Donald W. Johnson
Division Manager
Production Department
Hobbs Division
North American Production

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

August 20, 1986

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

Attention Mr. Richard L. Stamets

Gentlemen:

Application to Downhole Commingle Warren Unit #33 F-27-20-38

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 Warren Unit #33 (F-27-20-38).

In June 1984, Conoco applied for, and was granted, permission to downhole commingle 26 Warren Unit Blinebry - Tubb wells. Just prior to that time, the combined production from Warren Unit #33 exceeded 40 BOPD, and therefore the well did not qualify. The well now does qualify, and we are at this time requesting permission to downhole commingle the subject well.

Attached you will find all pertinent information concerning this application. Exhibit #1 contains the well location, the proposed formula for allocating production, and the value of the commingled production. Also attached are:

a) a lease plat
b) C-116's showing recent well tests
c) decline curves for both zones
d) existing and proposed wellbore diagrams
e) bottom hole pressure data

The bottom hole pressure data from nearby Blinebry-Tubb wells are being submitted due to the fact that we have recently discovered that communication exists between the Blinebry and Tubb formations in the subject well. It is not possible to obtain a valid bottom hole pressure buildup without first repairing the communcation. The cost of the repairs is estimated at $16,000. Naturally, we wish to avoid this expense since we intend to downhole commingle the well. The pressure data from Warren Unit #40, located 1320 ft. east of the subject well, is considered to be a reasonable estimate of the bottomhole pressure expected in the subject well.

Our experience with the other 26 downhole commingled Warren Unit wells has shown that the fluids from the Blinebry and Tubb are not incompatible in the wellbore. The oil gravity from both zones is approximately 40° API. While the small amount of water that is produced from each zone does have calcium carbonate scaling tendencies, mixing the waters does not cause increased scaling tendencies. Furthermore, no increase in scale related problems has been experienced in any of the 26 downhole commingled wells. Extensive water compatibility testing was performed on the produced waters from Warren Unit #55, and the results are attached for review. As has been done in the past, the formations will be chemically inhibited to prevent any scale-related problems.

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

Yours truly,

PDB:nvz

Attachments

cc: JEP, PAB, ELK, PDB

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 Management
P. O. Box 1778
Carlsbad, NM 88220

EXHIBIT 1

1) Operator: Conoco, Inc.
P. O. Box 460
726 East Michigan
Hobbs, NM 88240

2) Lease Name: Warrent Unit

3) Well Number: 33

4) Location: 1980' FNL & 1980' FWL Sec. 27, T-20S, R-38E

5) Pools: Blinebry Oil and Gas Pool
Warren Tubb Pool

6) Allocation Formula: (based on decline curves)

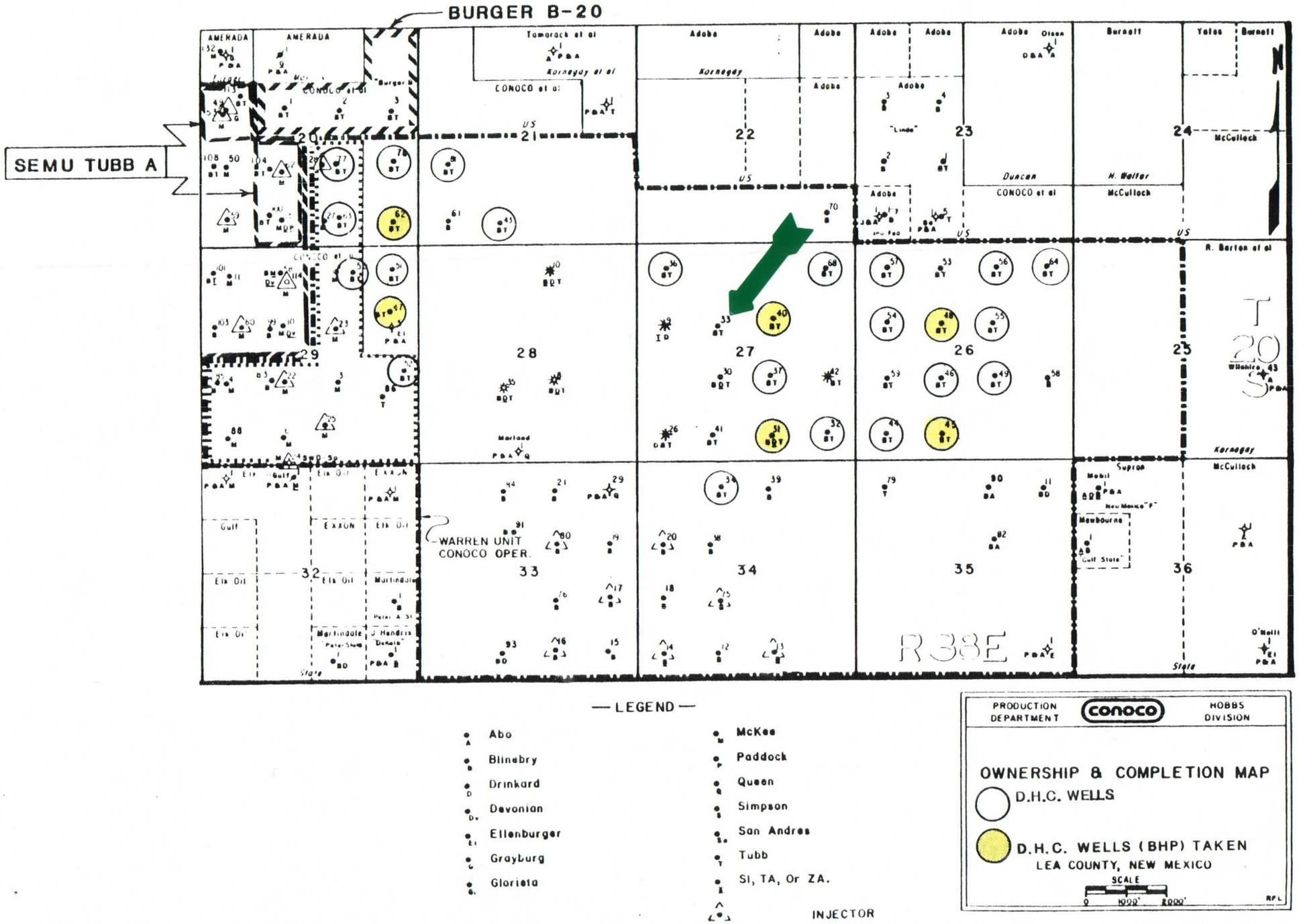
	Percent of Total Production	
	Oil	Gas
Blinebry	49%	38%
Tubb	51%	62%

7) Value of Production:
The oil produced from both zones is approximately 40° API, sweet crude (WPT TIER II). The value is nearly identical. The value of the casinghead gas is identical at $1.25/MCF.

		Gravity	Value
Oil:	Blinebry	38.5°	$11.22/bbl
	Tubb	41.5°	$11.25/bbl

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



— LEGEND —

- Abo (A)
- Blinebry (B)
- Drinkard (D)
- Devonian (Dv)
- Ellenburger (El)
- Grayburg (G)
- Glorieta (Gl)
- McKee (M)
- Paddock (P)
- Queen (Q)
- Simpson (S)
- San Andres (Sa)
- Tubb (T)
- Sl, TA, Or ZA. (X)
- INJECTOR

PRODUCTION DEPARTMENT — conoco — HOBBS DIVISION

OWNERSHIP & COMPLETION MAP

D.H.C. WELLS

D.H.C. WELLS (BHP) TAKEN

LEA COUNTY, NEW MEXICO

SCALE 0 1000' 2000'

RFL

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	TYPE OF TEST – (X)	Scheduled ☐	Completion ☐	Special ☒
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	33	F	27	20S	38E	8-1-86	P				24	0	38.7	5	80	16000

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.

(Signature)

Administrative Supervisor

(Title)

August 20, 1986

(Date)

NEW MEXICO OIL CONSERVATION COMMISSION

GAS – OIL RATIO TESTS

C-116
Revised 1-1-65

Operator	Pool	County
Conoco Inc.	Blinebry Oil & Gas	Lea

Address	TYPE OF TEST – (X)	Scheduled ☐	Completion ☐	Special ☒
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	33	F	27	20S	38E	8-5-86	P				24	0	38.7	6	47	7833

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.

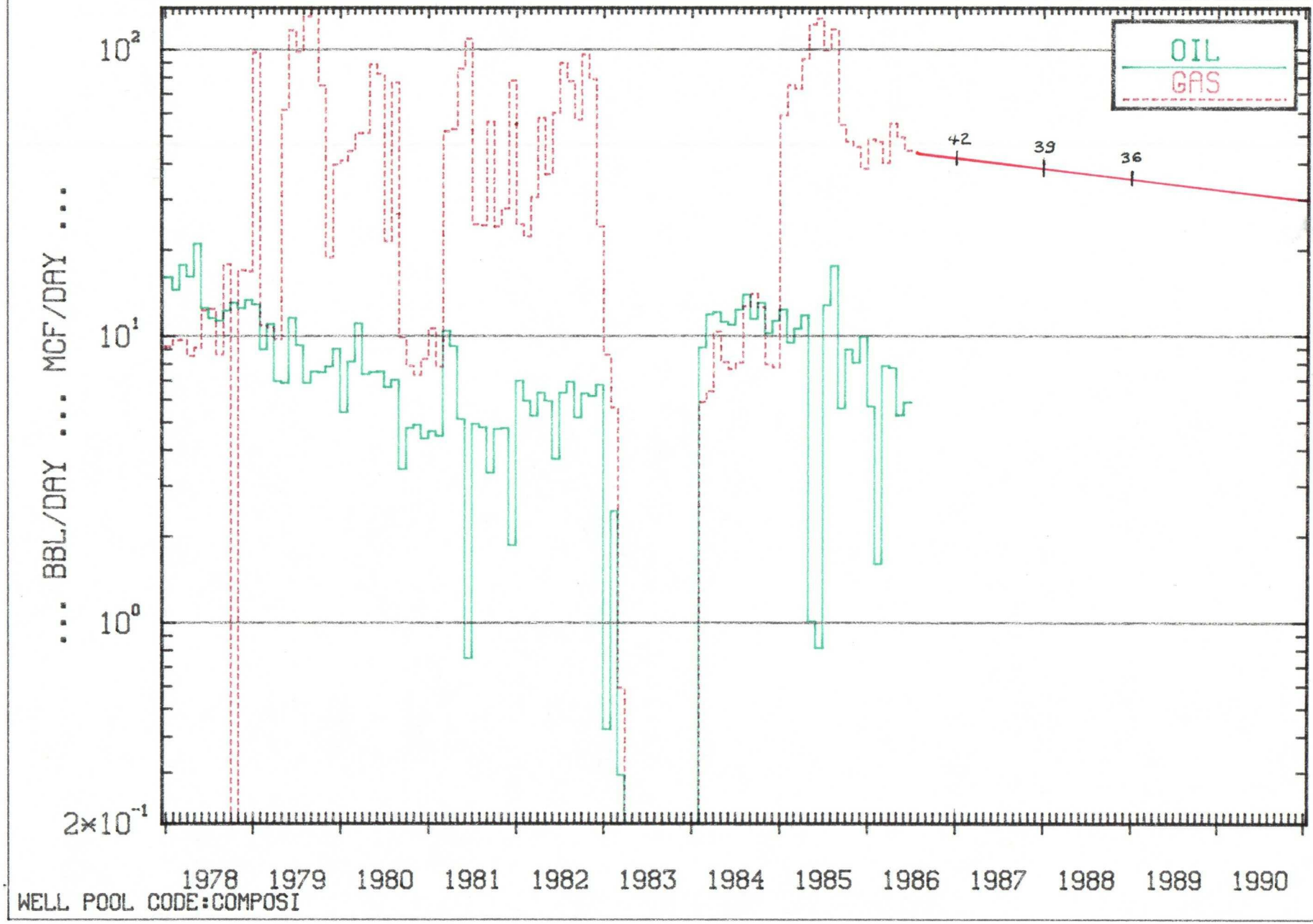
Kevin L. Boyd
(Signature)

Administrative Supervisor
(Title)

August 20, 1986
(Date)

WARREN BLINEBRY NO. 33

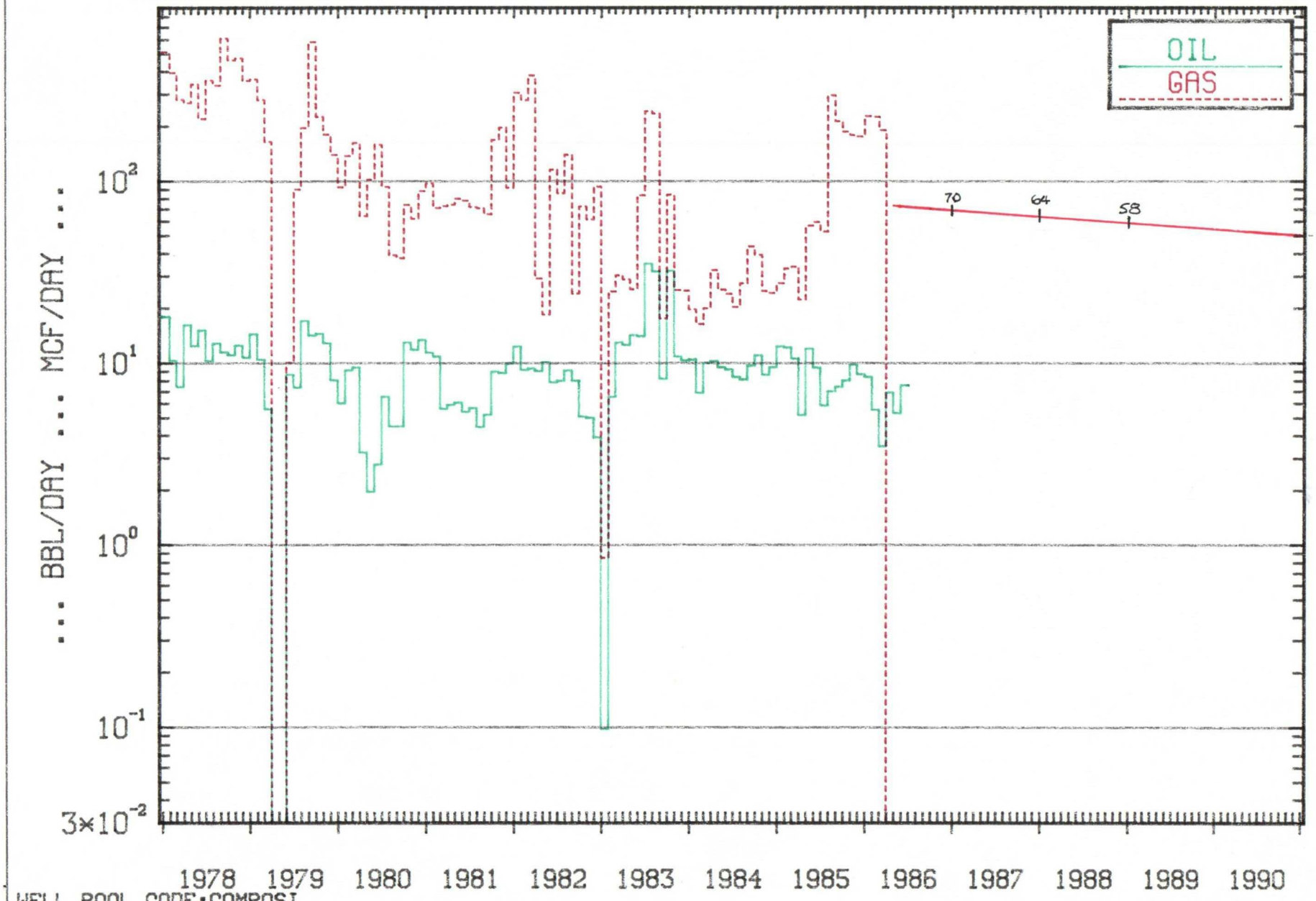
PEGS01 LIQUID & GAS PRODUCTION VS. TIME 08/07/86



WELL POOL CODE:COMPOSI

WARREN UNIT NO. 33 - TUBB

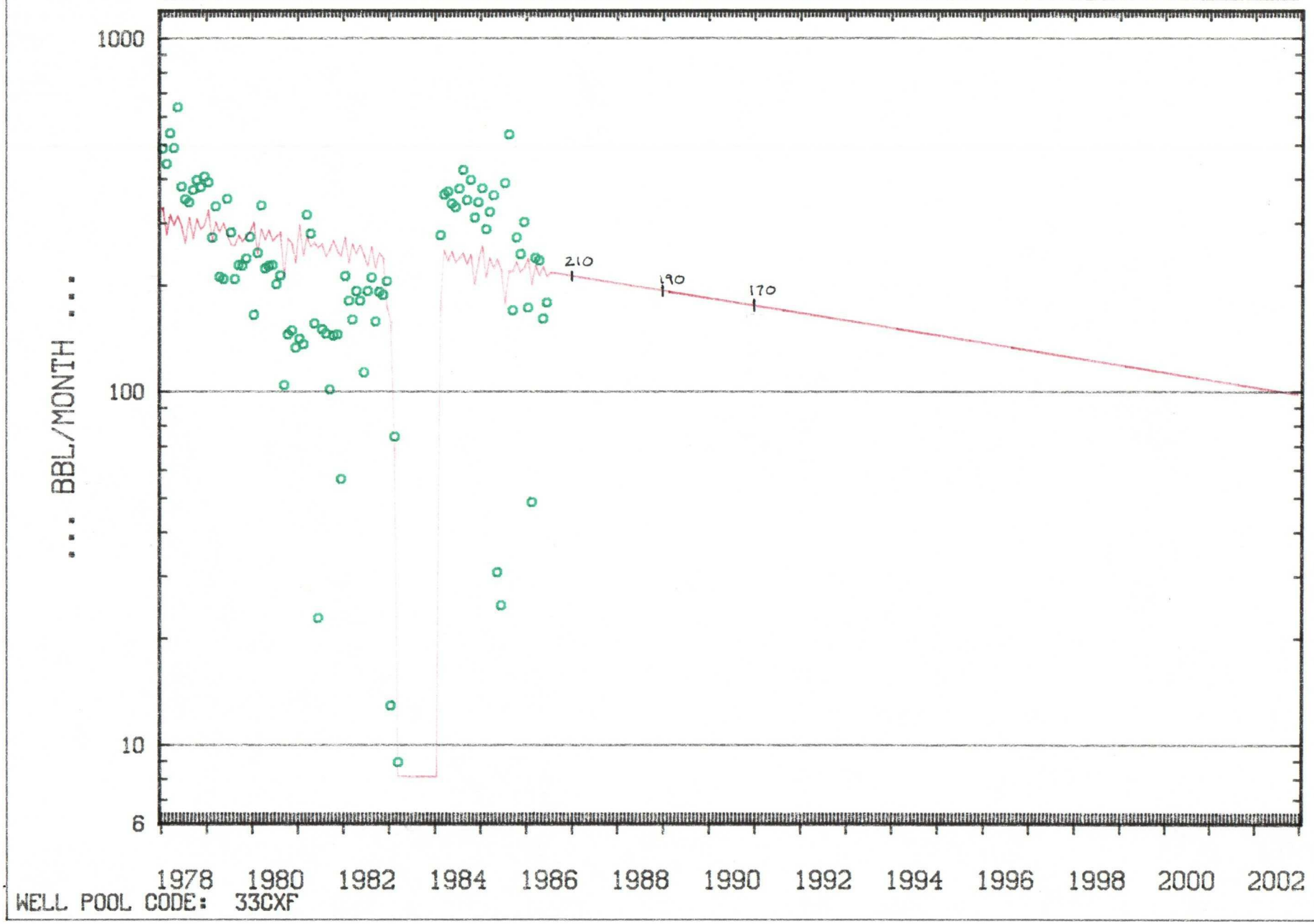
PEGS01 LIQUID & GAS PRODUCTION VS. TIME 08/07/86



WELL POOL CODE:COMPOSI

WARREN BLINEBRY NO. 33

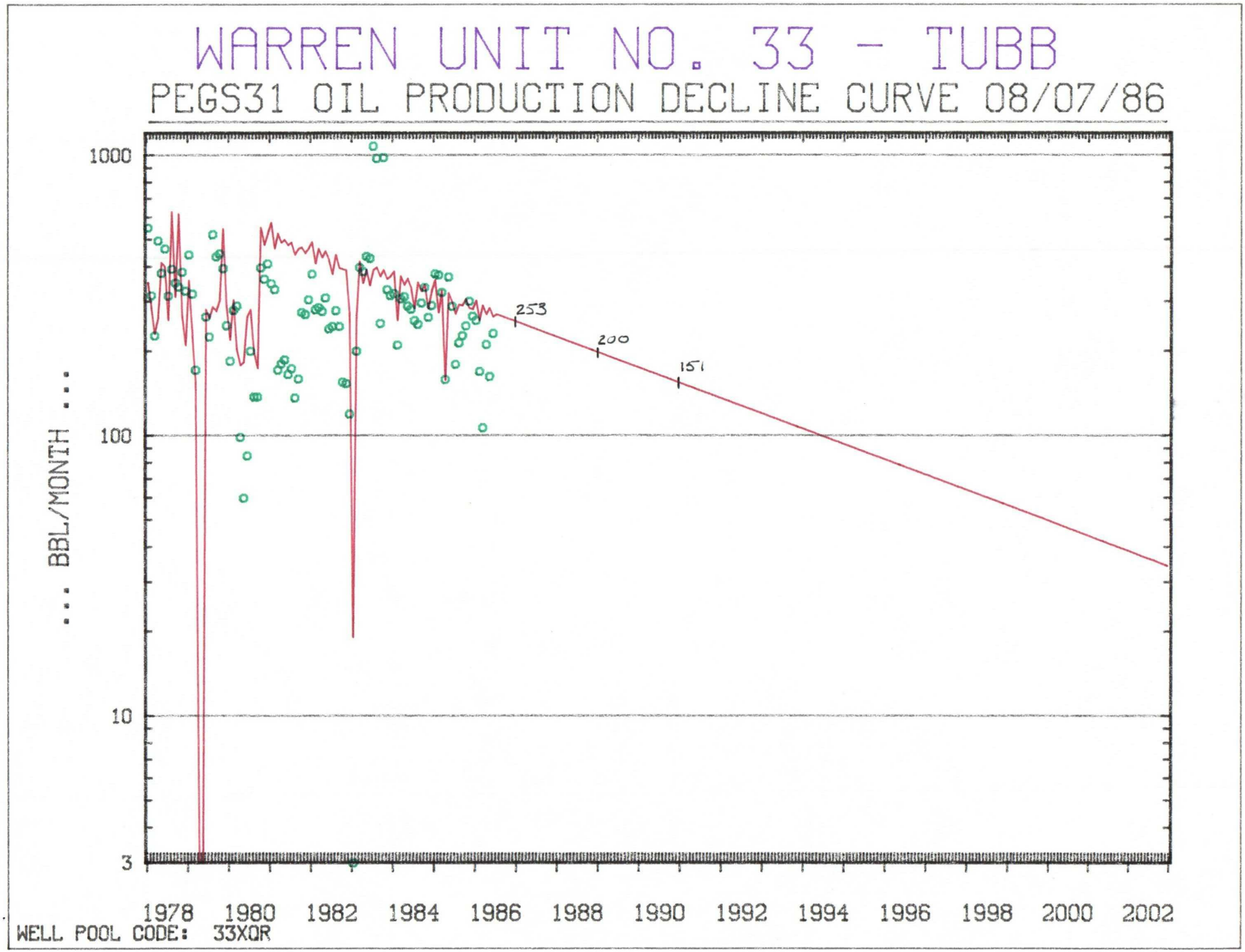
PEGS31 OIL PRODUCTION DECLINE CURVE 08/07/86



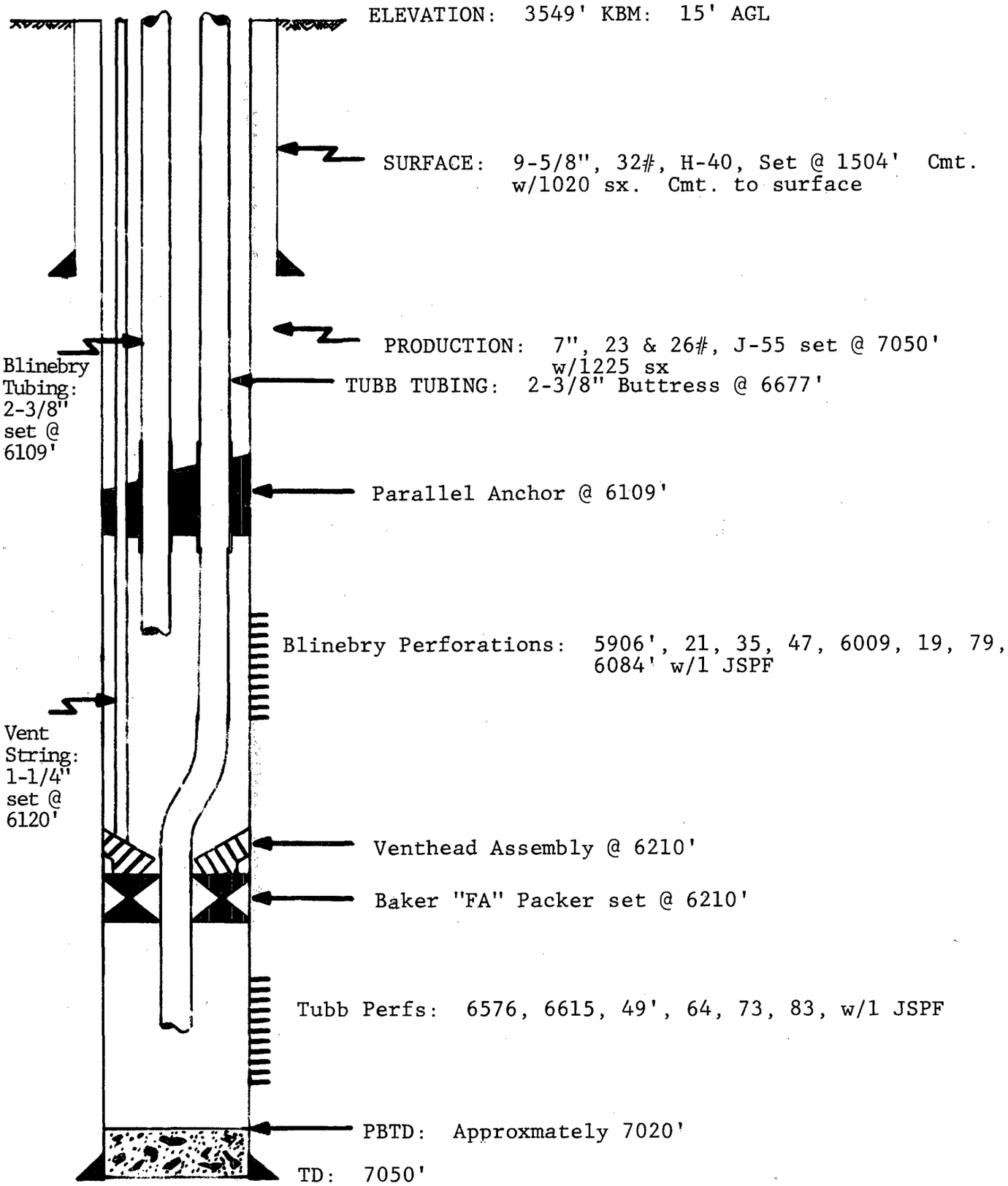
WELL POOL CODE: 33CXF

WARREN UNIT NO. 33 - TUBB

PEGS31 OIL PRODUCTION DECLINE CURVE 08/07/86

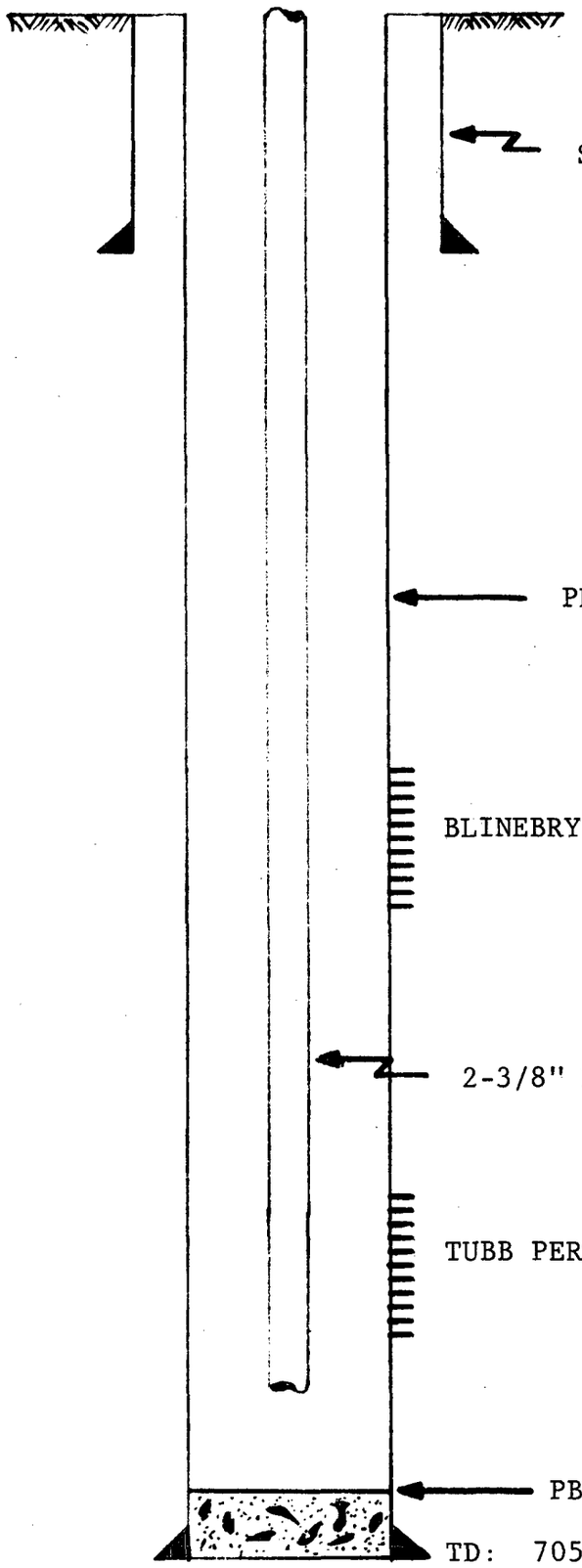


WARREN UNIT NO. 33
1980' FNL & 1980' FWL
Sec. 27, T-20-S, R-38-E



PRESENT WELLBORE

WARREN UNIT NO. 33
1980' FNL & 1980' FWL
Sec. 27, T-20-S, R-38-E



ELEVATION: 3549' KBM: 15' AGL

SURFACE CASING: 9-5/8", 32#, H-40, set @ 1504', cmt. w/1020 sx. cmt. to surface.

PRODUCTION CASING: 7", 23 & 26#, J-55 set @ 7050' w/1225 sx.

BLINEBRY PERFORATIONS: 5906', 21, 35, 47, 6009, 19, 79, 6084 w/1 JSPF

2-3/8" Buttress tbg. set @ ±6700'

TUBB PERFORATIONS: 6576, 6615, 49, 64, 73, 83, w/1 JSPF

PBTD: Approximately 7020'

TD: 7050'

PROPOSED WELLBORE

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.	
Chloride (Cl)	88,500	88,000	84,000	88,000	90,000	
Iron (Fe)						
Total Hardness ($CaCO_3$)						
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_2S)						
Specific Gravity	1.10	1.10	1.10	1.10	1.11	
Density, lb./gal.						
pH - 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.	
Chloride (Cl)	92,100	91,000	89,000	92,000	96,000	
Iron (Fe)						
Total Hardness ($CaCO_3$)						
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_2S)						
Specific Gravity	1.10	1.11	1.10	1.11	1.11	
Density, lb./gal.						
pH - 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

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 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.			
Chloride (Cl)	78,500	83,000	86,000			
Iron (Fe)						
Total Hardness ($CaCO_3$)						
Calcium (Ca)	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_2S)						
Specific Gravity	1.09	1.10	1.10			
Density, lb./gal.						
pH - Beckman [ ] Strip [ ]	7.2	7.0	7.05			
TDS	128,699	136,046	140,931			

OTHER DESCRIPTION, REMARKS AND RECOMMENDATIONS

WATER ANALYSIS REPORT

No. 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

WATER ANALYSIS REPORT

№ 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.	
Chloride (Cl)	84,900	86,000	81,500	84,000	89,000	
Iron (Fe)	3.75	2				
Total Hardness ($CaCO_3$)						
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_2S)						
Specific Gravity	1.10	1.10	1.095	1.099	1.10	
Density, lb./gal.						
pH - 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

WATER ANALYSIS REPORT

№ 2467

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 : 70/30
COUNTY: STATE: N.M.
FORMATION:
DEPTH:
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 ($CaCO_3$)						
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_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_2S)						
Specific Gravity	1.10	1.10	1.10	1.10	1.10	
Density, lb./gal.						
pH - 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

WATER ANALYSIS REPORT

No. 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

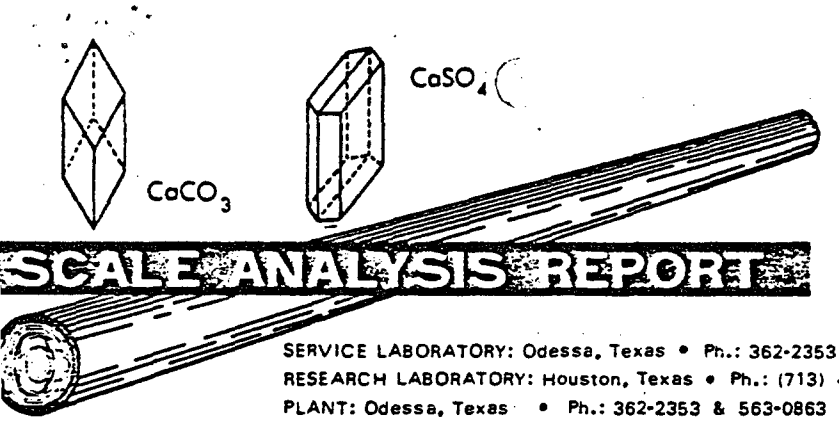
REPORT FOR: Elma Winter
CC: Jerry Skidmore
CC:
CC:
COMPANY: Conoco, Inc.
ADDRESS:
SERVICE ENGINEER: Jay Brown

DATE SAMPLED: 4/2/84
DATE REPORTED: 4/9/84
FIELD, LEASE, OR WELL: Blinebry/Tubb : 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.	
Chloride (Cl)	90,300	90,000	87,500	91,000	93,000	
Iron (Fe)						
Total Hardness ($CaCO_3$)						
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_2S)						
Specific Gravity	1.11	1.11	1.10	1.11	1.11	
Density, lb./gal.						
pH - Beckman [ ] Strip [ ]		7.13	6.7	6.75	6.8	
TDS	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, TEX.

CHEMICAL WITH SERVICE

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

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

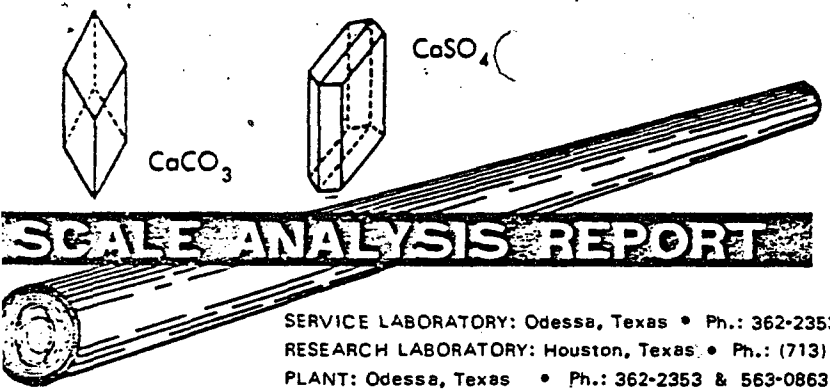
OTHER DESCRIPTION

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				
	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, TEXA

CHEMICAL WITH SERVICE

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

DATE SAMPLED: 4/2/84
DATE REPORTED: 4/6/84
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