

PETRO-TECH



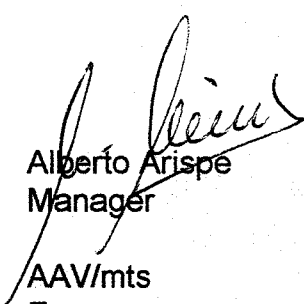
PERUANA S.A.

WELL FILE

EPPM-289-94

TO: Operations Manager
FROM: Exploration-Production Planning Manager
SUBJECT: PRESSURE TESTS RESULTS
DATE: November 14, 1994

Enclosed please find results from Static Gradient and Build Up Surveys taken in Wells LO13-22, PQ-7Q, VV-4, LO1-10, LO16-10, LO16-17, LO12-11, LO11-21, and LO17-7.


Alberto Arispe
Manager

AAV/mts
Enc.

cc: Assistant Operations Manager - Engineering
Well Files
200.2.1

PETRO-TECH



PERUANA S.A.

TO: Eng. Alberto Arispe
Exploration-Production Planning Manager

FROM: Eng. Víctor Peralta

SUBJECT: **PRESSURE BUILD UP AND STATIC GRADIENT SURVEYS AT WELLS:
VV-4, LO1-10, LO16-10, LO16-17, LO12-11, LO11-21, AND LO17-7**

DATE: November 2, 1994

Following please find a summary of results obtained during PBU and SG surveys run in wells of the reference to determine the status of reservoir pressure:

<u>Well</u>	<u>Formation</u>	<u>S.I. Time (Hrs.)</u>	<u>MPP</u>		<u>Pressure</u>		<u>Formation</u>		
			<u>MD (Ft.)</u>	<u>VD (Ft.)</u>	<u>Static (Psig)</u>	<u>P*</u>	<u>Gradient (Psi/Ft.)</u>	<u>K (md)</u>	<u>S (Damage)</u>
VV-4	R.Bravo	138	5725	3883	414	945	0.106	0.229	-2.943
LO1-10	R.Bravo	69	4217	3451	67	465	0.019	0.205	0.750
LO16-10	Pariñas	69	6016	4174	1296	2796	0.310	0.229	-3.659
LO16-17	Pariñas	67	5895	5210	548	670	0.105	1.410	-0.907
LO12-11	Pariñas	70	2923	1909	121	238	0.063	2.225	-3.428
LO11-21	Pariñas	137	3931	3703	303	579	0.081	0.353	-2.463
LO17-7	Pariñas	139	6511	5345	1104	1832	0.206	0.249	-2.767

In all the PBU a stabilized pressure was achieved. They are indicative too that there is no well bore damage, however their permeabilities are low.

In Wells LO16-10 and LO17-7, the current pressure referred to MPP is indicating that these wells have energy and superior production level should be expected. It is recommended to revise their gas lift installation.


Víctor Peralta G.

**History**

On September 13, 1992, Well LO16-10 was completed for Pariñas formation in the interval 6232'-5800', and the shoot-frac proceeding was used to produce the well. Initial production was 120 bopd on gas lift and cumulative production for last August, was 53,745 bbls of oil. Now, is producing 66 bopd.

This survey was recommended to evaluate actual reservoir pressure, because current recorded pressure is the first BHP of the well after its completion.

Results

<u>Form.</u>	<u>Interval</u> (Ft)	<u>MPP</u>		<u>Press.(Psig)</u>		<u>Form.</u> <u>Gradient</u> (Psi/Ft)	<u>Fluids</u>		<u>Status</u>
		<u>MD</u> (Ft)	<u>VD</u> (Ft)	<u>Static</u>	<u>P*</u>		<u>Grad.</u> (Psi/Ft)	<u>Level</u> (Ft)	
Pariñas	6232-5800	6016	4174	1296	2796	0.310	0.047 0.354	Surf. 5835	66 bopd, 0 bwpd 2500 gor.

	<u>Match</u>	<u>Homer</u>
Permeability (K)	0.228	0.229
Skin Factor (S)	-3.594	-3.659

The pressure at bomb depth (6045 Ft, MD) was 1309 psig.

The well was shut-in during 69 hours to buildup pressure. The derivative plot during PBU is shown in Attachment-1.

The buildup curve matched very good with the changing wellbore storage model. The derivative behavior shows a wellbore storage effect and a flat portion which is characteristic of radial flow.

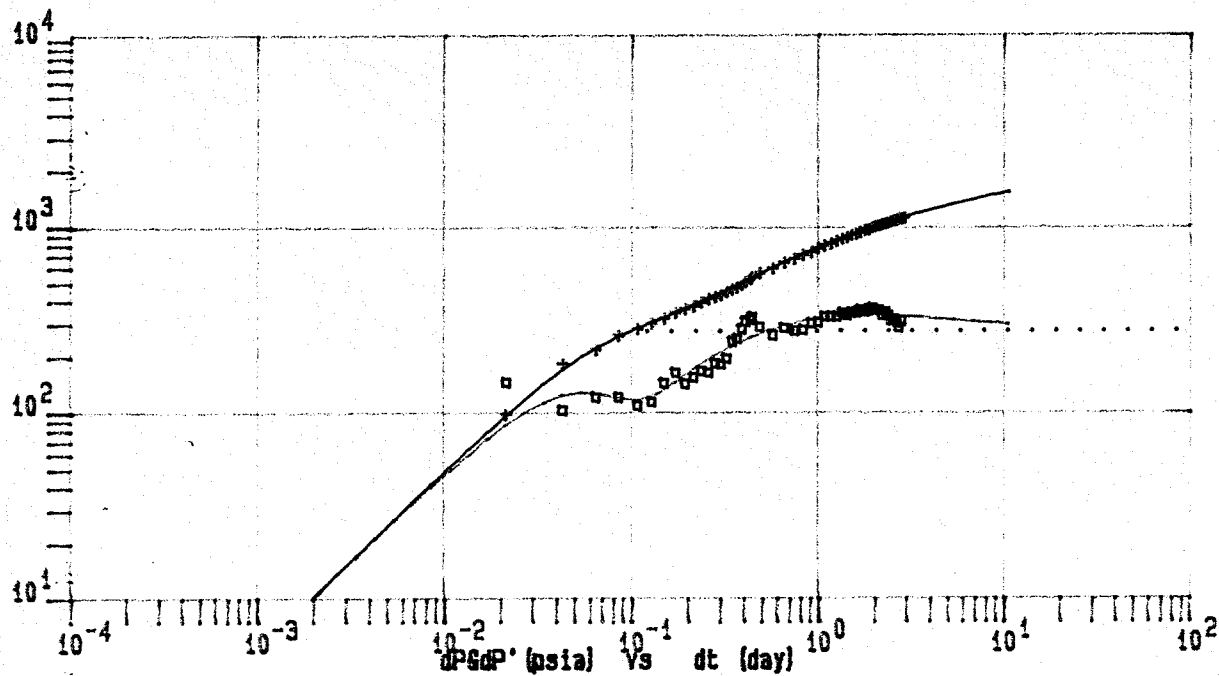
Homer plot gives very similar results as it is shown above.

The calculated reservoir pressure is 2796 psig and it is considered representative of reservoir. The survey was run after that well has produced 49 Mbbls of oil.

VPG

**CENTRAL FILE
GEOSCIENCES**

DEMO	Log-Log		L016-10
Company	PETRO-TECH	Test	PBU
Field	LOBITOS	Date	JULY 12-15/1994
Well	L016-10	Gauge	



Flow Period # 2
Rate 0 STB/day
Rate Change 66 STB/day
P @ dt=0 198.1 psia
P1 2885.1 psia
Smoothing 0.1

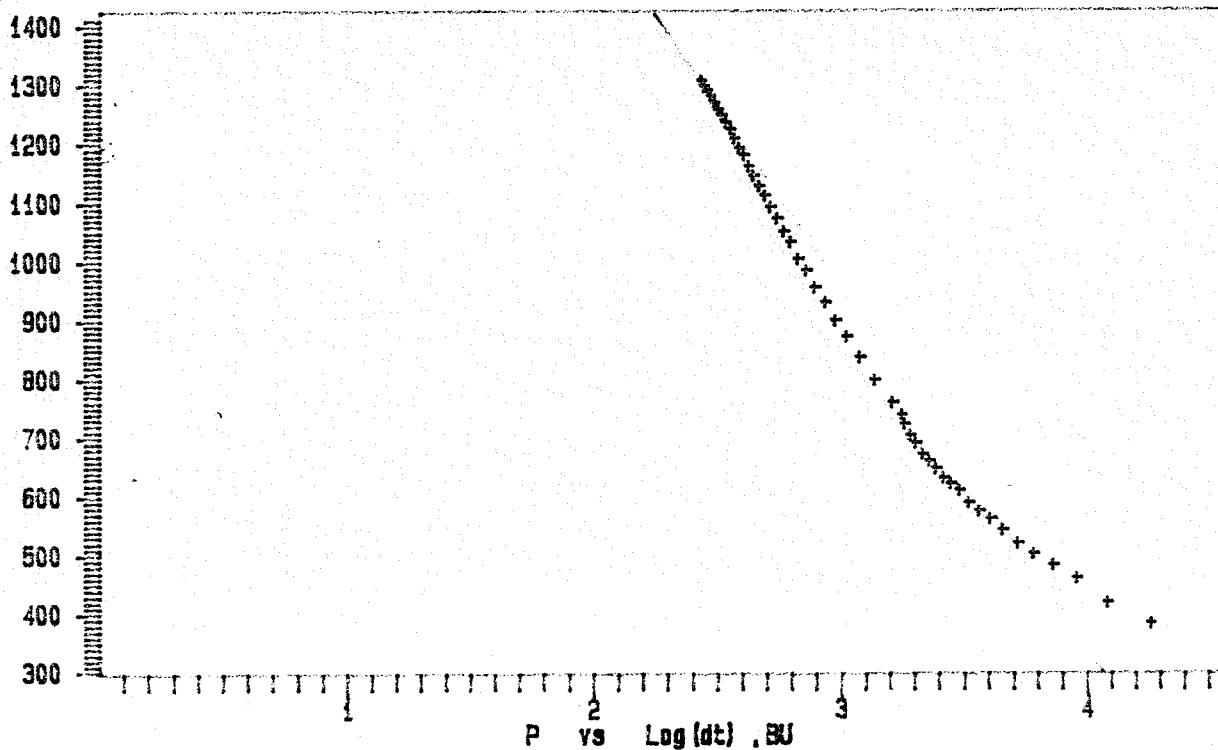
Time match 4.2176 (day)-1
Pressure Match 0.0018568 (psia)-1

RESERVOIR Homogeneous
WELL Changing storage
BOUNDARY Infinite

Storage C 0.035595 STB/psi
CD 4063.8
C factor 0.45407
Alpha 1087.9
Skin factor -3.5949

kh 20.547 md.ft
K 0.2283 md
Mobility k/mu 0.2356
Investig. R 90.065 ft

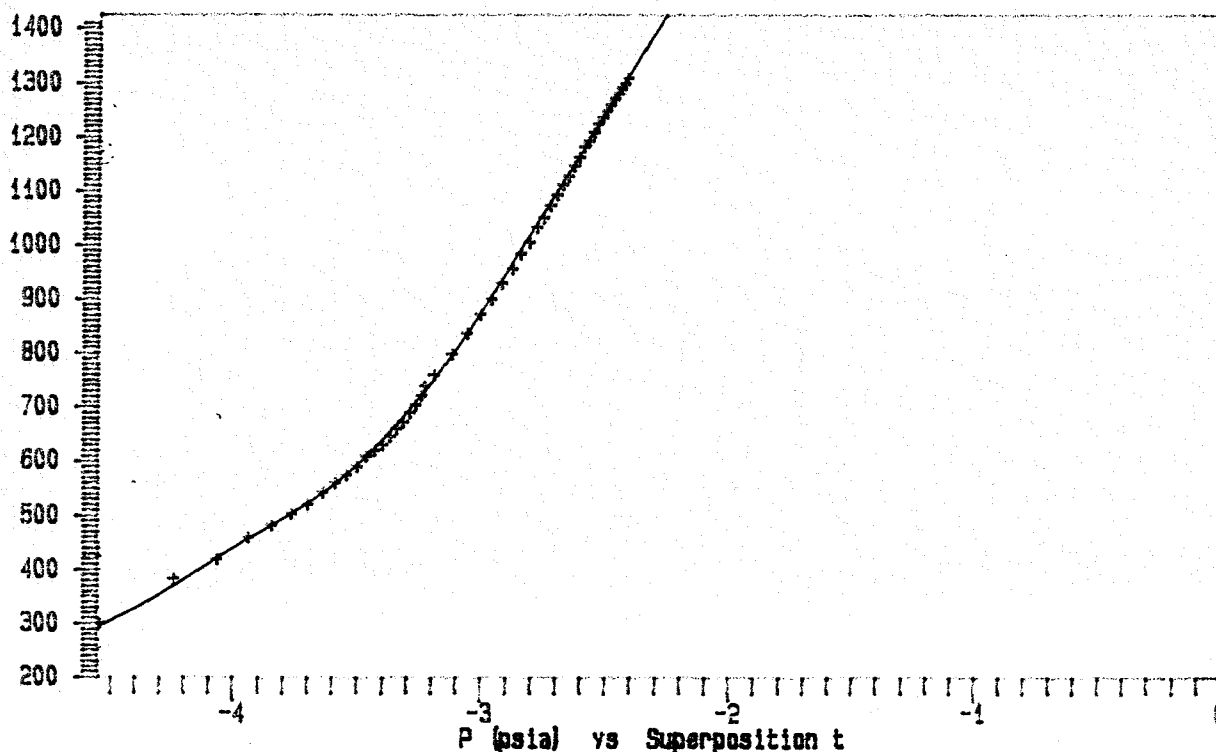
DEMO	Flexible		L016-10
	Company	PETRO-TECH	Test PBU
	Field	LOBITOS	Date JULY 12-15/1994
	Well	L016-10	Gauge



Flow Period # 2
 Rate 0 STB/day
 Rate Change 66 STB/day
 P @ dt=0 198.1 psia
 Pi 2885.1 psia

Flexible line # 1
 P vs Log(dt) , BU
 Slope -615.35
 Intercept 2795.7
 kh 20.698 md.ft
 K 0.22998 md
 Skin factor -3.6593

DEMO	Semi-Log		L016-10
Company	PETRO-TECH	Test	PBU
Field	LOBITOS	Date	JULY 12-15/1994
Well	L016-10	Gauge	



Flow Period # 2
 Rate 0 STB/day
 Rate Change 66 STB/day
 P @ dt=0 198.1 psia
 P1 2885.1 psia

Time match 4.2176 (day)⁻¹
 Pressure Match 0.0018568 (psia)⁻¹

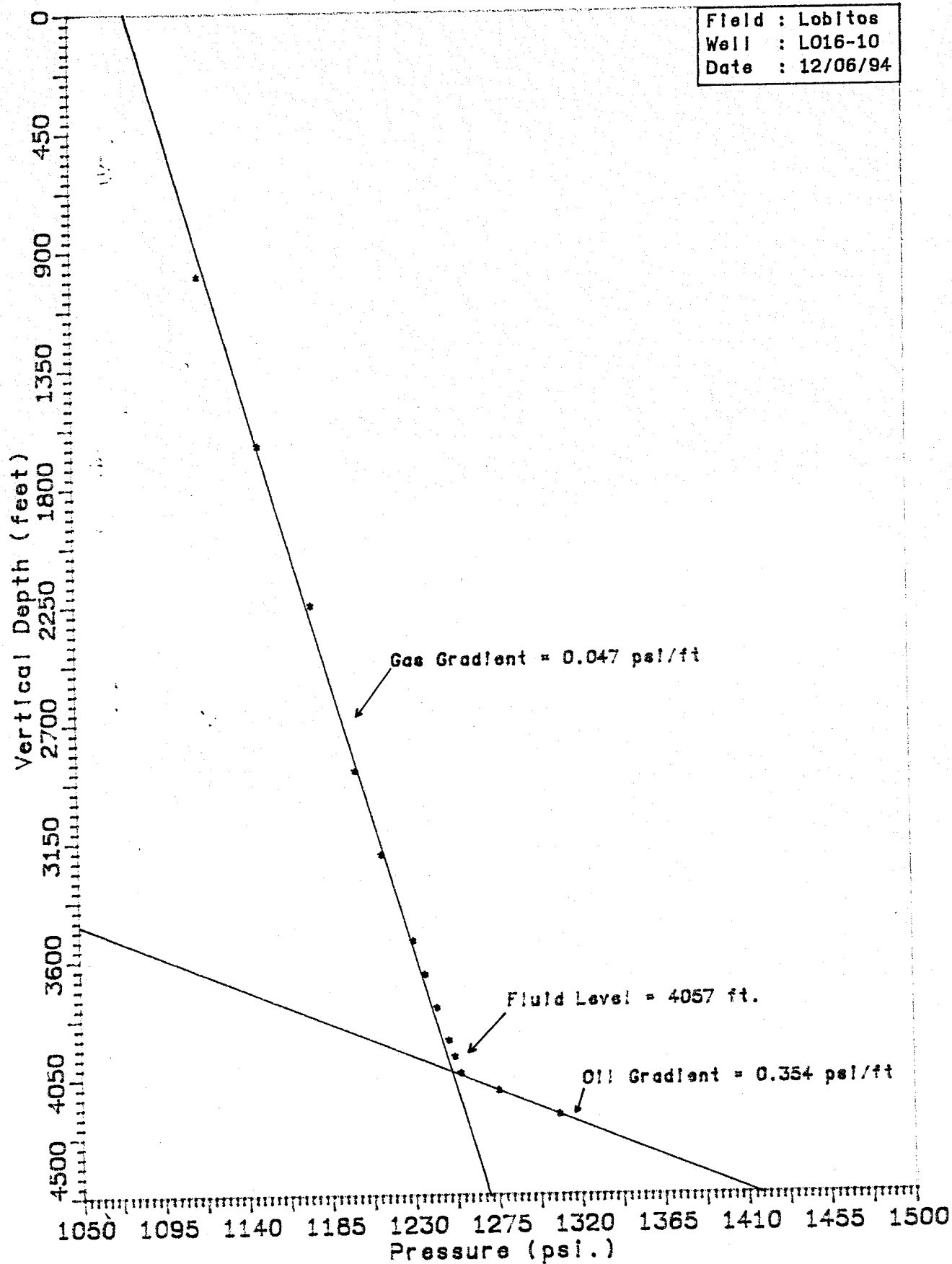
RESERVOIR Homogeneous
 WELL Changing storage
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Storage C 0.035595 STB/psi
 CD 4063.8
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kh 20.547 md.ft
 K 0.2283 md
 Mobility k/mu 0.2356

STATIC GRADIENT SURVEY
WELL LO16-10

Field : Lobitos
Well : LO16-10
Date : 12/06/94



RESTAURACION DE PRESION Y GRADIENTE ESTATICA

CLIENTE : PETRO-TECH PERUANA S.A.

POZO : LO16 - 10

LOCACION: LOBITOS

FECHA : del 12/06/94 al 15/06/94



FLOWPETROL SA.

Avda. Martires Petroleros Ex Cementerio
Mz B 3 Lote C. Talara Telefax 381690

Talara, 17 de Junio de 1,994

Sres.
PETRO-TECH PERUANA S.A.
Presente.-

Estimado Ingeniero:

Sírvase encontrar adjunto el resultado de la prueba Build-Up realizado en el área de Lobitos Pozo L016-10 de la formación Pariñas con intervalo de 6,232' - 5,800'.

En el análisis de la derivada se observa que no se llega al comportamiento del flujo radial, por tal motivo aplicamos el método de las curvas - tipo por Bourdet.

En el informe se adjuntan datos, cálculos, resultados y toda la secuencia de la prueba.

Esperando que esta información le sea de utilidad y agradeciendo vuestra comunicación para cualquier consulta adicional, me suscribo.

De usted, muy atentamente

Ismael Padilla
Ing. Ismael Padilla



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DATOS Y RESULTADOS DE LA PRUEBA

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FORMACION	: PARINAS
INTERVALO PERFORADO	: 6,232' a 5,800'
PRODUCCION ACUMULADA	: 49,059 STB
CAUDAL DE PETROLEO	: 66 STB/D
POROSIDAD	: 18 %
COMPRESIBILIDAD	: 8x1E-06
VISCOSIDAD DEL PETROLEO	: 1.48 cp
FACTOR DE VOLUMEN DE FORMACION	: 1.09 bbl/STB
PRESION FLUYENTE	: 198.10 PSI
PRESION ESTATICA	: 1,308 PSI
NIVEL DEL FLUIDO	: 5,835 PIES (MEDIDO)
GRADIENTE DEL POZO	: 0.312 PSI/PIE
GRADIENTE DEL PETROLEO	: 0.354 PSI/PIE
GRADIENTE DEL GAS	: 0.047 PSI/PIE
TRANSMISIBILIDAD	: 21.31 md-PIES/cp
PERMEABILIDAD	: 0.073 md
FACTOR SKIN (s)	: -3.5 (Estimulado)

SE USO CURVA TIPO BOURDET (DERIVADA)

MATCH:

$$\begin{aligned}\Delta T &= 1 \quad ; \quad T(D)/C(D) = 0.58 \\ \Delta P &= 100 \quad ; \quad P(D) = 0.21\end{aligned}$$

$$C(D)e^{2s} = 1 \quad \quad C(D) = 1085.2$$

$$k = [u \cdot Q \cdot B / (0.00708 \cdot h)] \cdot (P(D) / \Delta P)$$

$$C(D) = 0.0002637 \cdot k \cdot \Delta T / [\phi \cdot u \cdot C_t \cdot r_w^2 \cdot (T(D) / C(D))]$$

**FLOWPETROL SA.**

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POZO: L016 - 10		ZONA: L016 - 10		
PRUEBA: RESTAURACION DE PRESION Y GRADIENTE ESTATICA				
RELOJ: E-3619 - 72 HORAS		ELEMENTO 2000 PSI SERIE: 45278		
TIPO DE INSTALACION: 2 7/8" CONVENCIONAL		DESARROLLO DE LA PRUEBA		
ESQUEMA INSTALACION (SEGUN ARCHIVO)	FECHA	DATOS DEL POZO		
	12-06-94	ESTADO DEL POZO: PRODUCE CON GAS LIFT		
5,800' 6,232' PARINAS	GAS LIFT: ☒ SI ☐ NO CICLO DE PROD: 40x3:45			
	PRESION SISTEMA G/L: PROMEDIO 880 PSI			
	PRESION DE TBG: PSI			
	FLOWING: PSI WH CHOKE: 20/64			
	INSTALO BOP: ☒ SI ☐ NO CALIBRADOR: CON COPA 2 5/16"			
	RECUPERO STD VALVE: SI			
	TOPE DE ARENA: 6,175 PIES			
	GRADIENTE FLUYENTE			
	HORA	FECHA: 12/06/94		
	10:30	ELEMENTO ARMADO:	PSI	SERIE
	45278 -	2000	E-3619	
	RELOJ			
	72 Hrs.			
	PROFUNDIDAD DE BOMBA: 6,045 FT. MEDIDOS			
	RELOJ ENGROCHADO: 10:40			
	EN EL FONDO: 10:56 FLUYENTE: 3 INYECCIONES			
	GAS DE INYENCION CERRADO: 12:35			
	LEVANTO BOMBA 09:40 FECHA: 15-06-94			
	OBSERVACIONES:			
GRADIENTE ESTATICA				
HORA	ELEMENTO	PSI	SERIE	
10:05	45278	2000	748	
	RELOJ			
	3 HORAS			
	PARADAS CADA: 1000;500;200;100 Y 145 HASTA: 6,045 FT			
	REGISTRO POR: 180 MIN.			
	LEVANTO BOMBA A SUPERFICIE: 11:21			
	INSTALO STADING VALVE: ☒ SI ☐ NO			
	PROFUNDIDAD: 5,760' MEDIDO FT.			
	ESTADO DEL POZO DESPUES DE LA PRUEBA:			
	PRODUCIENDO			
	OBSERVACIONES: S.V. SE ENCONTRO A 5,760' Y EN EL ARCHIVO INDICA 5,783', EXISTIENDO UNA DIFERENCIA DE 23 PIES (+)			
(*) VALORES EN PROPORCION AL ARCHIVO				
OPERADOR: MARIO BENITES		ING: ISMAEL PADILLA		



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LECTURA DE MEDICION DE PRESIONES

DATOS BASICOS

CLIENTE PETROTECH PERUANA S. A.

DIRECCION NEGRITOS

TIPO DE PRUEBA RESTAURACION DE PRESION Y GRADIENTE ESTATICA.

INTERVALO DE PRODUCCION 6,232' al 5,000' DE LA FORMACION PARINAS

ELEMENTO SERIAL No. 45278

ECUACION DE CALIBRACION $K = 1025.6185$ $a = -7.0237$

ELEVACION KB 33 Pies

NOMBRE DEL POZO L016 - 10

LOCACION LOBITOS

FECHA DE PRUEBA DESDE 12 06 94 HASTA 15 06 94

FECHA DE CALIBRACION DEL ELEMENTO 11-04-94

TUBERIA DE PRODUCCION 2 7/8"

TIPO DE PRODUCCION GAS LIFT

PUNTO MEDIO DE PERFORACIONES: 6,016 Pies

PROFUNDIDAD DEL POZO 6,312 Pies

RELOJ # E3619 HORAS 72 # 748 HORAS 3

PRESION DE SUPERFICIE - TUBING PSI CASING PSI

PROFUNDIDAD MAXIMA DE TRABAJO 6,175 Pies

PRESION DE FONDO 1,308 PSI

GRADIENTE DEL POZO 0.312 PSI/FEET

FECHA DE CIERRE 12 06 94 HORA 15 45

OPERADOR FLOWPETROL MARIO BENITES

SUPERVISOR ING. ISMAEL PADILLA



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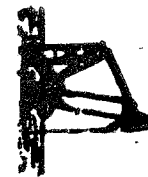
ANALISIS DE LECTURA DE CARTA

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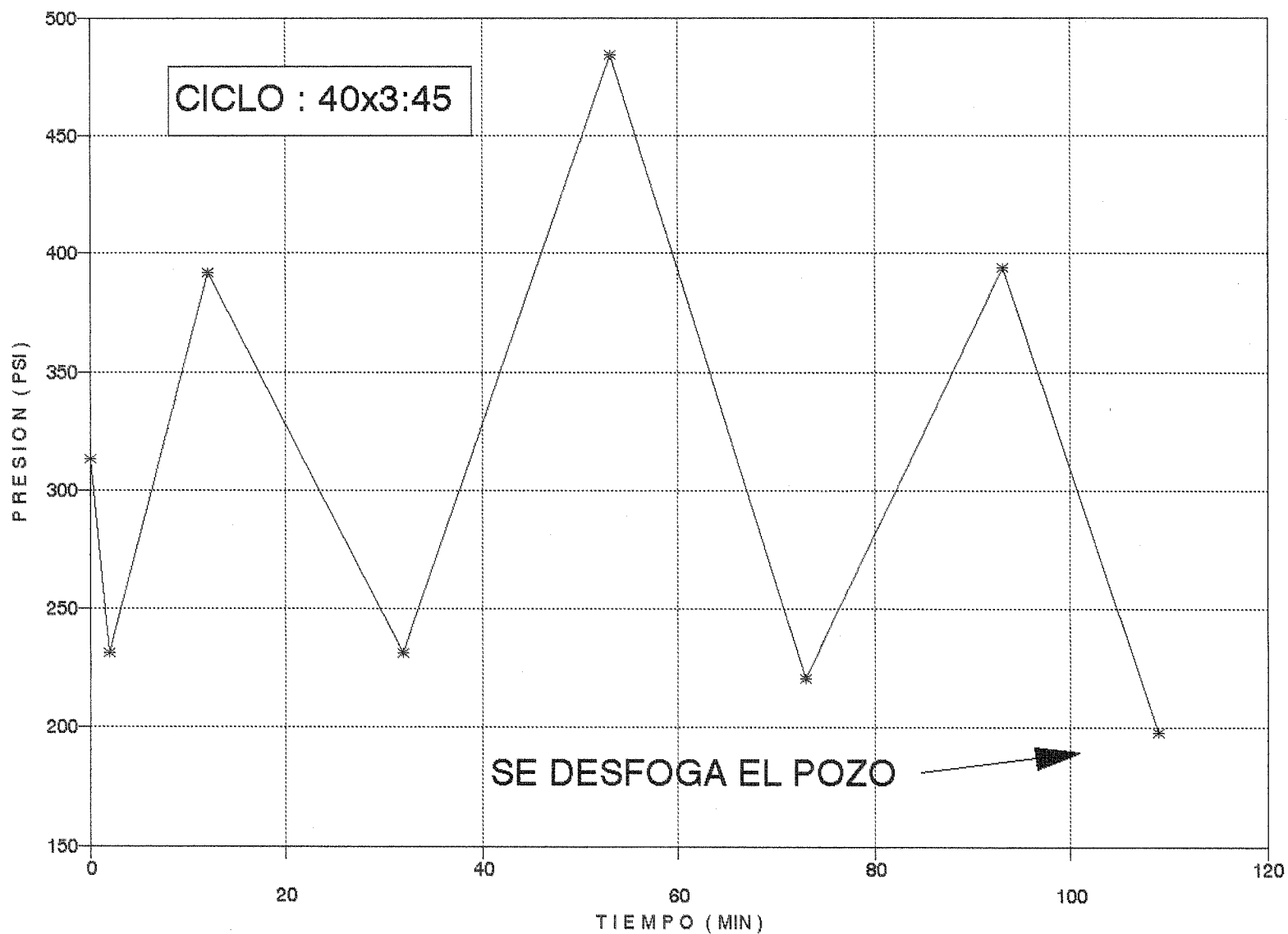
PRESION FLUYENTE

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DEFLECC	TIEMPO TRANS (MINUTOS)	TIEMPO FLUJO (MINUTOS)	PRESION (PSI)	OBSERVACIONES
	0			
0.312	16	0	312.97	LLEGADA PTO. MEDIO 6,045'
0.232	18	2	230.92	SE ABRE LATERAL DEL POZO
0.389	28	12	391.94	1ra. INYECCION
0.232	48	32	230.92	Q=0.8 Bls; S. GAS=880 PSI
0.479	69	53	484.25	2da. INYECCION
0.222	89	73	220.66	Q=2.4 Bls; S. GAS=880 PSI
0.391	109	93	393.99	3ra. INYECCION
0.200	125	109	198.10	Q=2 Bls; S. GAS=820 PSI
				SE CIERRA POZO PARA EL BUILDUP DE 72 HRS.



PRESION FLUYENTE
POZO: LO16 -10 LOBITOS (12/06/94)



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CALCULO PARA EL ANALISIS DE LA RESTAURACION DE PRESION

DEFLECC	TIEMPO (MIN.)	ΔT (HRS.)	$(\Delta T + T_p)/\Delta T$	ΔT_e	Pws (PSI)	ΔP (PSI)
0.2000	0	0.00	--	0.00	198.10	0.00
0.2950	30	0.50	35680.27	0.50	295.53	97.43
0.3780	60	1.00	17840.64	1.00	380.66	182.56
0.4130	90	1.50	11894.09	1.50	416.56	218.46
0.4530	120	2.00	8920.82	2.00	457.58	259.48
0.4750	150	2.50	7136.85	2.50	480.15	282.05
0.4950	180	3.00	5947.55	3.00	500.66	302.56
0.5120	210	3.50	5098.04	3.50	518.09	319.99
0.5340	240	4.00	4460.91	4.00	540.66	342.56
0.5520	270	4.50	3965.36	4.50	559.12	361.02
0.5650	300	5.00	3568.93	5.00	572.45	374.35
0.5800	330	5.50	3244.57	5.50	587.84	389.74
0.6000	360	6.00	2974.27	6.00	608.35	410.25
0.6100	390	6.50	2745.56	6.50	618.60	420.50
0.6200	420	7.00	2549.52	7.00	628.86	430.76
0.6350	450	7.50	2379.62	7.50	644.24	446.14
0.6490	480	8.00	2230.95	8.00	658.60	460.50
0.6600	510	8.50	2099.78	8.50	669.88	471.78
0.6780	540	9.00	1983.18	9.00	688.35	490.25
0.6910	570	9.50	1878.86	9.49	701.68	503.58
0.7090	600	10.00	1784.96	9.99	720.14	522.04
0.7250	615	10.25	1741.45	10.24	736.55	538.45
0.7460	675	11.25	1586.75	11.24	758.09	559.99
0.7830	795	13.25	1347.39	13.24	796.04	597.94
0.8210	915	15.25	1170.81	15.24	835.01	636.91
0.8550	1035	17.25	1035.18	17.23	869.88	671.78
0.8830	1155	19.25	927.73	19.23	898.60	700.50
0.9120	1275	21.25	840.51	21.22	928.34	730.24
0.9380	1395	23.25	768.30	23.22	955.01	756.91
0.9650	1515	25.25	707.52	25.21	982.70	784.60
0.9850	1635	27.25	655.67	27.21	1003.21	805.11
1.0120	1755	29.25	610.90	29.20	1030.90	832.80
1.0300	1875	31.25	571.87	31.20	1049.36	851.26
1.0520	1995	33.25	537.53	33.19	1071.93	873.83
1.0700	2115	35.25	507.09	35.18	1090.39	892.29
1.0890	2235	37.25	479.92	37.17	1109.87	911.77
1.1050	2355	39.25	455.51	39.16	1126.28	928.18

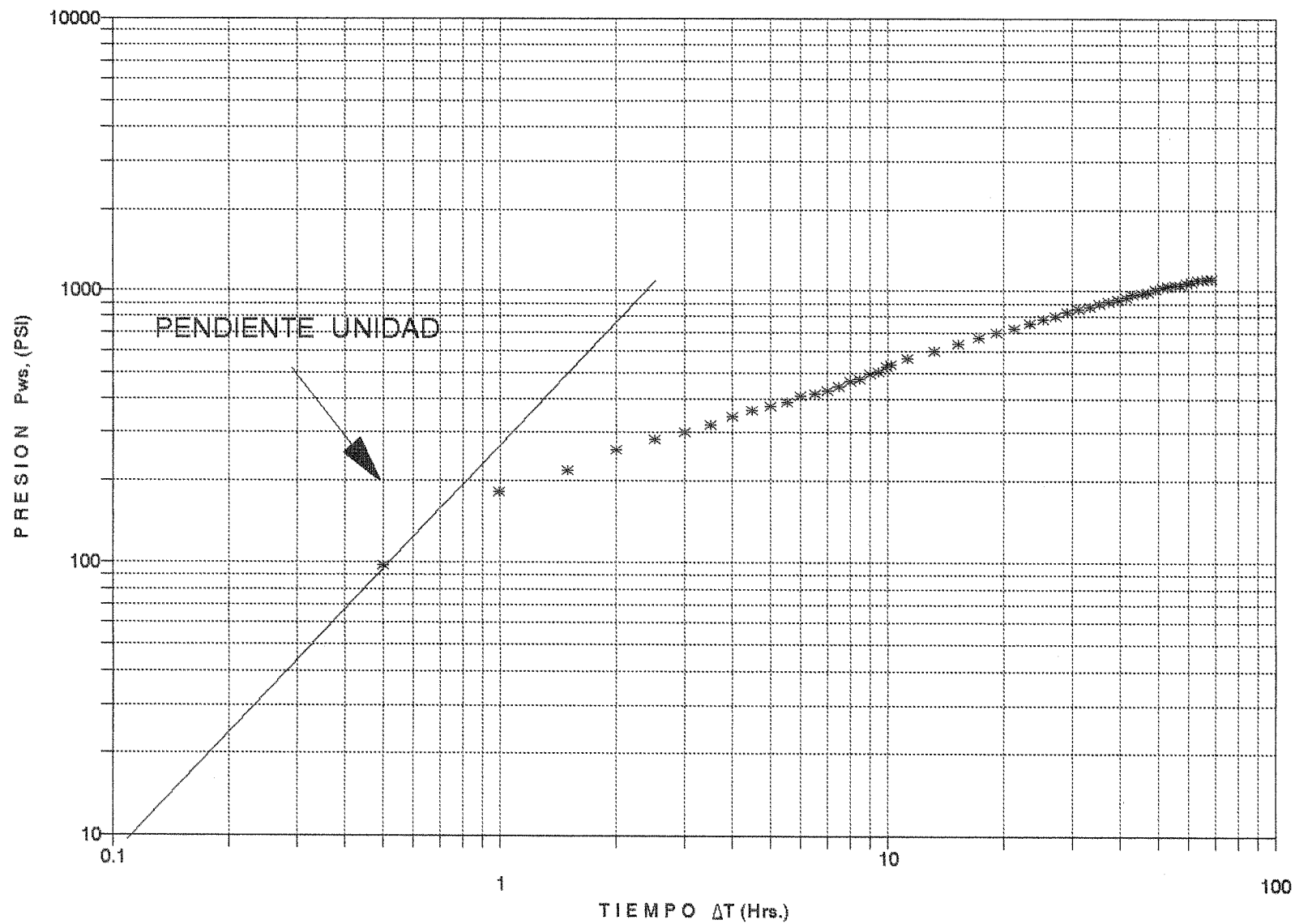
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DEFLECC	TIEMPO (MIN.)	ΔT (HRS.)	$(\Delta T + T_p)/\Delta T$	ΔT_e	Pws (PSI)	ΔP (PSI)
1.1230	2475	41.25	433.48	41.15	1144.75	946.65
1.1390	2595	43.25	413.48	43.15	1161.16	963.06
1.1570	2715	45.25	395.25	45.14	1179.62	981.52
1.1680	2835	47.25	378.56	47.13	1190.90	992.80
1.1840	2955	49.25	363.23	49.11	1207.31	1009.21
1.1990	3075	51.25	349.09	51.10	1222.69	1024.59
1.2100	3195	53.25	336.02	53.09	1233.97	1035.87
1.2230	3315	55.25	323.89	55.08	1247.31	1049.21
1.2320	3435	57.25	312.61	57.07	1256.54	1058.44
1.2440	3555	59.25	302.09	59.05	1268.85	1070.75
1.2540	3675	61.25	292.26	61.04	1279.10	1081.00
1.2640	3795	63.25	283.05	63.03	1289.36	1091.26
1.2710	3915	65.25	274.40	65.01	1296.54	1098.44
1.2800	4035	67.25	266.27	67.00	1305.77	1107.67
1.2820	4135	68.92	259.86	68.65	1307.82	1109.72



ANALISIS LOG-LOG
POZO: LO16 - 10 LOBITOS (12-15/06/94)



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FLOWPETROL S.A.



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Avda. Martires Petroferos Ex Cementerio
Mz B 3 Lote C. Talara Telefax 381690

TABLA PARA EL ANALISIS DE LA DERIVADA

ΔT (HRS.)	ΔP (PSI)	DERIVADA
0.00	0.00	--
0.50	97.43	97.43
1.00	182.56	170.25
1.50	218.46	107.69
2.00	259.48	164.10
2.50	282.05	112.82
3.00	302.56	123.07
3.50	319.99	122.05
4.00	342.56	180.51
4.50	361.02	166.15
5.00	374.35	133.33
5.50	389.74	169.23
6.00	410.25	246.15
6.50	420.50	133.33
7.00	430.76	143.59
7.50	446.14	230.76
8.00	460.50	229.74
8.50	471.78	191.79
9.00	490.25	332.30
9.50	503.58	253.33
10.00	522.04	369.22
10.25	538.45	672.81
11.25	559.99	242.30
13.25	597.94	251.40
15.25	636.91	297.17
17.25	671.78	300.76
19.25	700.50	276.40
21.25	730.24	316.02
23.25	756.91	309.99
25.25	784.60	349.61
27.25	805.11	279.48
29.25	832.80	404.99
31.25	851.26	288.46
33.25	873.83	375.12
35.25	892.29	325.38
37.25	911.77	362.94
39.25	928.18	322.04
41.25	946.65	380.76



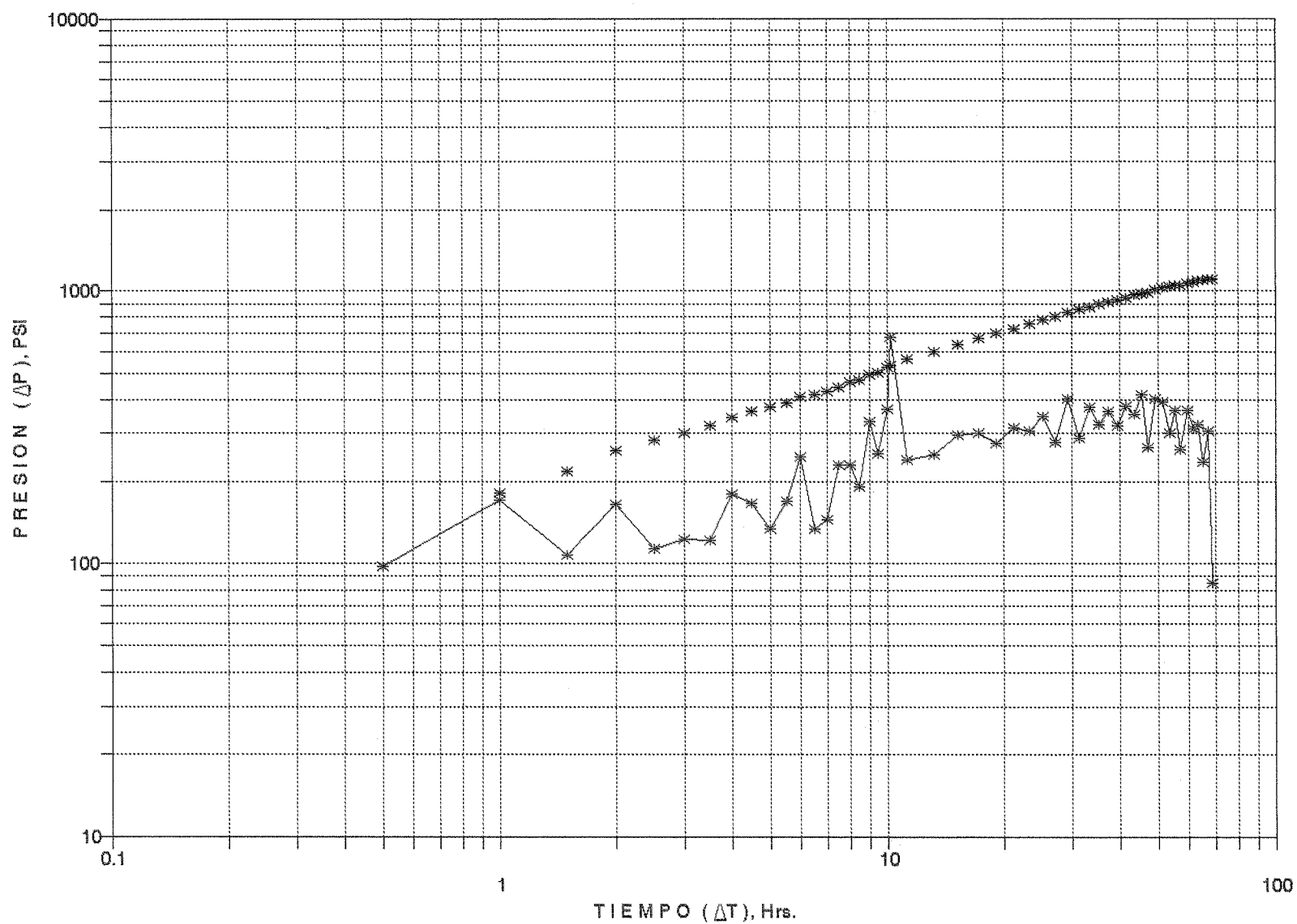
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ΔT (HRS.)	ΔP (PSI)	DERIVADA
43.25	963.06	354.86
45.25	981.52	417.68
47.25	992.80	266.53
49.25	1009.21	404.09
51.25	1024.59	394.22
53.25	1035.87	300.38
55.25	1049.21	368.33
57.25	1058.44	264.22
59.25	1070.75	364.61
61.25	1081.00	314.10
63.25	1091.26	324.35
65.25	1098.44	234.23
67.25	1107.67	310.38
68.92	1109.72	84.82



ANALISIS LOG-DERIVADA
POZO: LO16 -10 LOBITOS (12-15/06/94)



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FLOWPETROL SA

ELL - 4 WELL CORE STORAGE AND SIGNAL
 INFINITE ACTING RESERVOIR WITH HOMOGENEOUS BEHAVIOR
 The use of this type-curve is described in World Oil - May 1983 : A NEW SET OF TYPE CURVES SIMPLIFIES WELL TEST ANALYSIS by D. BOURDET, T.M. WHITTLE, A.A. DOUGLAS, Y.M. PIRARD.

Schlumberger
 228, rue ENSTEIN
 77530 Vaux-le-Pénil - FRANCE
 Postal address :
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 100 Macco Boulevard
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$$C_D = \frac{0.8936 C}{\phi c_t h r_w^2}$$

FOR OIL — $p_D = \frac{kh}{141.2 q B \mu} \Delta p$

FOR GAS — $p_D = \frac{kh}{5.030 \cdot 10^4 q} \frac{T_{sc}}{T} \frac{2}{p_{sc}} \int_{p_0}^{p_0 + \Delta p} \frac{p}{\mu(p) Z(p)} dp$

$$\frac{t_D}{C_D} = 0.000295 \frac{kh}{\mu} \frac{\Delta t}{C}$$

$$- \frac{t_D}{C_D} p_D' = \frac{kh}{141.2 q B \mu} \Delta t \cdot \Delta p'$$

$$- \frac{t_D}{C_D} p_D' = \frac{kh}{5.030 \cdot 10^4 q} \frac{T_{sc}}{T} \frac{2}{p_{sc}} \frac{p}{\mu(p) Z(p)} \Delta t \cdot \Delta p'$$

DEL MATCH :

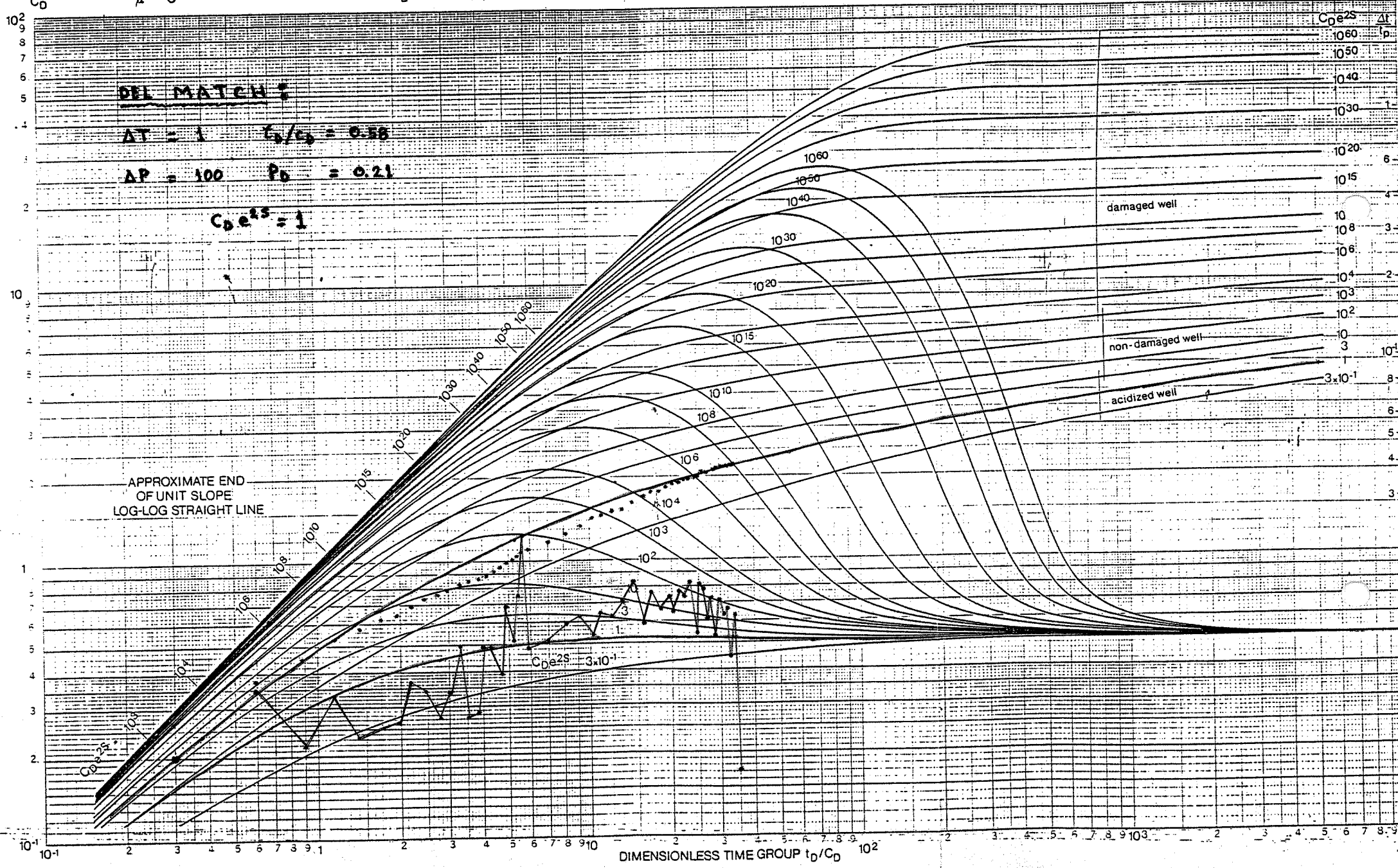
$\Delta T = 1 \quad C_0/c_0 = 0.58$

$\Delta P = 100 \quad P_0 = 0.21$

$C_0 e^{25} = 1$

APPROXIMATE END
 OF UNIT SLOPE
 LOG-LOG STRAIGHT LINE

DIMENSIONLESS PRESSURE p_D AND PRESSURE DERIVATIVE GROUP $(t_D/C_D) p_D'$





FLOWPETROL SA.

Avda. Martires Petroleros Ex Cementerio
Mz B 3 Lote C. Talara Telefax 381690

ANALISIS DE LA CARTA

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GRADIENTE ESTATICA

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PROF. MEDID (PIES)	DEFLECC	PROF. VERTICAL (PIES)	Δ PROF (PIES)	PRESION (PSI)	Δ P	Δ P/ Δ PROF (PSI/PIE)
0	1.0630	0.00		1083.21		--
1000	1.0970	944.68	944.68	1118.08	34.87	0.0369
2000	1.1280	1642.49	697.81	1149.87	31.79	0.0456
3000	1.1550	2250.64	608.15	1177.57	27.69	0.0455
4000	1.1770	2883.05	632.41	1200.13	22.56	0.0357
4500	1.1900	3202.85	319.80	1213.46	13.33	0.0417
5000	1.2060	3531.71	328.86	1229.87	16.41	0.0499
5200	1.2120	3659.36	127.65	1236.03	6.15	0.0482
5400	1.2180	3786.44	127.09	1242.18	6.15	0.0484
5600	1.2240	3910.95	124.50	1248.33	6.15	0.0494
5700	1.2270	3973.20	62.25	1251.41	3.08	0.0494
5800	1.2300	4035.45	62.25	1254.49	3.08	0.0494
5900	1.2500	4100.78	65.33	1275.00	20.51	0.3140
6045	1.2820	4193.50	92.72	1307.82	32.82	0.3540

TOTAL DE GRADIENTE ESTATICA DEL POZO = 0.312 PSI/PIE

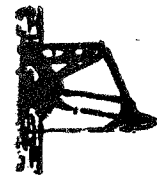
DEL GRAFICO SE PODRA OBSERVAR LOS SGTES. RESULTADOS :

GRADIENTE DEL PETROLEO	=	0.354 PSI/PIE
GRADIENTE DEL GAS	=	0.047 PSI/PIE
NIVEL DEL FLUIDO	=	4,057' VERTICAL
		5,835' MEDIDO

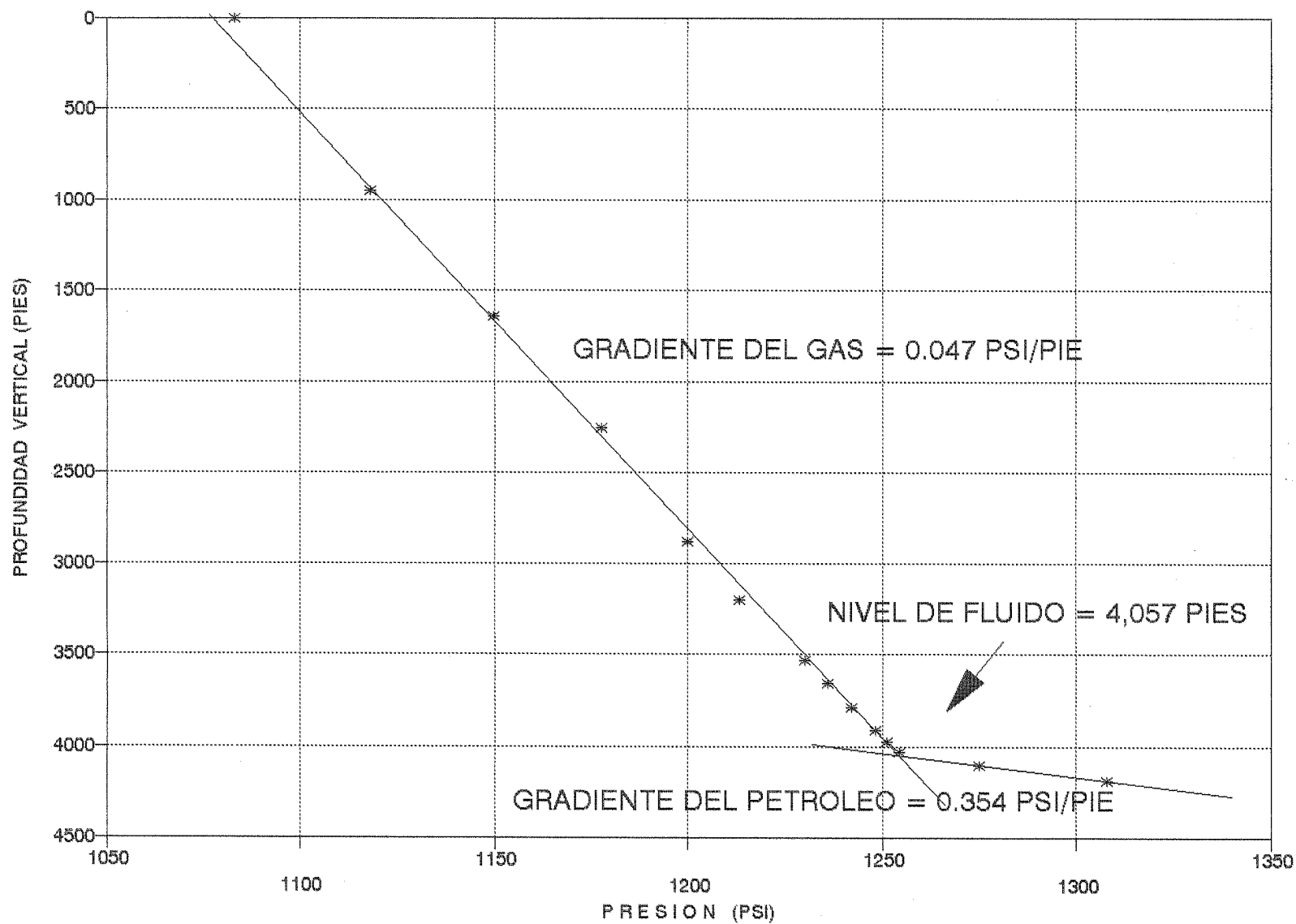
- Bonaparte Date - Set 13/92

120 BORN - 6C.

53,745



ANALISIS DE LA GRADIENTE ESTADICA
POZO: LO16 -10 LOBITOS (12/06/94)



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FLOWPETROL S.A.

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Mz B 3 Lote C. Talara Telefax 381680

REPORTE DIARIO DE CORTE PARAFINA Y SLICK LINE

DSR. No.	:		CARGO	:	BUILDUP DE 72 HORAS
FECHA	:	12-06-94	SUPERVISOR	:	ISMAEL PADILLA
OPERADOR	:	M. BENITES	AYUDANTE	:	J. JIMENEZ H.
AREA	:	LOBITOS	POZO No.	:	10
HORA LLEGADA:	:	7:40	TUBING	:	2 7/8"
	:		HORA SALIDA:	:	18:30

HORA = 08:00 SE CORTO PARAFINA SUAVE CON CUCH. DE 2 1/2" DE 0' a 1,500'. LIBRE A 5,760' N.A.
09:20 SE BAJO COPA DE 2 5/16" A LA PROFUNDIDAD DE 5,760' N.A.

HORA = 09:45 SE BAJO PESCANTE DE 2" Y SE LOGRA RECUPERAR S.V. A LA PROFUNDIDAD DE 5,760' N.A.
10:10 SE TONO TOPE DE ARENA CON ESTAMPA DE 1 7/8" A LA PROFUNDIDAD DE 6,175'
10:30 SE ARMA AMERADAS DE 1,000 Y 2,000 PSI CON RELOJ DE 72 HORAS.

HORA = 10:40 SE ENGANCHA ESTILETE.
10:50 SE EMPIEZA A BAJAR AMERADAS.
10:56 LLEGADA A LA PROFUNDIDAD DE 6,045' P.M.

HORA = 10:58 SE ABRE LATERAL DE PRODUCCION Y LA INYECCION DE GAS.
11:04 PRIMERA INYECCION.
Q = 0.8 Bis. ; SIST. DE GAS = 880 PSI.

HORA = 11:45 SEGUNDA INYECCION.
Q = 2.4 Bis. ; SIST. DE GAS = 880 PSI
12:25 TERCERA INYECCION.
Q = 2 Bis. ; SIST. DE GAS = 820 PSI

12:42 SE DESFOGA EL POZO
12:45 SE CIERRA EL POZO PARA REGISTRO DE BUILD UP X 72 HRS. SALE EL DIA MIERCOLES.

OBSERVACIONES:

- CICLO DE 40x3:45
- CHOKE DE 20/64

FIRMA DEL CLIENTE

OPERADOR FLOWPETROL S.A.



FLOWPETROL S.A.

Avda. Martires Petroleros Ex Cementerio
Mz B 3 Lote C. Talara Telefax 381690

REPORTE DIARIO DE CORTE PARAFINA Y SLICK LINE

DSR. No. :		EQUIPO :	1	CARGO :	BUILDUP/GRAD. ESTATICA
FECHA :	15-06-94	AYUDANTE :	E NECA	SUPERVISOR:	ING. LUIS MONTORO
OPERADOR :	MARIO BENITES	PLATAFORMA :	L016	AYUDANTE :	J. JIMENEZ
AREA :	LOBITOS	POZO No. :	10	TUBING :	2 7/8"
HORA LLEGADA:	08:10	HORA SALIDA:	18:30		

HORA : 09:40 SE EMPIEZA A SUBIR AMERADAS.

09:55 EN SUPERFICIE.

HORA : 10:05 SE ARMA AMERADA. ELEMENTO: 2,000 PSI-45278; RELOJ: 748 - 3 HORAS.

10:15 SE ENGANCH A ESTILETE.

10:18 EN LUBRICADOR.

HORA : 10:19 EN CERO POR ESPACIO DE 10 MINUTOS. LUEGO SE HACEN PARADAS DE TRES MINUTOS EN:
1,000' ; 2,000' ; 3,000' ; 4,000' ; 4,500' ; 5,000' ; 5,200' ; 5,400' ; 5,600
5,700' ; 5,800' ; 5,900' ; 6,045'.

HORA : 11:27 SE SUBE AMERADA.

11:32 LLEGADA A CERO, LUEGO SE SACA AMERADAS.

12:00 SE CORRIO COPA DE 2 5/16" A LA PROFUNDIDAD DE 5,760'

HORA : 13:00 SE INSTALO S.V. A 5,760' , CHEQUEADO CON COPA DE 2 5/16".

17:00 SE INSTALO LUBRICADOR DE SISTEMA PLUNGER LIFT.

HORA : 17:45 POZO EN PRODUCCION.

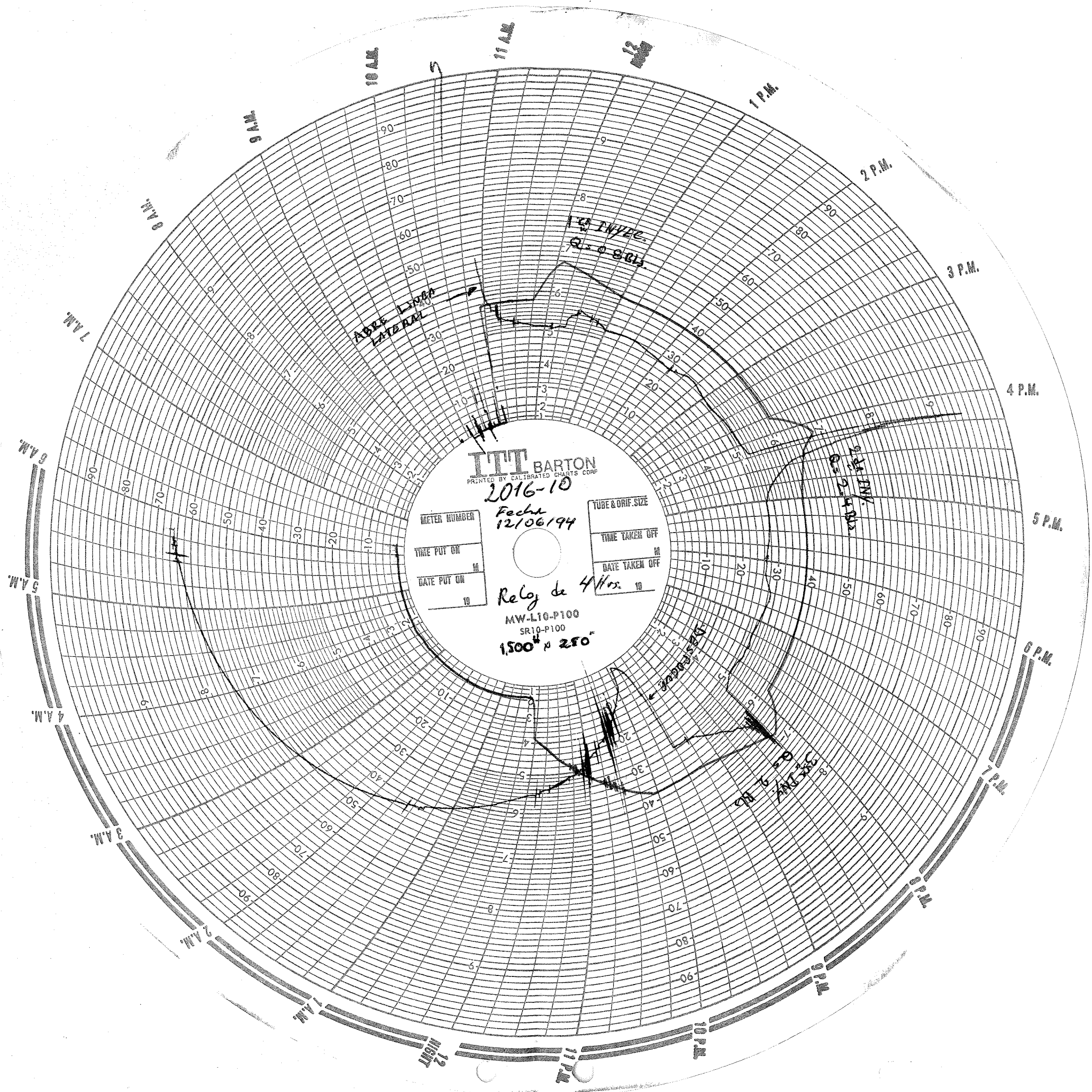
HORA :

OBSERVACIONES :

- MANANA SE INSTALA PLUNGER LIFT.

FIRMA DEL CLIENTE

OPERADOR FLOWPETROL S.A.





FLOWPETROL SA.

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DATOS PARA CALCULO

=====

PROFUNDIDAD VERTICAL

=====

"SURVEY DIRECTIONAL DRILLING		
MEASUR DEPTH	AVERAGE ANGLE	TOTAL VERTICAL
959	32.750	910.20
1911	55.000	1591.44
2976	50.250	2235.29
3993	51.250	2878.67
4454	48.500	3172.37
4823	49.500	3416.76
5036	51.000	3556.15
5255	51.500	3696.18
5255	51.500	3696.18
5255	51.500	3696.18
5255	51.500	3696.18
5835	50.250	4059.22
5835	50.250	4059.22

**FLOWPETROL SA.**

Parque 23-7 2do Piso - Telf. 381880 Talara

- BOTTOM HOLE PRESSURE GAUGE CALIBRATION SHEET -

DATE: 04/11/94 CALIBRATION No.: 11

- EQUIPMENT DATA -

Calibration cell No.: 2318 Manufacturer : CHANDLER
Dead weight tester No.: 13864 Manufacturer : CHANDLER Range: 0 -10000 PSI
Recording element No.: 15233 Manufacturer : GRC
Pressure element No.: 45278 Manufacturer : GRC Range: 0 - 2,000 PSI

- MISCELLANEOUS INFORMATION -

Base line drawing temperature : AMBT
Reference line data-temperature: AMBT -pressure Pr: reading Yr:
Calibration data -temperature: AMBT -step drawing: with crank with clock
Equivalent pressure P of level difference between Dwt and bellows

Level difference : +in case of Dwt above
Oil specific gravity : P= -in case of Dwt beneath
bellows

-CALIBRATION READING AND CALCULATIONS-

NUM. DE LECTURAS 4

P(Dwt)	Y	ΔY	$\frac{2}{Y}$	YP	$P_c = KY + a$	$C = P - P_c$
PSI	DEFLEC		-Units on this line-			
500	0.4860	-----	0.2362	243.00	491.427	8.5731
1000	0.9885	0.5025	0.9771	988.50	1006.800	-6.8002
1500	1.4820	0.4935	2.1963	2223.00	1512.943	-12.9429
2000	1.9460	0.4640	3.7869	3892.00	1988.830	11.1701
5000	4.9025		7.1966	7346.50	ERROR =	-0.0000

$$A = \text{SUM}(P)/n = 1250$$

$$K = (A-D)/(B-C) = 1025.6185$$

$$B = \text{SUM}(Y)/n = 1.225625$$

$$a' = A - BK = -7.0237$$

$$C = \text{SUM}(Y^2) / \text{SUM}(Y) = 1.46793845$$

$$a' = D - CK = -7.0237$$

$$D = \text{SUM}(YP) / \text{SUM}(Y) = 1498.52116$$

$$a = a' + P = -7.0237$$