



STATE OF NEW MEXICO  
**ENERGY AND MINERALS DEPARTMENT**  
OIL CONSERVATION DIVISION  
HOBBS DISTRICT OFFICE  
April 19, 1989

GARREY CARRUTHERS  
GOVERNOR

POST OFFICE BOX 1980  
HOBBS, NEW MEXICO 88240  
(505) 393-6161

*CASE FILE 8383*

OIL CONSERVATION DIVISION  
P.O. BOX 2088  
SANTA FE, NEW MEXICO 87504-2088

RE: APPLICATION FOR PRESSURE LIMIT INCREASE FOR DISPOSAL & INJECTION WELLS

Gentlemen:

I have examined the step rate test for the:

|                       |                         |            |
|-----------------------|-------------------------|------------|
| Yates Petroleum Corp. | Sun U.W. Fed #2-H (SWD) | 10-8-33    |
| Operator              | Lease & Well No.        | Unit S-T-R |

and my recommendations are as follows:

*OK*

Very truly yours

*Jerry Sexton*  
Jerry Sexton  
Supervisor, District I

/bp



STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION  
HOBBS DISTRICT OFFICE

TONEY ANAYA  
GOVERNOR

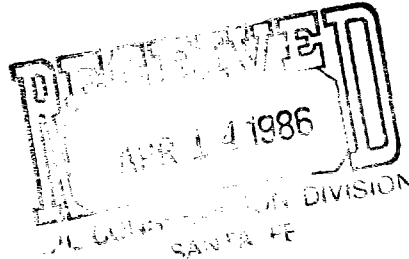
April 10, 1986

POST OFFICE BOX 1980  
HOBBS, NEW MEXICO 88240  
(505) 353-5161

OIL CONSERVATION DIVISION  
P. O. BOX 2088  
SANTA FE, NEW MEXICO 87501

RE: Proposed:

MC \_\_\_\_\_  
DHC \_\_\_\_\_  
NSL \_\_\_\_\_  
NSP \_\_\_\_\_  
SWD XXX \_\_\_\_\_  
WFX \_\_\_\_\_  
PMX \_\_\_\_\_



*Case No. 5883*

Gentlemen:

I have examined the application for the:

|                             |                       |          |
|-----------------------------|-----------------------|----------|
| Yates Petroleum Corporation | Freeman ACF #1-M      | 22-16-37 |
| Operator                    | Lease & Well No. Unit | S-T-R    |

and my recommendations are as follows:

Santa Fe should review application and see if P&A wells are adequate.

Yours very truly,

Jerry Sexton  
Supervisor, District 1

/mc



# KERR-McGEE CORPORATION

KERR-McGEE CENTER • OKLAHOMA CITY, OKLAHOMA 73125

EXPLORATION AND PRODUCTION DIVISION

April 16, 1986

Yates Petroleum Corporation  
207 South Fourth Street  
Artesia, New Mexico 88210  
Attn: Eddie Mahfood

RE: YATES PETROLEUM CORPORATION  
APPLICATION FOR DISPOSAL WELL  
SUN "UW" FEDERAL WELL #3  
NE/4 SECTION 10-T8S-R33E  
CHAVES COUNTY, NEW MEXICO

Kerr-McGee Corporation agrees not to protest the subject application conditional on Yates Petroleum Corporation agreeing to the following:

1. Yates agrees to furnish Kerr-McGee the daily volumes of disposed saltwater on a monthly basis.
2. Yates agrees to furnish Kerr-McGee on a monthly basis with production figures on the producing wells on Yates' Sun "UW" Federal Lease.
3. Yates acknowledges and agrees that by not protesting the above referenced application and accepting the information furnished in (1) and (2) above, Kerr-McGee Corporation does not waive any rights to damage claims resulting from water encroachment caused by Yates' disposal operations in Sections 10-T8S-R33E, Chaves County, New Mexico.

Please have an authorized representative of Yates sign both copies of this agreement in the spaces provided indicating Yates' assent to this agreement and return both copies to the undersigned. Kerr-McGee will retain one original for our files, and the other will be filed of record at the hearing on this cause currently set for April 30, 1986.

If you have any questions or need any information, please contact the undersigned at (405) 270-2129.

Sincerely,

*Kelley Eisenberg*  
Kelley Eisenberg  
T-24C McGee Tower  
P. O. Box 25861  
Oklahoma City, OK 73125

\_\_\_\_\_  
KERR-McGEE CORPORATION

DATE: \_\_\_\_\_

ACCEPTED:

\_\_\_\_\_  
YATES PETROLEUM CORPORATION

\_\_\_\_\_  
TITLE

DATE: \_\_\_\_\_

cc: New Mexico Oil Conservation  
Division  
P. O. Box 2086  
Santa Fe, NM 87501

David  
C

Huston Ranch  
4721 Lovington Hwy  
Hobbs, N M 88240  
April 12, 1986

Oil Conservation Division  
P. O. Box 2088  
State Land Office Bldg  
Santa Fe, N M 87501

Dear Sirs:

Re: Yates Pet Corp  
Application for Disposal  
Sun "UW" Federal #2

As surface owners we object to this application for the following reasons:

1. No agreement has been made between Yates Pet. Corp. and the land owners.
2. Sun "UW" Federal #2 is on deeded land and has been plugged.
- ↔ 3. Freshwater wells in Sec. 11 and Sec. 15 are subject to contamination.
4. Yates Pet. Corp. has no right to dispose of water by injection without a prior agreement with the land owners.

Sincerely,  
*Char. E. Seed*  
Charles E. Seed.

RECEIVED

APR 14 1986

O.C.D.  
HOBBES OFFICE



207 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210

TELEPHONE (505) 748-1331

S. P. YATES  
PRESIDENT  
MARTIN YATES, III  
VICE PRESIDENT  
JOHN A. YATES  
VICE PRESIDENT  
B. W. HARPER  
SEC. TREAS.

May 2, 1986

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

ATTENTION: Mr. Michael Stogner, Examiner

Re: Case 8883, Application for SWD  
Sun UW Federal No. 2

Dear Mr. Stogner:

With reference to "Surface Owners" objection in Case 8883 heard on April 30, 1986, I submit the following additional data as per your request.

1. The Sun UW Federal No. 2 well is on surface land deeded to some relative of Mr. Charles E. Seed, and Mr. Seed is the designated manager. As I stated at the hearing, an offer for compensation was made by Yates Petroleum when YPC was interested in using subject well for public salt water disposal, but no agreement could be reached with Mr. Seed. As a result the matter was submitted to Losee and Carson, Attorneys, for arbitration or alternatives, and you have their legal determinations. Negotiations have been going on since the No. 3 well went on production in March 1984.
2. The Sun UW Federal No. 2 well is not plugged, but temporarily abandoned as documented in both Federal and NMOCD files.
3. There is no fresh water well in Section 11 that our people can detect. The "Murdock well" pointed out in attachment page 1 of our exhibit in red ink at approximately 500 feet SSE of subject well is in Section 10 as indicated in the Button Mesa NE topographic map made in 1979. This well is close to the section line and could conceivably be mistaken by Mr. Seed as being in Section 11. I have spliced the SE corner of the Button Mesa NE topo map with the NE corner of the Flying M Ranch topo which was revised in 1984, and am enclosing a copy for your convenience. Visible from atop the sun UW battery, other than the "Murdock well"; to the east, approximately in the center Section 12 is one windmill; two miles west is the "Davis well" in the NW corner of Section 9; another well is in the SE corner of Section 8; and 1.6 miles SSW of subject well, in Unit 0 of Section 15, there are two windmills approximately 200 feet south of Lively Energy's Conoco well No. 4. The fresh water strata in this area, as testified, is the Ogallala Sand occurring between 250 and 300 feet from the surface, and all oil wells, producing or abandoned, were cased and cemented from surface to about 100 feet below the water strata.

Page - 2

May 2, 1986  
Oil Conservation Division

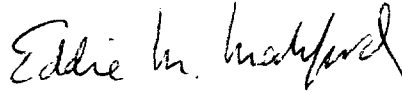
ATT: Mr. Michael Stogner, Examiner

4. At today's crude oil prices, the high costs of trucking away produced salt water is resulting in the premature abandonment of marginal oil wells as well as non-marginal high water-cut oil wells as in this Chaveroo San Andres area.

Approval of the Sun UW Federal No. 2 well for disposal of produced San Andres water by injection into the San Andres formation is in the best interests of conservation and protection of correlative rights.

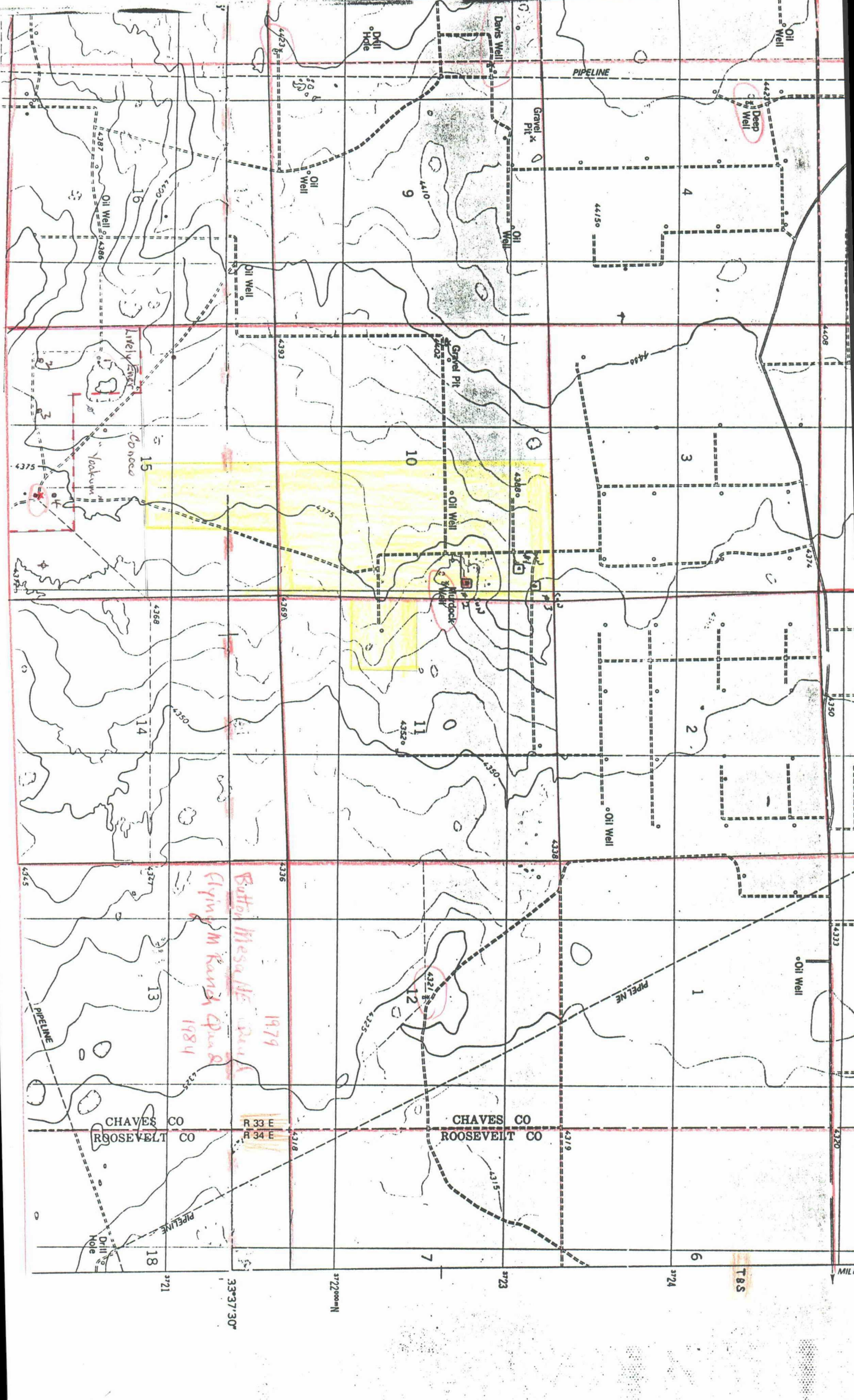
Yours truly,

YATES PETROLEUM CORPORATION

A handwritten signature in dark ink, appearing to read "Eddie M. Mahfood". The signature is fluid and cursive, with the first name "Eddie" being more prominent.

Eddie M. Mahfood  
Senior Engineer

EMM:jg  
Encl.



Butter Mesa NE Quad  
Flying M Ranch Quad  
1979  
1984

CHAVES CO  
ROOSEVELT CO

CHAVES CO  
ROOSEVELT CO

R 33 E  
R 34 E

T85

33°37'30"

37°22'00"N

37°23'

37°24'

MILNE



STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

**TONEY ANAYA**  
GOVERNOR

August 11, 1986

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87501  
(505) 827-5800

Mr. William F. Carr  
Campbell & Black  
Attorneys at Law  
Post Office Box 2208  
Santa Fe, New Mexico

Re: CASE NO. 8893  
ORDER NO. R-9271

Applicant:

Yates Petroleum Corporation

Dear Sir:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Sincerely,

Sincerely,  
B. L. Lamb

R. L. STAMETS  
Director

RLS / fd

Copy of order also sent to:

|             |          |
|-------------|----------|
| Hobbs OCD   | <u>x</u> |
| Artesia OCD | <u>x</u> |
| Aztec OCD   |          |

Other \_\_\_\_\_



207 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210  
TELEPHONE (505) 748-1331

N. M. OIL CONS. COMMISSION  
P. O. BOX 1980  
HOBBS, NEW MEXICO 88240

S. P. YATES  
PRESIDENT  
MARTIN YATES, III  
VICE PRESIDENT



September 26, 1986

United States Department of the Interior  
Bureau of Land Management  
P.O. Box 1857  
Roswell, New Mexico 88201

Subject: Sun "UW" Federal #3, #NM-31211  
Sec. 10-T8S-R33E, Chavez County

Dear Sirs:

The subject federal lease produces water. Therefore, we are requesting your approval of our disposal method pursuant to NTL-2B.

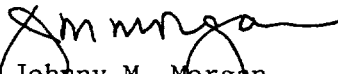
The well has produced 43,950 barrels of water in 1986, about 181 barrels of water per day. The well produced 61,133 barrels of water in 1985.

The tank battery has an open top fiberglass tank (16' diameter, 210 barrel capacity) used for storage and accumulation until a full load is available to be transported by pipeline to our disposal well; Sun "UW" #2, an approved disposal well, order #R-8271, located 1650' FNL and 330' FEL of Section 10-T8S-R33E.

Table I shows data pertaining to the disposal well

Table II is an analysis of water from the subject well.

YATES PETROLEUM CORPORATION

  
Johnny M. Morgan  
Production Manager

SUBJECT TO LIKE  
APPROVAL BY STATE

APPROVED  
PETER W. CHESTER

SEP 30 1986

BUREAU OF LAND MANAGEMENT  
ROSWELL RESOURCE AREA

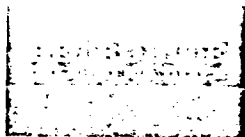
JMM/pt  
ENC.

# TABLE I

OPERATOR: YATES PETROLEUM CORPORATION  
 ADDRESS: 207 SOUTH 4TH STREET  
 ARTESIA, NEW MEXICO 88210  
 LEASE NAME: SUN UW FEDERAL  
 WELL NUMBER: 2  
 FIELD: CHAVEROO SAN ANDRES  
 COUNTY, STATE: CHAVES, NEW MEXICO  
 LOCATION: 1650 FNL & 330 FEL,  
 SEC 10-T08S-R33E  
 INJECTION INTERVAL: 4219'-4308'  
 TOTAL DEPTH: 4350'  
 PACKER: GUIBERSON UNI VI @ 4026'  
 ANNULUS FLUID: INHIBITED FRESH WATER

## CASING AND TUBING DATA

| NAME OF STRING | SIZE    | DEPTH | SX<br>CEMENT | CEMENT<br>TOP |
|----------------|---------|-------|--------------|---------------|
| SURFACE        | 10 3/4" | 385'  | 300          | CIRC.         |
| LONG STRING    | 4 1/2"  | 4397' | 225          | CIRC.         |
| TUBING         | 2 3/8"  | 4026' | NONE         | NONE          |



## TRETOLITE DIVISION

369 Marshall Avenue / Saint Louis, Missouri 63118  
(314) WD 1-3500/TWX 910-760-1660/Telex 44-2417

## WATER ANALYSIS REPORT

COMPANY Yates Petroleum ADDRESS \_\_\_\_\_ DATE: 8-23-85SOURCE Sun U W Federal # 3 DATE SAMPLED 8-22-85 ANALYSIS  
Analysis \_\_\_\_\_ NO. \_\_\_\_\_  
Mg/L \_\_\_\_\_ \*Meq/L \_\_\_\_\_

1. pH 5.2
  2. H<sub>2</sub>S (Qualitative) 40 ppm
  3. Specific Gravity 1.180
  4. Dissolved Solids 233,638
  5. Suspended Solids \_\_\_\_\_
  6. Phenolphthalein Alkalinity (CaCO<sub>3</sub>) \_\_\_\_\_
  7. Methyl Orange Alkalinity (CaCO<sub>3</sub>) 200
  8. Bicarbonate (HCO<sub>3</sub>) HCO<sub>3</sub> 244 ÷ 61 4 HCO<sub>3</sub>
  9. Chlorides (Cl) Cl 146258 ÷ 35.5 4120 Cl
  10. Sulfates (SO<sub>4</sub>) SO<sub>4</sub> 375 ÷ 48 8 SO<sub>4</sub>
  11. Calcium (Ca) Ca 22800 ÷ 20 1140 Ca
  12. Magnesium (Mg) Mg 5346 ÷ 12.2 438 Mg
  13. Total Hardness (CaCO<sub>3</sub>) 79000
  14. Total Iron (Fe) \_\_\_\_\_
  15. Barium (Qualitative) \_\_\_\_\_
  16. Strontium \_\_\_\_\_
- \*Milli equivalents per liter

## PROBABLE MINERAL COMPOSITION

|      | Compound                            | Equiv. Wt. | X | Meq/L | = | Mg/L    |
|------|-------------------------------------|------------|---|-------|---|---------|
| 1140 | Ca (HCO <sub>3</sub> ) <sub>2</sub> | 81.04      |   | 4     |   | 324     |
| 438  | Ca SO <sub>4</sub>                  | 68.07      |   | 8     |   | 545     |
| 2554 | Ca Cl <sub>2</sub>                  | 55.50      |   | 1128  |   | 62,604  |
|      | Mg (HCO <sub>3</sub> ) <sub>2</sub> | 73.17      |   | 0     |   | 0       |
|      | Mg SO <sub>4</sub>                  | 60.19      |   | 0     |   | 0       |
|      | Mg Cl <sub>2</sub>                  | 47.62      |   | 438   |   | 20,858  |
|      | Na HCO <sub>3</sub>                 | 84.00      |   | 0     |   | 0       |
|      | Na <sub>2</sub> SO <sub>4</sub>     | 71.03      |   | 0     |   | 0       |
|      | Na Cl                               | 58.46      |   | 2554  |   | 149,307 |

Saturation Values Distilled Water 20°C

Ca CO<sub>3</sub> 13 Mg/LCa SO<sub>4</sub> • 2H<sub>2</sub>O 2,090 Mg/LMg CO<sub>3</sub> 103 Mg/L

REMARKS \_\_\_\_\_

Respectfully submitted  
TRETOLITE COMPANY

STABILITY INDEX CALCULATIONS  
(Stiff-Davis Method)  
CaCO<sub>3</sub> Scaling Tendency

SAMPLE

Sample Test No. \_\_\_\_\_

Company Yates Sample Date 8-22-85

Address \_\_\_\_\_ Submitted by \_\_\_\_\_

Sample Sun U W Federal # 3 Field \_\_\_\_\_

$$S. I. = pH - pCa - pAlk - K$$

where S. I. = stability index

pH = pH as measured on fresh sample

pCa = negative logarithm of calcium concentration

pAlk = negative logarithm of total alkalinity

K = constant, depends upon temperature and salt content

$$pH = \underline{5.2} \quad pCa = \underline{.6} \quad pAlk = \underline{2.4}$$

CALCULATION OF IONIC STRENGTH AND K VALUE

$$Na \quad ( \underline{.58742} ) \times ( 2.2 \times 10^{-5} ) = \underline{1.2923}$$

$$Ca \quad ( \underline{.22800} ) \times ( 5.0 \times 10^{-5} ) = \underline{1.1400}$$

$$Mg \quad ( \underline{.05346} ) \times ( 8.2 \times 10^{-5} ) = \underline{.4384}$$

$$Cl \quad ( \underline{1.46258} ) \times ( 1.4 \times 10^{-5} ) = \underline{2.0476}$$

$$HCO_3 \quad ( \underline{.00244} ) \times ( 0.8 \times 10^{-5} ) = \underline{.0020}$$

$$SO_4 \quad ( \underline{.00375} ) \times ( 2.1 \times 10^{-5} ) = \underline{.0079}$$

$$TOTAL \ IONIC \ STRENGTH = \underline{4.9282}$$

$$K = \underline{2.4} \quad @ \quad \underline{80} \quad ^\circ F.$$

$$K = \underline{1.9} \quad @ \quad \underline{120} \quad ^\circ F.$$

$$SI \text{ at } ( \underline{80} )^\circ = ( \underline{5.2} ) - ( \underline{.6} ) - ( \underline{2.4} ) - ( \underline{2.4} ) \text{ or } \underline{-0.2}$$

$$SI \text{ at } ( \underline{120} )^\circ = ( \underline{5.2} ) - ( \underline{.6} ) - ( \underline{2.4} ) - ( \underline{1.9} ) \text{ or } \underline{+0.3}$$

SI = 0 or water is relatively stable at \_\_\_\_\_ °F.

Remarks: Very Mild Scaling Indicated at Higher Temperatures.

# SCALING TENDENCY CALCULATIONS

## CALCIUM SULFATE

(Skillman-McDonald-Stiff Method)

Company Yates Petroleum Water Analysis No. \_\_\_\_\_  
 Address \_\_\_\_\_ Date 8-23-85  
 Well Sun U W Federal # 3 Field \_\_\_\_\_

$$S = 1000 \left( \sqrt{X^2 + 4K} - X \right)$$

S = Solubility of Calcium Sulfate under given conditions

X = Excess common ion factor

K = Constant dependent on ionic strength, U, and temperature

### CALCULATION OF IONIC STRENGTH AND K VALUE

|                      | mg/l      | X | factor                 | Ionic Strength |
|----------------------|-----------|---|------------------------|----------------|
| Na                   | (.58742)  | X | $(2.2 \times 10^{-5})$ | = 1.2923       |
| Ca                   | (.22800)  | X | $(5.0 \times 10^{-5})$ | = 1.1400       |
| Mg                   | (.05346)  | X | $(8.2 \times 10^{-5})$ | = .4384        |
| Cl                   | (1.46258) | X | $(1.4 \times 10^{-5})$ | = 2.0476       |
| HCO <sub>3</sub>     | (.00244)  | X | $(0.8 \times 10^{-5})$ | = .0020        |
| SO <sub>4</sub>      | (.00375)  | X | $(2.1 \times 10^{-5})$ | = .0079        |
| TOTAL IONIC STRENGTH |           |   |                        | = 4.9282       |

K =  $23.80 \times 10^{-4}$  @ 70 °F  
 K =  $24.87 \times 10^{-4}$  @ 110 °F

# CALCULATION OF EXCESS COMMON ION FACTOR

$$X = \left| (2.5 \text{ Ca} - 1.04 \text{ SO}_4) \right| \times 10^{-5}$$

where Ca and SO<sub>4</sub> are expressed in mg/l

$$X = \left| \left[ 2.5 (22,800) - 1.04 (375) \right] \right| \times 10^{-5}$$

$$X = \left| \left( \frac{57,000}{390} \right) \right| \times 10^{-5}$$

$$X = \frac{56.61 \times 10^{-2}}{3204.69 \times 10^{-4}}$$

## CALCULATION OF SOLUBILITY

$$S = 1000 \left( \sqrt{X^2 + 4K} - X \right)$$

$$S = 1000 \left[ \sqrt{\left( \frac{3204.69 \times 10^{-4}}{56.61 \times 10^{-2}} \right)^2 + 4(-24.87 \times 10^{-4})} - \left( \frac{3204.69 \times 10^{-4}}{56.61 \times 10^{-2}} \right) \right]$$

$$S = 1000 \left[ \sqrt{3304.17 \times 10^{-4}} - \left( \frac{3204.69 \times 10^{-4}}{56.61 \times 10^{-2}} \right) \right]$$

$$S = 1000 \left[ \left( \frac{57.48 \times 10^{-2}}{56.61 \times 10^{-2}} \right) - \left( \frac{3204.69 \times 10^{-4}}{56.61 \times 10^{-2}} \right) \right]$$

$$S = 5 = \frac{.87 \times 10^{-2}}{\text{meq/l}}$$

$$S = 8.7 (68.07) = 592 \text{ mg/l @ 110}$$

REMARKS No Sulfate Scaling Indicated



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

GARREY CARRUTHERS  
GOVERNOR

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

April 21, 1989

Yates Petroleum Corporation  
105 South Fourth Street  
Artesia, NM 88210

Attention: Theresa Padilla

RE: Injection Pressure Increase  
Sun "UW" Federal Well No. 2  
Chaves County, New Mexico

Dear Ms. Padilla:

Reference is made to your request dated April 11, 1989, to increase the surface injection pressure on the Sun "UW" Federal SWD Well No. 2. This request is based on a step rate test conducted on the well on April 6, 1989. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on the well is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well:

WELL AND LOCATION

MAXIMUM INJECTION  
SURFACE PRESSURE

Sun "UW" Federal Well No. 2  
Unit H, Section 10, T-8 South,  
R-33 East, NMPM, Chaves County,  
New Mexico.

1440 PSIG

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,

William J. LeMay  
Director

cc: Oil Conservation Division - Hobbs  
File: Case No. 8883

T. Gallegos  
D. Catanach

COMPANY: Indco Petroleum Corporation  
ADDRESS: 105 South Fourth Street  
CITY, STATE, ZIP: Artesia, New Mexico 88210  
ATTENTION: Meresa Padilla

Re: Injection Pressure Increase

Son "UW" Federal Well No. 2

Chaves County, New Mexico

Dear Sir:

Reference is made to your request dated April 11, 1989, to increase the surface injection pressure on the Son "UW" Federal Well No. 2. This request is based on a step rate test~~(s)~~ conducted on the ~~these well(s)~~ on during April 6, 1989. The results of the test~~(s)~~ have been reviewed by my staff and we feel an increase in injection pressure on the ~~these well(s)~~ is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following well~~(s)~~:

| <u>Well &amp; Location</u>                   | <u>Maximum Injection Surface Pressure</u> |
|--|---|
| <u>Son "UW" Federal Well No. 2</u>           | <u>1440 PSIG</u>                          |
| <u>Unit H, Section 10, T-8S, R-23E, N14W</u> |   |
| <u>Chaves County, New Mexico</u>             |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |
|  |   |

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

xc: OCD- Artesia Hobbs T. Gallegos  
File- Case 8883 D. Catanach

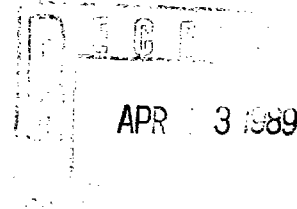
Sincerely,  
William J. LeMay



105 SOUTH FOURTH STREET  
ARTESIA, NEW MEXICO 88210  
TELEPHONE (505) 748-1471

S. P. YATES  
PRESIDENT  
JOHN A. YATES  
VICE PRESIDENT  
B. W. HARPER  
SEC. - TREAS.

April 11, 1989



NMOCD  
P. O. Box 2088  
Santa Fe, New Mexico 87501

ATTN: Mr. David Catanach  
Engineer

RE: Request for Injection Pressure Limit Increase  
SWDW - Sun "UW" Federal #2 H 10-8S-33E Chaves County

Dear Mr. Catanach:

The Sun "UW" #2 has been limited to an injection wellhead pressure of 811 psi by Administrative Order R-8271. According to rule 704-C, a step-rate test was conducted on April 6, 1989 on the Sun "UW" #2 salt water disposal well. This test was witnessed by Jack Griffin of the Hobbs NMOCD office.

John West Engineering of Hobbs, New Mexico conducted the test. The results of the step-rate test are enclosed. 1) The test results indicated fracturing had not occurred at 1450 psi while injecting at 2.5 BPM. 2) Yates Petroleum respectfully requests that the pressure limit for our Sun "UW" Federal #2 salt water disposal well be increased to 1450 psi.

Sincerely,

Theresa Padilla  
Petroleum Engineer

xc: NMOCD  
Hobbs, NM

300

200

100

3000

2900

2800

2700

2600

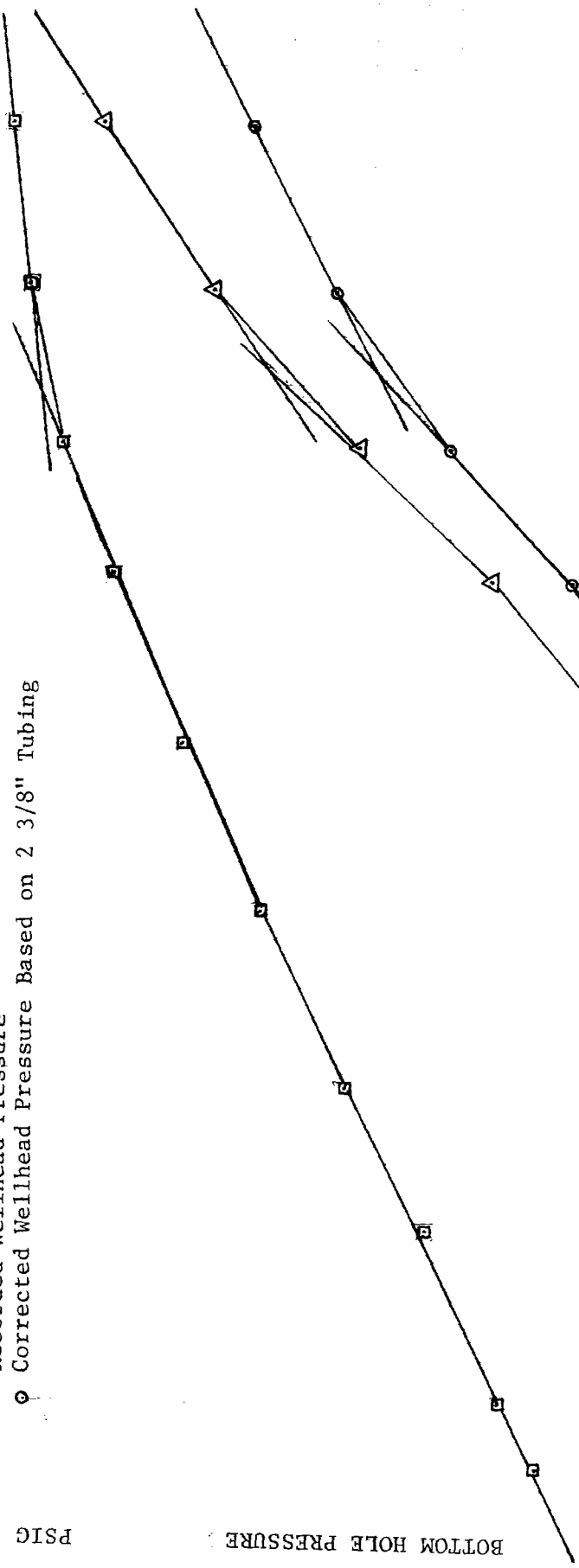
2500

PSIG

BOTTOM HOLE PRESSURE

- Bottom Hole Pressure @ 4,128 Feet
- △ Recorded Wellhead Pressure
- Corrected Wellhead Pressure Based on 2 3/8" Tubing

Corrected Wellhead Pressure Based on 2 3/8" Tubing



WELLHEAD PRESSURE

YATES PETROLEUM CORP.  
Sun U.W. Federal No.2  
Step-rate Injection Test

B W P D

300

800

1300

1800

2300

2800

3300

3800

4300

4800

6

7

80

90

100

110

120

130

1400

1500

1600

1700

1800

1900

**JOHN WEST ENGINEERING CO.**  
**Step Rate Injection Test**

**Well Name** Sun UW Federal No. 2  
**CO. Name** Yates Petroleum Corp.

**Date** 4-6-89

| Remarks | Time  | Tbg. Press.     | Rate BWP. | Total | B.H.P.  | Tbg. Press. | Rate G.P.M. | Head Loss |
|---------|-------|-----------------|-----------|-------|---------|-------------|-------------|-----------|
|         |       | SET BOMB @ 4128 |           |       |         |             |             |           |
|         | 10:20 | 618.5           |           | 0     | 2534.80 |             |             |           |
|         | 10:25 | 657.9           | 374.40    | 1.3   | 2556.20 |             |             |           |
|         | 10:30 | 666.6           | 374.40    | 2.6   | 2567.30 |             |             |           |
| 1       | 10:35 | 674.10          | 345.60    | 3.8   | 2576.30 | 672.2       | 10.64       | 1.82      |
|         |       |                 |           |       |         |             |             |           |
|         | 10:40 | 705.90          | 547.20    | 5.7   | 2593.80 |             |             |           |
|         | 10:45 | 686.70          | 547.20    | 7.6   | 2607.50 |             |             |           |
| 2       | 10:50 | 645.80          | 576.00    | 9.6   | 2620.10 | 641.8       | 16.24       | 3.98      |
|         |       |                 |           |       |         |             |             |           |
|         | 10:55 | 670.1           | 1036.80   | 13.2  | 2657.90 |             |             |           |
|         | 11:00 | 649.70          | 1094.40   | 17.0  | 2685.40 |             |             |           |
| 3       | 11:05 | 678.90          | 1094.40   | 20.8  | 2712.80 | 655.5       | 31.36       | 13.43     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:10 | 768.30          | 1497.60   | 26.0  | 2759.30 |             |             |           |
|         | 11:15 | 800.20          | 1526.40   | 31.3  | 2789.60 |             |             |           |
| 4       | 11:20 | 819.30          | 1497.60   | 36.5  | 2813.80 | 792.2       | 43.96       | 25.09     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:25 | 931.7           | 2044.80   | 43.6  | 2861.0  |             |             |           |
|         | 11:30 | 968.8           | 2044.80   | 50.7  | 2892.90 |             |             |           |
| 5       | 11:35 | 999.40          | 1987.20   | 57.6  | 2919.20 | 956.1       | 59.08       | 43.34     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:40 | 1122.20         | 2534.40   | 66.4  | 2961.0  |             |             |           |
|         | 11:45 | 1159.30         | 2592.00   | 75.4  | 2991.70 |             |             |           |
| 6       | 11:50 | 1178.70         | 2448.00   | 83.9  | 3016.80 | 1113.5      | 73.64       | 65.15     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:55 | 1314.40         | 2995.20   | 94.3  | 3052.90 |             |             |           |
|         | 12:00 | 1328.40         | 3024.00   | 104.8 | 3080.10 |             |             |           |
| 7       | 12:05 | 1347.60         | 3081.60   | 115.5 | 3102.60 | 1256.1      | 88.48       | 91.50     |
|         |       |                 |           |       |         |             |             |           |
|         | 12:10 | 1492.20         | 3456.00   | 127.5 | 3133.20 |             |             |           |
|         | 12:15 | 1504.00         | 3398.40   | 139.3 | 3152.50 |             |             |           |
| 8       | 12:20 | 1514.70         | 3398.40   | 151.1 | 3167.30 | 1400.6      | 99.68       | 114.08    |
|         |       |                 |           |       |         |             |             |           |
|         | 12:25 | 1663.40         | 3916.80   | 164.7 | 3190.10 |             |             |           |
|         | 12:30 | 1684.90         | 3888.00   | 178.2 | 3203.30 |             |             |           |
| 9       | 12:35 | 1686.10         | 3888.00   | 191.7 | 3211.11 | 1540.6      | 113.68      | 145.47    |

## JOHN WEST ENGINEERING CO.

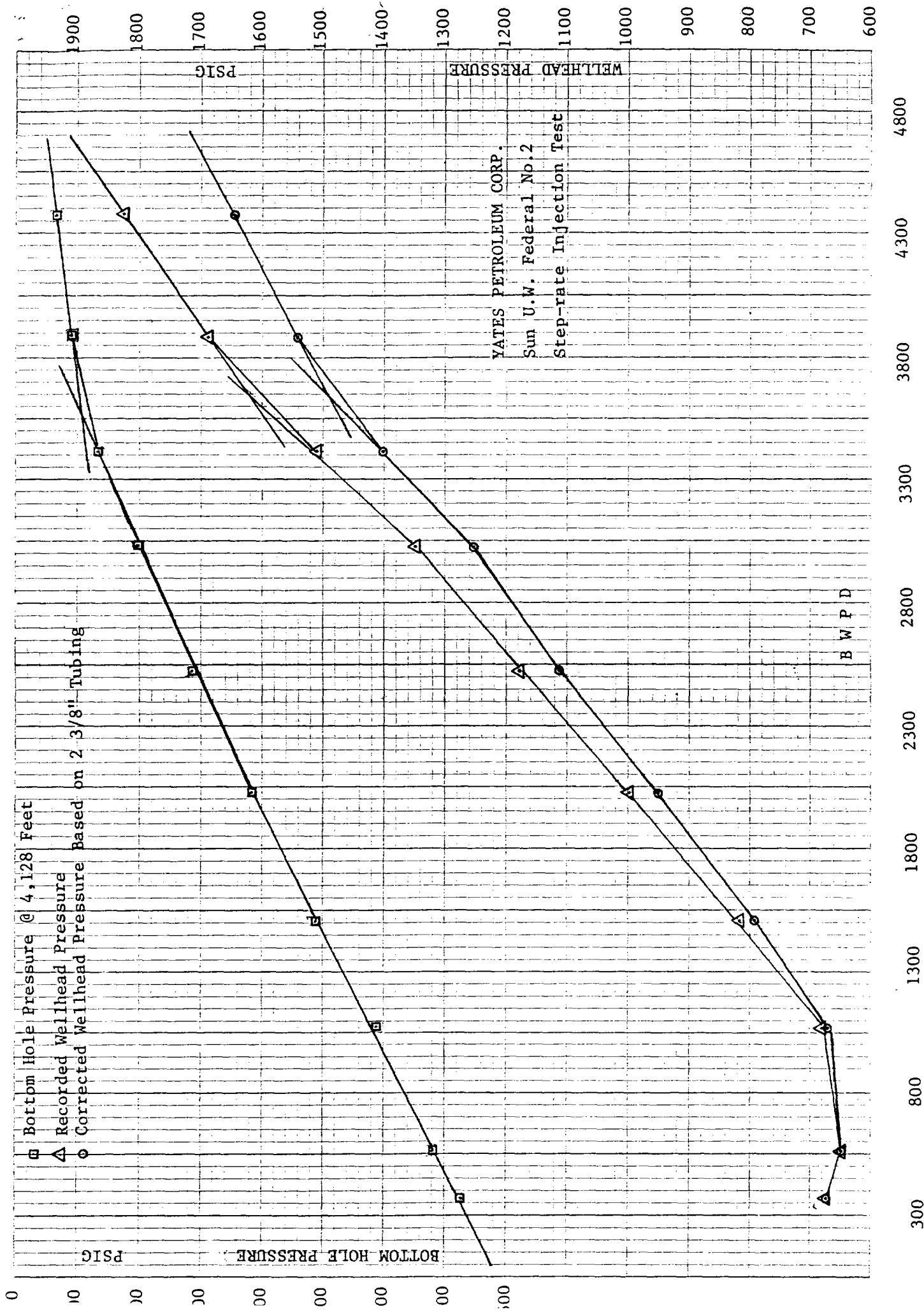
### Step Rate Injection Test

Well Name Sun UW Federal No. 2  
CO. Name Yates Petroleum Corp.

Date 4-6-89

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# Step Rate Injection Test

Well Name Sun UW Federal No. 2  
 CO. Name Yates Petroleum Corp.

Date 4-6-89

| Remarks | Time  | Tbg. Press.     | Rate BWP. | Total | B.H.P.  | Tbg. Press. | Rate G.P.M. | Head Loss |
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|         |       | SET BOMB @ 4128 |           |       |         |             |             |           |
|         | 10:20 | 618.5           |           | 0     | 2534.80 |             |             |           |
|         | 10:25 | 657.9           | 374.40    | 1.3   | 2556.20 |             |             |           |
|         | 10:30 | 666.6           | 374.40    | 2.6   | 2567.30 |             |             |           |
| 1       | 10:35 | 674.10          | 345.60    | 3.8   | 2576.30 | 672.2       | 10.64       | 1.82      |
|         |       |                 |           |       |         |             |             |           |
|         | 10:40 | 705.90          | 547.20    | 5.7   | 2593.80 |             |             |           |
|         | 10:45 | 686.70          | 547.20    | 7.6   | 2607.50 |             |             |           |
| 2       | 10:50 | 645.80          | 576.00    | 9.6   | 2620.10 | 641.8       | 16.24       | 3.98      |
|         |       |                 |           |       |         |             |             |           |
|         | 10:55 | 670.1           | 1036.80   | 13.2  | 2657.90 |             |             |           |
|         | 11:00 | 649.70          | 1094.40   | 17.0  | 2685.40 |             |             |           |
| 3       | 11:05 | 678.90          | 1094.40   | 20.8  | 2712.80 | 655.5       | 31.36       | 13.43     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:10 | 768.30          | 1497.60   | 26.0  | 2759.30 |             |             |           |
|         | 11:15 | 800.20          | 1526.40   | 31.3  | 2789.60 |             |             |           |
| 4       | 11:20 | 819.30          | 1497.60   | 36.5  | 2813.80 | 792.2       | 43.96       | 25.09     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:25 | 931.7           | 2044.80   | 43.6  | 2861.0  |             |             |           |
|         | 11:30 | 968.8           | 2044.80   | 50.7  | 2892.90 |             |             |           |
| 5       | 11:35 | 999.40          | 1987.20   | 57.6  | 2919.20 | 956.1       | 59.08       | 43.34     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:40 | 1122.20         | 2534.40   | 66.4  | 2961.0  |             |             |           |
|         | 11:45 | 1159.30         | 2592.00   | 75.4  | 2991.70 |             |             |           |
| 6       | 11:50 | 1178.70         | 2448.00   | 83.9  | 3016.80 | 1113.5      | 73.64       | 65.15     |
|         |       |                 |           |       |         |             |             |           |
|         | 11:55 | 1314.40         | 2995.20   | 94.3  | 3052.90 |             |             |           |
|         | 12:00 | 1328.40         | 3024.00   | 104.8 | 3080.10 |             |             |           |
| 7       | 12:05 | 1347.60         | 3081.60   | 115.5 | 3102.60 | 1256.1      | 88.48       | 91.50     |
|         |       |                 |           |       |         |             |             |           |
|         | 12:10 | 1492.20         | 3456.00   | 127.5 | 3133.20 |             |             |           |
|         | 12:15 | 1504.00         | 3398.40   | 139.3 | 3152.50 |             |             |           |
| 8       | 12:20 | 1514.70         | 3398.40   | 151.1 | 3167.30 | 1400.6      | 99.68       | 114.08    |
|         |       |                 |           |       |         |             |             |           |
|         | 12:25 | 1663.40         | 3916.80   | 164.7 | 3190.10 |             |             |           |
|         | 12:30 | 1684.90         | 3888.00   | 178.2 | 3203.30 |             |             |           |
| 9       | 12:35 | 1686.10         | 3888.00   | 191.7 | 3211.11 | 1540.6      | 113.68      | 145.47    |

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Well Name Sun UW Federal No. 2

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