

**Unocal North American
Oil & Gas Division**

Unocal Corporation
1004 North Big Spring, P.O. Box 671
Midland, Texas 79702
Telephone (915) 682-9731

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June 6, 1991

Southwestern Region
Andrews District

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
State Land Office Building
Santa Fe, New Mexico 87501

Attn: David Catanach
Petroleum Engineer

SUBJECT: _____

Esperanza (Delaware) Field
Wersell Federal Well No. 2 SWD
Eddy County, New Mexico

Mr. Catanach:

As seen on the attached copy of ORDER SWD-301, the wellhead pressure limitation on the referenced injection well is 566 psi. Unocal perforated 528 holes and fracture treated this well on April 29, 1991. A step-rate test run last week indicates this well can inject 1400 BWPD at a BHP of 1940 psi (which equates to 701 psi wellhead pressure) without resulting in migration of the injected fluid from the Delaware formation.

Unocal respectfully requests that the wellhead pressure limitation be increased from 566 psi to 701 psi. If you have any questions, please call me at (915) 682-9731.

Sincerely,

Union Oil Company of California
dba UNOCAL

Tim L. Chase
Reservoir Engineering Technician

TLC:ren

Attachment

KUYKENDALL

Bottom Hole Pressure, Inc.

P.O. Box 2043 Midland, Tx. 79702

(915) 563-5231

COMPANY : UNOCAL

WELL NAME : WERSELL FEDERAL # 2

FIELD : ESPERANZA

RESERVOIR : DELAWARE

PERFS : 2832-3794

TEST DATE : 5-29-1991

KUYKENDALL B.H.P., Inc.

Bottom Hole Pressure Report

COMP : UNOCAL WELL : WERSELL FEDERAL # 2 T : 0.0
 FIELD : ESPERANZA RES : DELAWARE DATUM : 3313.0
 DATE : 5-29-1991 STATUS : INJECTING HRS : 0.0
 TBG : 2-3/8 DPTH : END : PKR : 2745 S N :
 CSG : 5-1/2 DPTH : PERFS : 2832-3794 GRAD : 0.000000 T D : PB 4407

Date	Remarks	Time	Elapsed Time	Pressure (psig)	3313'	3313'
5-29-91	*	10:00	00:00	1807.1	1807.1	
	WELL S.I.	10:15	00:15	1807.6	1807.6	
	**	10:30	00:30	1807.5	1807.5	
5-29-91	BEGIN STEP RATE	10:30	00:00	1807.5	1807.5	
	1ST RATE 200 BBL/DAY	10:35	00:05	1807.8	1807.8	
	355	10:40	00:10	1808.5	1808.5	
		10:45	00:15	1808.2	1808.2	
		10:50	00:20	1808.2	1808.2	
		10:55	00:25	1811.7	1811.7	
		11:00	00:30	1813.0	1813.0	
	2ND RATE 400 BBL/DAY	11:05	00:35	1816.5	1816.5	
	385 PSI	11:10	00:40	1820.5	1820.5	
		11:15	00:45	1823.7	1823.7	
		11:20	00:50	1827.9	1827.9	
		11:25	00:55	1832.2	1832.2	
		11:30	01:00	1836.3	1836.3	
	3RD RATE 600 BBL/DAY	11:35	01:05	1838.3	1838.3	
	431 PSI	11:40	01:10	1841.5	1841.5	
		11:45	01:15	1843.4	1843.4	
		11:50	01:20	1848.8	1848.8	
		11:55	01:25	1853.2	1853.2	
		12:00	01:30	1856.3	1856.3	
	4TH RATE 800 BBL/DAY	12:05	01:35	1859.6	1859.6	
	496 PSI	12:10	01:40	1863.2	1863.2	
		12:15	01:45	1865.2	1865.2	
		12:20	01:50	1872.1	1872.1	
		12:25	01:55	1875.9	1875.9	
		12:30	02:00	1880.5	1880.5	
	5TH RATE 1000 BBL/DA	12:35	02:05	1883.5	1883.5	
	585 PSI	12:40	02:10	1887.8	1887.8	

KUYKENDALL B.H.P., Inc.

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Date	Remarks	Time	Elapsed Time	Pressure (psig)	3313'	3313'
		12:45	02:15	1891.9	1891.9	
		12:50	02:20	1895.4	1895.4	
		12:55	02:25	1902.6	1902.6	
		13:00	02:30	1906.0	1906.0	
	6TH RATE 1200 BBL/D	13:05	02:35	1909.5	1909.5	
	631 PSI	13:10	02:40	1914.5	1914.5	
		13:15	02:45	1917.7	1917.7	
		13:20	02:50	1922.2	1922.2	
		13:25	02:55	1938.7	1938.7	
		13:30	03:00	1938.5	1938.5	
	7TH RATE 1400 BBL/DA	13:35	03:05	1939.8	1939.8	
	701 PSI	13:40	03:10	1943.5	1943.5	
		13:45	03:15	1944.8	1944.8	
		13:50	03:20	1948.3	1948.3	
		13:55	03:25	1954.2	1954.2	
		14:00	03:30	1959.0	1959.0	
	S.I.RAN OUT OF WATER	14:05	03:35	1960.8	1960.8	
		14:10	03:40	1950.7	1950.7	
		14:15	03:45	1948.9	1948.9	
		14:20	03:50	1944.6	1944.6	
		14:25	03:55	1940.0	1940.0	
		14:30	04:00	1935.7	1935.7	
	8TH RATE 1600 BBL/DA	14:35	04:05	1932.7	1932.7	
	685 PSI	14:40	04:10	1948.2	1948.2	
		14:45	04:15	1950.5	1950.5	
		14:50	04:20	1956.5	1956.5	
		14:55	04:25	1960.8	1960.8	
		15:00	04:30	1967.2	1967.2	
	9TH RATE 1800 BBL/DA	15:05	04:35	1975.6	1975.6	
	685 PSI	15:10	04:40	1982.5	1982.5	

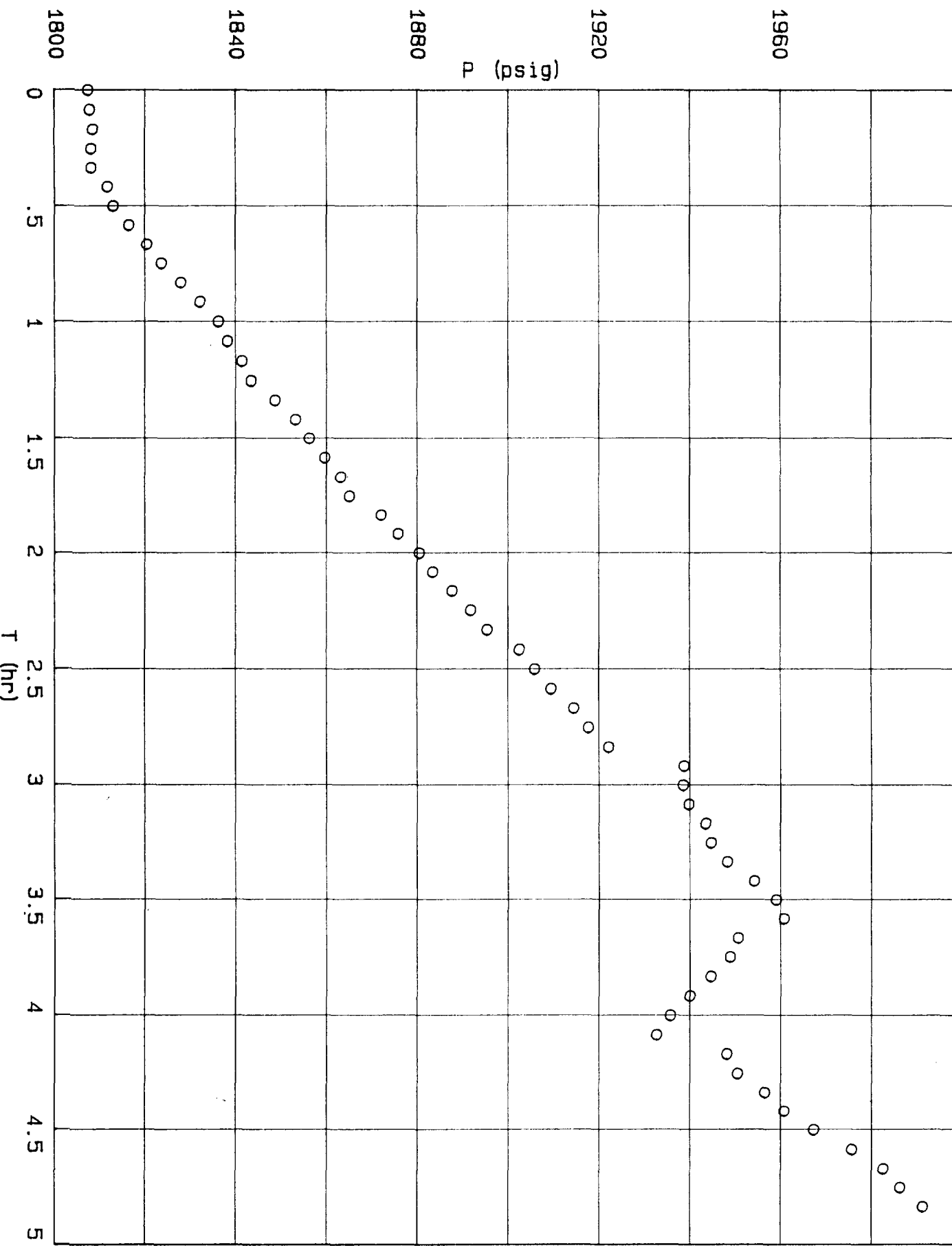
KUYKENDALL B.H.P., Inc.

Bottom Hole Pressure Report

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Date	Remarks	Time	Elapsed Time	Pressure (psig)	3313'	3313'
		15:15	04:45	1986.3	1986.3	
	END STEP RATE	15:20	04:50	1991.3	1991.3	

REMARKS :



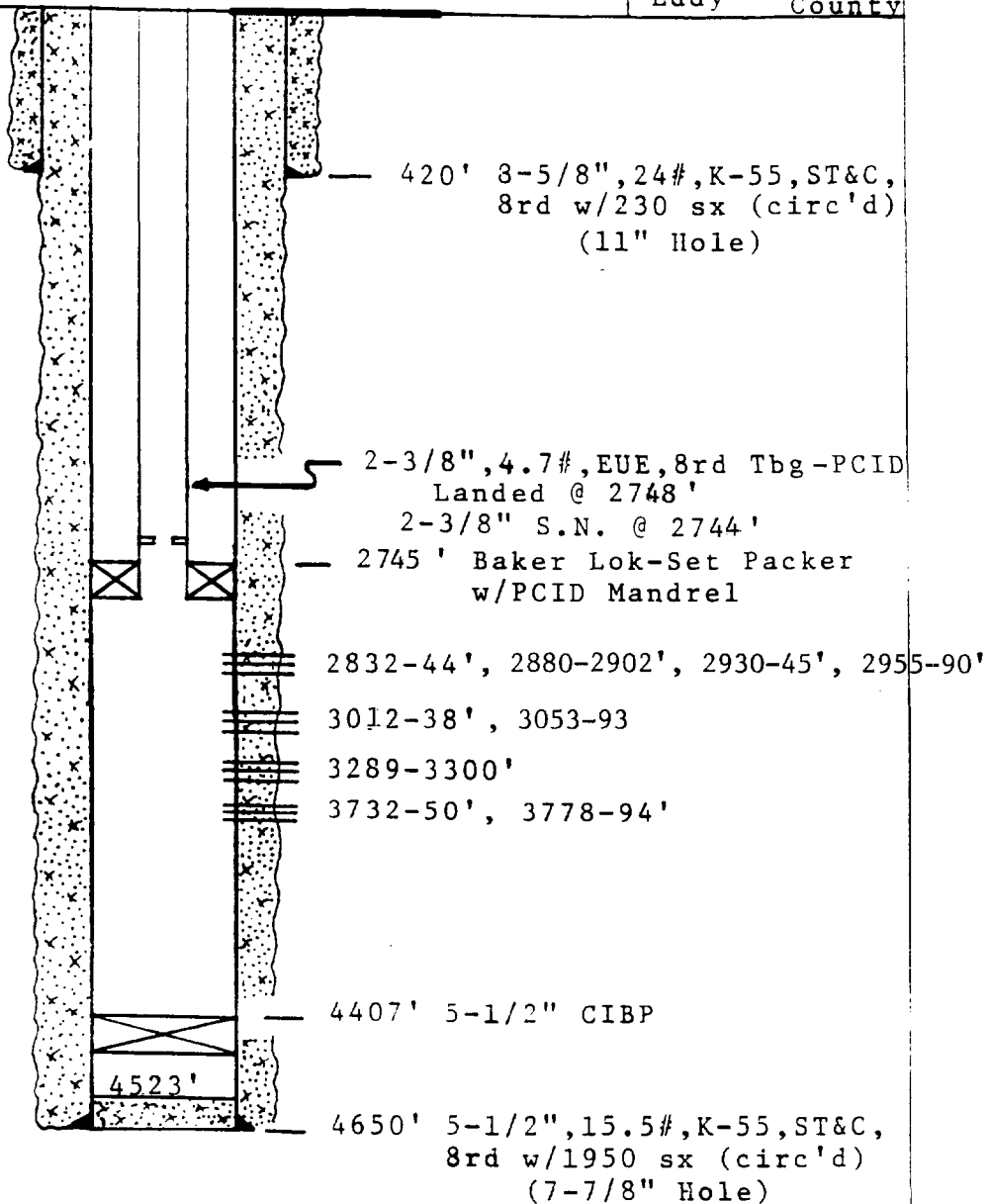
UNOCAL 73

PREPARED BY TLC	CHECKED BY TLC	DATE 6-5-91	PAGE 1 OF 1
SUBJECT: ESPERANZA (DELAWARE) Wersell Federal Well No. 2		W/O/A/E NO Eddy County	

KB 3184'
DF 3183'
GL 3172'

FORMATION TOPS

Base Salt - 1320'
Delaware Sand - 1938'
Manzanita - 2748'
Tracy - 3368'

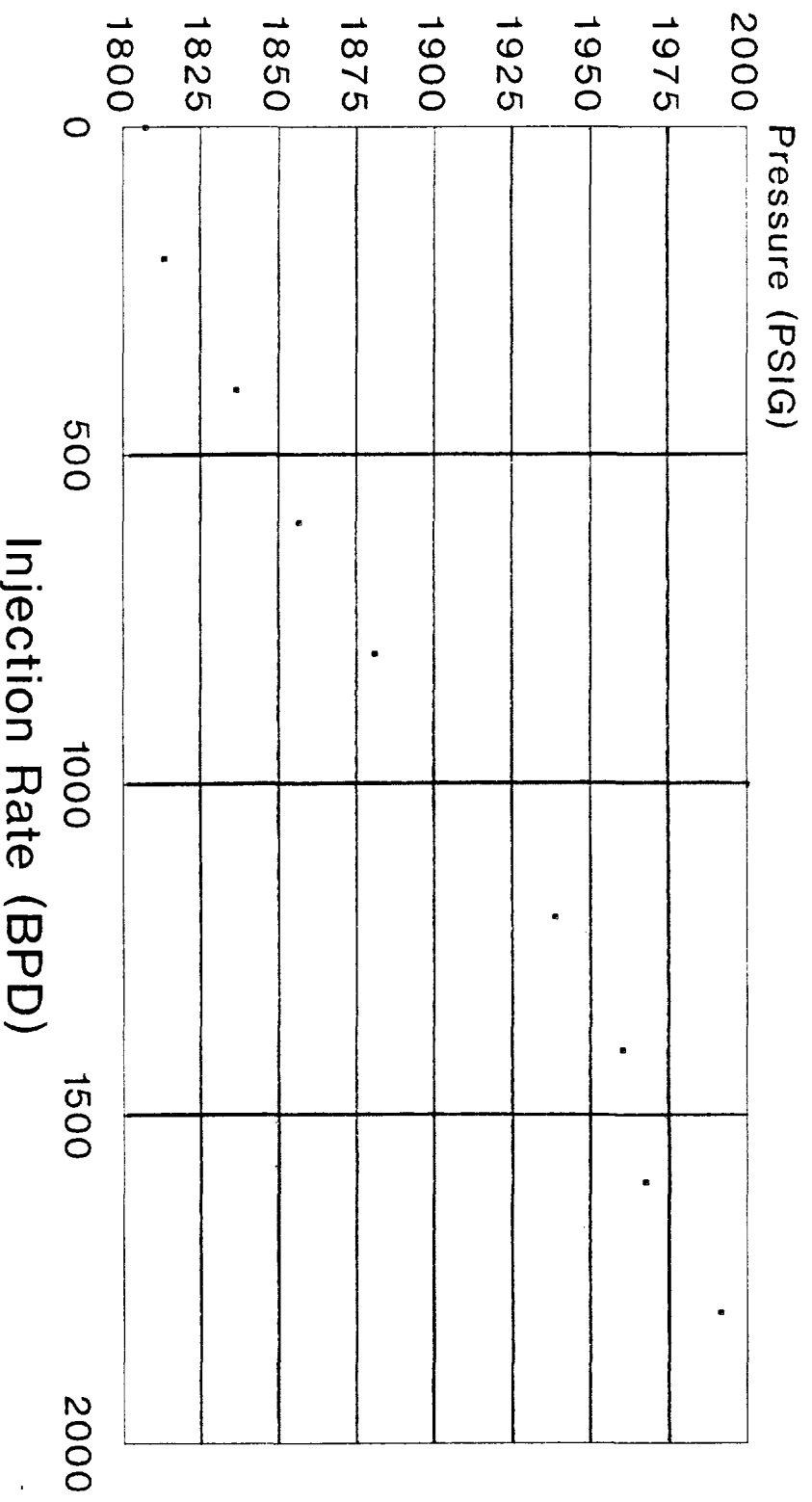
ETD 4407'PBTD 4523'TD 4650'

LOCATION: 660' FNL & 660' FWL
Section 4, Township 22-S,
Range 27-E, New Mexico

IP (7/29/84): 23 + 168 Pumping
GOR TSTM

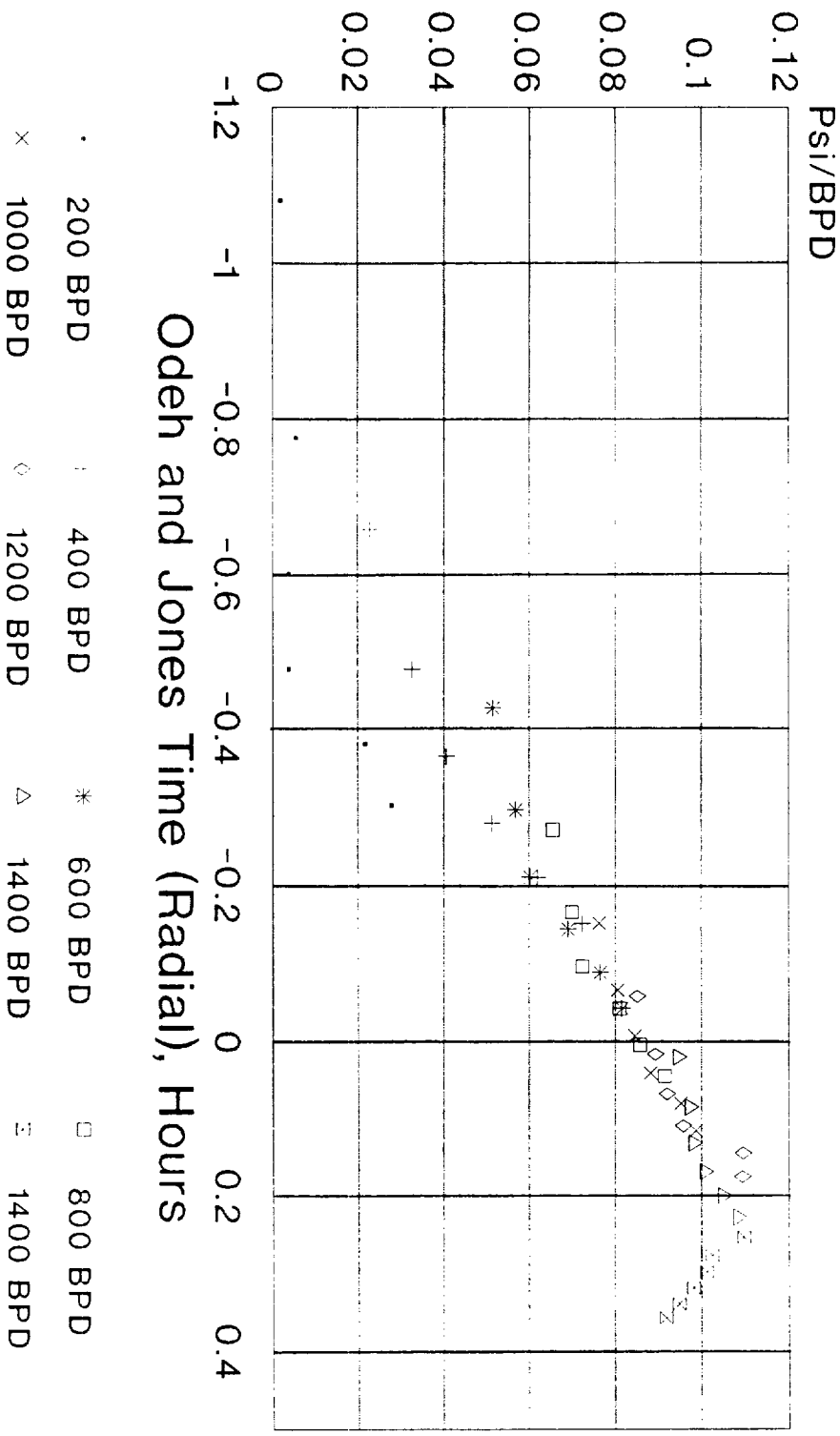
Step Rate Test on Wersell Federal #2

Esperanza (Delaware) Field

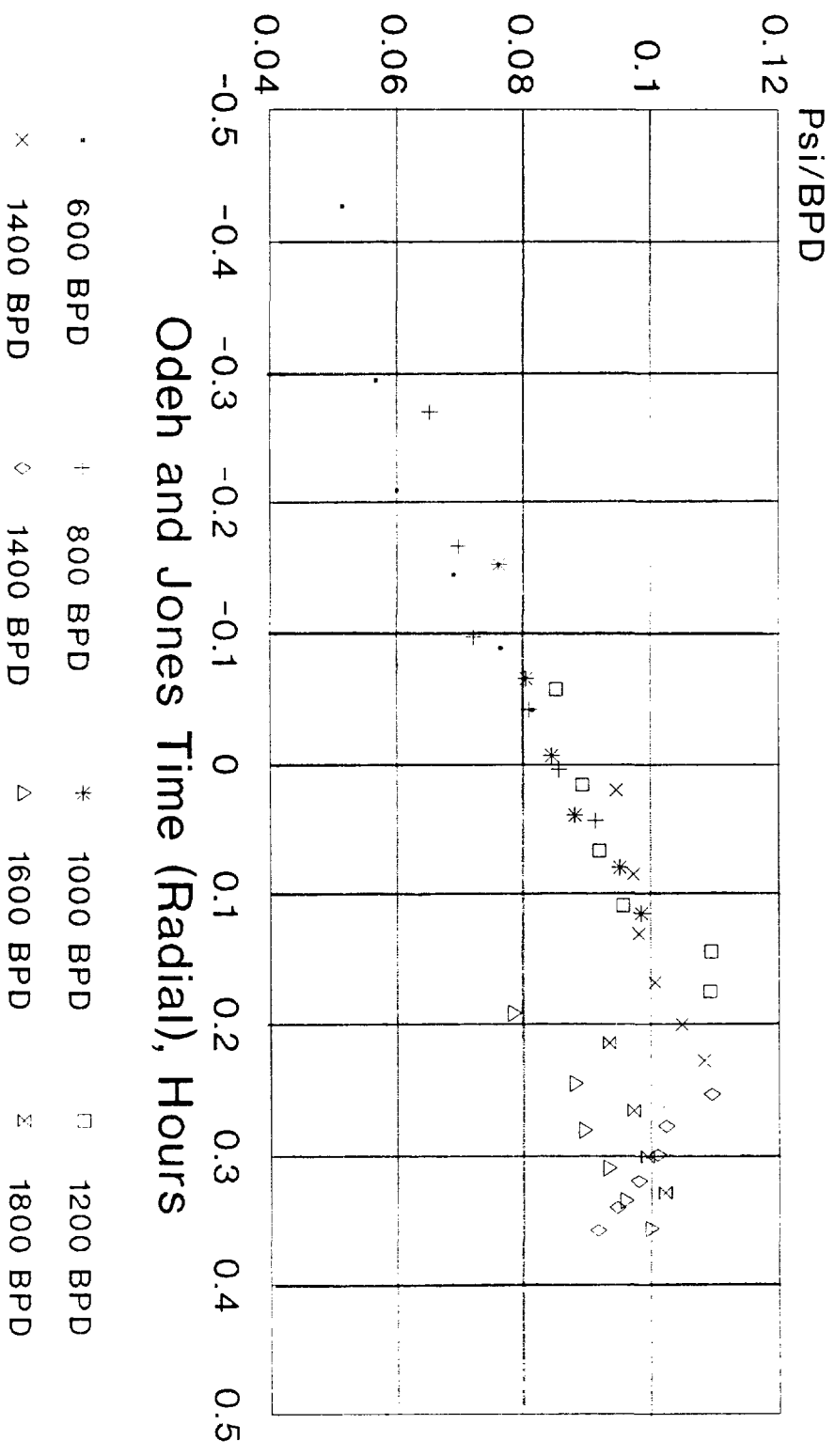


• Step Rate Values

Multi-Rate Plot of Wersell Federal #2 Step Rate Test



Multi-Rate Plot of Wersell Federal #2 Step Rate Test



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING
GOVERNOR

July 16, 1991

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

Unocal Corporation
P.O. Box 671
Midland, Texas 79702

Attention: Tim L. Chase

*RE: Injection Pressure Increase
Wersell Federal Well No. 2
Eddy County, New Mexico*

Dear Sir:

Reference is made to your request dated June 6, 1991, to increase the surface injection pressure on the Wersell Federal Well No. 2. This request is based on a step rate test conducted on the well on May 29, 1991. The results of the tests 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

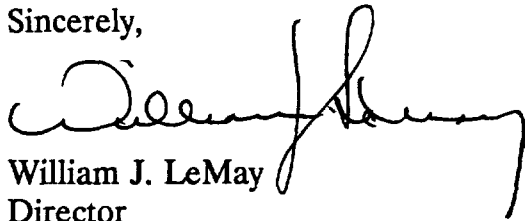
Wersell Federal Well No. 2
Unit D, Section 4, T-22 South, R-27 East, NMPM
Eddy County, New Mexico

701 PSIG

Unocal Corporation
July 15, 1991
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', written over the printed name and title.

William J. LeMay
Director

WJL/DC/jc

cc: Oil Conservation Division - Artesia
File: Case No. SWD-301
D. Catanach
R. Brown