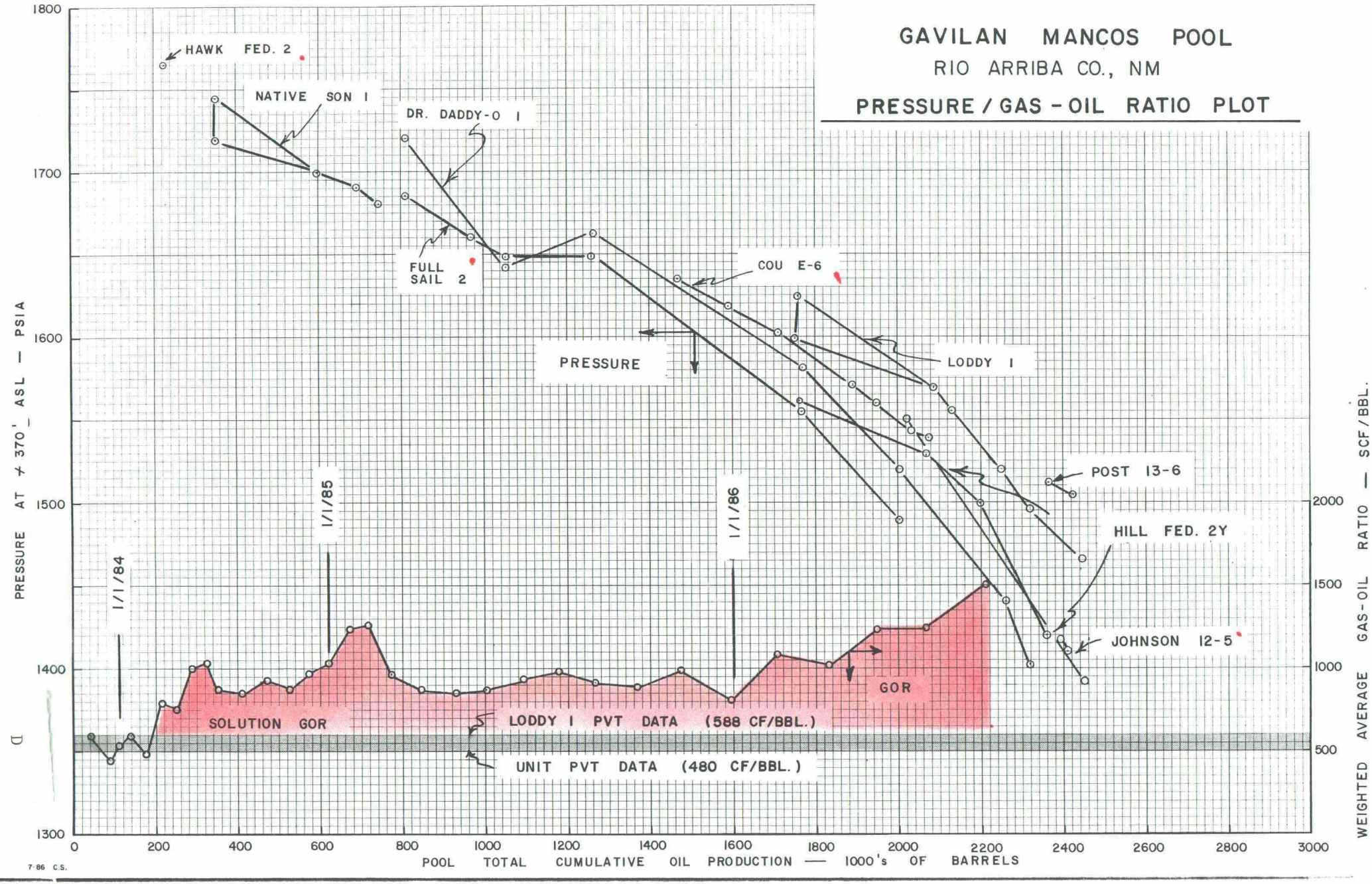
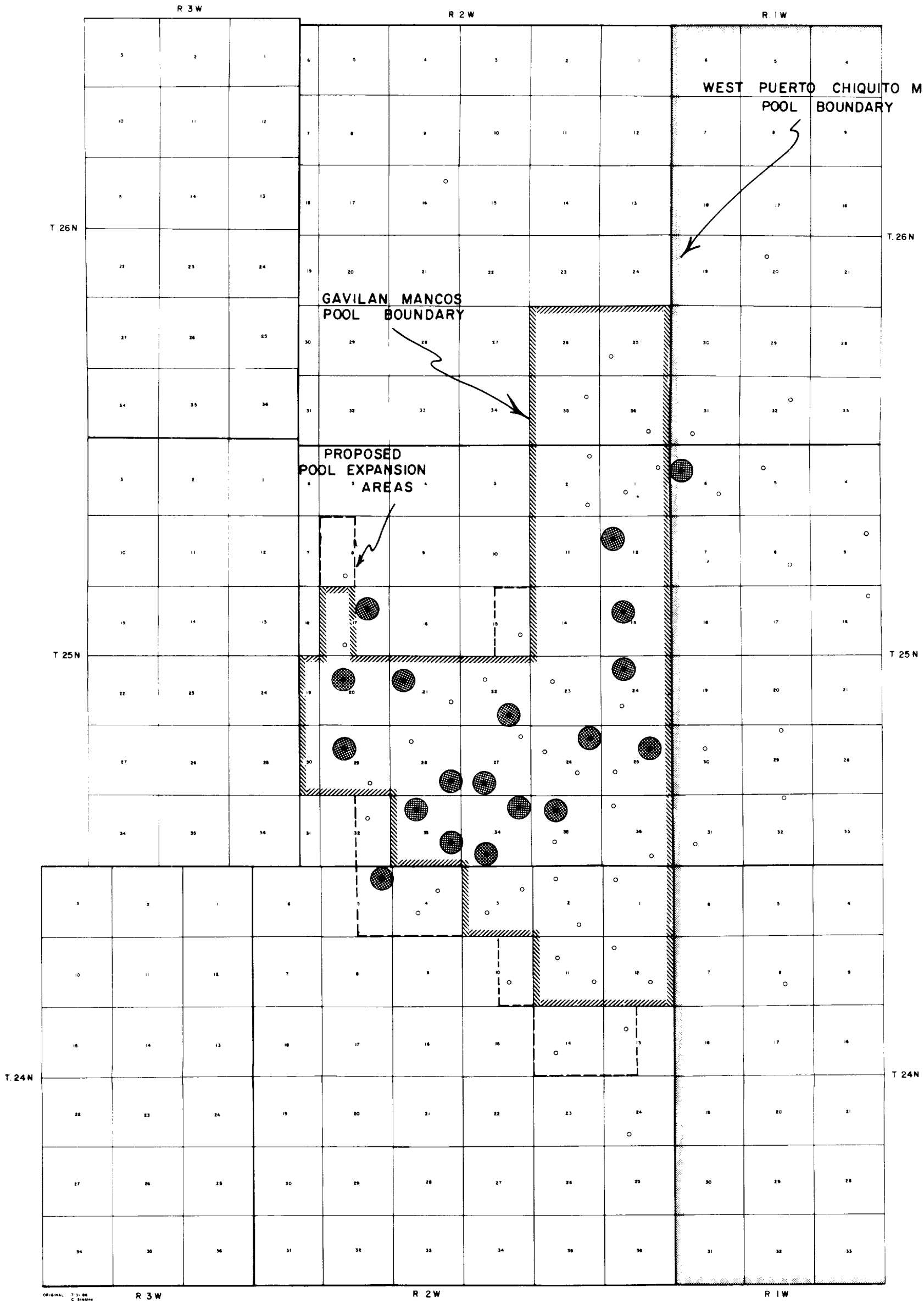
GAVILAN MANCOS POOL

RIO ARRIBA CO., NM

PRESSURE / GAS - OIL RATIO PLOT



7-86 C.S.



WELL PROVIDING PRESSURE DATA
FOR
PLOTS PRESSURE VS. PRODUCTION
AND
PRESSURE VS. TIME

GAVILAN MANCOS POOL

Exhibit #2

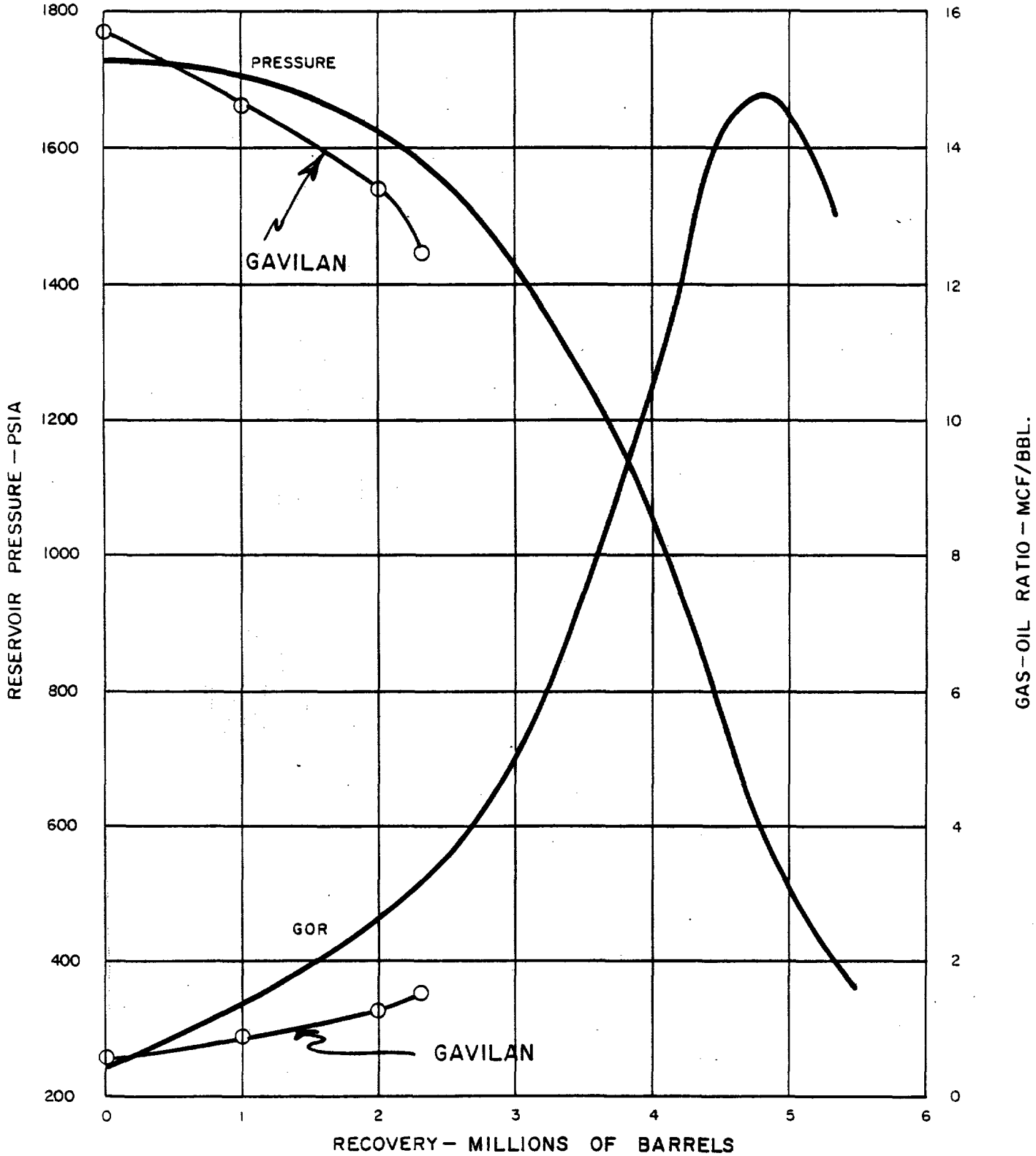
DUGAN PRODUCTION CORP.
EXHIBITS IN CASE NO. 8946
BEFORE THE OIL CONSERVATION DIVISION OF THE
NEW MEXICO DEPARTMENT OF ENERGY AND MINERALS

AUGUST 7, 1986

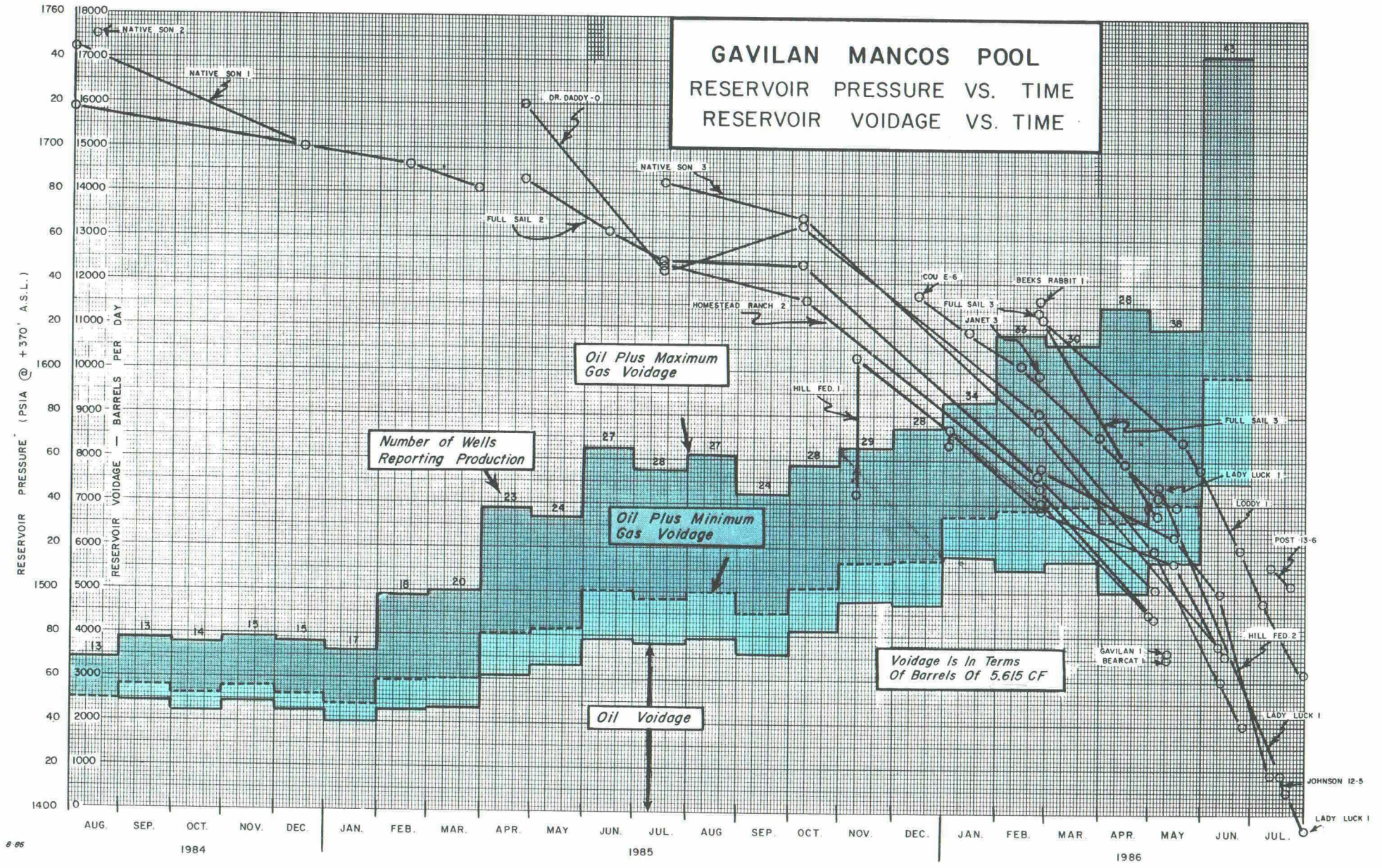
BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No._____ Exhibit No. 2
Submitted by_____
Hearing Date_____

COMPARISON
of
SOLUTION GAS DRIVE
PRODUCTION HISTORY

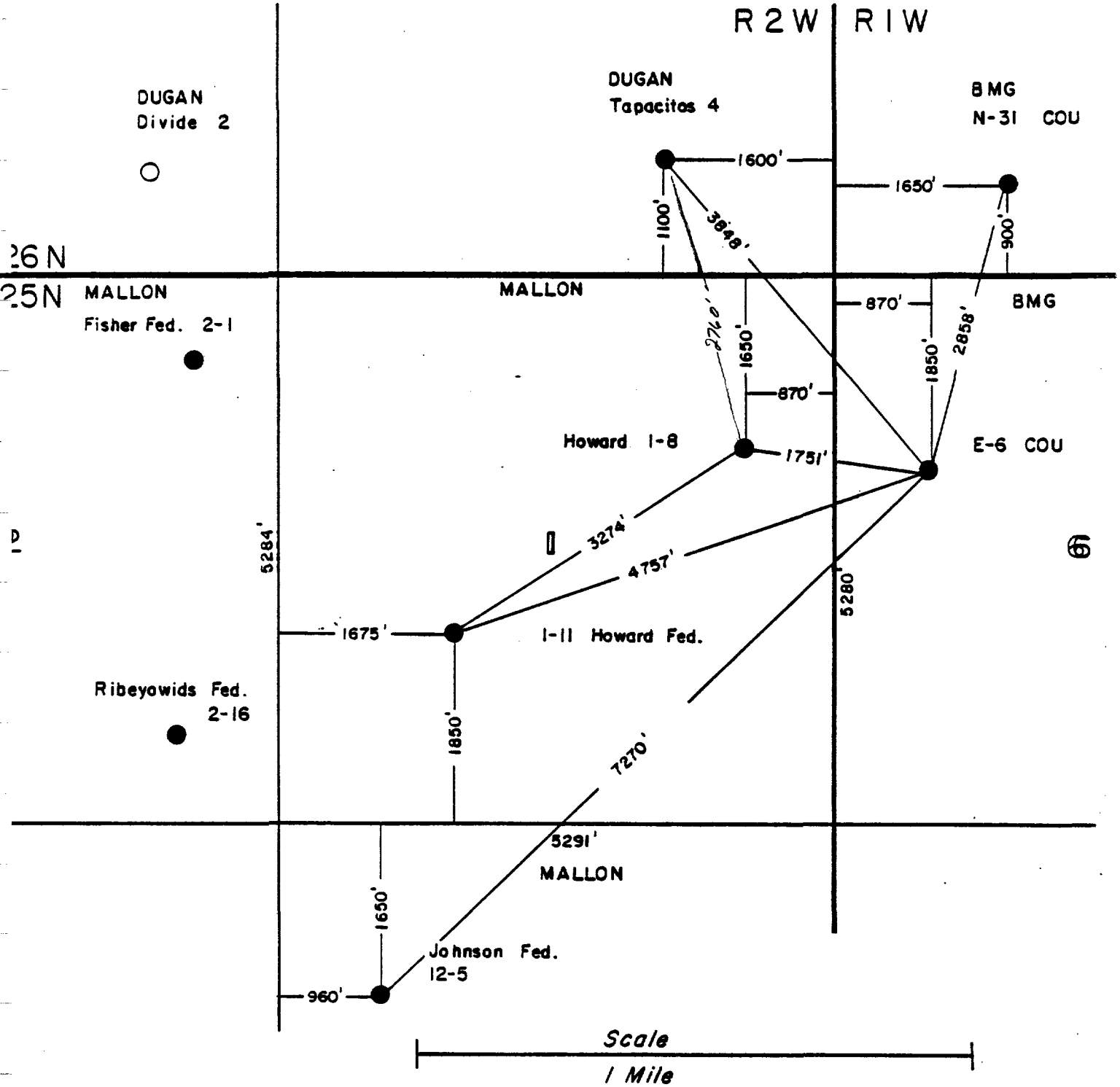
FOR A FRACTURED RESERVOIR
CONTAINING 100 MILLION BARRELS IN PLACE
WITH
GAVILAN ACTUAL PRODUCTION
(PVT Data Similar To Gavilan)



8·86


GAVILAN MANCOS POOL
RESERVOIR PRESSURE VS. TIME
RESERVOIR VOIDAGE VS. TIME
RESERVOIR PRESSURE (PSIA @ +370' A.S.L.)
RESERVOIR VOIDAGE — BARRELS PER DAY
NATIVE SON 2
NATIVE SON 1
DR. DADDY-O
NATIVE SON 3
FULL SAIL 2
COU E-6
BEEKS RABBIT 1
FULL SAIL 3
JANET 3
HOMESTEAD RANCH 2
HILL FED. 1
FULL SAIL 3
LADY LUCK 1
LODDY 1
POST 13-6
HILL FED 2
GAVILAN 1
BEARCAT 1
LADY LUCK 1
JOHNSON 12-5
LADY LUCK 1
Oil Plus Maximum Gas Voidage
Number of Wells Reporting Production
Oil Plus Minimum Gas Voidage
Oil Voidage
Voidage Is In Terms Of Barrels Of 5.615 CF
AUG. SEP. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUN. JUL. AUG SEP. OCT. NOV. DEC. JAN. FEB. MAR. APR. MAY JUN. JUL.
1984
1985
1986
8-86

PLAT OF AREA OF PROPOSED INTERFERENCE TEST MALLON #1-8 HOWARD AND BENSON-MONTIN-GREER #E-6 CANADA OJITOS UNIT

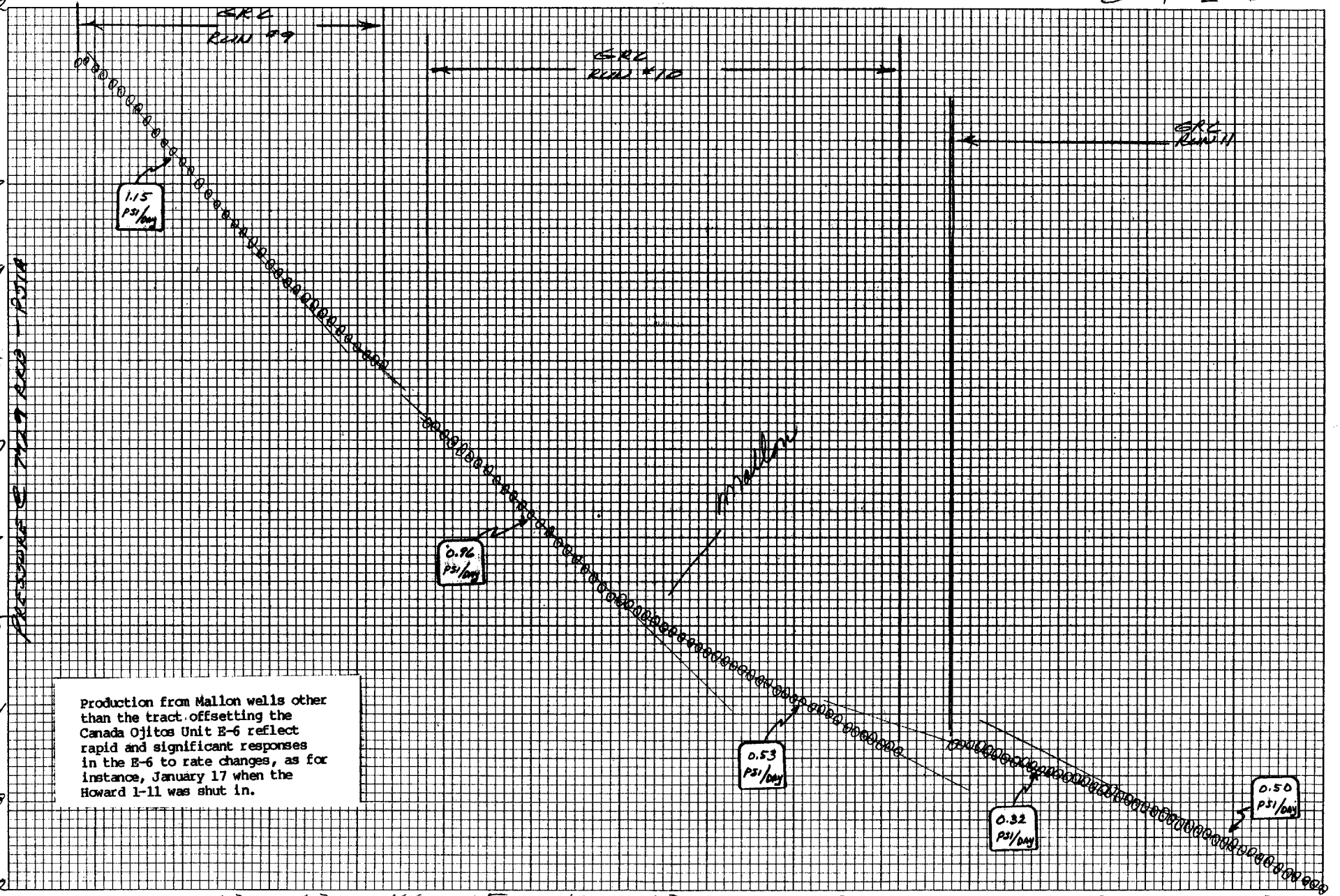


/85

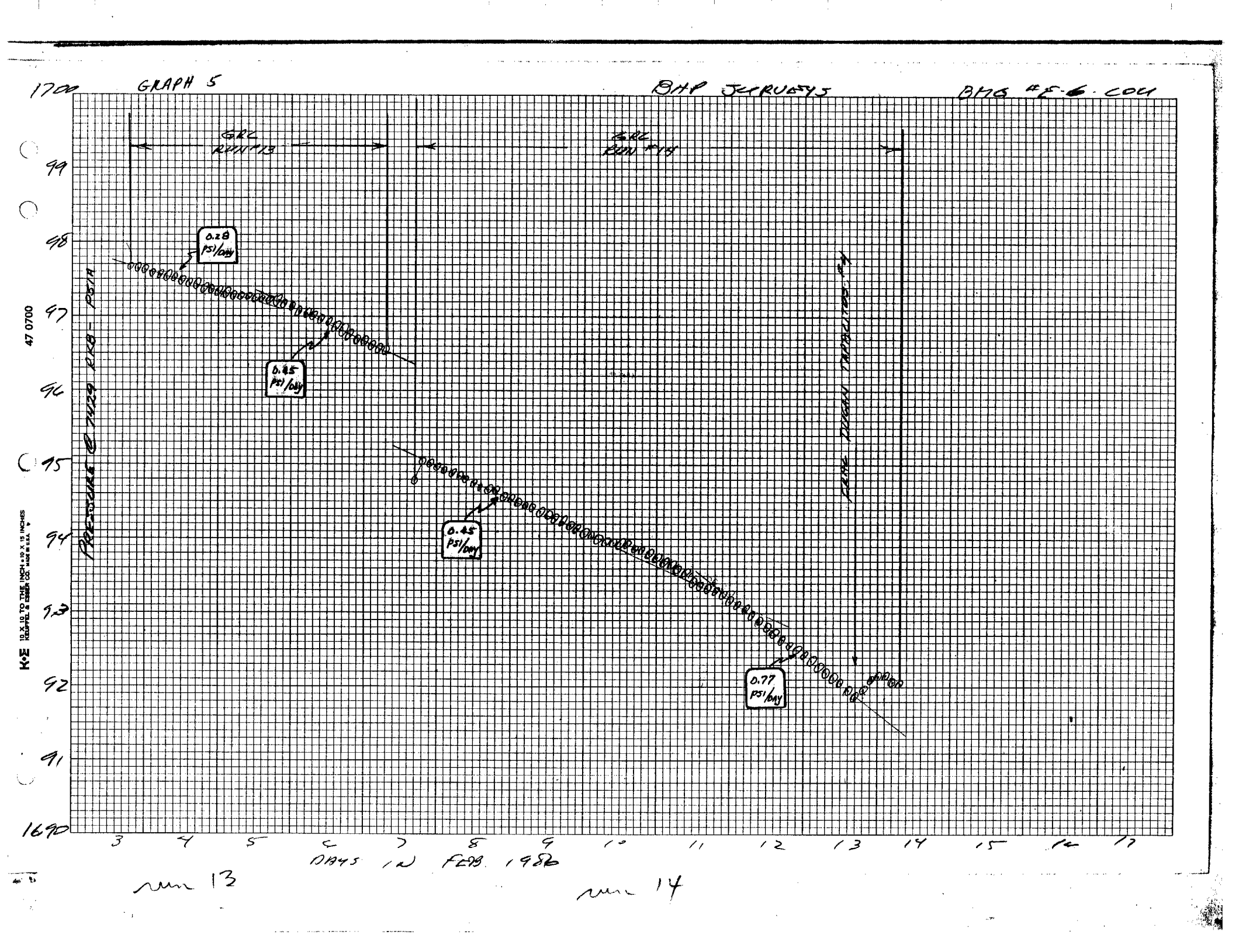
Revised: 6-23-86

GRAPH 3

COCA E-6



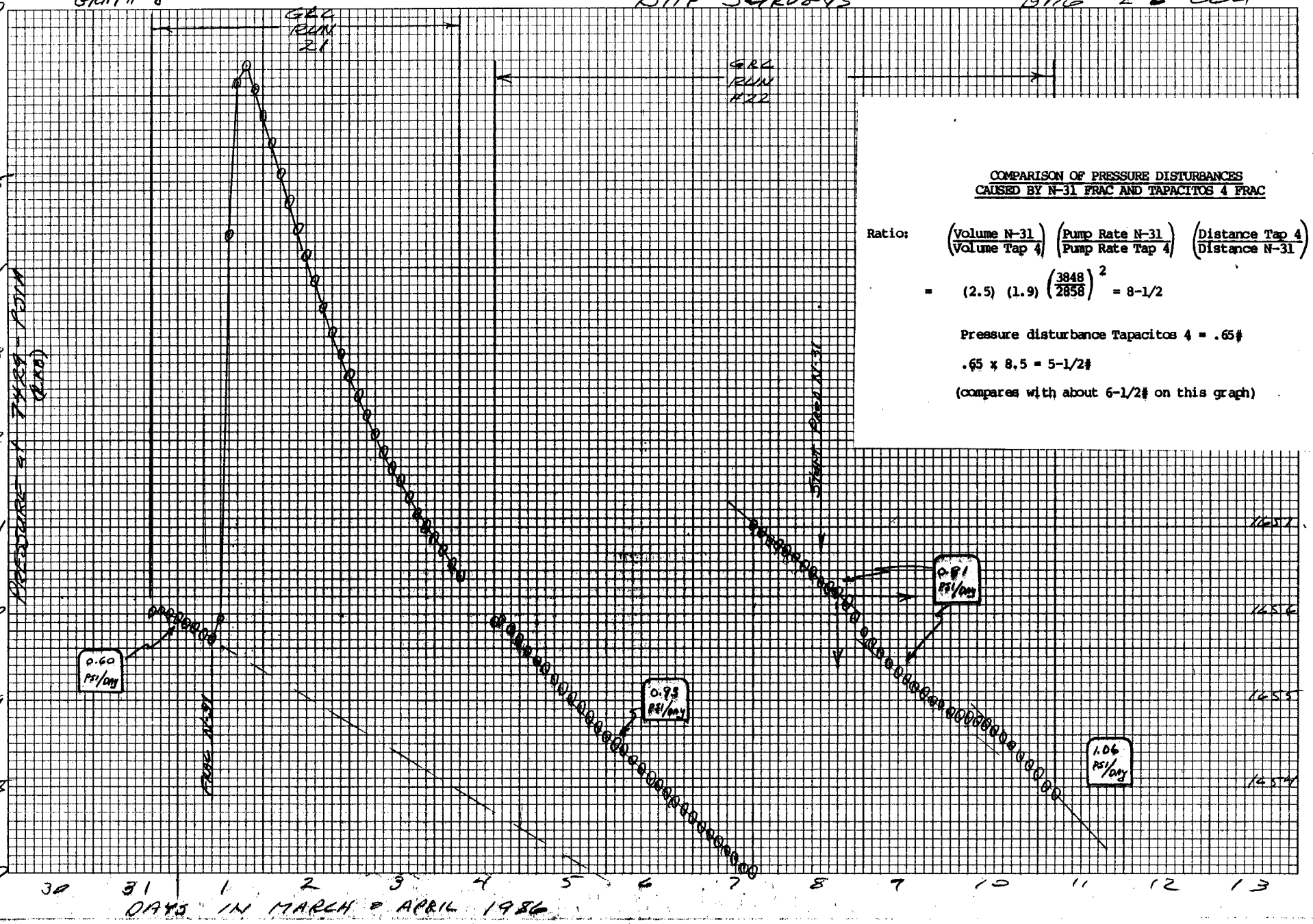
Production from Mallon wells other than the tract offsetting the Canada Ojitos Unit E-6 reflect rapid and significant responses in the E-6 to rate changes, as for instance, January 17 when the Howard 1-11 was shut in.


GRAPH 5
BHP SURVEYS
BHG #E-6 COCH
GRC RUN #13
GRC RUN #14
0.28 PSI/DAY
0.45 PSI/DAY
0.45 PSI/DAY
0.77 PSI/DAY
PRESSURE @ 7429 FKB - PSIA
1700
99
98
97
96
95
94
93
92
91
1690
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
DAYS IN FEB 1986
47 0700
10 X 10 TO THE INCH • 10 X 15 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.
K•E
run 13
run 14

GRAPH 8

BHP SURVEYS

BTG #E-6 COM



COMPARISON OF PRESSURE DISTURBANCES
CAUSED BY N-31 FRAC AND TAPACITOS 4 FRAC

Ratio: $\left(\frac{\text{Volume N-31}}{\text{Volume Tap 4}}\right)\left(\frac{\text{Pump Rate N-31}}{\text{Pump Rate Tap 4}}\right)\left(\frac{\text{Distance Tap 4}}{\text{Distance N-31}}\right)^2$

$= (2.5)\ (1.9)\left(\frac{3848}{2858}\right)^2 = 8\text{-}1/2$

Pressure disturbance Tapacitos 4 = .65#

.65 x 8.5 = 5-1/2#

(compares with about 6-1/2# on this graph)

47 0700

K&E 10 X 10 TO THE INCH • 10 X 15 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

DATE: 7/ 8/86 COMPANY: BMG
GAUGE SN # 69160 CLIENT: McHugh
WELL # 0 WELL NAME: Dr Daddy-o
TEST # 37 TEST OPERATOR: MD
DATA FILE: 3 LOCATION:
COMMENTS: BHP @8950' GL
DWT TBG 476 psig

INT	TIME	DELTA T HRS	FREQUENCY HZ	PRESSURE PSIA	TEMPERATURE 'F
1	15:45:57	3.216	8638.13		73.87
1	15:46:55	3.232	10618.06	14.08	
1	15:47:52	3.248	6633.41		73.50
1	15:48:50	3.264	10617.70	13.63	
1	15:49:48	3.280	6620.69		72.49
1	15:50:45	3.296	10618.11	13.77	
1	15:51:43	3.312	6610.20		71.67
1	15:52:40	3.328	11078.11	487.38	
1	15:53:38	3.344	6625.30		72.86
1	15:54:36	3.360	11078.64	486.05	
1	15:55:33	3.376	6612.23		71.83
1	15:56:31	3.392	11076.98	486.18	
1	15:57:28	3.408	6602.35		71.05
1	15:58:26	3.424	11077.30	486.36	
1	15:59:24	3.440	6594.93		70.46
1	16: 0:21	3.456	11077.54	486.49	
1	16: 1:19	3.472	6588.72		69.97
1	16: 2:16	3.488	11077.71	486.56	
1	16: 3:14	3.504	6499.92		62.97
1	16: 4:12	3.520	11083.86	491.68	
1	16: 5: 9	3.536	6431.24		57.57
1	16: 6: 7	3.552	11092.78	500.19	
1	16: 7: 4	3.568	6491.99		62.35
1	16: 8: 2	3.584	11095.73	504.47	
1	16: 9: 0	3.600	6540.04		66.13
1	16: 9:57	3.616	11097.35	507.09	
1	16:10:55	3.632	6584.53		69.64
1	16:11:52	3.648	11098.87	509.53	
1	16:12:50	3.664	6630.21		73.25
1	16:13:48	3.680	11100.95	512.61	
1	16:14:45	3.696	6676.07		76.87
1	16:15:43	3.712	11102.82	515.45	
1	16:16:40	3.728	6725.71		80.80
1	16:17:38	3.744	11102.62	516.11	
1	16:18:36	3.760	6740.22		81.95
1	16:19:33	3.776	11103.54	517.37	
1	16:20:31	3.792	6775.78		84.76
1	16:21:28	3.808	11103.83	518.32	
1	16:22:26	3.824	6791.47		86.01
1	16:23:24	3.840	11105.51	520.43	
1	16:24:21	3.856	6827.51		88.87
1	16:25:19	3.872	11107.51	523.24	
1	16:26:16	3.888	6872.70		92.46
1	16:27:14	3.904	11107.44	523.96	
1	16:28:12	3.920	6887.57		93.64
1	16:29: 9	3.936	11109.36	526.32	
1	16:30: 7	3.952	6922.09		96.39
1	16:31: 4	3.968	11112.08	529.90	
1	16:32: 2	3.984	6992.24		101.98
1	16:33: 0	4.000	11115.16	534.47	

10 minutes

RECORDER IN LUBRICATOR AT SURFACE (TBG PRESS)

ΔT
Tmax = 171.23
Tmin = 57.57

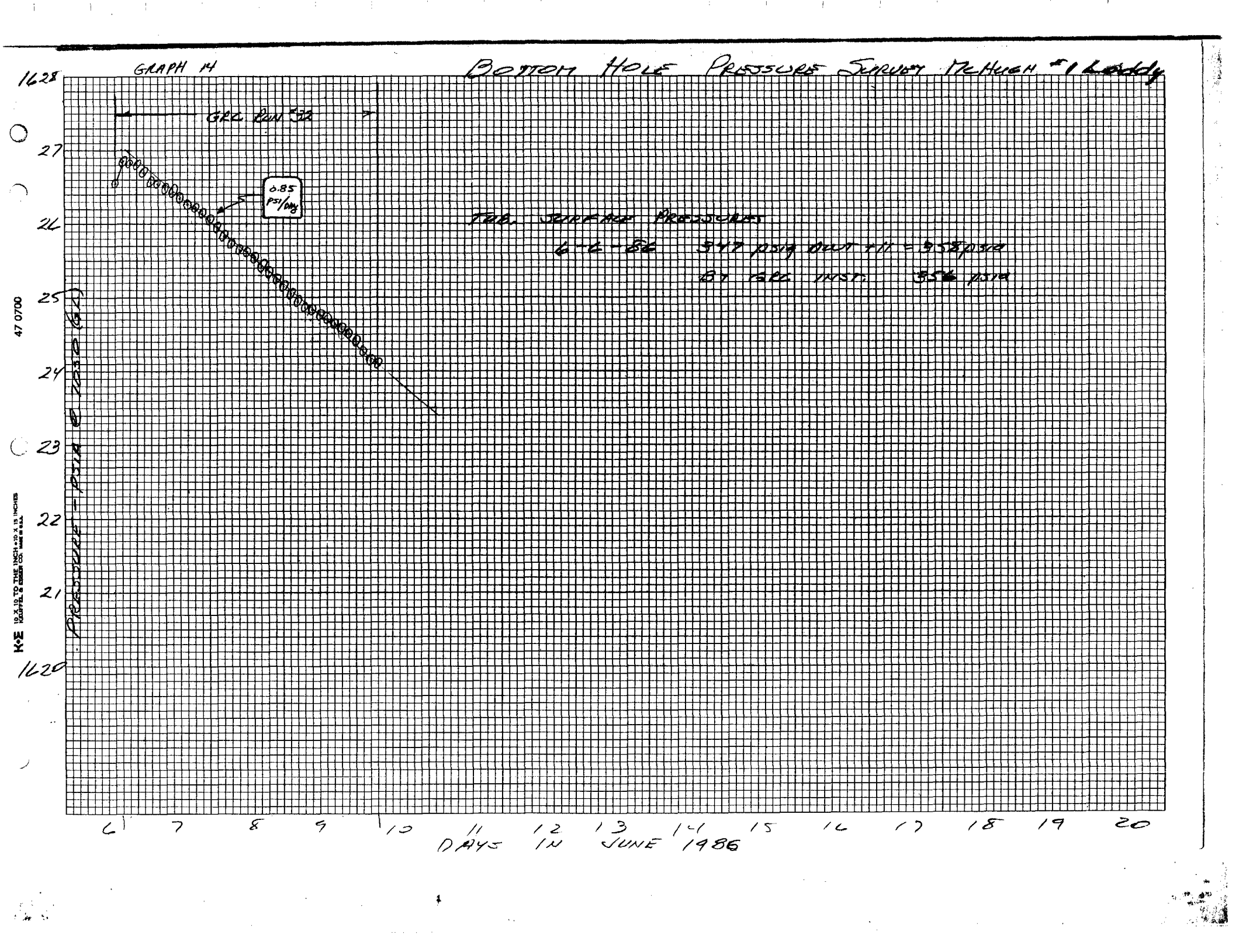
DATE: 7/ 9/86 COMPANY: BMG
GAUGE SN # 69160 CLIENT: McHugh
WELL # 0 WELL NAME: Dr Daddy-o
TEST # 37 TEST OPERATOR: MD
DATA FILE: 7 LOCATION:
COMMENTS: BHP @6950' GL
DWT TBG 476 psig

INT	TIME	DELTA T HRS	FREQUENCY HZ	PRESSURE PSIA	TEMPERATURE 'F
4	21:48: 0	33.250	7851.03		171.23
4	22: 3: 0	33.500	11863.48	1438.06	
4	22:18: 0	33.750	7850.97		171.22
4	22:33: 0	34.000	11863.33	1437.86	
4	22:48: 0	34.250	7851.04		171.23
4	23: 3: 0	34.500	11863.20	1437.69	
4	23:18: 0	34.750	7850.97		171.22
4	23:33: 0	35.000	11863.07	1437.53	
4	23:48: 0	35.250	7850.96		171.22
4	0: 3: 0	35.500	11862.96	1437.38	
4	0:18: 0	35.750	7851.00		171.23
4	0:33: 0	36.000	11862.83	1437.22	
4	0:48: 0	36.250	7851.02		171.23
4	1: 3: 0	36.500	11862.71	1437.07	
4	1:18: 0	36.750	7850.98		171.23
4	1:33: 0	37.000	11862.61	1436.93	
4	1:48: 0	37.250	7850.98		171.23
4	2: 3: 0	37.500	11862.50	1436.79	
4	2:18: 0	37.750	7850.95		171.23
4	2:33: 0	38.000	11862.39	1436.66	
5	2:48: 0	38.250	7851.02		171.23
5	3: 3: 0	38.500	11862.29	1436.52	
5	3:18: 0	38.750	7850.99		171.23
5	3:33: 0	39.000	11862.18	1436.38	
5	3:48: 0	39.250	7850.84		171.22
5	4: 3: 0	39.500	11862.08	1436.26	
5	4:18: 0	39.750	7851.01		171.23
5	4:33: 0	40.000	11861.99	1436.14	
5	4:48: 0	40.250	7851.04		171.23
5	5: 3: 0	40.500	11861.89	1436.01	
5	5:18: 0	40.750	7851.04		171.23
5	5:33: 0	41.000	11861.80	1435.90	
5	5:48: 0	41.250	7851.04		171.23
5	6: 3: 0	41.500	11861.71	1435.78	
5	6:18: 0	41.750	7851.07		171.23
5	6:33: 0	42.000	11861.62	1435.66	
5	6:48: 0	42.250	7851.05		171.23
5	7: 3: 0	42.500	11861.53	1435.55	
5	7:18: 0	42.750	7851.04		171.23
5	7:33: 0	43.000	11861.41	1435.40	
5	7:48: 0	43.250	7851.08		171.23
5	8: 3: 0	43.500	11861.28	1435.22	
5	8:18: 0	43.750	7850.99		171.23
5	8:33: 0	44.000	11861.14	1435.04	
5	8:48: 0	44.250	7850.99		171.23
5	9: 3: 0	44.500	11861.00	1434.86	
5	9:18: 0	44.750	7851.09		171.23
5	9:33: 0	45.000	11860.94	1434.79	
5	9:48: 0	45.250	7850.95		171.22
5	10: 3: 0	45.500	11860.86	1434.69	

← ± 2.4 hrs (1 day) →

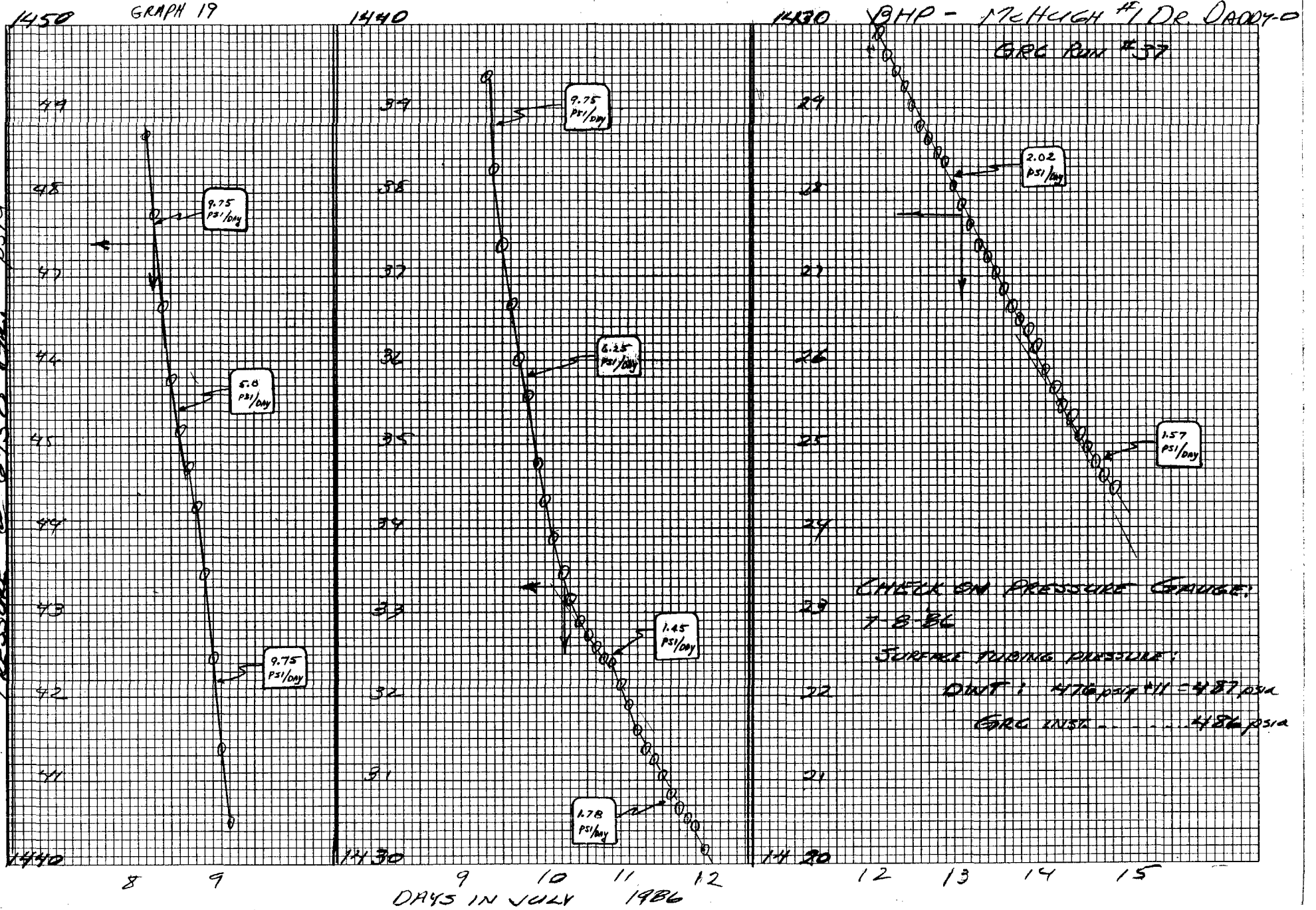
GRAPH 14

BOTTOM HOLE PRESSURE SURVEY McHUGH #1 Laddy



47 0700

K+E 10 X 10 TO THE INCH • 10 X 15 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.


GRAPH 19
BHP - MCHIGH #1 DR. DADDY-O
CORE RUN #37
PRESSURE @ 6450 Ft. - DST#
1450
1440
1430
9.75 PSI/DAY
5.0 PSI/DAY
9.75 PSI/DAY
9.75 PSI/DAY
6.25 PSI/DAY
1.45 PSI/DAY
1.78 PSI/DAY
2.02 PSI/DAY
1.57 PSI/DAY
CHECK ON PRESSURE GAUGE:
7-8-86
SURFACE FLOWING PRESSURE:
DST: 476 psig + 11 = 487 psia
CORE INTK ..... 486 psia
DAYS IN JULY 1986