



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:

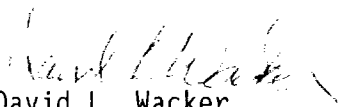
MCA Unit Injection Pressure Limit
Well Nos. 202 and 350
Maljamar Field
Lea County, New Mexico

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	LINEAR
BWPD	PSI.	HOLE REGRESSION	REGRESSION
		PSI. 1ST SLOPE	2ND SLOPE
***	*****	*****	*****
(x)	(y)	(y1)	(y2)
0	1485	3378	3340
100	1575	3493	3569
200	1906	3837	3799
300	2060	3982	4028
400	2274	4199	4258
500	2378	4296	4487

Regression Output: 3339.833 Constant 3531
 Std Err of Y Est 93.48885 Std Err of Y Est 48.98979
 R Squared 0.923386 R Squared 0.953576
 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: $y = ax + c$

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

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

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 3/4 TBG. COATING _____ DEPTH SN. _____ BHP @ 4150'

STABILIZATION:

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

INCREMENTS:

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

TEST RESULTS:

FORMATION PARTING POINT BHP 3260 PSIG. @ 150 BHPD

	RATE BHPD	PRESSURE SURFACE PSIG.		PRESSURE MINUS FRICTION PSIG.	PRESSURE BOTTOM HOLE PSIG.	
1.	0	1485	AP	1485	3378	AP
2.	100	1575	90	1600	3493	115
3.	200	1906	331	1944	3837	344
4.	300	2060	154	2089	3982	145
5.	400	2274	214	2306	4199	217
6.	500	2378	104	2403	4296	97
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20.						

REMARKS _____

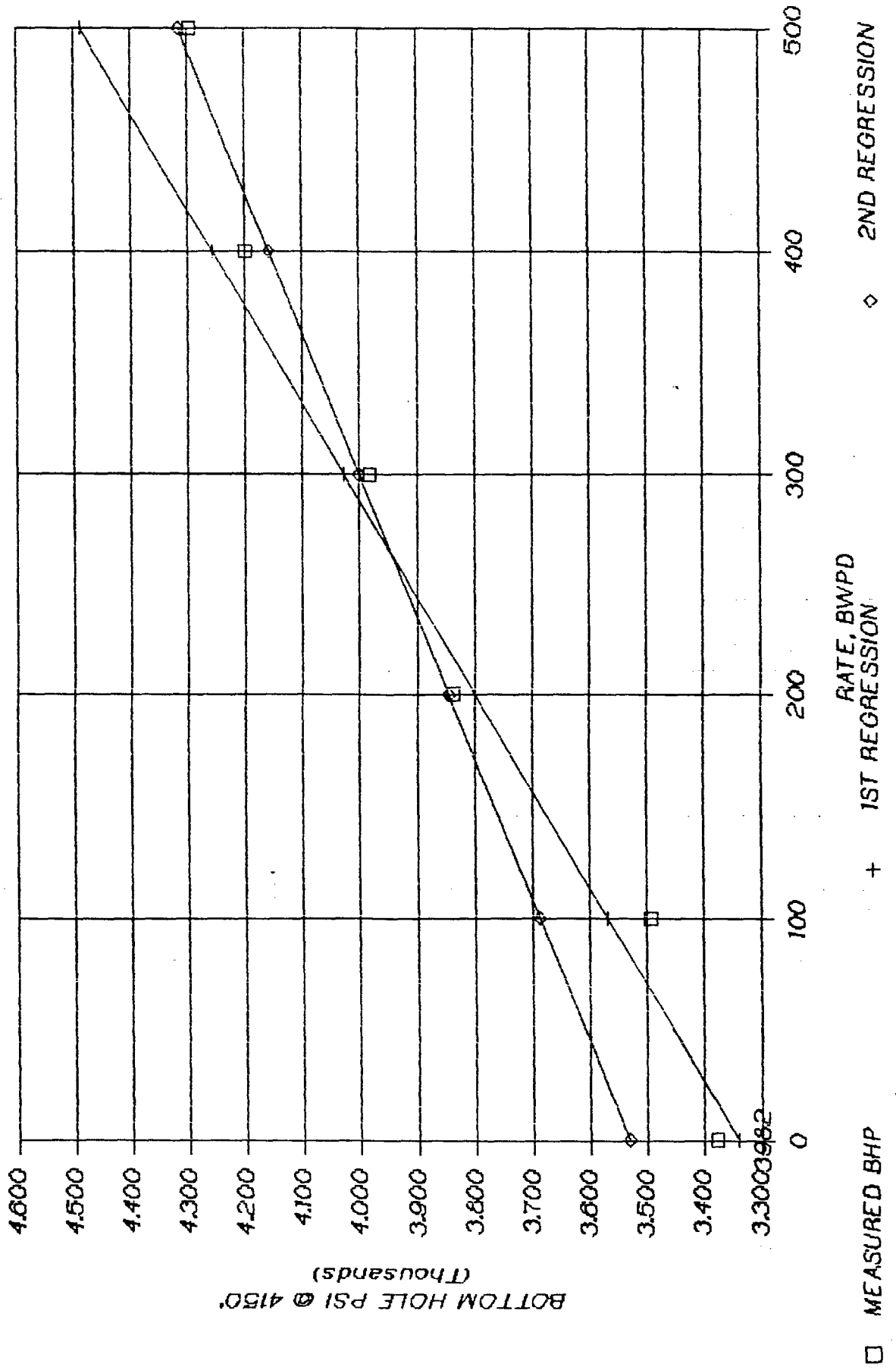
TESTER

Wade 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: 0.460
 SP.GRAV: 1.062

FORMATION PARTING POINT

 SURFACE 1428 PSI.
 BHP 3331 PSI.

RATE SURFACE	BOTTOM	LINEAR	LINEAR	REGRESSION
BWPD	PSI.	HOLE	REGRESSION	2ND SLOPE
*****	*****	*****	*****	*****
(X)	(Y)	(Y)	(Y1)	(Y2)
0	414	2317	2306	2820
300	640	2537	2556	2945
600	915	2804	2806	3069
900	1191	3074	3056	3194
1200	1440	3297	3305	3318
1500	1601	3485	3555	3443
1800	1744	3546	3805	3567

Regression Output: 2820.166
 Constant 2306.4
 Std Err of Y Est 17.22304
 R Squared 0.998574
 No. of Observations 5
 Degrees of Freedom 3
 X Coefficient(s) 0.832333
 Std Err of Coef. 0.018154
 X Coefficient(s) 0.415
 Std Err of Coef. 0.122205

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

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

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

AT PARTING PRESSURE, $y1=y2$

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

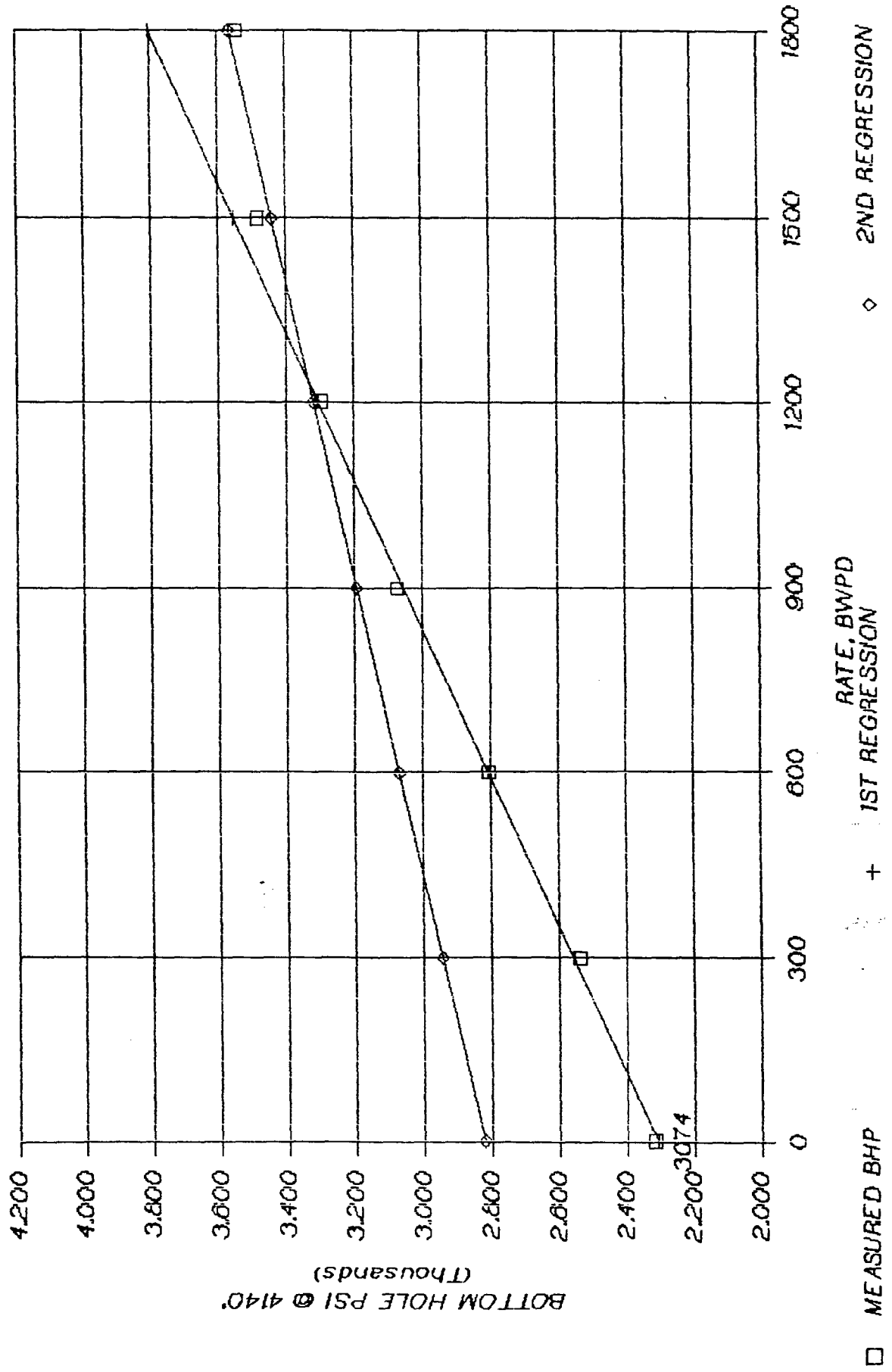
$$x = 1231 \text{ BWPD}$$

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

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

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 MCA UNIT

WELL FILE DATA:

T.D. 4317 PACKERS @ 3926 PERFS. 4024-4249

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.	0	414	10:10	414	2317	
2.	300	640 226	1:40	634	2537	220
3.	600	915 275	11:10	901	2800	260
4.	900	1191 276	1:40	1171	3072	274
5.	1200	1440 249	12:10	1394	3297	223
6.	1500	1601 161	1:40	1532	3435	138
7.	1800	1744 143	1:10	1643	3546	111
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REMARKS _____

TESTER _____ COMPANY REP. _____

0 - 483
1005 - 910
2000 - 1373
3000 - 1829
4000 - 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:

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



STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
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(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

MALJAMAR COOPERATIVE AGREEMENT (MCA)

UNIT PRESSURE MAINTENANCE EXPANSION

<u>WELL NUMBER</u>	<u>LOCATION</u>	<u>APPROXIMATE PACKER DEPTH</u>	<u>MAXIMUM SURFACE INJECTION PRESSURE</u>
43	1980' FNL & 1980' FEL Section 21	3640 ft.	748 PSIG
122	660' FNL & 660' FEL Section 27	3816 ft.	783 PSIG
156	2580' FNL & 2595' FWL Section 29	3708 ft.	762 PSIG
182	2615' FSL & 2570' FEL Section 27	3762 ft.	772 PSIG
202	660' FSL & 660' FWL Section 26	3920 ft.	804 PSIG
282	1295' FNL & 2615' FWL Section 27	3706 ft.	761 PSIG
299	175' FNL & 1295' FWL Section 27	3765 ft.	773 PSIG
311	1295' FNL & 2615' FWL Section 26	3879 ft.	795 PSIG
318	25' FNL & 1295' FEL Section 28	3709 ft.	762 PSIG
327	1225' FSL & 2615' FEL Section 22	3704 ft.	761 PSIG
346	55' FSL & 1200' FWL Section 27	3942 ft.	808 PSIG
349	75' FSL & 1295' FWL Section 23	3850 ft.	792 PSIG
350	2615' FSL & 1295' FWL Section 26	3900 ft.	805 PSIG

APPENDIX "A"

Administrative Order PMX 135