

NOTE: *Pruebas no
representativa.*

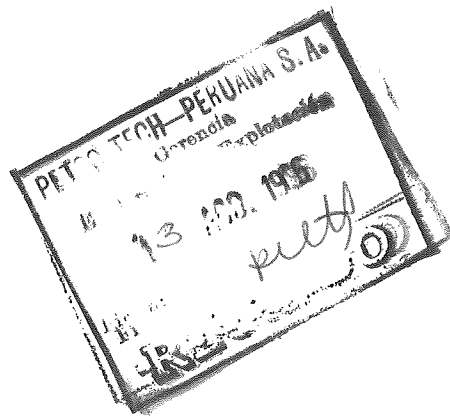
COPESERPET S.A.

LO16 - 16 Lobitos offshore

Record flowing Pressure ,Build Up x 8 hrs and
Static Gradient

Customer: Petro Tech Peruana S.A.

Date: August the 06th to 07th ,1996



CPSP-110-96

Talara, August the 8th , 1996.

Mr.
PETRO-TECH PERUANA S.A.
Negritos.-

ATT.: ENG° RIGOBERTO FRANCIA
Assistant Manager Production

Dear Sr.

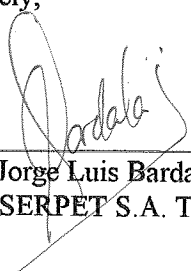
Attached you will find the report , analysis and results of the RECORD FLOWING PRESSURE , BUILD UP X 8HRS. AND STATIC GRADIENT carried out in the well LO16 - 16 (Mogollon Sands), Lobitos offshore.

Data used for this analysis and the results were obtenied using our Memory Gauge model EMS-700 EE PROM n/s 87166 with range 350 ° F and 5,000 psi., which is available for you in order to supply a good service.

If you had any question about this please, do not hesitate to phone me to our office.

Thanks for you kind attention,

Sincerely,



Eng°. Jorge Luis Bardales Cruz
COPESERPET S.A. TALARA

w.c.: Eng° Ricardo Corman
Eng° Alberto Agurto
File.

JBC/lqr.

COPESERPET S.A.

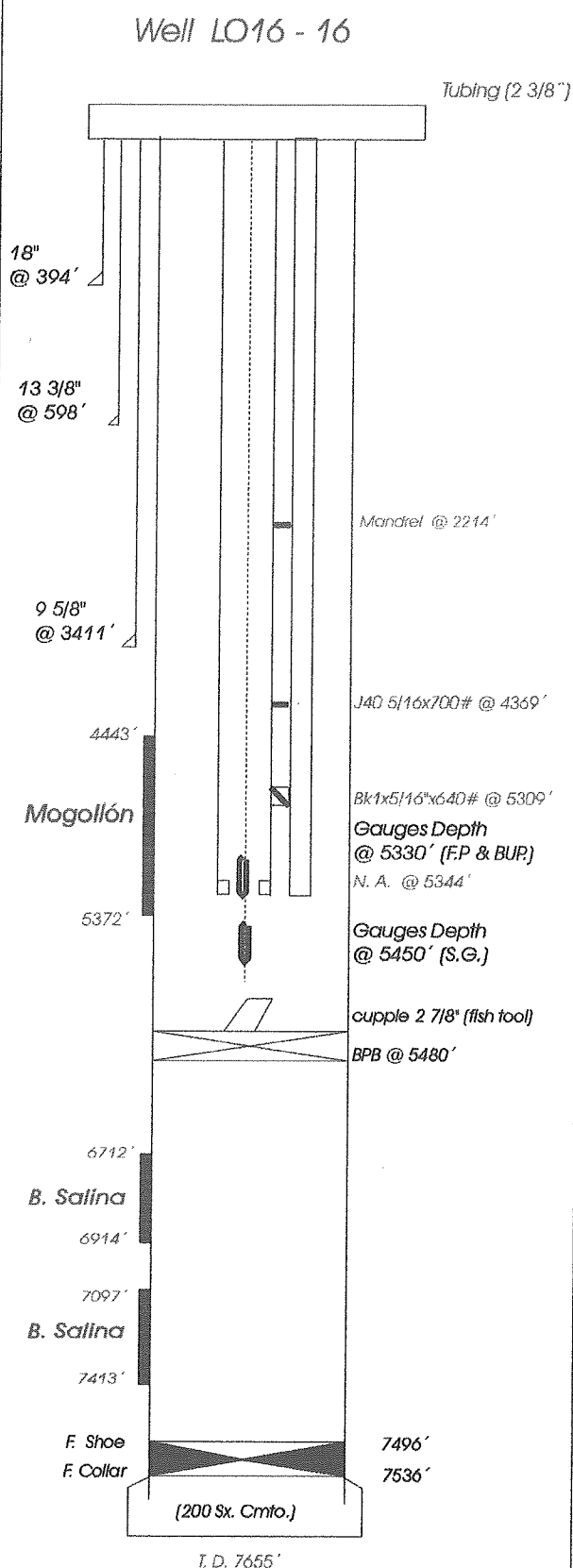
Well: LO16 - 16 (well Z-2-A-21-774-D- LO16)

Field : Lobitos offshore

Test: Flowing Pressure, Build Up x 8 hrs. and Static Gradient.

Formation : Mogollón

Perf. Interv.: 4443' - 5372'



Date

Well conditions

08/06th/ '96

Actual Instalation: Gas Lift BLT, f
Well status : Production
Prod. last test : 130 BOPD (July '96)
Cicle of inyection : 17' x 3'
Producing days cumulative : 2373 days (July '96.)
Oil Produced Cumulative: 617700 BSM (July '96)
Sistem G/L Pressure range : 860-900#.
Flowing : PSI WH Beam :
Control BOP: yes Calibrator :
STD. Valve : @ 5340 M.D. Retrieve: yes
Sand Top : 5480 M.D.

Hora
17:20
17:40

Operative Procedure

Hora

Carried Out by Cia. Copeserpet 08/06th/ '96

18:00

Memory Gauge n/s 87166 prog. BUP x 24 hrs.
Amerada Gauge 2,025 psi n/s D850594 x 12 hrs.
Gauges Depth : 5,330 M.D. o 5,325.45 V.D.
Active and Conect the Gauges.

18:10

run in hole @ 5330' and record flowing pressure for 4 hours. According we show in the chart N° 1. and Graphic N°1

18:30

At the bottom, record 10 cycles G/L 17' x 3'.

22:00

Shut in the well x 08 hours

Date

RIH gauges @ 5450' then record static Pressure..

08/07th/ '96

take Static Gradient.

Time

06:00

Memory Gauge n/s 87166 prog. BUP x 12 hrs.
Amerada Gauge 2,025 psi n/s D850594 x 3 hrs.
Gauges Depth: 5,450 M.D. o 5,445.30 V.D.

07:15

Gauges in Surface & Installe S. Valve.

08:00

Open the well to production .

Coments:

Data used for this analysis and the results were obtained using our Memory Gauges EMS-700 EEPROM.

Results:

Flowing Pressure @ 5330' : 330 psia.
Surface Static Pressure: 340 psia.
Surface Static Temperature: 67.34 °F
Bottom Static Pressure : 378.54 psia.
Bottom static Temperature: 109.18 °F.
Gas Gradient : 0.007 psi/feet.
Formation Gradient: 0.07 psi/feet.

Operator: Adán Quiroga

Supervisor : Ing. Jorge Luis Bardales Cruz.

COMPañIA PERUANA DE SERVICIOS PETROLEROS S.A.
COPESERPET

**RESULTS OF THE REGISTER FLOWING PRESSURE ,
BUILD UP X 8 HRS & STATIC GRADIENT WELL LO16 -16**

Date of the test	: August the 06th to 07th ,1996
Formation	: Mogollón
Perforated Interval	: 4,443' - 5,372'
Sand Top	: 5,480'
Height (h)	: 243 M.D. o 242.76 V.D.
Rate average (qo)	: 130 BOPD (july '96)
Cycle of injection G/L	: 17'x 3'
Production time (Tp)	: 13,272 hours. (Mog. fm since feb '95)
Depth of the Gauges	: 5,330 M.D. (5,325.45 V.D.)
Surface Tubing Flowing Pressure	: 60 psia.
Flowing Pressure average (Pwf.)	: 330 psia.
Average Flowing Gradient	: 0.051 psi/feet.
Surface Static Pressure	: 340 psia
Bottom hole Static Pressure	: 378.54 psia
Surface Static Temperature	: 67.34 °F
Bottom hole Static Temperature	: 109.18 °F
Formation Gradient	: 0.070 psi/feet
Static Gradient	: 0.007 psi/feet (Gas)

The well in reference was programed to completion from February 1995 the Mogollon fm. have perforated interval 4443' - 5372' and fractured.

From August 06th to 07th ,1996, With the purpose of determining the current pressure of this block, like their permeability and other physical characteristics, we take flowing test x 4 hrs. and the build up test x 8hrs., register pressure and flow in surface.

After run in to hole the Gauges at 5,330' , we registered flowing pressure at that depth . The flowing pressure was 330 psia, we noted this behavior for 4 hours. The well status is producing with G/L BLT . During the test, the total production was 10 bbls. As you see in the Chart N° 1 & Graphic N° 1.

After the last cycle of production , we shut in the well for 08 hours to register Build Up at 5,330' . The well head pressure WHP rapidly increased to 60 to 100 # in 15 min., then increased slowly from 100 to 140 psi in 4 hours., then increased rapidly from 320 # to 340 # in 2 hours.

The behavior of the bottom hole pressure BHP registered in 08 hours is showed in Graphic N° 2. As you see, Because of the wellbore storage and the type of installation, we noticed that first the BHP increased rapidly then go down slowly meanwhile WHP behavior increased rapidly from 60# to 100# in 15 min. and then WHP increased slowly from 100# to 140# for 4 hours. It could be possible that the annular CSG to TBG exerted a back pressure effect to the depleted formation which take the fluid.

Because the initial Oil level was approx. 4716 M.D. in 2 3/8" TBG and there is no Oil level at the end.

After the 4th. hours of the test. The back pressure in the annul go throught TBG and Suddenly change TBG conditions.

This event causes disturbation of pressure and temperature BHT in TBG that is registered by Memory Gauges EMS-700 EEPROM and Amerada Gauge.

The last two hours of the test we registered a regular behavior BHP, WHP and BHT of BUP.

COMPAÑIA PERUANA DE SERVICIOS PETROLEROS S.A.
COPESEPET

This phenomenon is called jumping in the Petroleum industry.

This kind of test will be better for a 120 hours test than 8 hours test to have more information for analysis.

The results of the Static Pressure & Temperature Gradient was plotted in Graphic N° 3 & 4 at the end of the test respectively. When the test finished, pull out of the well Memory Gauge and Amerada Gauge, we found Oil in the oiltramp of the Memory.

The performance of the test was good without any leaks and both Gauges registered the test appropriately .

**OPERATIVE PROCEDURE TO
REGISTER FLOWING & BUILD UP PRESSURE
& STATIC GRADIENT
WELL LO16 - 16**

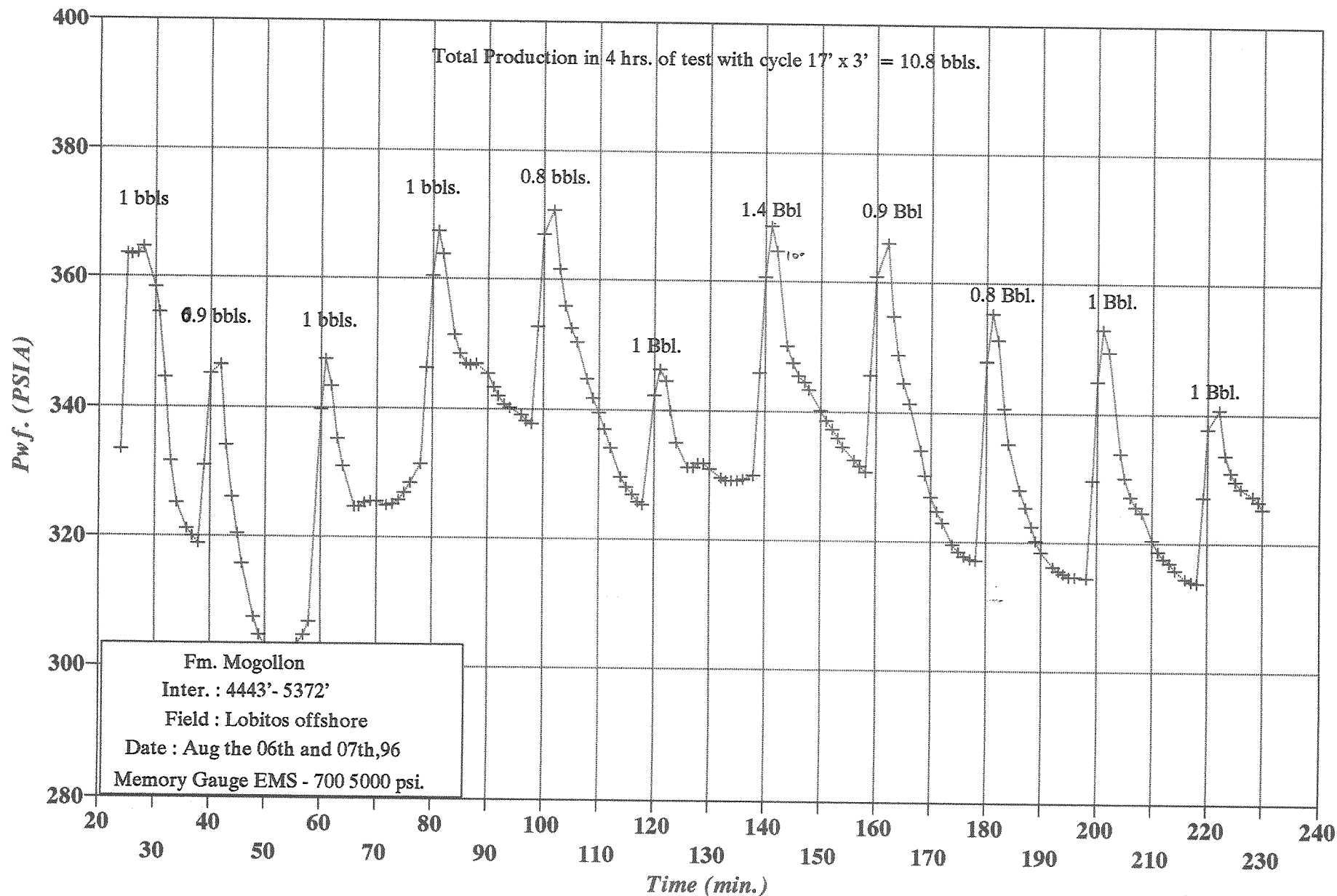
DATE	TIME	ACTIVITY
08/06th/'96	17:00	Conect record surface pressure.
	17:10	Nipple up lubricator and test. and Recover Standing valve.
	17:30	Check Sand Top @ 5,480 M.D.
	18:10	Conect Battery to Memory Gauge EMS-700 n/s 87166 and active Amerada Gauge range 2025 psi with 48 hours.
	18:15	Set the gauges inside the lubricator and test again .
	18:20	Run in to the hole with Memory Gauge & Amerada Gauge at 5,330' .
	18:30	Record flowing pressure & production for 4 hours , the well produced 10 Bbls.
	22:00	Shut in the well, to begin the Build up x 08 hours.
	23:00	Survey BUP pressure, Surface Pressure equal 110 psia.
	00:00	Survey BUP pressure, Surface Pressure equal 120 psia.
08/07th/'96	01:00	Survey BUP pressure, Surface Pressure equal 130 psia.
	02:00	Survey BUP pressure, Surface Pressure equal 140 psia.
	03:00	Survey BUP pressure, Surface Pressure equal 190 psia.
	04:00	Survey BUP pressure, Surface Pressure equal 260 psia.
	05:00	Survey BUP pressure, Surface Pressure equal 320 psia.
	06:00	Survey BUP pressure, Surface Pressure equal 330 psia.
	06:05	Run in hole the Gauges @ 5450'.
	06:08	Pulling out the hole the Gauges, take Static Gradient.
	07:15	finished the survey, Gauges in surface. Pwh = 340 psia.
	08:00	Open the well to production.

FLOWING PRESSURE TO WELL LO16 - 16

Date of test : August the 6th ,1996
 Perforated Intervale : 4,443' - 5,372' (Mogollón)
 Depth of the Gauge : 5,330 M.D. o 5,325.45 V.D.
 Memory Gauge: EMS - 700 : 5000 psi.
 Program : 4 Hours

Date	Time hh:mm:ss	dT test (hours)	dT test (min.)	Temperature (°F)	Pwf (psia)
08/06/96	18:26:10	0.40	24.00	87.86	333.55
08/06/96	18:27:10	0.42	25.00	91.45	363.65
08/06/96	18:32:10	0.50	30.00	106.36	358.29
08/06/96	18:38:10	0.60	36.00	108.66	321.08
08/06/96	18:42:10	0.67	40.00	106.56	345.20
08/06/96	18:47:10	0.75	45.00	107.01	320.48
08/06/96	18:52:10	0.83	50.00	108.32	302.94
08/06/96	18:57:10	0.92	55.00	109.16	302.52
08/06/96	19:02:10	1.00	60.00	108.59	339.79
08/06/96	19:08:10	1.10	66.00	106.19	324.83
08/06/96	19:12:10	1.17	70.00	108.17	325.74
08/06/96	19:17:10	1.25	75.00	109.39	327.03
08/06/96	19:22:10	1.33	80.00	106.99	360.31
08/06/96	19:27:10	1.42	85.00	105.58	348.52
08/06/96	19:32:10	1.50	90.00	108.44	345.43
08/06/96	19:38:10	1.60	96.00	108.69	339.08
08/06/96	19:42:10	1.67	100.00	106.44	366.82
08/06/96	19:47:10	1.75	105.00	106.48	352.61
08/06/96	19:52:10	1.83	110.00	107.36	339.57
08/06/96	19:57:10	1.92	115.00	107.94	328.19
08/06/96	20:02:10	2.00	120.00	106.88	342.33
08/06/96	20:08:10	2.10	126.00	102.21	331.27
08/06/96	20:12:10	2.17	130.00	105.67	331.01
08/06/96	20:17:10	2.25	135.00	107.13	329.24
08/06/96	20:22:10	2.33	140.00	105.16	360.73
08/06/96	20:27:10	2.42	145.00	103.99	347.40
08/06/96	20:32:10	2.50	150.00	106.31	340.22
08/06/96	20:38:10	2.60	156.00	106.45	332.57
08/06/96	20:42:10	2.67	160.00	104.52	360.82
08/06/96	20:47:10	2.75	165.00	104.79	344.51
08/06/96	20:52:10	2.83	170.00	105.85	327.02
08/06/96	20:57:10	2.92	175.00	106.54	318.37
08/06/96	21:02:10	3.00	180.00	106.04	347.78
08/06/96	21:08:10	3.10	186.00	103.89	328.08
08/06/96	21:12:10	3.17	190.00	105.52	318.38
08/06/96	21:17:10	3.25	195.00	106.43	314.69
08/06/96	21:22:10	3.33	200.00	104.18	344.90
08/06/96	21:27:10	3.42	205.00	103.08	330.04
08/06/96	21:32:10	3.50	210.00	106.02	320.56
08/06/96	21:38:10	3.60	216.00	105.71	314.39
08/06/96	21:42:10	3.67	220.00	102.42	337.65
08/06/96	21:47:10	3.75	225.00	102.72	329.75
08/06/96	21:52:10	3.83	230.00	104.29	325.51

FLOWING PRESSURE **WELL LO16 - 16 LOBITOS OFFSHORE**



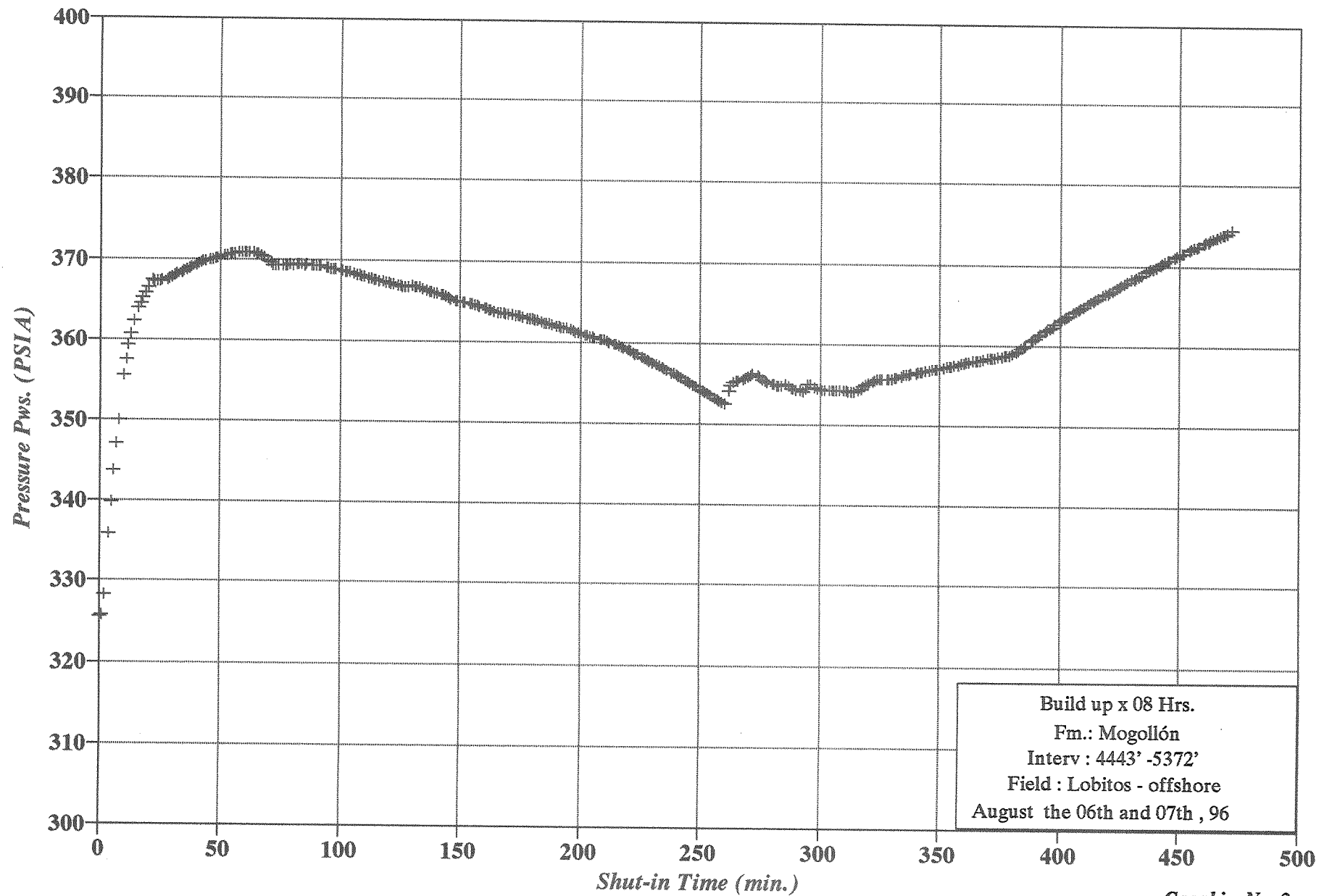
**WELL LO16 - 16
BUILD UP TEST DATA**

Chart No. 2

Date	Time hh:mm:ss	dT test (hours)	dT shut-in (hours)	Time Horner (hours)	Pws (psia)	Pws-Pwf (psia)
08/06/96	21:52:10	3.83	0.00	-	325.51	0.00
08/06/96	21:53:10	3.85	0.02	796161.77	325.85	0.34
08/06/96	22:02:10	4.00	0.17	79631.41	355.55	30.04
08/06/96	22:12:10	4.17	0.33	39816.20	366.49	40.98
08/06/96	22:22:10	4.33	0.50	26545.00	367.72	42.21
08/06/96	22:32:10	4.50	0.67	19908.90	369.23	43.72
08/06/96	22:42:10	4.67	0.83	15927.27	370.21	44.70
08/06/96	22:52:10	4.83	1.00	13273.00	370.84	45.33
08/06/96	23:02:10	5.00	1.17	11376.97	369.83	44.32
08/06/96	23:12:10	5.17	1.33	9954.95	369.27	43.76
08/06/96	23:22:10	5.33	1.50	8849.00	369.25	43.74
08/06/96	23:32:10	5.50	1.67	7964.18	368.74	43.23
08/06/96	23:42:10	5.67	1.83	7240.25	367.94	42.43
08/06/96	23:52:10	5.83	2.00	6637.00	367.16	41.65
08/07/96	00:02:10	6.00	2.17	6126.53	366.83	41.32
08/07/96	00:12:10	6.17	2.33	5688.98	366.06	40.55
08/07/96	00:22:10	6.33	2.50	5309.80	364.96	39.45
08/07/96	00:32:10	6.50	2.67	4977.99	364.23	38.72
08/07/96	00:42:10	6.67	2.83	4685.22	363.47	37.96
08/07/96	00:52:10	6.83	3.00	4425.00	362.85	37.34
08/07/96	01:02:10	7.00	3.17	4192.15	362.07	36.56
08/07/96	01:12:10	7.17	3.33	3982.59	361.19	35.68
08/07/96	01:22:10	7.33	3.50	3793.00	360.34	34.83
08/07/96	01:32:10	7.50	3.67	3620.63	359.10	33.59
08/07/96	01:42:10	7.67	3.83	3463.25	357.61	32.10
08/07/96	01:52:10	7.83	4.00	3319.00	356.05	30.54
08/07/96	02:02:10	8.00	4.17	3186.28	354.33	28.82
08/07/96	02:12:10	8.17	4.33	3063.76	352.47	26.96
08/07/96	02:22:10	8.33	4.50	2950.33	355.99	30.48
08/07/96	02:32:10	8.50	4.67	2845.00	355.01	29.50
08/07/96	02:42:10	8.67	4.83	2746.93	354.35	28.84
08/07/96	02:52:10	8.83	5.00	2655.40	354.43	28.92
08/07/96	03:02:10	9.00	5.17	2569.77	354.34	28.83
08/07/96	03:12:10	9.17	5.33	2489.50	355.17	29.66
08/07/96	03:22:10	9.33	5.50	2414.09	355.83	30.32
08/07/96	03:32:10	9.50	5.67	2343.12	356.54	31.03
08/07/96	03:42:10	9.67	5.83	2276.20	357.16	31.65
08/07/96	03:52:10	9.83	6.00	2213.00	357.76	32.25
08/07/96	04:02:10	10.00	6.17	2153.22	358.35	32.84
08/07/96	04:12:10	10.17	6.33	2096.58	358.92	33.41
08/07/96	04:22:10	10.33	6.50	2042.85	361.04	35.53
08/07/96	04:32:10	10.50	6.67	1991.80	363.04	37.53
08/07/96	04:42:10	10.67	6.83	1943.24	364.89	39.38
08/07/96	04:52:10	10.83	7.00	1897.00	366.60	41.09
08/07/96	05:02:10	11.00	7.17	1852.91	368.24	42.73
08/07/96	05:12:10	11.17	7.33	1810.82	369.80	44.29
08/07/96	05:22:10	11.33	7.50	1770.60	371.32	45.81
08/07/96	05:32:10	11.50	7.67	1732.13	372.78	47.27
08/07/96	05:42:10	11.67	7.83	1695.30	374.08	48.57
08/07/96	05:44:10	11.70	7.87	1688.12	374.40	48.89

11h → FRI

BUILD UP CURVE (P_{ws} vs. T_c)
WELL LO16 - 16 LOBITOS OFFSHORE



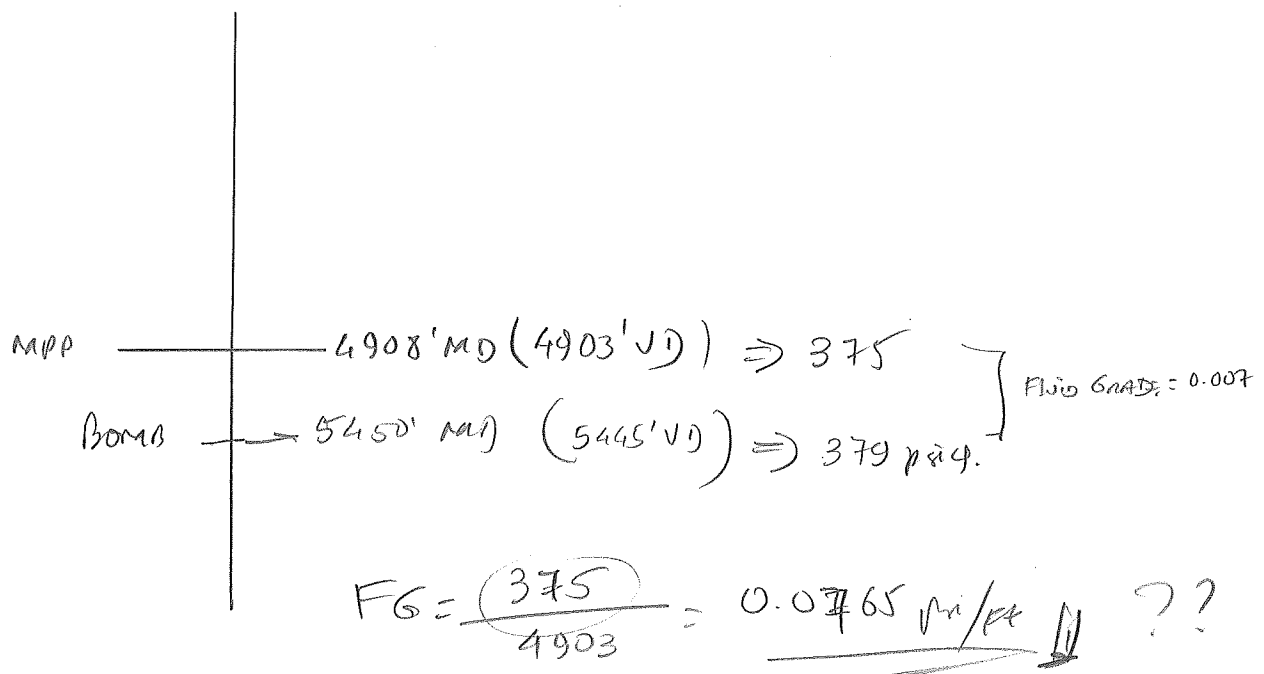
Graphic No. 2

STATIC GRADIENT TO WELL LO16 - 16

Date of test : August the 7th ,1996
 Instalation : 4,443' - 5,372' (Mogollón)
 Perforated Intervale : 5,450 M.D. o 5,445.30 V.D.
 Depth of the Gauge : EMS - 700 : 5000 psi.

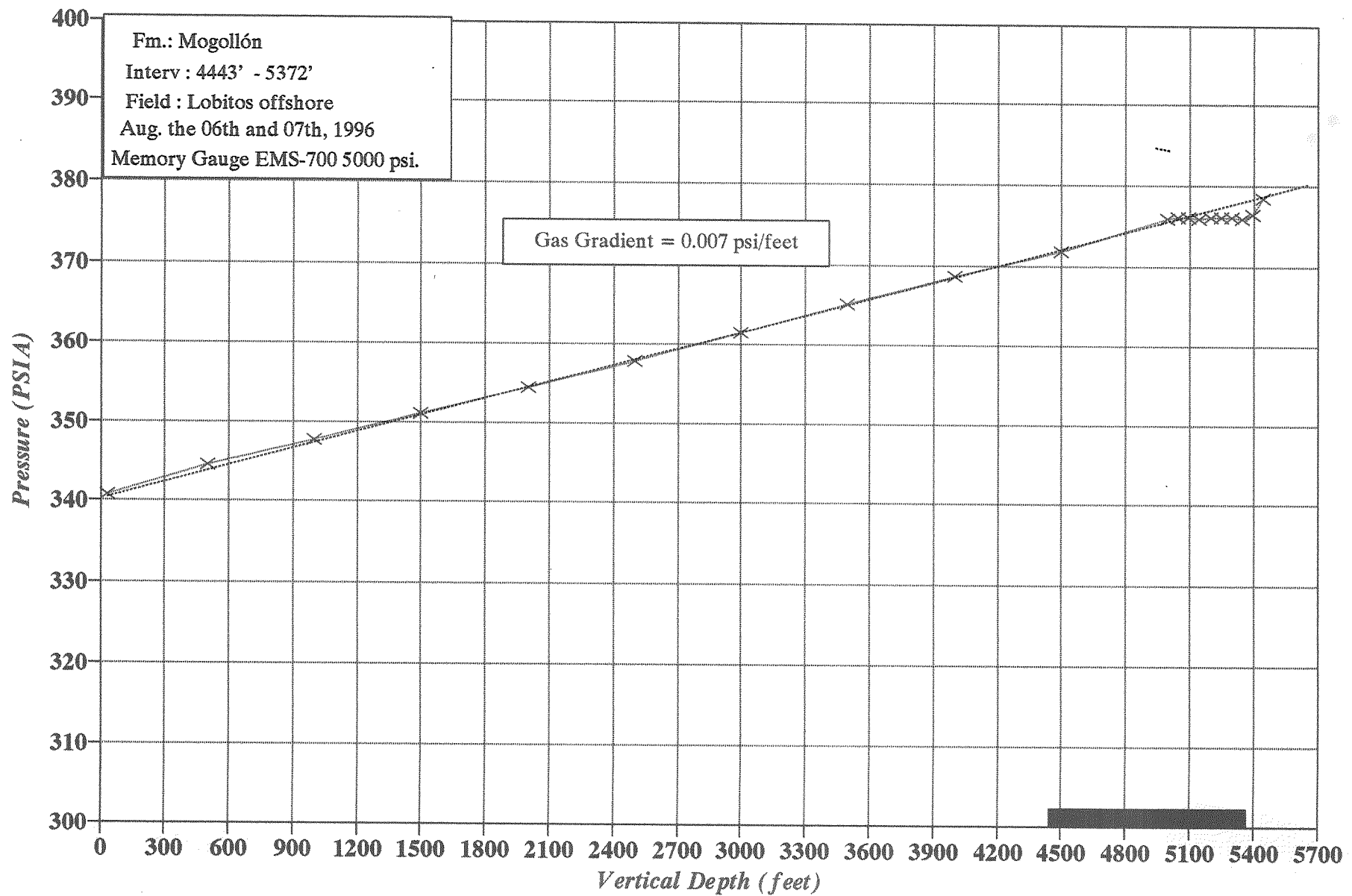
Measure Depth (feet)	Vertical Depth (feet)	Temperature (°F.)	Pressure (PSIG.)	Pressure Gradient (PSIG./feet)	Temperature Gradient (°F/100 feet)
5450	5445.30	109.18	378.54	0.043	-0.721
5400	5395.37	109.54	376.41	0.009	-0.621
5350	5345.43	109.85	375.96	-0.002	0.561
5300	5295.49	109.57	376.04	-0.001	1.181
5250	5245.55	108.98	376.11	0.001	0.567
5200	5195.61	108.70	376.06	0.001	0.444
5150	5145.66	108.48	376.00	-0.001	0.537
5100	5095.71	108.21	376.07	0.000	0.504
5050	5045.74	107.96	376.05	0.001	0.410
5000	4995.78	107.75	375.98	0.008	0.746
4900 → 4500	4496.93	104.03	371.91	0.006	0.702
4000	3998.02	100.53	368.68	0.007	0.556
3500	3498.29	97.75	365.20	0.008	0.647
3000	2998.40	94.52	361.42	0.007	0.852
2500	2498.90	90.27	357.70	0.007	0.805
2000	1999.43	86.24	354.36	0.007	0.991
1500	1499.77	81.29	351.06	0.007	0.934
1000	999.96	76.62	347.65	0.006	0.698
500	500.00	73.14	344.59	0.008	1.245
34	34.00	67.34	340.84	-	-

Gas Gradient = 0.007 psi/feet.

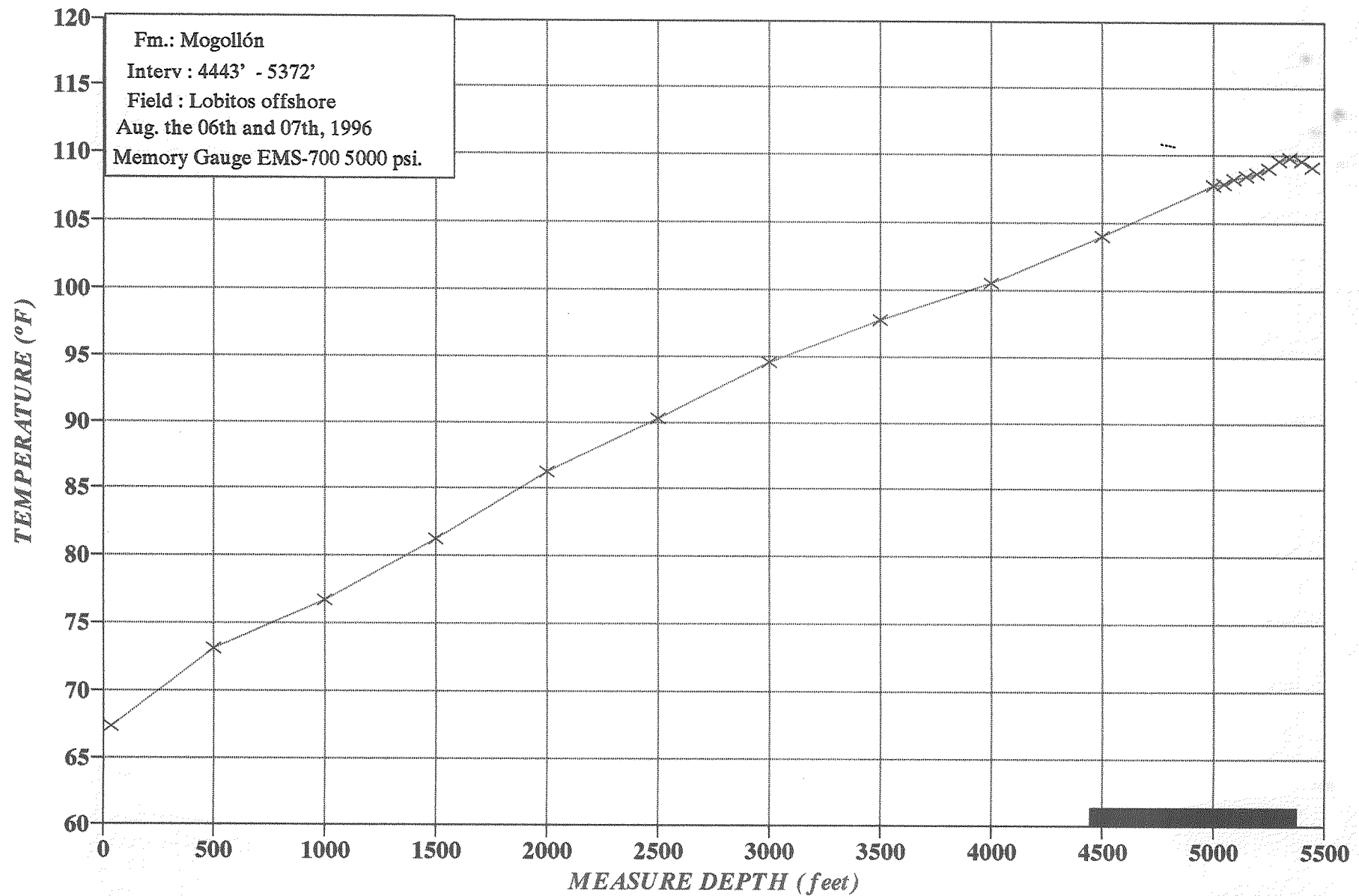


TEST NO REPRESENTATIVE

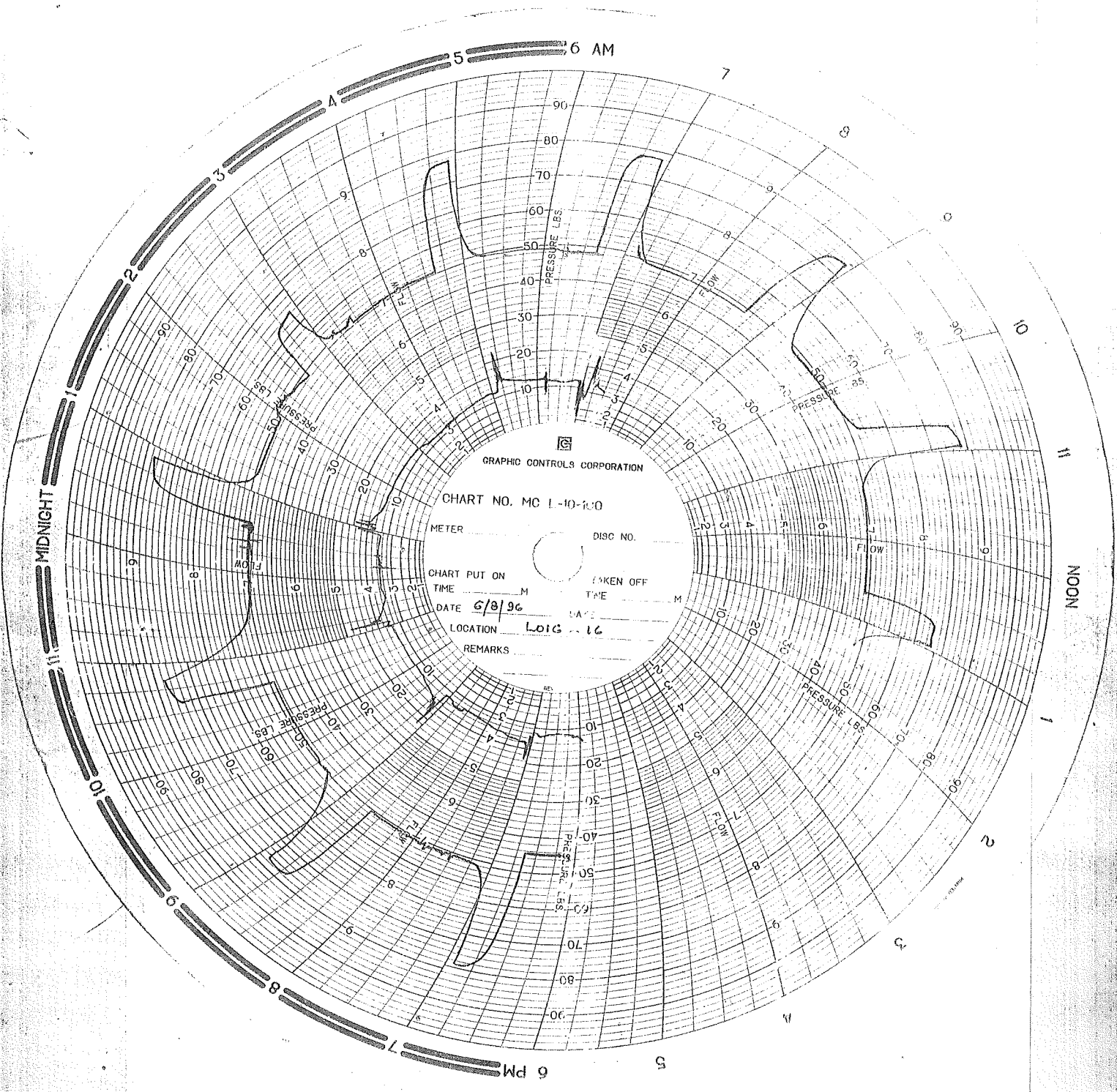
STATIC GRADIENT WELL LO16 - 16 OFFSHORE



TEMPERATURE GRADIENT WELL LO16 - 16 OFFSHORE



Graphic No. 4



MIDNIGHT

NOON

6 PM

6 AM