

COPESERPET S.A.

Well LO6 - 9X Lobitos offshore

Static Gradient

Customer : Petrotech Peruana S.A.

Date : January the 20 th, 1997

csp 012/97

Talara, January the 22th, 1997.

ENG° RIGOBERTO FRANCIA
Production Engineering Chief
PETRO-TECH PERUANA S.A.

Dear Sr.

Attached you will find the report of the **BOTTOM HOLE STATIC PRESSURE** and **PRESSURE GRADIENT** tests carried out in the well **LO6-9X (Rio Bravo sand)** Lobitos offshore.

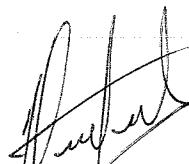
Data used in this report was obtained using **Amerada gauge**:

- 1000 psi / 3 hours. s.n. 18874

If you have any question please contact us.

Thanks for your attention,

Yours sincerely,



José Manuel Castro Solórzano
COPESERPET S.A.

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

COPESEPET S.A.

TEST: STATIC GRADIENT & FLUID LEVEL
WELL: LO6 - 9X (Z-2-A-21-629-XD-LO6)

FIELD: LOBITOS OFFSHORE
SAND: RIO BRAVO

DAILY REPORT

JANUARY 15 th 1997

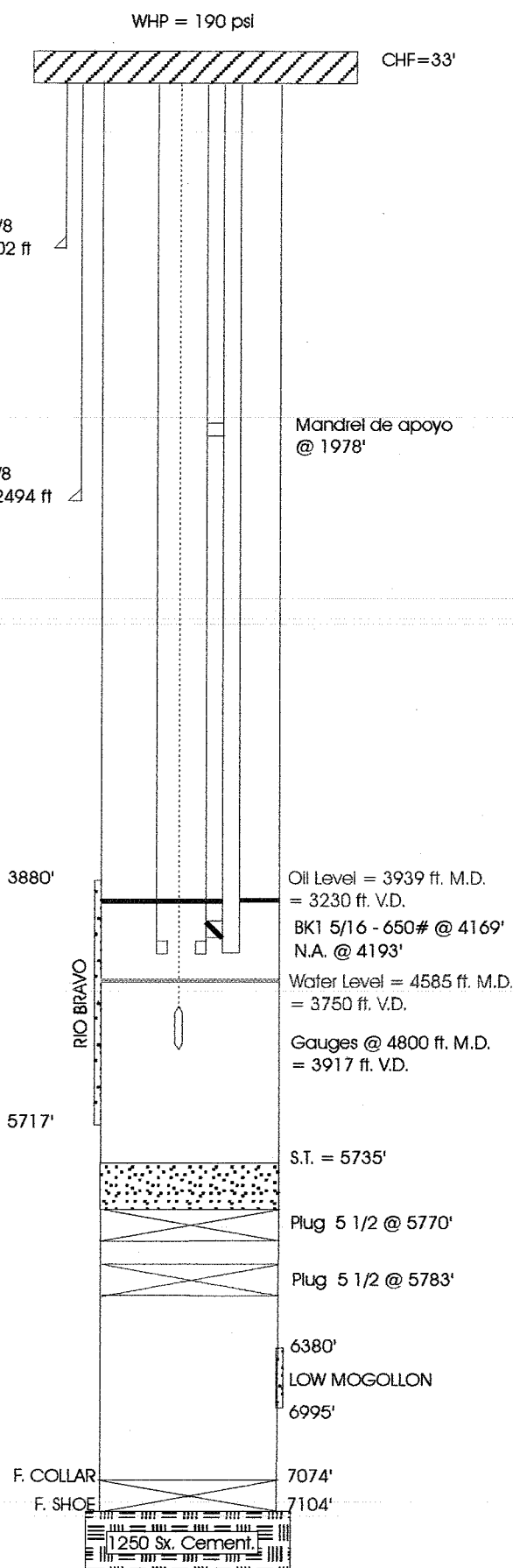
Standing Valve recovered at 4193 ft. M.D.
Sand Top at 5735 ft. M.D.
Well closed for 5 days.

JANUARY 17 th 1997

P(tbg) = 180 psi
P(Annul) = 190 psi

JANUARY 20 th 1997

9:00 P(tbg) = 190 psi
P(Annul) = 250 psi
9:45 Activate Amerada 1025 psi s/n 18874 Gauge clock.
9:50 Running Gauges into the well.
10:00 Gauges at 4800 ft. M.D.
Recording pressures for 1 hr.
11:00 Run gauges down to 5700 ft. M.D. (recording for 5 min).
11:06 Recovering gauges with steps as follows:
5700' 3600'
5400' 3300'
5100' 3000'
4800' 2500'
4500' 2000'
4200' 1000'
3900' 0
11:20 Gauges in surface.
13:00 Standing Valve installed.

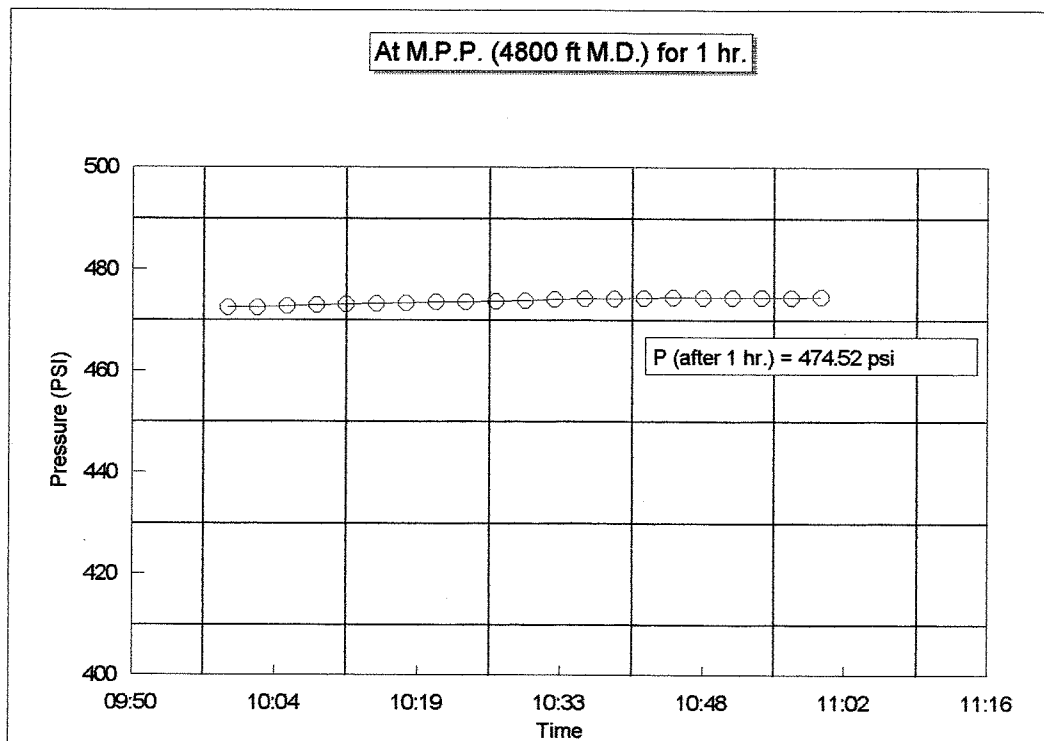


Results of the Static Gradient Test
on well Z-2-A-21-629-XD (LO6-9X)

Date of the test	January, 20th 1997
Formation	Rio Bravo
Intervale	3880' - 5717' M.D.
December rate	4 BOPD 6 BWPD
Depth of gauges	4800 ft. M.D. = 3917 ft. V.D.
Surface TBG pressure	190 psi
Surface CSG pressure	250 psi
Bottom hole static pressure	474.52 psi
Oil gradient	0.3648 psi/ft
Water gradient	0.4568 psi/ft
Gas gradient	0.003 psi/ft
Middle Point of Perforations	4800 ft. M.D. (3917 ft. V.D.)
Pressure at M.P.P.	474.52 psi
Static Gradient at M.P.P.	$474.52 \text{ psi} / 3917 \text{ ft} = 0.1211 \text{ psi/ft}$
Oil Level	3939 ft. M.D. = 3230 ft. V.D.
Water Level	4585 ft. M.D. = 3750 ft. V.D.
Oiltramp	Crude oil with some water.

Static Pressure at the M.P.P.

TIME	DEFLECT. (in)	PRESSURE (psi)
10:00	0.8314	472.3417
10:03	0.8316	472.4482
10:06	0.832	472.6611
10:09	0.8324	472.8740
10:12	0.8327	473.0337
10:15	0.8329	473.1401
10:18	0.8332	473.2998
10:21	0.8335	473.4595
10:24	0.8337	473.5659
10:27	0.8339	473.6724
10:30	0.8342	473.8321
10:33	0.8345	473.9917
10:36	0.8347	474.0982
10:39	0.8348	474.1514
10:42	0.835	474.2579
10:45	0.8352	474.3643
10:48	0.8353	474.4176
10:51	0.8353	474.4176
10:54	0.8354	474.4708
10:57	0.8354	474.4708
11:00	0.8355	474.5240



Fluid Level & Gradient

M.D. (ft)	V.D. (ft)	DEFLECT. (in)	PRESSURE (psi)	GRADIENT (psi/ft)
5700	4621.53	1.448	800.5405	0.4353
5400	4387.98	1.257	698.8766	0.4570
5100	4152.73	1.055	591.3577	0.4749
4800	3917.35	0.845	479.5806	0.4601
4500	3682.51	0.642	371.5294	0.3683
4200	3441.19	0.475	282.6400	0.3612
3900	3198.03	0.31	194.8152	0.0023
3600	2961.67	0.309	194.2829	0.0023
3300	2733.68	0.308	193.7506	0.0024
3000	2510.2	0.307	193.2184	0.0058
2500	2139.97	0.303	191.0893	0.0042
2000	1756.1	0.3	189.4924	0.0033
1000	943.03	0.295	186.8311	0.0011
0	0	0.293	185.7665	-

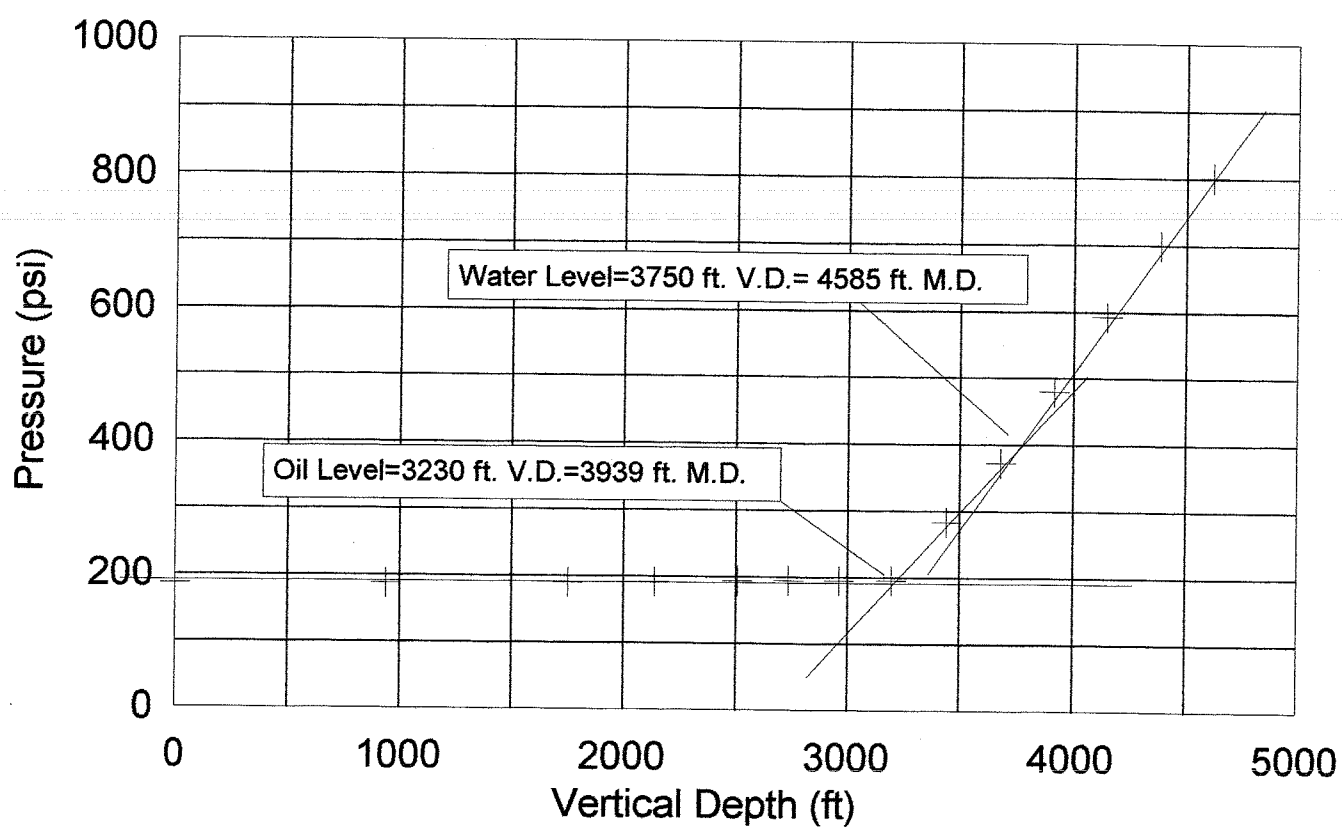
Water Avg. Gradient = 0.4568 psi/ft
 Oil Avg. Gradient = 0.3648 psi/ft
 Gas Avg. Gradient = 0.0030 psi/ft

O.I level - 3939 MD (3230' VD)
 WATER level - 4585 MD (3750' VD)
 BOMB & MDD - 4800 MD (3917' VD) = 480 psig.

$$FG = \frac{475}{3917} = 0.121 \text{ psi/ft}$$

- IT IS REPRESENTATIVE
- 5 DAYS SI, BEFORE TEST
- 2 psi DURING 60 MINUTES, THAT BOMB WAS IN BOTTOM HALF.

Fluid Level



COPESERPET S.A.	Cliente : Petro - Tech Peruana S.A.	N° Report : 001
Base : Talara	Field :	

BOTTOM HOLE PRESSURE GAUGE CALIBRATION SHETT

DATE : 11 - 09 - '96

CALIBRATION N° 006

EQUIPMENT DATA

Gauge Serial Number	: 18874	Manufacturer: KUSTER
Gauge Type	: RPG 3	Manufacturer: KUSTER
Range	: 1025 PSI	
Elongation Factor	: 0.001 IN.	
Temperature	: 75 °F	

CALIBRATION READING AND CALCULATIONS

P (Dwt)	Y	dY	Y 2	Y * P	Pc = K*Y+a	C = P-Pc.
PSI	INCH	INCH	UNITS ON THIS LINE		PSI	PSI
15	0.0000	-	0.0000000	0.0000	29.81	-15.00
200	0.3090	0.3090	0.0954810	61.8000	194.28	5.72
400	0.6570	0.3480	0.4316490	262.8000	379.51	20.49
600	1.0780	0.4210	1.1620840	646.8000	603.60	-3.60
800	1.4600	0.3820	2.1316000	1168.0000	806.93	-6.93
1000	1.8240	0.3640	3.3269760	1824.0000	1000.67	-0.67
3014.81	5.3280		7.14779	3963.4000		-26.20 26.20

A = $P/n = 3014.81/6 = 502.4683$ B = $Y/n = 5.3280/6 = 0.8880$

D = $(Y*P)/ Y = 3963.40/5.3280 = 743.8814$

C = $(Y 2)/ Y = 7.14779/5.3280 = 1.3416$

K = $(A-D)/(C-B) = 532.271832$

a' = $A-B*K = 29.8109$

a' = $D-C*K = 29.8109$

RESULTADOS FINALES

K = 532.27183155

a = a' + p = + 29.8109 psi.

$Prc = K * Yr + a = 532.27183 * Yr + 29.8109$
