

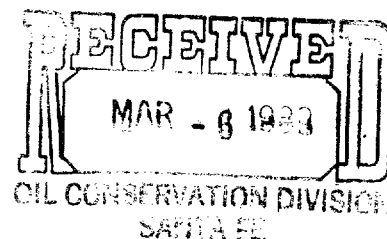
CHARLES B. READ
PRESIDENT

Read & Stevens, Inc.

*Oil Producers
P. O. Box 1518
Roswell, New Mexico 88202*

9607

March 3, 1989



Mr. Michael E. Stogner, Examiner
Oil Conservation Division
New Mexico State Land Office Bldg.
Old Santa Fe Trail
Santa Fe, NM 87503

Re: Addendum to the Preliminary
Waterflood Study of
Read and Stevens, Inc.
Bunker Hill Field

Dear Mr. Stogner:

During our hearing of February 15 on the subject waterflood, you requested that I update our completion data of the wells located within the unit boundary.

Enclosed please find such an update which lists the lease and well numbers, along with surface and production casing sizes, the depths those casing strings were set, and the cementing records. You will also notice that the top of cement on both the surface and production strings are included and the method used to determine top of cement is noted.

If I can be of further assistance in this matter, please do not hesitate to call.

Sincerely,

John C. Maxey
John C. Maxey
Petroleum Engineer

JCM/sc

Enc.

ADDENDUM TO THE
PRELIMINARY WATERFLOOD STUDY
READ & STEVENS, INC.
BUNKER HILL FIELD
PENROSE FORMATION
EDDY CO., NM

WELL RECORDS

Operator Lease Well	Csg Size	Csg Depth	Cmt Record Sx	TOC
<u>Read & Stevens</u>				
Amoco Skeeter #1	9 5/8" 7"	1,085' 4,058'	400 625	Circ 126 sx 1,800' (CBL)
Amoco Supron Mesa #1	8 5/8" 5 1/2"	1,260' 4,250'	600 650	Circ 70 sx 1,600' (TS)
Amoco Supron Mesa #2	8 5/8" 5 1/2"	1,263' 4,250'	550 580	Circ 50 sx 2,100 (calc)
Amoco W. Mesa #1	8 5/8" 4 1/2"	1,279' 4,250'	600 600	Circ 100 sx 1,800' (calc)
Bogle Farms #1	12 3/4" 4 1/2"	340' 3,704'	350 250	Surf (calc) 2,910' (TS)
Dartmouth #1	8 5/8" 4 1/2"	1,236' 4,250	550 600	Circ 100 sx 2,060' (TS)
Dartmouth #2	8 5/8" 4 1/2"	1,074' 4,065'	370 775	Circ 35 sx 2,100' (TS)
Dartmouth #3	8 5/8" 4 1/2"	1,206' 4,170'	400 725	Circ 75 sx 2,060' (TS)
Dartmouth #4	8 5/8" 4 1/2"	1,055' 4,050'	575 725	Circ 50 sx 2,138' (CBL)
Dartmouth #5	8 5/8" 4 1/2"	1,160' 4,210	600 825	Circ 97 sx 1,740' (CBL)
Dartmouth #6	8 5/8" 4 1/2"	1,074' 4,000'	600 700	Surf (calc) 2,180' (calc)
Dartmouth #7	8 5/8" 5 1/2"	1,070' 4,080'	550 560	Circ 75 sx 1,780 (calc)
Dartmouth #8	8 5/8" 4 1/2"	1,050' 4,050'	450 605	Circ 50 sx 2,210 (calc)

ADDENDUM TO THE
PRELIMINARY WATERFLOOD STUDY
READ & STEVENS, INC.
BUNKER HILL FIELD
PENROSE FORMATION
EDDY CO., NM

WELL RECORDS

Operator Lease Well	Csg Size	Csg Depth	Cmt Record Sx	TOC
<u>Read & Stevens</u>				
Getty Mesa #1	8 5/8" 4 1/2"	1,264' 4,250'	500 730	Circ 75 sx 2,210' (CBL)
Getty Mesa #2	8 5/8" 4 1/2"	1,229' 4,253'	550 600	Circ 90 sx 2,090' (CBL)
Getty Mesa #3	8 5/8" 4 1/2"	1,194' 4,237.04'	550 600	Circ 150 sx 2,000' (CBL)
Gulf West Mesa #1	8 5/8" 4 1/2"	1,253' 4,250'	550 775	Circulated 2,190' (TS)
Gulf West Mesa #2	8 5/8" 4 1/2"	1,252' 4,242'	550 775	Circulated 2,190' (TS)
Gulf West Mesa #3	8 5/8" 4 1/2"	1,272' 4,248'	500 625	Circ 63 sx 2,020' (TS)
Gulf West Mesa #4	8 5/8" 4 1/2"	1,132' 4,140'	400 625	Circ 25 sx 2,085' (TS)
Gulf West Mesa #5	8 5/8" 4 1/2"	1,208' 4,250'	400 775	Circ 30 sx 1,490' (calc)
Gulf West Mesa #6	8 5/8" 4 1/2"	1,175' 4,256'	400 725	Circ 25 sx 2,280' (TS)
Mobil Mesa #1	8 5/8" 4 1/2"	1,270' 4,250'	600 600	Circ 50 sx 2,250' (CBL)
Richardson #1	8 5/8" 4 1/2"	1,065' 4,010'	500 485	Circ 65 sx 2,100' (CBL)
Supron #1	8 5/8" 4 1/2"	1,172' 4,159'	600 700	Circ 50 sx 2,400' (TS)
Supron #2	8 5/8" 4 1/2"	1,198' 4,237'	600 950	Circ 60 sx 1,725' (TS)

ADDENDUM TO THE
PRELIMINARY WATERFLOOD STUDY
READ & STEVENS, INC.
BUNKER HILL FIELD
PENROSE FORMATION
EDDY CO., NM

WELL RECORDS

Operator Lease Well	Csg Size	Csg Depth	Cmt Record Sx	TOC
<u>Read & Stevens</u>				
Turner #1	8 5/8" 5 1/2"	1,253' 4,265'	550 600	Circ 60 sx 2,030' (CBL)
<u>Larue & Muncy</u>				
Amoco Federal #1	8 5/8" 5 1/2"	1,271' 4,120'	500 310	Surf (calc) 2,970' (calc)
Amoco Federal #2	8 5/8" 4 1/2"	1,104' 3,520'	450 300	Surf (calc) 2,520' (calc)
Joe #1	8 5/8" 5 1/2"	1,252' 4,201'	500 310	Circ 35 sx 3,050' (calc)
Joe #2	8 5/8" 5 1/2"	1,206' 3,685'	550 500	Surf (calc) 1,830' (calc)
Rutter Federal #2	8 5/8" 5 1/2"	1,097' 4,075'	550 310	Surf (calc) 2,920' (calc)

TOC=Top of Cement

TS=Temperature Survey

CBL=Cement Bond Log

Calc=Calculated

Surf=Surface

READ & STEVENS, INC.
Oil Producers
P.O. Box 1518
Roswell, NM 88201
(505)622-3770

FAX COVER SHEET

PLEASE DELIVER THE FOLLOWING PAGES TO:

NAME: Mike Stogner

COMPANY: MINOCD

CITY/STATE: Santa Fe, NM

FAX NUMBER: 505-827-5741

FROM: John Mafey

RE: Distribution #1

TOTAL NUMBER OF PAGES SENT, INCLUDING COVER SHEET 2

IF YOU DO NOT RECEIVE ALL OF THE PAGES SENT, PLEASE CALL BACK AS SOON AS POSSIBLE: (505) 622-3770

TO TRANSMIT TO US CALL FAX #: (505) 625-0262

TRANSMITTED BY:

Sandy Cook

4-3-89
DATE TIME SENT

Mike,
Your FAX copy is a short
version of the log. I'm
mailing the full length
one.
John Mafey
505/622-3770



Compensated **Densilog**
Compensated **Neutron**
Gamma Ray

FILE NO.

COMPANY READ & STEVENS, INC.

WELL DARTMOUTH NO. 1

FIELD BUNKER HILL

COUNTY EDDY STATE NEW MEXICO

LOCATION:

660' FSL, 660' FEL

SEC 14 TWP 16-S RGE 31-E

Other Services
DLL/MLL/GR
PROLOG

4402.0

GROUND LEVEL

Elev 4491'

KB

Permanent Datum

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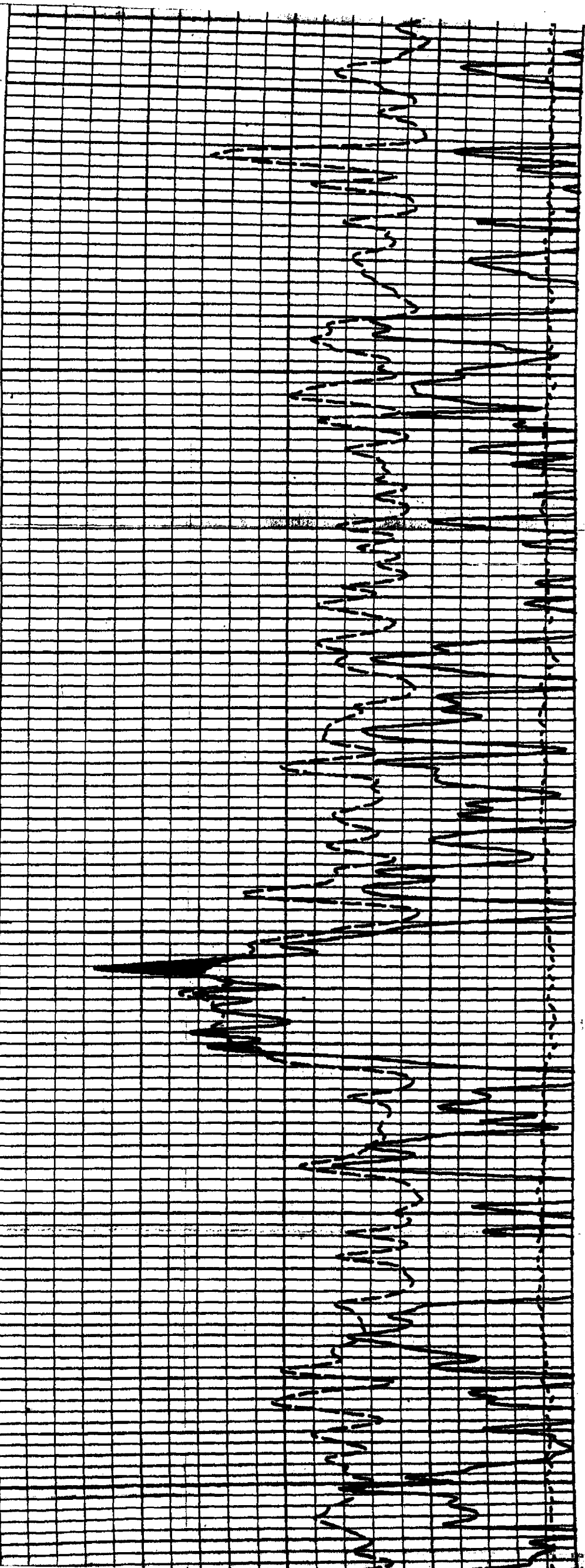
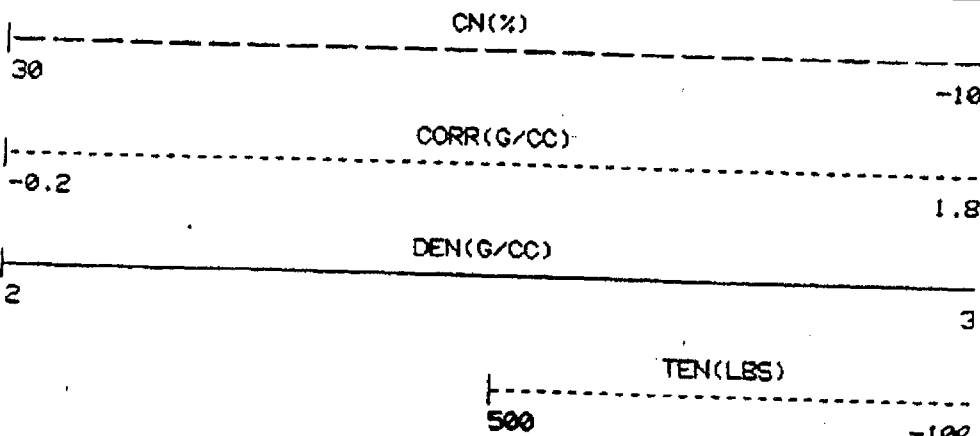
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T/Penrose
03800

B/Penrose
03700

03700

1	Well	DARTMOUTH NO. 1
2	Field	BUNKER HILL
3	County	EDDY
4	State	NEW MEXICO
5	Location	660' FSL, 660' FEL
6	Sec	14
7	Twp	16-S
8	Rge	31-E
9	Other Services	DLL/MLL/GR PROLOG
10	Ground Level	Elev 4491'
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STATE OF NEW MEXICO

ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

GARREY CARRUTHERS
GOVERNOR

April 13, 1989

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 2203
Santa Fe, New Mexico

Re: CASE NO. 2627
ORDER NO. R-8905-A

Applicant:

Read & Stevens, Inc.

Dear Sir:

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

Sincerely,

Florene Davidson

FLORENE DAVIDSON
OC Staff Specialist

Copy of order also sent to:

Hobbs OCD x
Artesia OCD x
Aztec OCD

Other Randolph Richardson, Damon Richards, Ernest Carroll

CAMPBELL & BLACK, P.A.
LAWYERS

JACK M. CAMPBELL
BRUCE D. BLACK
MICHAEL B. CAMPBELL
WILLIAM F. CARR
BRADFORD C. BERGE
MARK F. SHERIDAN
J. SCOTT HALL
JOHN H. BEMIS
WILLIAM P. SLATTERY
MARTE D. LIGHTSTONE
PATRICIA A. MATTHEWS

JEFFERSON PLACE
SUITE 1 - 110 NORTH GUADALUPE
POST OFFICE BOX 2208
SANTA FE, NEW MEXICO 87504-2208
TELEPHONE: (505) 988-4421
TELECOPIER: (505) 983-6043

February 23, 1989

HAND-DELIVERED

Mr. Michael E. Stogner
Examiner
Oil Conservation Division
New Mexico State Land
Office Building
Santa Fe, New Mexico 87503

Re: Oil Conservation Division Case No. 9606
In the Matter of the Application of Read and Stevens,
Inc. for Statutory Unitization, Eddy County, New Mexico

and

Oil Conservation Division Case No. 9607
In the Matter of the Application of Read and Stevens,
Inc. for a Waterflood Project, Eddy County, New Mexico

Dear Mr. Stogner:

As you are aware the above referenced cases came on for hearing before you on February 15, 1989. At that time, on the request of H & S Oil Company the case was continued to the Examiner hearings scheduled for March 1, 1989. Following the February 15th hearing, Campbell & Black was employed by Read & Stevens to represent them in these cases.

The purpose of this letter is to request a continuance of each of these cases to the March 15, 1989 Examiner hearings. This continuance will enable us to review the tape made of the prior hearing, review the engineering study prepared for Read & Stevens and otherwise prepare for the hearing.

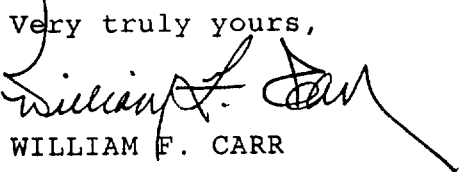
*Cont. to 3/15/89
M.S.
JHC*

Mr. Michael E. Stogner
Examiner
February 23, 1989
Page Two

I have contacted Ernest Carroll, attorney for H & S Oil Company, concerning this request and can advise that Mr. Carroll does not oppose the continuance.

Your assistance in this matter is appreciated.

Very truly yours,



WILLIAM F. CARR

WFC:mlh

cc: Read & Stevens, Inc.
Randolph M. Richardson
Ernest L. Carroll



STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

BRUCE KING
GOVERNOR

September 3, 1991

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

Read & Stevens, Inc.
PO Box 1518
Roswell, New Mexico 88202

Attention: John C. Maxey, Jr.

RE: *Injection Pressure Increase
Bunkerhill Unit Waterflood Project
Eddy County, New Mexico*

Dear Mr. Maxey:

Reference is made to your request dated July 31, 1991, to increase the surface injection pressure on two wells within the Bunkerhill Unit Waterflood Project. This request is based on a step rate test conducted on one of these wells on May 30, 1991. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

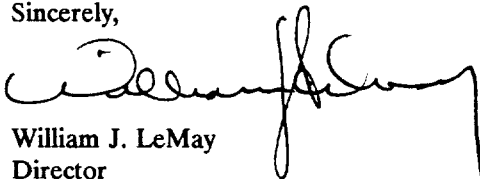
You are therefore authorized to increase the surface injection pressure on the following wells.

<u>WELL AND LOCATION</u>	<u>MAXIMUM INJECTION SURFACE PRESSURE</u>
Bunkerhill Unit Well No. 15 Unit P, Section 14, T-16S, R-31E, NMPM	1450 PSIG
Bunkerhill Unit Well No. 19 Unit D, Section 24, T-16S, R-31E, NMPM	1450 PSIG

Both in Eddy County

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.

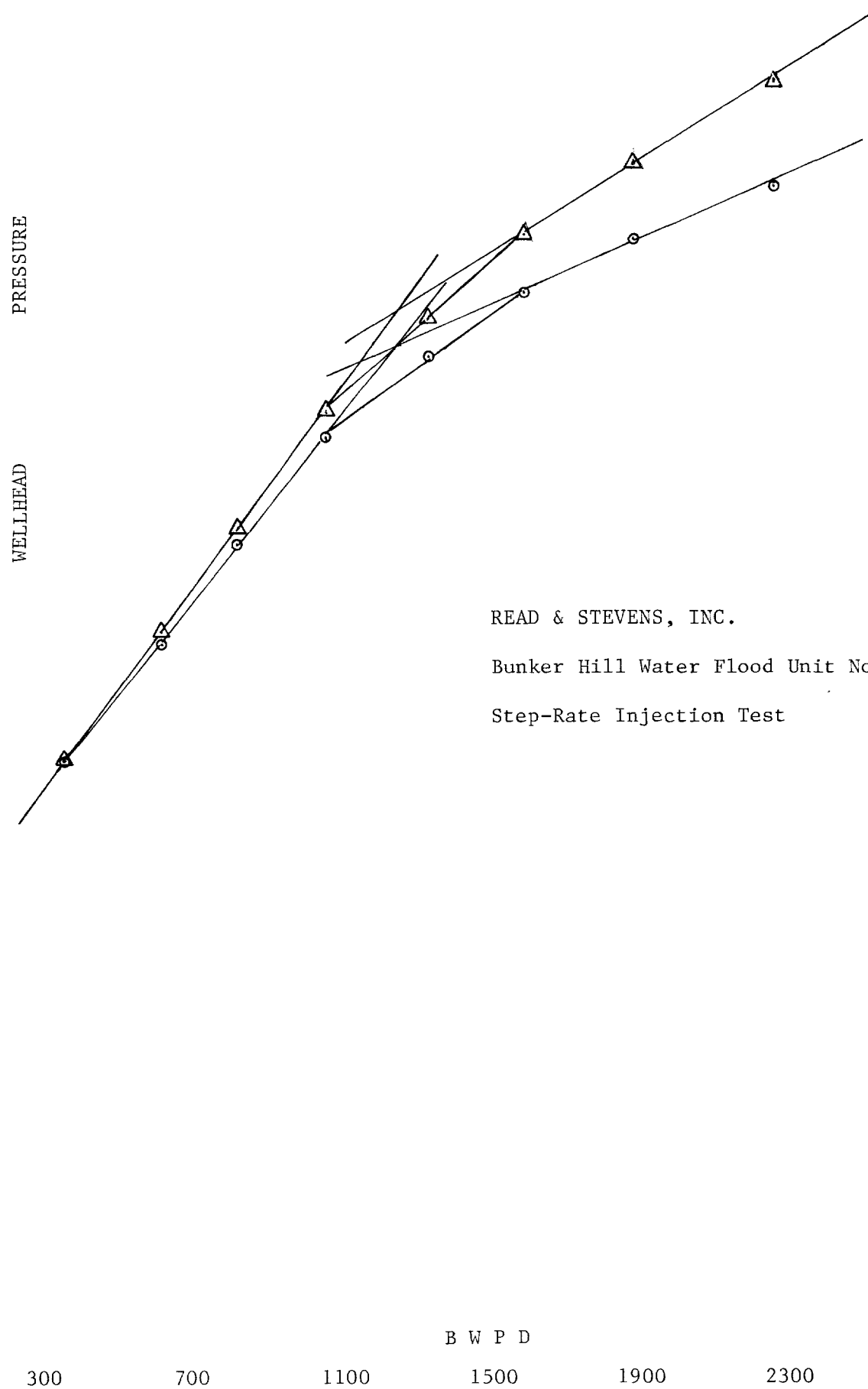
Sincerely,



William J. LeMay
Director

cc: Oil Conservation Division - Artesia
File: Case No. 9607 ✓
D. Catanach
R. Brown

- △ Recorded Wellhead Pressure
 ○ Corrected Wellhead Pressure based on 2 3/8" Tubing



NO WAITING PERIOD

COMPANY:

Read E. Stevens, Inc.

ADDRESS:

P.O. Box 1518

CITY, STATE, ZIP:

Roswell, New Mexico 88202

ATTENTION:

John C. Maxey, Jr.

Re: Injection Pressure Increase

Bunkerhill Unit Waterflood Project

Eddy County, New Mexico

Dear Sir:

Reference is made to your request dated July 31, 1991, to increase the surface injection pressure on two wells within the Bunkerhill Unit Waterflood Project. This request is based on step rate tests conducted on these wells on May 30, 1991. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

^{one of}
You are therefore authorized to increase the surface injection pressure on the following wells:

<u>Well & Location</u>	<u>Maximum Injection Surface Pressure</u>
<u>Bunkerhill Unit Well No. 15</u> <u>Unit P, Section 14, T-16N, R-3E, N.M.</u>	<u>1450 PSI</u>
<u>Bunkerhill Unit Well No. 19</u> <u>Unit D, Section 24, T-16N, R-3E, N.M.</u>	<u>1450 PSI</u>
<u>Both in Eddy 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: T. GALLEGOS

D. CATANACH

FILE-

Case No. 9607

OCD-

Atesio

R. Brown

CHARLES B. READ
PRESIDENT

Read & Stevens, Inc.

Oil Producers

P. O. Box 1518

Roswell, New Mexico 88202

OIL CONSERVATION DIVISION
RECEIVED

'91 JUN 19 11 5 19

July 31, 1991

David R. Catanach
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504

Re: Bunkerhill Waterflood Unit
Sec. 13, 14, 23, & 24-16S-31E
Eddy Co., NM

Dear Mr. Catanach,

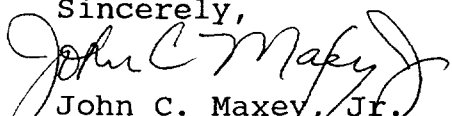
I wrote you in October of last year concerning administrative approval for increasing our maximum injection pressure on the four wells we now have active in a pilot flood in the subject unit. Based on step-rate testing, we received a pressure increase to 1450 psig on well #17 and well #9.

Currently, well #17 is taking water at an average pressure of 1250 psig and well #9 is taking water at an average pressure of 1150 psig. The third well, well #15, is taking water at 700 psig which is 50 psi below the original pressure limit on the unit. The fourth well, well #19, was taking water at the rate of 100 barrels per day at 1100 psig. Since this exceeds the original pressure order of 750 psig, we had to reduce the rate in order to legally continue water injection into the well.

A step-rate test was taken on well #19 on May 30 of 1991 and this test is enclosed. This step-rate test is similar in characteristic to the step-rate test that was taken on well #17 in September 1990. Due to the similar characteristics and the fact that this is a tight Queen Sand, and typically these sands cannot be flooded at the 0.2 psi per foot injection gradient, I believe administrative approval of a 1450 psig pressure limit for our pilot project would be appropriate.

If further information is required, please advise.

Sincerely,


John C. Maxey, Jr.
Petroleum Engineer

Enc.

xc: File

JCM/sc

Step Rate Injection Test

Well Name BUNKER HILL WATER FLOOD UNIT # 19Test Date 5-30-91Company Name READ & STEVENS, INC.

PAGE 1

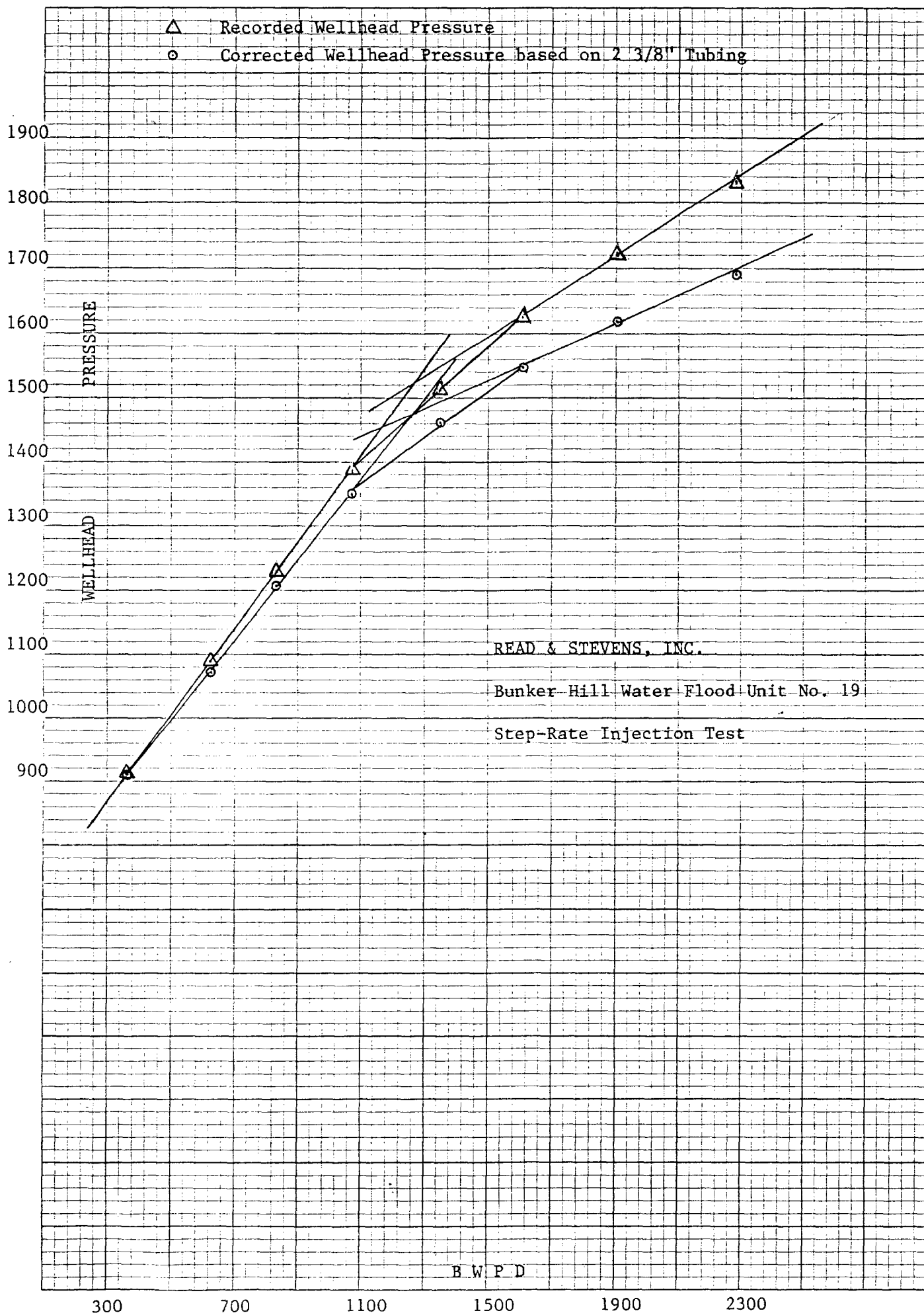
Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	
	9:15	20.9		0				
	9:20	604.10	403.20	1.4				
	9:25	657.60	394.56	2.7				
1	9:30	695.80	374.40	4.0				
			384.00					
	9:35	888.60	547.20	5.9				
	9:40	919.00	547.20	7.8				
2	9:45	935.50	518.40	9.6				
			537.60		3550 METER STOPPED. RESTART TEST			
	9:55	614.50		0				
	10:00	862.30	403.20	1.4				
	10:05	878.90	403.20	2.8				
1	10:10	909.50	374.40	4.1		904.0	11.48	5.457
			393.60					
	10:15	1030.80	633.60	6.3				
	10:20	1061.50	633.60	8.5				
2	10:25	1088.30	604.80	10.6		1075.5	18.20	12.799
			624.00					
	10:30	1168.90	835.20	13.5				
	10:35	1199.50	835.20	16.4				
3	10:40	1230.20	835.20	19.3		1208.3	24.36	21.948
			835.20					
	10:45	1310.90	1065.60	23.0				
	10:50	1359.40	1094.40	26.8				
4	10:55	1383.60	1065.60	30.5		1348.6	31.36	35.021
			1075.20					
	11:00	1466.60	1324.80	35.10				
	11:05	1494.60	1353.60	39.8				
5	11:10	1513.80	1353.60	44.5		1460.9	39.20	52.919
			1344.00					
	11:15	1586.80	1584.00	50.0				
	11:20	1608.70	1641.60	55.7				
6	11:25	1625.50	1612.80	61.3		1551.4	47.04	74.148
			1612.80					

Step Rate Injection Test

Test Date 5-30-91

PAGE 2

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JOHN WEST ENGINEERING COMPANY

Step Rate Injection Test

Well Name BUNKER HILL WATER FLOOD UNIT # 19Test Date 5-30-91Company Name READ & STEVENS, INC.

PAGE 1

marks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	
	9:15	20.9		0				
	9:20	604.10	403.20	1.4				
	9:25	657.60	394.56	2.7				
1	9:30	695.80	374.40	4.0				
			384.00					
	9:35	888.60	547.20	5.9				
	9:40	919.00	547.20	7.8				
2	9:45	935.50	518.40	9.6				
			537.60		3550 METER STOPPED, RESTART TEST			
	9:55	614.50		0				
	10:00	862.30	403.20	1.4				
	10:05	878.90	403.20	2.8				
1	10:10	909.50	374.40	4.1		904.0	11.48	5.457
			393.60					
	10:15	1030.80	633.60	6.3				
	10:20	1061.50	633.60	8.5				
2	10:25	1088.30	604.80	10.6		1075.5	18.20	12.799
			624.00					
	10:30	1168.90	835.20	13.5				
	10:35	1199.50	835.20	16.4				
3	10:40	1230.20	835.20	19.3		1208.3	24.36	21.948
			835.20					
	10:45	1310.90	1065.60	23.0				
	10:50	1359.40	1094.40	26.8				
4	10:55	1383.60	1065.60	30.5		1348.6	31.36	35.021
			1075.20					
	11:00	1466.60	1324.80	35.10				
	11:05	1494.60	1353.60	39.8				
5	11:10	1513.80	1353.60	44.5		1460.9	39.20	52.919
			1344.00					
	11:15	1586.80	1584.00	50.0				
	11:20	1608.70	1641.60	55.7				
6	11:25	1625.50	1612.80	61.3		1551.4	47.04	74.148
			1612.80					

Step Rate Injection Test

Test Date 5-30-91

PAGE 2

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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

October 18, 1990

Read and Stevens, Inc.
P.O. Box 1518
Roswell, NM 88202

Attention: John C. Maxey

*RE: Injection pressure increase;
Bunkerhill Unit WF Project,
Eddy County, New Mexico.*

Dear Mr. Maxey:

Reference is made to your request dated October 3, 1990, to increase the surface injection pressure on two wells within the Bunkerhill Unit Waterflood Project. This request is based on a step rate test conducted on one of these wells on September 17, 1990. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

WELL LOCATION

*MAXIMUM SURFACE
INJECTION PRESSURE*

Bunkerhill Unit Well No. 17
(Unit N) Sec. 13, T-16 South,
R-31 East, NMPM

1450 PSIG

Bunkerhill Unit Well No. 9
(Unit L) Sec. 13, T-16 South,
R-31 East, NMPM

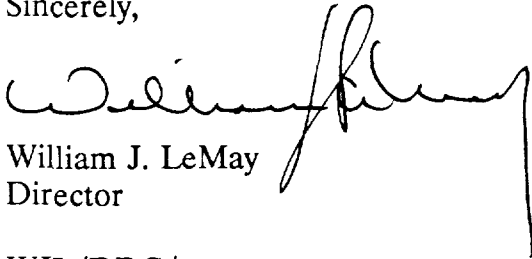
1450 PSIG

Both in Eddy County, New Mexico.

Injection Pressure Increase
Read & Stevens, Inc.
October 18, 1990
Page 2

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,

A handwritten signature in black ink, appearing to read 'William J. LeMay', with a long horizontal stroke extending to the right.

William J. LeMay
Director

WJL/DRC/ag

cc: File: Case No. 9607
Oil Conservation Division - Artesia
D. Catanach
R. Brown

NO WAITING PERIOD

COMPANY: Read & Stevens, Inc.
ADDRESS: P.O. Box 1518
CITY, STATE, ZIP: Roswell, New Mexico 88202
ATTENTION: Wm C. Maxey

Re: Injection Pressure Increase

Barkerhill Unit W Project

Eddy County, New Mexico

Dear Sir:

Reference is made to your request dated October 3, 1990, to increase the surface injection pressure on two wells within the Barkerhill Unit W Project. This request is based on step rate tests conducted on these wells on September 17, 1990. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

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

<u>Well & Location</u>	<u>Maximum Injection Surface Pressure</u>
<u>Barkerhill Unit Well No. 17</u> <u>(Unit N) Section 13, T. 16S, R. 31E, Eddy Co., NM</u>	<u>1450 PSIG</u>
<u>Barkerhill Unit Well No. 9</u> <u>(Unit N) Section 13, T. 16S, R. 31E, Eddy Co., NM</u>	<u>1450 PSIG</u>
<u>Both in Eddy Co. 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: T. CALLEGOS D. CATANACH FILE- Case 9607 OCD- Artesia
R. Brown

UNITED BANK PLAZA
400 N. PENN. SUITE 1000

PHONE 505 622-3770
FAX: 505 625-0262

CHARLES B. READ
PRESIDENT

Read & Stevens, Inc.

Oil Producers

P. O. Box 1518

Roswell, New Mexico 88202

October 3, 1990

David R. Catanach
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504

Re: Bunkerhill Waterflood Unit
Sec 13, 14, 23 & 24-16S-31E
Eddy Co., NM

Dear Mr. Catanach,

The subject unit is a Penrose Waterflood which was unitized during the summer of 1989. The first well to be placed on injection at the rate of 150 BWPD was our BHWFU #17, shown on the attached map. The well was placed on injection October 1, 1989 and after injection of 5700 BW the pressure rose to the maximum of 750 psi. The well was subsequently shut in until our allowed injection pressure could be increased.

The #17 well is the eastern-most well of a five-spot pilot flood pattern. Three other wells that are currently on injection, marked in yellow on the attached map, are operating at rates of 130 BWPD with injection pressure ranging from 230-750 psi. These pressures are also gradually increasing.

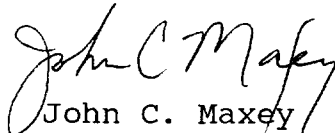
On September 24, 1990 a step-rate injection test using treated fresh water was taken on the #17 well, and the results are attached. The indicated fracturing pressure is 1750 psi at the wellhead after backing out friction on the 2 3/8" tubing. Due to the low rates necessary to perform the test, a bottom hole

1000 psi #9 well

10/2/90
Page 2

pressure-surface read out was not required. Based on the step-rate test and the fact that the #17 well is an edge well within the unit, and we are injecting into a tight Penrose Sand, I would like to request administrative approval for increasing our maximum injection pressure to 1750 psi. If further information is required, please advise.

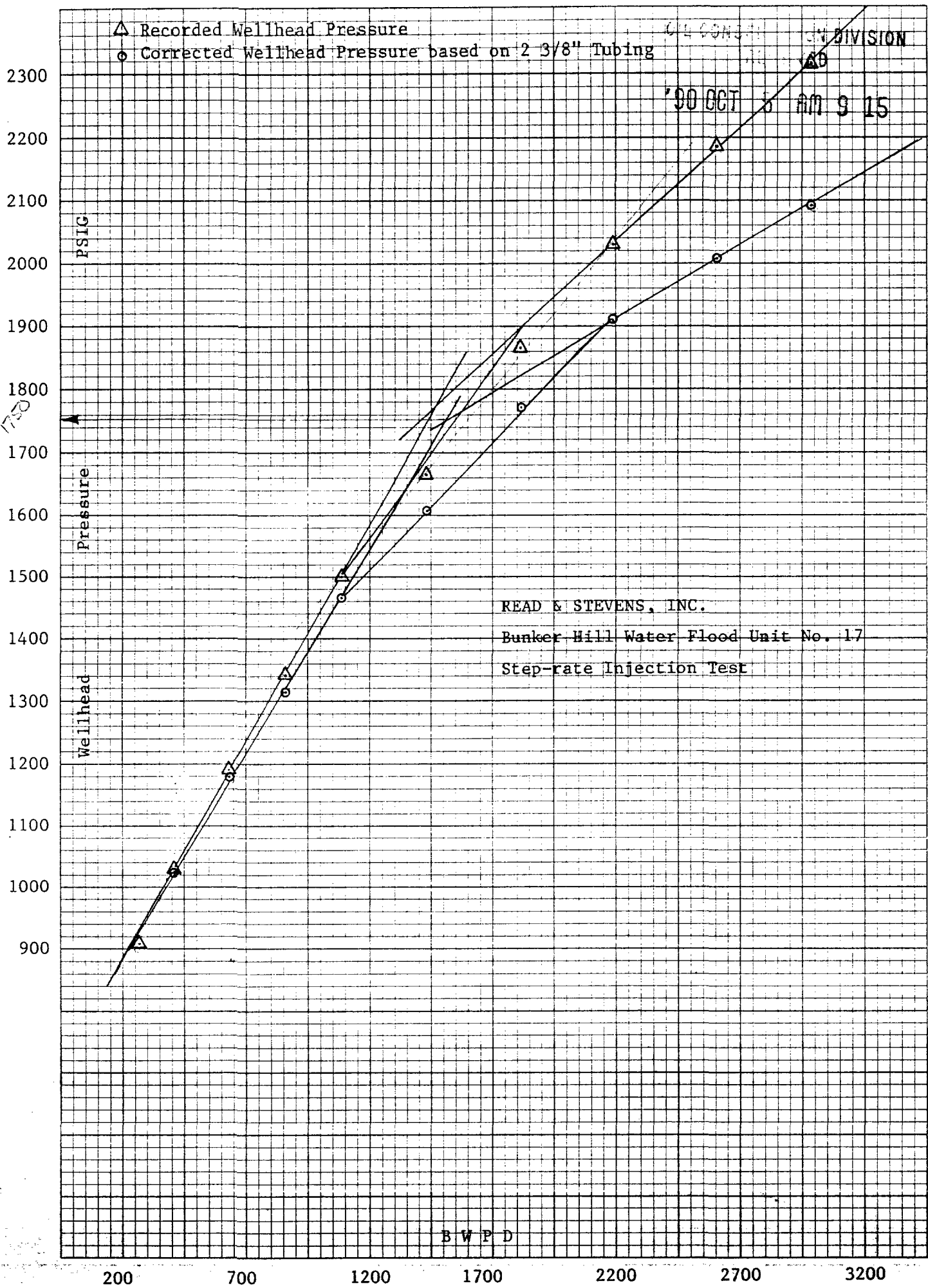
Sincerely,


John C. Maxey
Petroleum Engineer

JCM/sc

Enc.

xc: Engr.
Well file



Step Rate Injection Test

Well Name Bunker Hill Water Flood Unit No. 17Test Date 9/17/90Company Name Read & Stevens, Inc.

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	Total
	9:45	747.4		0				
	9:50	854.50	288.00	1.0				
	9:55	880.80	259.20	1.9				
Rate I	10:00	903.40	259.20	2.8		900.8	7.84	2.581
			268.80					
	10:05	974.80	432.00	4.3				
	10:10	1001.50	403.20	5.7				
Rate II	10:15	1033.40	403.20	7.1		1027.7	12.04	5.708
			412.80					
	10:20	1126.80	633.60	9.3				
	10:25	1163.70	633.60	11.5				
Rate III	10:30	1192.80	633.60	13.7		1180.2	18.48	12.609
			633.60					
	10:35	1284.60	864.00	16.7				
	10:40	1319.10	864.00	19.7				
Rate IV	10:45	1340.60	835.20	22.6		1318.7	24.92	21.923
			854.40					
	10:50	1418.40	1094.40	26.4				
	10:55	1461.80	1065.60	30.1				
Rate V	11:00	1499.70	1094.40	33.9		1465.6	31.64	34.097
			1084.80					
	11:05	1603.20	1440.00	38.9				
	11:10	1646.60	1440.00	43.9				
Rate VI	11:15	1665.50	1411.20	48.8		1608.6	41.72	56.875
			1430.40					
	11:20	1794.60	1785.60	55.0				
	11:25	1831.60	1843.20	61.4				
Rate VII	11:30	1864.80	1814.40	67.7		1776.5	52.92	88.304
			1814.40					
	11:35	1985.50	2188.80	75.3				
	11:40	2018.50	2217.60	83.0				
Rate VIII	11:45	2033.80	2188.80	90.6		1907.8	64.12	125.957
			2198.40					

Test Date 9/17/90

[illegible]

△ Recorded Wellhead Pressure
○ Corrected Wellhead Pressure based on 2 3/8" Tubing

2300

2200

2100

2000

1900

1800

1700

1600

1500

1400

1300

1200

1100

1000

900

PSIG

Pressure

Wellhead

READ & STEVENS, INC.

Bunker Hill Water Flood Unit No. 17

Step-rate Injection Test

B W P D

200

700

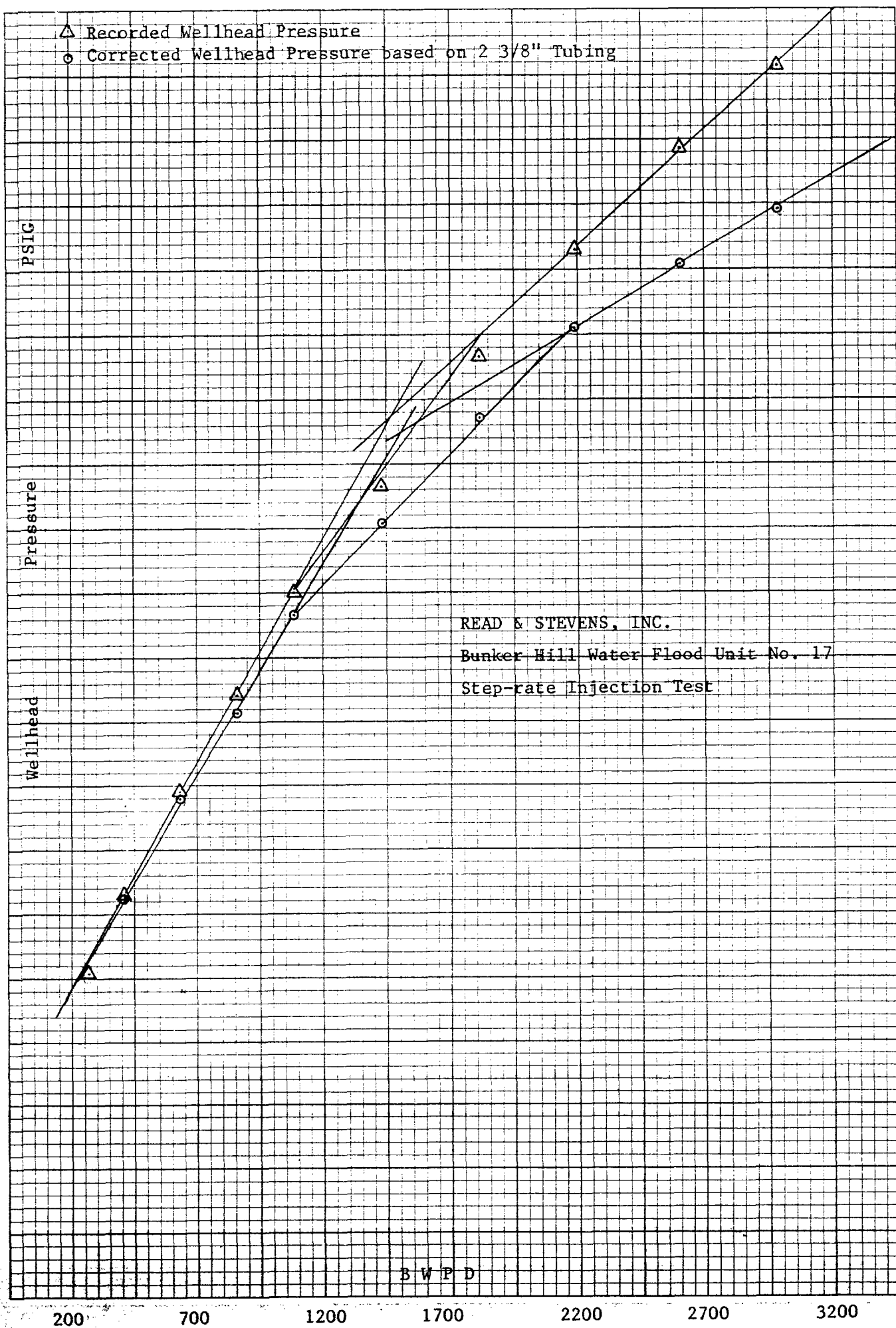
1200

1700

2200

2700

3200



Step Rate Injection Test

Well Name Bunker Hill Water Flood Unit No. 17Test Date 9/17/90Company Name Read & Stevens, Inc.

Remarks	Time	Tbg. Press.	Rate B P D	Total	B H P	Tbg. Press.	Rate G P M	Total
	9:45	747.4		0				
	9:50	854.50	288.00	1.0				
	9:55	880.80	259.20	1.9				
Rate I	10:00	903.40	259.20	2.8		900.8	7.84	2.581
			268.80					
	10:05	974.80	432.00	4.3				
	10:10	1001.50	403.20	5.7				
Rate II	10:15	1033.40	403.20	7.1		1027.7	12.04	5.708
			412.80					
	10:20	1126.80	633.60	9.3				
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Rate III	10:30	1192.80	633.60	13.7		1180.2	18.48	12.609
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	11:05	1603.20	1440.00	38.9				
	11:10	1646.60	1440.0 0	43.9				
Rate VI	11:15	1665.50	1411.20	48.8		1608.6	41.72	56.875
			1430.40					
	11:20	1794.60	1785.60	55.0				
	11:25	1831.60	1843.20	61.4				
Rate VII	11:30	1864.80	1814.40	67.7		1776.5	52.92	88.304
			1814.40					
	11:35	1985.50	2188.8 0	75.3				
	11:40	2018.50	2217.60	83.0				
Rate VIII	11:45	2033.80	2188.80	90.6		1907.8	64.12	125.957
			2198.40					

Test Date 9/17/90

[illegible]

