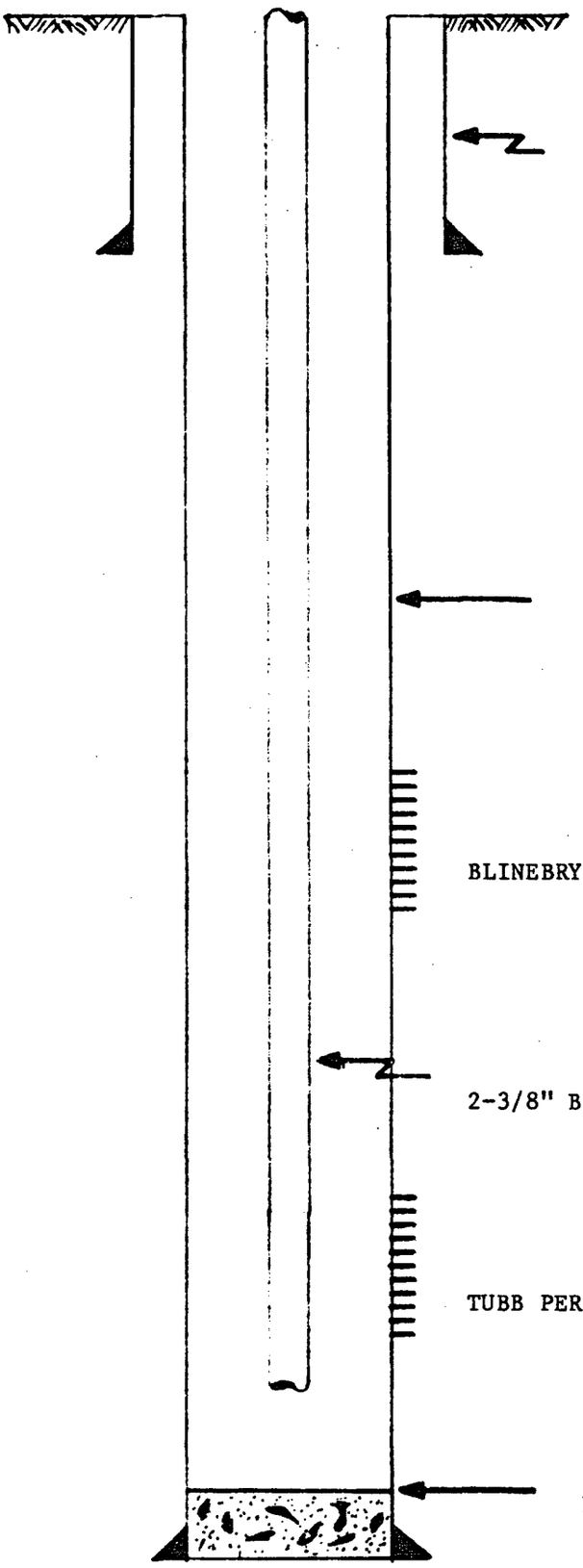


WARREN UNIT NO. 40
1980' FNL & 1980' FEL
Sec. 27, T-20-S, R-38-E



PRESENT WELLBORE

WARREN UNIT NO. 40
1980' FNL & 1980' FEL
Sec. 27, T-20-S, R-38-E



ELEVATION: 3563' KBM: 11' AGL

SURFACE CASING: 9-5/8", 32.3#, K-55, set @ 1536' cmt/550 sx. Circ. to surface

PRODUCTION CASING: 7", 23# & 26#, K-55 set @ 7070' cmt w/1250 sx

BLINEBRY PERFORATIONS: 5912, 34, 50, 66, 75, 82, 6030, 34 w/1 JSPF

2-3/8" Buttress tbg set @ ±6720'

TUBB PERFORATIONS: 6513, 20, 34, 44, 57, 6608, 17, 30, 47, 59, 72, 80, 88, 93 w/1 JSPF

PBTD: 7027'

TD: 7070'

PROPOSED WELLBORE