

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

PI-373

GARREY CARRUTHERS
GOVERNOR

March 14, 1990

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-6800

Conoco, Inc.
P.O. Box 460
Hobbs, NM 88240

Attention: David L. Wacker

RE: Injection Pressure Increase
MCA Unit Well Nos. 202 & 350
Lea County, New Mexico

Dear Mr. Wacker:

Reference is made to your request dated December 29, 1989, to increase the surface injection pressure on two wells within the Maljamar (MCA) Unit Pressure Maintenance Project. This request is based on step rate tests conducted on these wells on December 11, 1989. 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.

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

PMX-135
PSI

WELL AND LOCATION

MAXIMUM INJECTION
SURFACE PRESSURE

API
30-025-

804 psi — MCA Unit Well No. 202
660' FSL & FWL (Unit M) Section 26; and

1850 PSIG

00707

805 psi — MCA Unit Well No. 350
2615' FSL & 1295' FWL (Unit L),

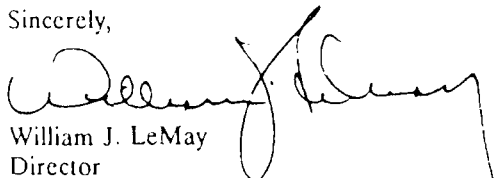
1355 PSIG

24546

Both in Township 17 South, Range 32 East, NMPM, Lea County, New Mexico.

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: PMX-135
T. Gallegos
D. Catanach



David L. Wacker
Division Manager
Hobbs Division
Exploration and Production, North America

Conoco Inc.
726 East Michigan
P.O. Box 460
Hobbs, NM 88241
(505) 397-5800

December 29, 1989

State of New Mexico
Energy and Minerals Department
Oil Conservation Division
P.O. Box 2088
Santa Fe, NM 87504

Attention: Mr. David Catanach

Gentlemen:

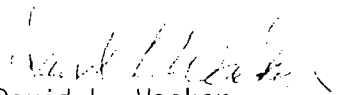
MCA Unit Injection Pressure Limit
Well Nos. 202 and 350
Maljamar Field
Lea County, New Mexico

We are requesting relief from the 0.2 psi/ft surface injection pressure limit for MCA Unit Wells 202 and 350. Data are attached indicating current formation parting pressures of 2052 psig (surface) for Well 202 and 1428 psig (surface) for Well 350. These data relate to surface pressure fracture gradients of 0.494 psi/ft and 0.345 psi/ft, respectively. Based on the attached data, we request approval to inject water into Well 202 at a maximum surface pressure of 2000 psig and into Well 350 at a maximum surface pressure of 1375 psig.

Both injection wells will be used to contain CO₂ injection in the Stage II area (Section 27 and SW/4 of Section 26, T17S, R32E) of our MCA CO₂ injection project. It is critical that we be able to maintain effective water injection rates at the 202 and 350 locations.

If you have questions concerning this request, please call R. E. (Bob) Beamer at (505) 397-5836.

Yours very truly,


David L. Wacker
Division Manager

REB/tk
1203

Attachments

cc: Mr. J. Sexton
Supervisor, District I
OCD
P.O. Box 1980
Hobbs, NM 88241-1980

STEP RATE TESTERS INC.

DATE : 12/11/89
 COMPANY: CONOCO INC.,
 FIELD : MCA UNIT
 WELL NO: 202
 DEPTH : 4150
 STEPS : 30
 FLD.GRD: 0.456
 SP.GRAV: 1.053

FORMATION PARTING POINT

 SURFACE 2052 PSI.
 BHP 3945 PSI.

RATE SURFACE	BOTTOM	LINEAR	
BWPD	PSI.	HOLE REGRESSION	
	PSI.	1ST SLOPE	2ND SLOPE
***	*****	*****	*****
(x)	(y)	(y1)	(y2)
- 0	1485	3378	3531
100	1575	3493	3688
200	1906	3837	3845
300	2060	3982	4002
400	2274	4199	4159
500	2378	4296	4316

Regression-Output: Constant 3339.833 Constant 3531
 Std Err of Y Est 93.48885 Std Err of Y Est 48.98979
 R Squared 0.923386 R Squared 0.933576
 No. of Observations 3 No. of Observations 3
 Degrees of Freedom 1 Degrees of Freedom 1

X Coefficient(s) 2.295 X Coefficient(s) 1.57
 Std Err of Coef. 0.661066 Std Err of Coef. 0.346410

EQN OF STRAIGHT LINE: $y = ax + c$

$$y1 = (2.295x) + 3340$$

$$y2 = (1.57x) + 3531$$

AT PARTING PRESSURE, $y1 = y2$

$$(2.295)x + 3340 = (1.570)x + 3531$$

$$x = 263.4 \text{ BWPD}$$

$$y1 = y2 = 3945 \text{ psi (BHP)}$$

$$= 3945 - (3378 - 1485) = 2052 \text{ psi (Surface)}$$

STEP RATE TESTERS, INC.

915/366-3409

P. O. Box 13094

ODESSA, TEXAS 79768

No. _____

COMPANY CONOCO INC. DATE 12-10-89

ADDRESS _____

WELL # 202 LEASE MCA UNIT

WELL FILE DATA:

T.D. 4280 PACKERS @ 3150' PERFS. 4022-4272

TBG. ID. 2 3/8 TBG. COATING _____ DEPTH SN _____ BHP @ 4150'

STABILIZATION:

SURFACE 1485

RATE 0 BHPD PRES. BHP 3378 PSIG. CUMULATIVE _____ BBLs.

INCREMENTS:

RATE 100 BHPD PRES. _____ PSIG. STEP LENGTH 30 MINS.

TEST RESULTS:

SURFACE 1800

155

FORMATION PARTING POINT BHP 3260 PSIG. @ 150 BHPD

	RATE BHPD	PRESSURE SURFACE PSIG.		PRESSURE MINUS FRICTION PSIG.	PRESSURE BOTTOM HOLE PSIG.	
1.	0	1485	Δ7	1485	3378	Δ7
2.	100	1575	90	1600	3493	115
3.	200	1906	331	1944	3832	344
4.	300	2060	154	2089	3982	145
5.	400	2274	211	2306	4199	217
6.	500	2378	104	2403	4296	97
7.						
8.						
9.						
10.						
11.						
12.						
13.						
14.						
15.						
16.						
17.						
18.						
19.						
20.						

REMARKS _____

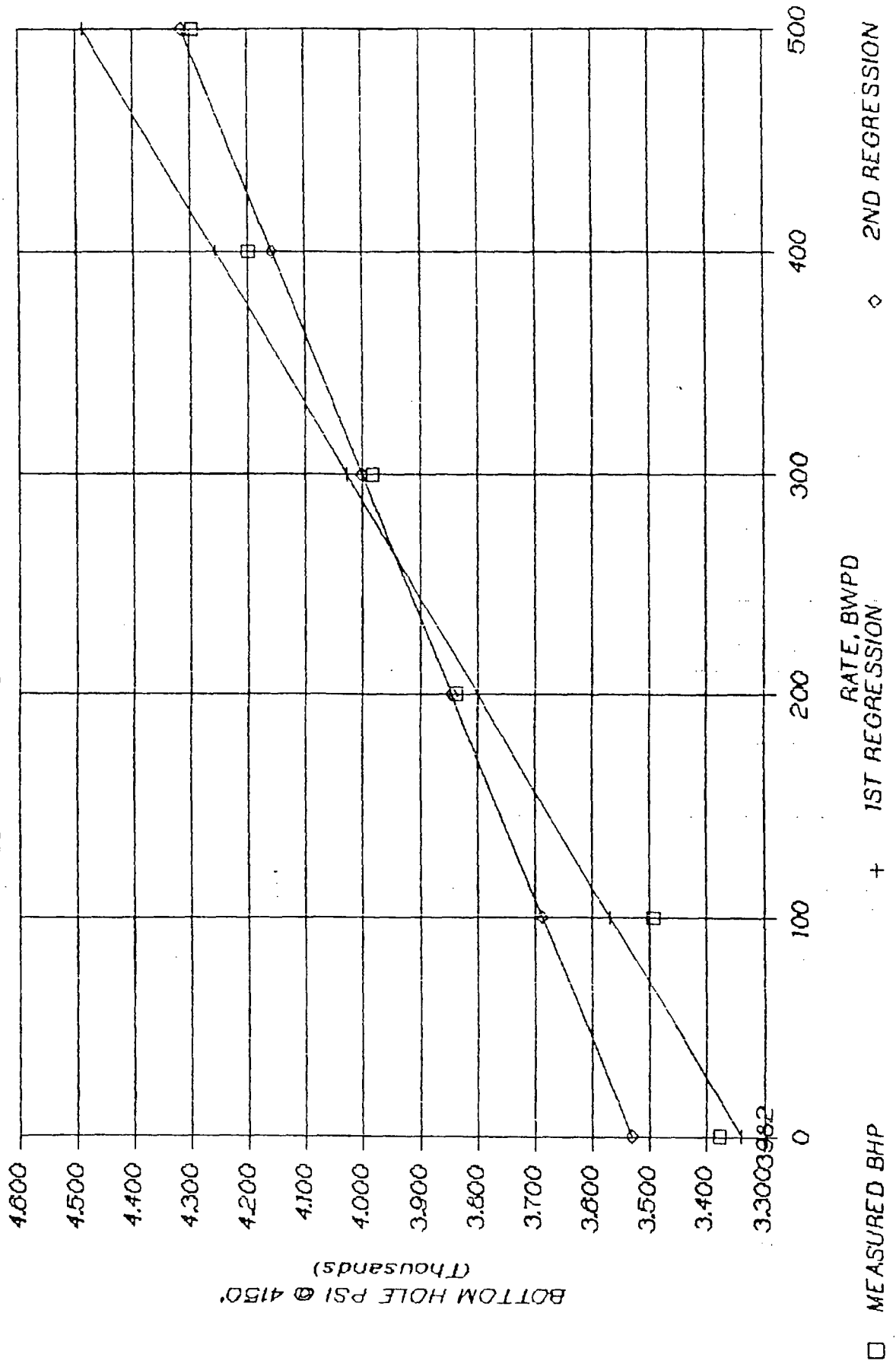
TESTER

Mike R.

COMPANY REP. _____

STEP-RATE TEST

CONOCO MCA UNIT NO. 202 (12/11/89)



STEP RATE TESTERS INC.

DATE : 12/11/89
 COMPANY: CONOCO INC.
 FIELD : MCA UNIT
 WELL NO: 350
 DEPTH : 4140
 STEPS : 30 MIN.
 FLD.GRD: 0.450
 SP.GRAV: 1.062

FORMATION PARTING POINT
 SURFACE 1428 PSI.
 BHP 3331 PSI.

RATE SURFACE	BOTTOM	LINEAR	LINEAR
BHPD	PSI.	HOLE REGRESSION	REGRESSION
		PSI. 1ST SLOPE	2ND SLOPE
###	#####	#####	#####
(X)	(Y)	(Y1)	(Y2)
0	414	2317	2306
300	640	2537	2556
600	915	2804	2806
900	1191	3074	3056
1200	1440	3297	3305
1500	1601	3485	3555
1800	1744	3546	3805

Regression Output:
 Constant 2306.4 Constant 2820.166
 Std Err of Y Est 17.22304 Std Err of Y Est 51.84753
 R Squared 0.998574 R Squared 0.920205
 No. of Observations 5 No. of Observations 3
 Degrees of Freedom 3 Degrees of Freedom 1

X Coefficient(s) 0.832333 X Coefficient(s) 0.415
 Std Err of Coef. 0.018154 Std Err of Coef. 0.122205

EQN OF STRAIGHT LINE: $y = ax + c$

$$y1 = (0.832333x) + 2306.4$$

$$y2 = (0.415x) + 2820.2$$

AT PARTING PRESSURE, $y1=y2$

$$(0.832333)x + 2306.4 = (0.415)x + 2820.2$$

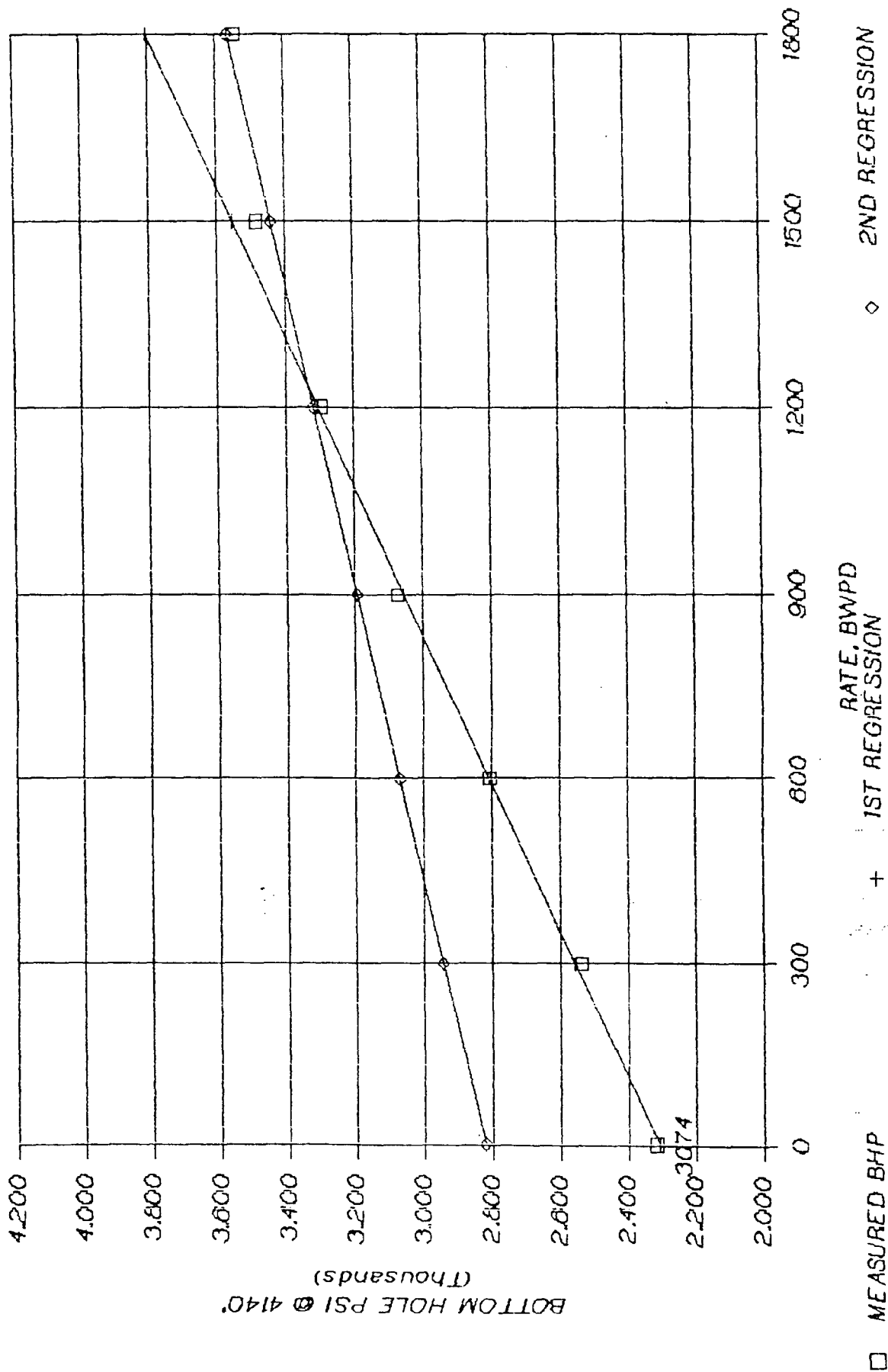
$$x = 1231 \text{ BHPD}$$

$$y1 = y2 = 3331 \text{ psi (BHP)}$$

$$= 3331 - (2317-414) = 1428 \text{ psi (Surface)}$$

CONOCO INC. MCA UNIT

NO. 350 (DATE: 12-11-89)



STEP RATE TESTERS, INC.

915/366-3409

P. O. Box 13094

ODESSA, TEXAS 79768

No. _____

COMPANY CONOCO INC. DATE 12-10-89

ADDRESS _____

WELL # 350 LEASE NCA UNIT

WELL FILE DATA:

T.D. 4317 PACKERS @ 3900 PERFS. 4024-4240

TBG. ID. _____ TBG. COATING _____ DEPTH SN. _____ BHP @ 4140'

STABILIZATION:

RATE 0 BHPD PRES. 2317 PSIG. CUMULATIVE _____ BBLs.

INCREMENTS:

RATE 300 BHPD PRES. _____ PSIG. STEP LENGTH 30 MINS.

TEST RESULTS:

FORMATION PARTING POINT 3250 PSIG. @ 1100 BHPD

	RATE BHPD	PRESSURE SURFACE PSIG.		PRESSURE MINUS FRICTION PSIG.	PRESSURE BOTTOM HOLE PSIG.	
1.	<u>0</u>	<u>414</u>	<u>10:10</u>	<u>414</u>	<u>2310</u>	
2.	<u>300</u>	<u>640</u> 226	<u>1:40</u>	<u>634</u>	<u>2537</u>	220
3.	<u>600</u>	<u>915</u> 275	<u>11:10</u>	<u>901</u>	<u>2800</u>	260
4.	<u>900</u>	<u>1191</u> 276	<u>1:40</u>	<u>1171</u>	<u>3074</u>	270
5.	<u>1200</u>	<u>1440</u> 249	<u>12:10</u>	<u>1394</u>	<u>3297</u>	223
6.	<u>1500</u>	<u>1601</u> 161	<u>1:40</u>	<u>1532</u>	<u>3435</u>	138
7.	<u>1800</u>	<u>1744</u> 143	<u>1:10</u>	<u>1643</u>	<u>3546</u>	111
8.	_____	_____	_____	_____	_____	_____
9.	_____	_____	_____	_____	_____	_____
10.	_____	_____	_____	_____	_____	_____
11.	_____	_____	_____	_____	_____	_____
12.	_____	_____	_____	_____	_____	_____
13.	_____	_____	_____	_____	_____	_____
14.	_____	_____	_____	_____	_____	_____
15.	_____	_____	_____	_____	_____	_____
16.	_____	_____	_____	_____	_____	_____
17.	_____	_____	_____	_____	_____	_____
18.	_____	_____	_____	_____	_____	_____
19.	_____	_____	_____	_____	_____	_____
20.	_____	_____	_____	_____	_____	_____

REMARKS _____

TESTER _____ COMPANY REP. _____

0 - 483
100 - 910
200 - 1373
300 - 1829
400 - 2201



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

January 12, 1990

GARREY CARRUTHERS
GOVERNOR

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

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:

Conoco Inc.	MCA	#202-P	26-17-32
Operator	Lease & Well No.	Unit	S-T-R

and my recommendations are as follows:

OK

Very truly yours

Jerry Sexton
Supervisor, District I

/bp



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

90 JAN 19 AM 9 36

January 12, 1990

GARREY CARRUTHERS
GOVERNOR

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

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:

Conono Inc.	MCA Unit #350-L	26-17-32
Operator	Lease & Well No.	Unit S-T-R

and my recommendations are as follows:

OK

Very truly yours

Jerry Sexton
Supervisor, District I

/bp