

PTP-RESN-026-97

May 14<sup>th</sup>, 1997

RECEIVED  
PETRO-TECH PERUANA S.A.  
1997 MAY 19 AM 9:05

H. Chang

V. Peralta

ARCHIVO P20

TO: John Meyers

FROM: Alberto Agurto

SUBJECT: Pressure Build Up Test  
Well LO6-22R

Please find attached results obtained from Build Up test run in the above mentioned well in order to determine the current reservoir pressure and to know if the well is damage.

The main results are as follows:

Date	: May 07 - 08 <sup>th</sup> , 1997.
Perforated interval	: 9288' - 9273' & 8426' - 8145' MD.
Formation	: Upp. Bs. Salina & Wedge Sand.
Middle Perf. Point	: 8717' MD - 6746' VD.
Pressure at MPP	: 1902 psi. (last reading).
Extrp. Pressure P*	: 2650 psi.
Well head pressure	: 1570 psi.
Flowing BHP	: 735 psi.
Fluid level	: Gas was only found in the wellbore.
Sand top	: 8220' MD (It has a fish with wire line).
Formation gradient	: 0.393 psi/ft
Permeability	: 3.05 - 2.72 md.
Skin factor	: -2.02



In the last hour that the gauge remained in the bottom hole, the pressure increased only 4 psi., then it could be considered almost stabilized. The interpretation using the Storage-Skin model was most adequate, the reservoir characteristics from Straight Line evaluation are similar to those obtained to the Matching method.

The analysis shows that in the wellbore there is no damage (-2.02 skin factor from Straight Line), and extrapolated pressure (P\*) was estimated in 2650 psia at middle perforated point.

This well was perforated and fraced in March 1996 in the Upp. Bs. Salina and Wedge Sand formation, an initial production of 520 BOPD flowing. Currently it produces 197 BOPD - 900 GOR - 130 psi., with an acumulated of 115 MBO.

This well does not have an initial pressure in order to compare with this one. However, the initial pressure can be estimated considering that this well in its initial stage produced with low GOR from undersaturated reservoir with Bubble Pressure 3520 psi (PVT tuned from LO16-14 well). Likewise, using Ansari correlation (WEM analysis) its initial rate and flowing pressure are confirming this suposition. Therefore, the initial gradient at Upp. Bs. Salina in this reservoir can be higher than 0.522 psi/ft, with a productivity index 0.238 BPD/psi.

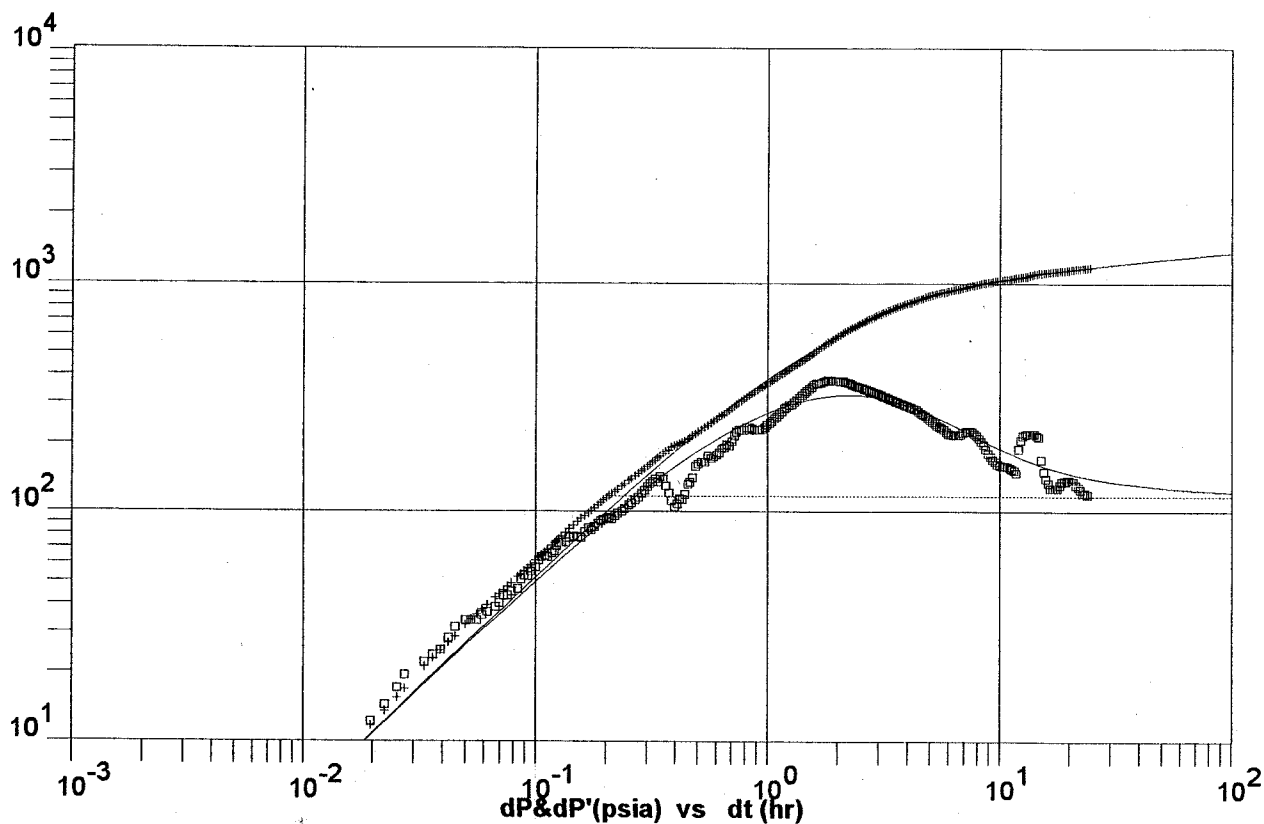
This well has enough energy, in agreement with this, a good production is expected after clean out sand and assisted with a continuous gas lift design to reduce the bottom hole pressure.

Alberto Agurto S.  
Reservoir Engineer

c.c.: H. Chang.  
R. Francia.  
Well File.

PETRO - TECH PERUANA S.A.  
ARCHIVO CENTRAL

Log-Log		LO6-22R	
Company	PETROTECH	Test	BU
Field	Lobitos	Date	May-97
Well	LO6-22R	Gauge	MG



Flow Period # 2  
 Rate 0 STB/day  
 Rate Change 197 STB/day  
 P @ dt=0 737.75 psia  
 Pi 2610.9 psia  
 Smoothing 0.1

Time match 2.395 (hr)-1  
 Pressure Match 0.0043398 (psia)-1

RESERVOIR Homogeneous  
 WELL Storage & skin  
 BOUNDARY Infinite

Storage C 0.020306 STB/psi  
 CD 3730  
 Skin factor -1.4246

kh 167.7 md.ft  
 K 3.0492 md  
 Mobility k/mu 2.9973  
 Investig. R 163.91 ft

PETRO - TECH PERUANA S.A.  
 ARCHIVO CENTRAL

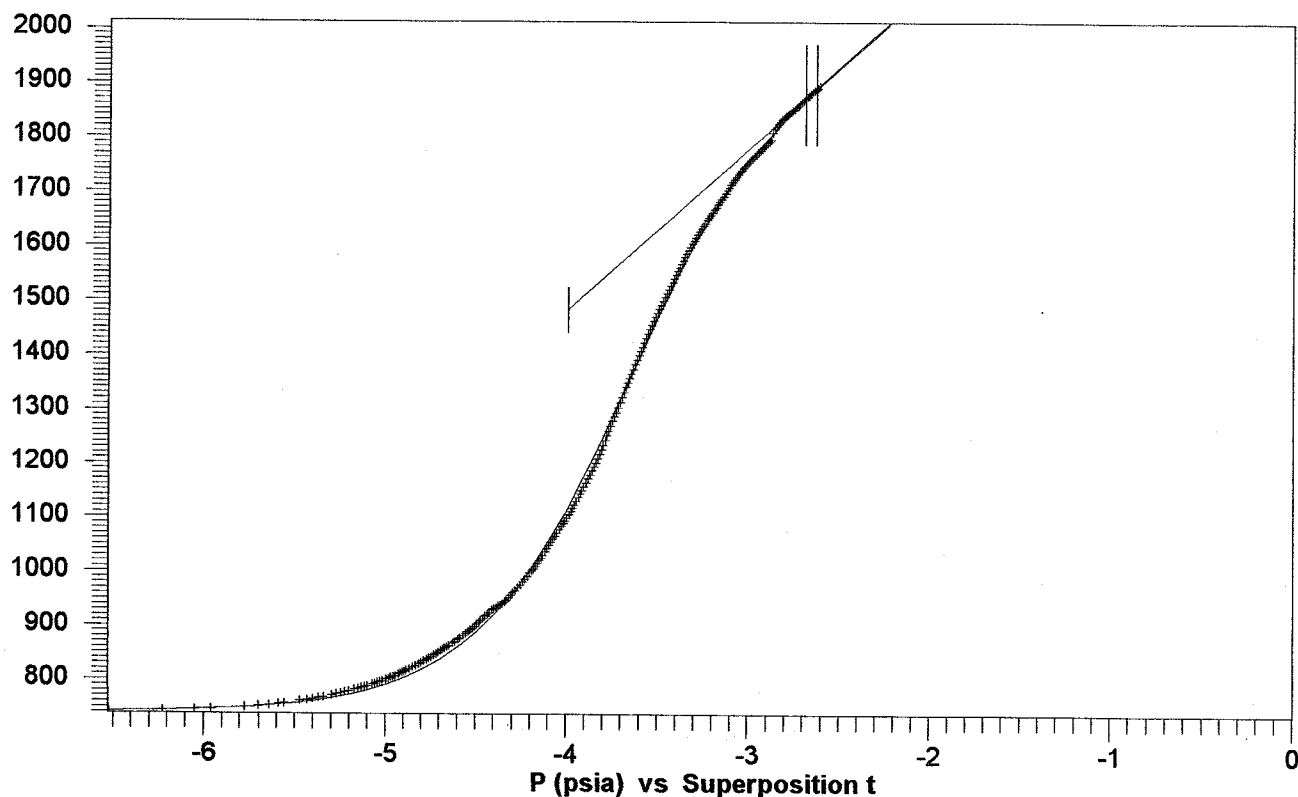
		Main Results		LO6-22R	
Company	PETROTECH	Formation interval	Bs.Salina		
Field	Lobitos	Perforated interval	9288'-8145'		
Well	LO6-22R	tp. 413 days.	Np. 115MBO.		
Test	BU	Tsi: 24.394 hrs			
Date	May-97	FBHP. 735/760 p	FWHP. 120 psi.		
Gauge	MG	SBHP. 1893 psi.	SWHP. 1600 psi.		
Depth	8150'(6476')				

Test type	Standard	FLUID TYPE	Oil
Porosity Phi (%)	9	Volume Factor B	1.3656
Well Radius rw	0.197 ft	Compressibility	2.5323E-5 psi-1
Pay Zone h	55 ft	Viscosity	1.0173 cp

Flow Period #	2	Time match	2.395 (hr)-1
Rate	0 STB/day	Pressure Match	0.0043398 (psia)-1
Rate Change	197 STB/day	RESERVOIR	Homogeneous
P @ dt=0	737.75 psia	WELL	Storage & skin
Pi	2610.9 psia	BOUNDARY	Infinite
Smoothing	0.1	Storage C	0.020306 STB/psi
		CD	3730
		Skin factor	-1.4246
		kh	167.7 md.ft
		K	3.0492 md
		Mobility k/mu	2.9973

PETRO-TECH PERUANA S.A.  
ARCHIVO CENTRAL

Semi-Log		LO6-22R	
Company	PETROTECH	Test	BU
Field	Lobitos	Date	May-97
Well	LO6-22R	Gauge	MG



Flow Period # 2  
Rate 0 STB/day  
Rate Change 197 STB/day  
P @ dt=0 737.75 psia  
Pi 2610.9 psia

Time match 2.395 (hr)<sup>-1</sup>  
Pressure Match 0.0043398 (psia)<sup>-1</sup>

RESERVOIR Homogeneous  
WELL Storage & skin  
BOUNDARY Infinite

#### STRAIGHT LINE

From 20.233 hr  
To 23.208 hr  
Slope 297.68 psia  
Intercept 2670.8 psia  
value @ dt=1hr 1481.2 psia

Storage C 0.020306 STB/psi  
CD 3730  
Skin factor -1.4246

kh 167.7 md.ft  
K 3.0492 md  
Mobility k/mu 2.9973

-> p\* 2670.8 psia  
-> PMatch 0.0038666 (psia)<sup>-1</sup>  
-> k.h 149.46 md.ft  
-> k 2.7175 md  
-> Skin -2.0204

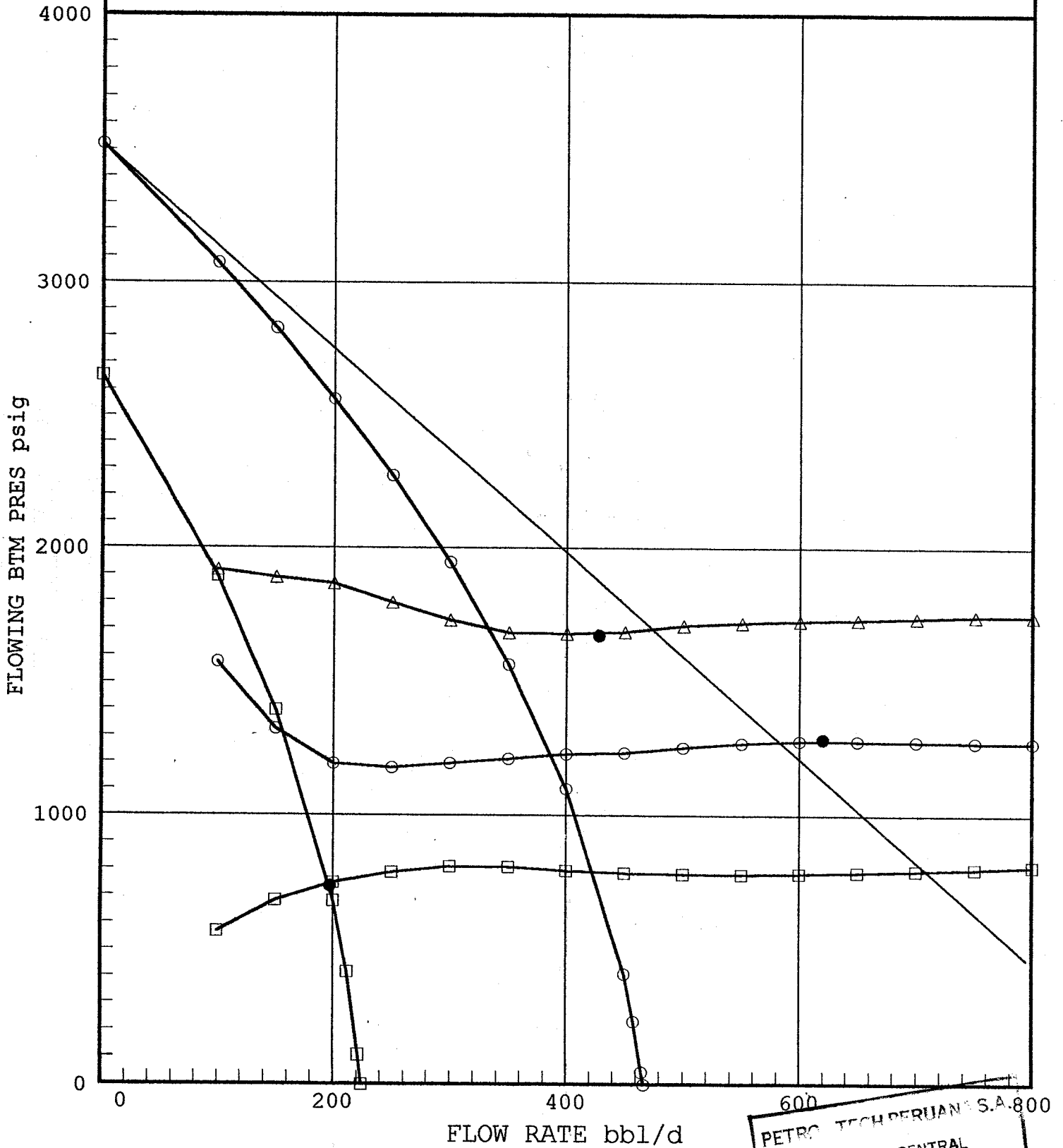
PETRO - TECH PERUANA S.A.  
ARCHIVO CENTRAL

Plot 1

Lse/Fld: Lobitos Well ID: LO6-22R WEM V9.2.0 5/15/97

Inflow Parameter = RES PRES (psig )  
 □ 2650 ○ 3520

Outflow Parameter = WHD PRES (psig )  
 □ 130 ○ 270 △ 440



PETRO TECH PERUANA S.A. 800  
 Archivo CENTRAL

