

MULTIPLE WELL INTERFERENCE TEST
MALTON WELLS ADJOINING CANADA OJITOS UNIT E-6
(SECTION 6, TOWNSHIP 25 NORTH, RANGE 1 WEST)
CONDUCTED DURING MAY, 1986

The circled wells on the facing page in the vicinity of the Canada Ojitos Unit E-6 were so located and producing at reservoir voidage rates high enough to influence the pressure in the vicinity of the E-6 observation well.

The test indicates average values for Kh/u of 35 darcy feet; which for a GOR of 1300 cubic feet per barrel (dominant well in the test) shows a value of Koh of 10 darcy feet.

Pore volume approximates 1700 stock tank barrels per acre.

This test was conducted while the Gavilan Engineering Committee was in existence; and copies of the pressure response in the E-6 were provided members of the committee. The committee as a group did not analyze the interference test.

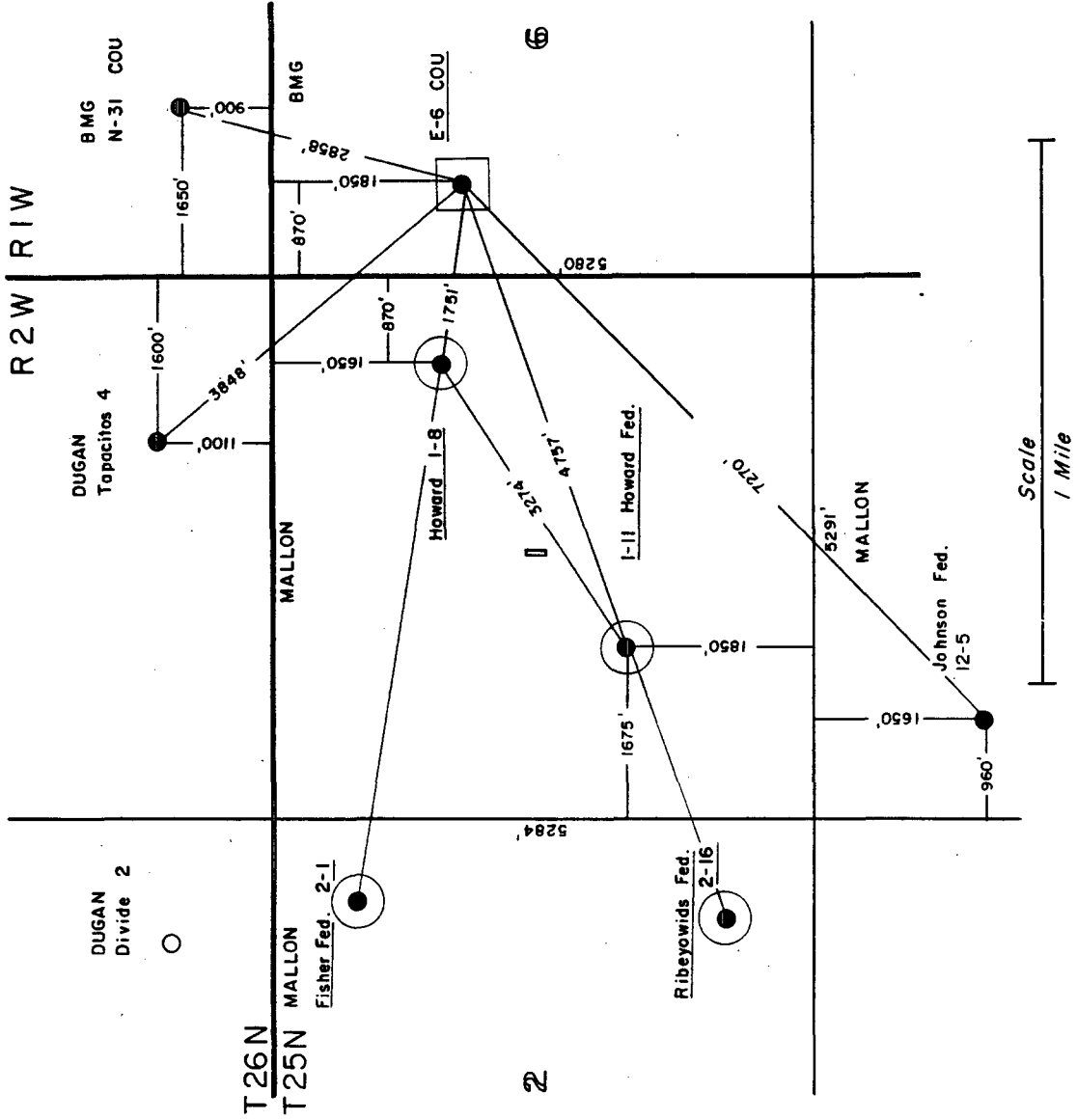
PLAT OF INTERFERENCE TEST

MALLON WELLS

AND

BENSON-MONTIN-GREER DRILLING CORP. CANADA OUITOS UNIT E-6

MAY 1986



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The graph on the facing page shows pressures in the Dugan Tapacitos #4 and Canada Ojitos Unit E-6 before and during the interference test.

All wells in the test area were shut in before and during the test until some of the Mallon wells went on production May 12.

All of the Mallon wells were shut in from May 5 to May 12 for maintenance of the gasoline plant.

The Canada Ojitos Unit J-6 was sand fraced May 8 with pressure responses shown on the graph.

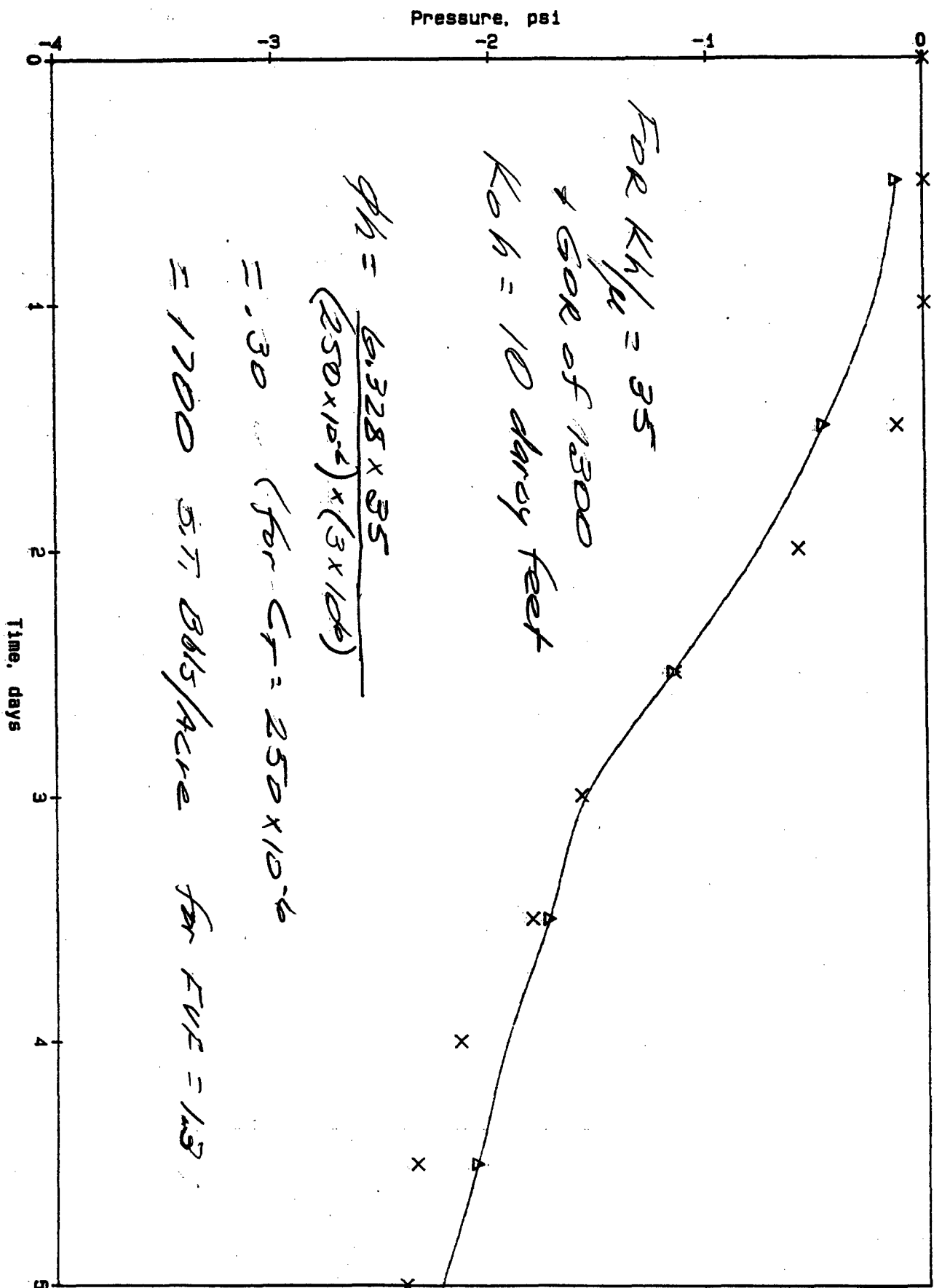
Pressures in the area had a stabilized rate of decline of approximately .46 psi/day until the Mallon wells went on production May 12. The interference effect as the consequence of the Mallon wells going on production is noted on the graph.

On the pages following are print-outs and graphs of the calculations. To estimate pore volume a formation compressibility of approximately 15×10^{-6} was used. If the formation compressibility is higher, the pore volume will be lower. Also enclosed are statistics of production, GOR's, reservoir voidage by each well by each reported day along with normalized reservoir rates.



MALON/E-6 INTERFERENCE TEST
MAY 1966

X SRC RUN 27 (FILE RUN 27)
 $\Delta K_h/u = 35$, $n = 366$ (ITM108)



THE COMPUTATION OF PRESSURE RESPONSE IN AN OBSERVATION WELL OF MULTIPLE SOURCE WELLS PRODUCED AT VARIABLE RATES
(E.I. SOLUTION BY SUPERPOSITION)

OBSERVATION WELL : C00 E-6

dc=diffusivity constant=6.328K/(a)(c)(u) a=porosity,fraction t=compressibility u=viscosity,cp k=permeability,darcys

FISHER 2 HOW 1-11 RIBEY 2

PROD-WELL 1	PROD-WELL 2	PROD-WELL 3	PROD-WELL 4	PROD-WELL 5	PROD-WELL 6	PROD-WELL 7	PROD-WELL 8	PROD-WELL 9	PROD-WELL 10	PROD-WELL 11	PROD-WELL 12	PROD-WELL 13	PROD-WELL 14	PROD-WELL 15
1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
35.00	35.00	35.00	35.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3000000	3000000	3000000	3000000	0	0	0	0	0	0	0	0	0	0	0
7000.00	1751.00	4757.00	7600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TIME INCREMENT

DAY

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1.0

Ratio Of K_{oh} To Total
Mobility xh As Dependent On
GOR & Reservoir Pressure
West Puerto Chiquito Pool

1.0

$K_{oh} \text{ To } \left(\frac{\mu_r}{k_r} \right) h$

0.1

0.1

For Kh/u of 35 darcy feet and GOR of 1300:

Ratio = .27

$K_{oh} = 10$ darcy feet

1400 #

1000 #

10,000

1,000

100

100,000

GAS - OIL RATIO — CUBIC FEET / BBL.

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CONDUCTED DURING MAY, 1986

Fisher Fed #2 Howard 1-8 Howard 1-11 Johnson 12-5 Ribeyowids 2-1

Distance from E-6 7000' 1751' 4757' 7270' 7600'

Reported GOR 927 1243 1305 (NR) 467

* Reservoir Voidage (bbl/bbl) 1.448 1.881 2.000 - 1.000

Stock Tank Oil Production, Bbls/Day

May 12	0	28	0	0	0
May 13	522	125	596	0	232
May 14	337	245	422	0	110
May 15	327	0	732	0	154
May 16	577	0	751	0	221

Equivalent Reservoir Bbls/Day

May 12	0	53	0	0	0
May 13	756	235	1192	0	232
May 14	488	461	844	0	110
May 15	473	0	1464	0	154
May 16	835	0	1502	0	221

Normalized Production Rates, Reservoir Bbls/Day

May 12	0	113	0	0	0
May 13	667	246	1076	0	232
May 14	551	289	1086	0	110
May 15	567	100	1318	0	154
May 16	688	0	1318	0	221

* Total reservoir voidage of oil and gas in terms of stock tank barrels of oil with formation volume factor of 1.3 and solution GOR of 600 cf/bbl:

1630# at 7300' converted to 7130: (7300-7130) (.3) = 1580 at 7130. Vol. ratio 1.74 bbls/MCF.

DATE: 5/12/86
GAUGE SN #69160
WELL # 0
TEST # 27

DATA FILE: 1

COMPANY: BMG
CLIENT:
WELL NAME: ES
TEST OPERATOR: MD
LOCATION: COU
COMMENTS: 7423' GL
(7429' RKB)

Print-out of this survey covers
79 pages. They are not duplicated
here - but are available, on
request by reasonable notice
from B-M-G's files.

DATA PT	TIME	DELTA T (HRS)	FREQUENCY	PRESSURE PSIA	TEMPERATURE 'F
1	11:12:24	0.000	6704.99		79.16
2	11:14:48	0.040	10615.60	13.01	
3	11:17:12	0.080	6709.11		79.48
4	11:19:36	0.120	10615.55	13.04	
5	11:22:00	0.160	6711.67		79.69
6	11:24:24	0.200	10615.31	12.86	
7	11:26:48	0.240	6711.85		79.70
8	11:29:12	0.280	10615.22	12.78	
9	11:31:36	0.320	6712.85		79.78
10	11:34:00	0.360	10615.04	12.63	
11	11:36:24	0.400	6715.59		80.00
12	11:38:48	0.440	10614.86	12.50	
13	11:41:12	0.480	6718.51		80.23
14	11:43:36	0.520	10614.70	12.41	
15	11:46:00	0.560	6714.78		79.93
16	11:48:24	0.600	10614.84	12.47	
17	11:50:48	0.640	6711.99		79.71
18	11:53:12	0.680	10614.97	12.54	
19	11:55:36	0.720	6710.03		79.56
20	11:58:00	0.760	10615.08	12.60	
21	12:00:24	0.800	6707.82		79.38
22	12:02:48	0.840	10615.17	12.65	
23	12:05:12	0.880	6706.84		79.30
24	12:07:36	0.920	10615.15	12.61	
25	12:10:00	0.960	6708.04		79.40
26	12:12:24	1.000	10615.07	12.55	
27	12:14:48	1.040	6712.75		79.77
28	12:17:12	1.080	10614.78	12.36	
29	12:19:36	1.120	6717.40		80.14
30	12:22:00	1.160	10614.61	12.29	
31	12:24:24	1.200	6719.01		80.27
32	12:26:48	1.240	10614.59	12.31	
33	12:29:12	1.280	6719.95		80.34
34	12:31:36	1.320	10614.68	12.41	
35	12:34:00	1.360	6720.11		80.35
36	12:36:24	1.400	10614.81	12.54	
37	12:38:48	1.440	6719.91		80.34