REPSA

GRE filters

Repsa filters provide maximum control of sand and gas from the well, as they provide excellent permeability for gas separation. At the same time, filter sand with a 100 or greater grid when working as downhole separators.

These meshes have a special design of unique veins with eccentric holes geometry, with decreasing flow section. This stimulates the release of gas, which is adsorbed in the hole mouth. In this way, it accumulates until the bubble is formed and gets free.

Applications

- The mesh can function as a single filter or with gravel or sand packaging. Applicated as a single filter, the mesh is threaded to the lower part of the male plug.
- Sand filtering or downhole separators.

Benefits

- Increase wells production, since it efficiently separates the liquid phase from the gas one.
- Operating as a solid filter, production increases and interventions get broader.

DIAMETER	MAXIMUM OPERANTING TEMPERATURE		APPLICATIONS	FLUID	JOINT	THREAD
INCHES	C°	F°				
2 3/8	120	248	Production wells (AIB/ESP/ Gas/lift/PCP)	Oil Natural Gas Acid gas (with CO_2/H_2S)	Integral Joint	8 rd
2 7/8	120	248				
3 1/2	120	248				
4 1/2	120	248				

PETROBRAS		Report Number	
		Version	1/10
	Extraction Engineering	Start Date	08/14/2012
	Author	Update	

Evaluation of Repsa GRE filters as downhole separators

1-Objective

To quantify the rise in production associated with the downhole biphasic separation in wells of Jagüel de los Machos oil field area.

2-Conclusion

Tested GRE filters have proven to separate the liquid from the gaseous phase efficiently, increasing the production of the wells where they are installed.

3-Recommendations

It is advisable to include these equipments in the master agreement with REPSA so as to be used in the eligible wells of the oil field.

4-Fundaments

When the gas enters the pumps, the volumetric efficiency of downhole mechanical pumps is affected. According to the gas flow, type of oil and the pressure/temperature conditions, the effect on pumping may appear as a reduction in the useful displacement volume (gas compression) or the total blocking as valves are prevented from opening. The reduction of clearance between piston and foot valves by +- 12 mm and the use of mechanical devices to minimize the effect of gas on pumping are among the most usual practices.

A further complementary practice consists in reducing the pump gas intake; usually, gas separators are used to release part of the gas thus generating longer residence time and/or creating a depression.

The tested filter works as a downhole gas separator. It depicts an eccentric holes geometry with a flow section declining towards the inner side which generates a small pressure drop thus releasing the gas absorbed in the hole entrance; this way, it accumulates until the released bubble is formed.

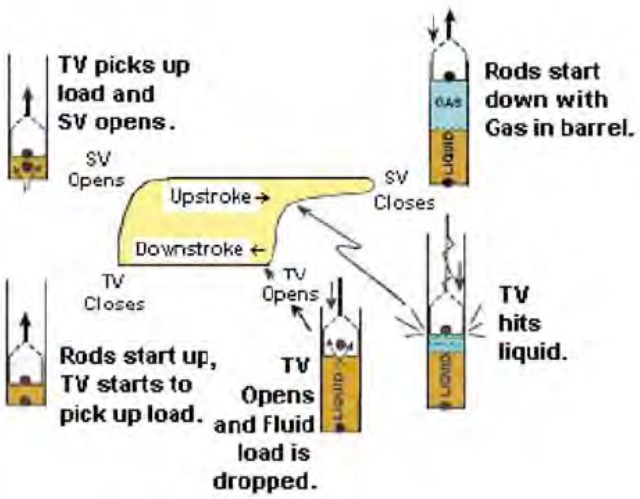


Fig. 1 Gas interference process

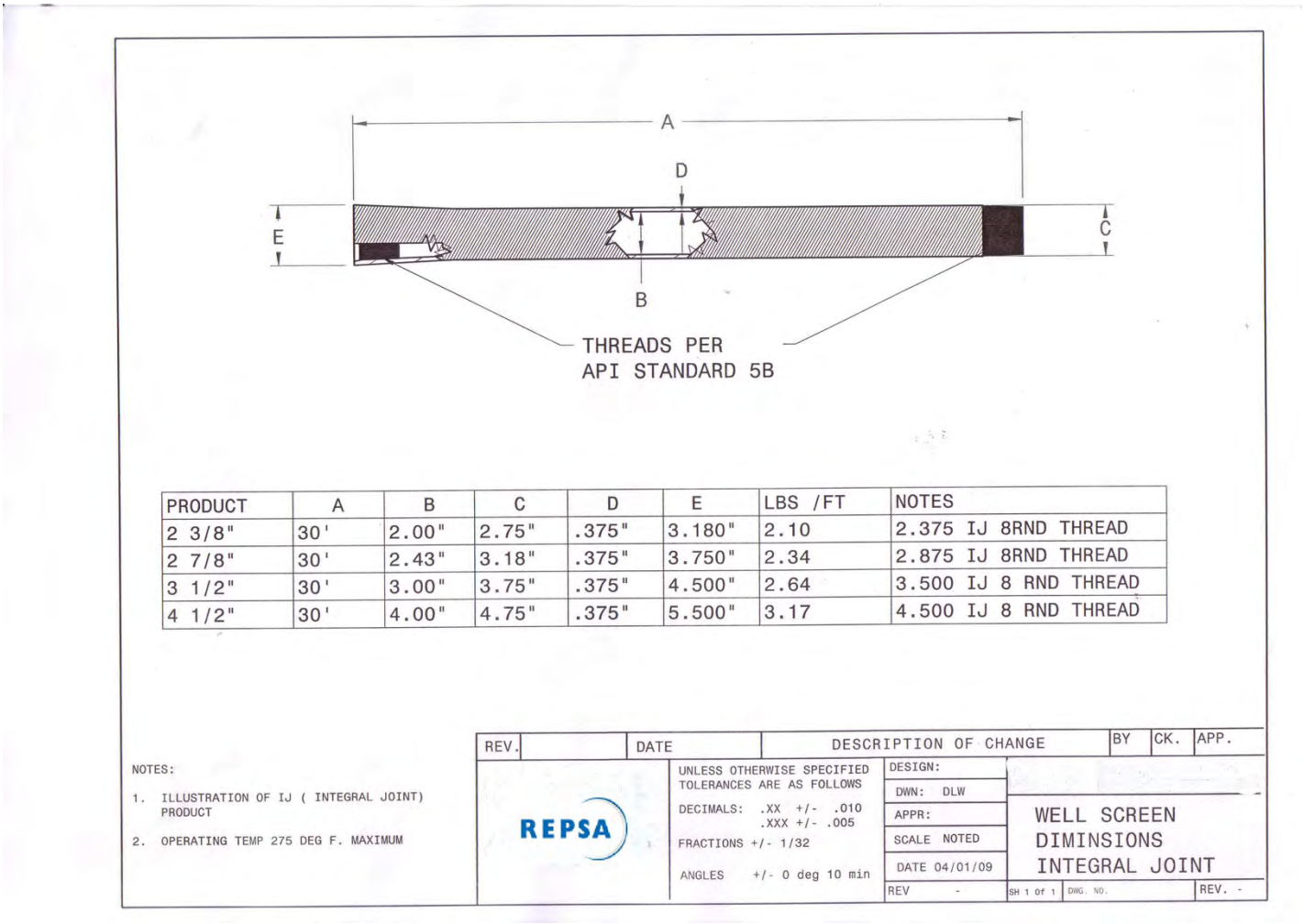
Fig. 2 Transversal cut of gas separating filter

Fig. 3 and Fig. 4 View of gas separating filter

5-Field tests

Due to the foregoing, the decision was made to test these filters as separators in wells TA 1053, LP 1592 and LP 1251.

The filters used were 2 7/8”.



PRODUCT	A	B	C	D	E	LBS /FT	NOTES
2 3/8"	30'	2.00"	2.75"	.375"	3.180"	2.10	2.375 IJ 8RND THREAD
2 7/8"	30'	2.43"	3.18"	.375"	3.750"	2.34	2.875 IJ 8RND THREAD
3 1/2"	30'	3.00"	3.75"	.375"	4.500"	2.64	3.500 IJ 8 RND THREAD
4 1/2"	30'	4.00"	4.75"	.375"	5.500"	3.17	4.500 IJ 8 RND THREAD

NOTES:

1. ILLUSTRATION OF IJ (INTEGRAL JOINT) PRODUCT
2. OPERATING TEMP 275 DEG F. MAXIMUM

REV.		DATE	DESCRIPTION OF CHANGE	BY	CK.	APP.

REPSA

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE AS FOLLOWS

DECIMALS: .XX +/- .010
.XXX +/- .005

FRACTIONS +/- 1/32

ANGLES +/- 0 deg 10 min

DESIGN:
DWN: DLW
APPR:
SCALE NOTED
DATE 04/01/09
REV -

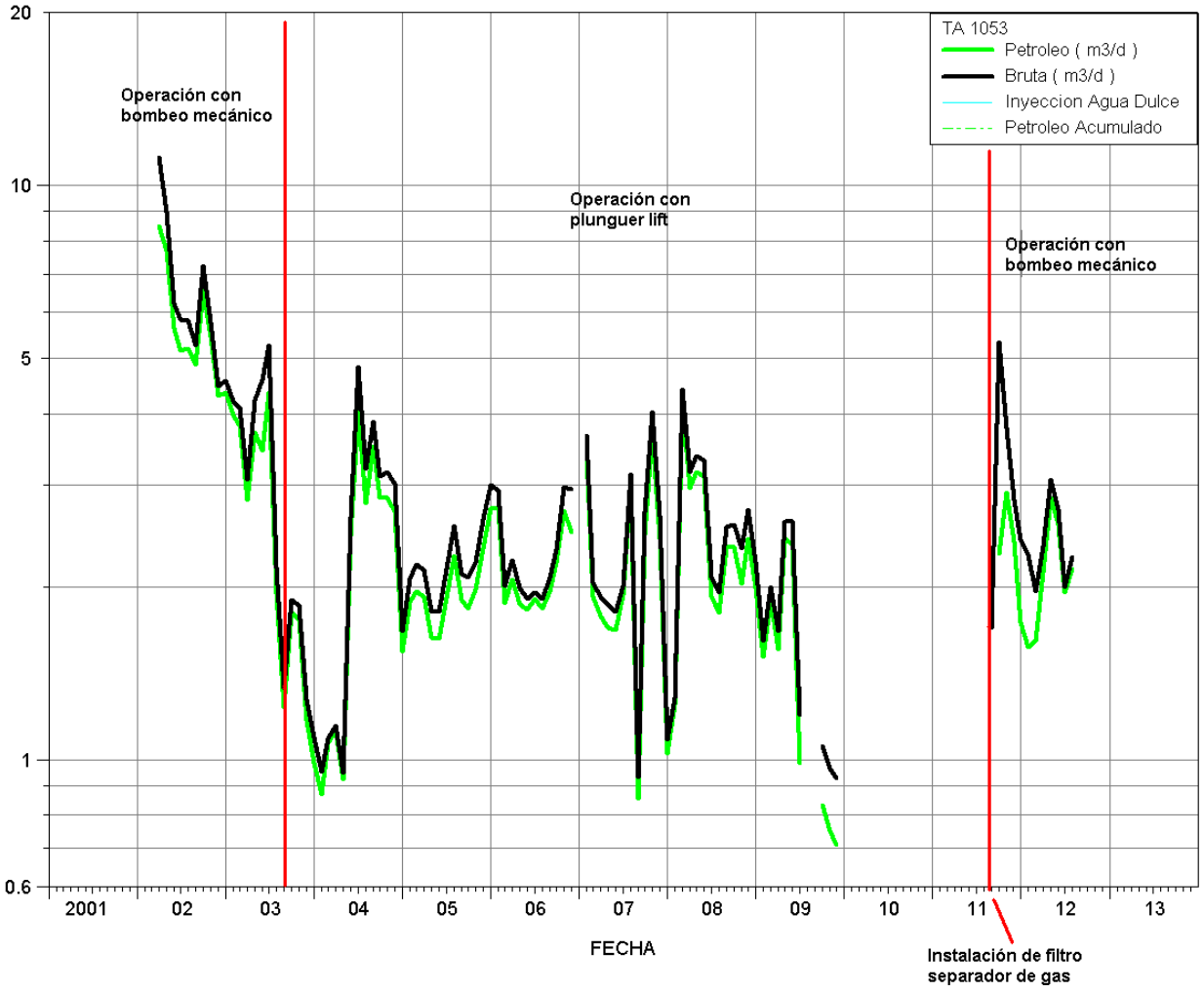
WELL SCREEN
DIMINSIONS
INTEGRAL JOINT

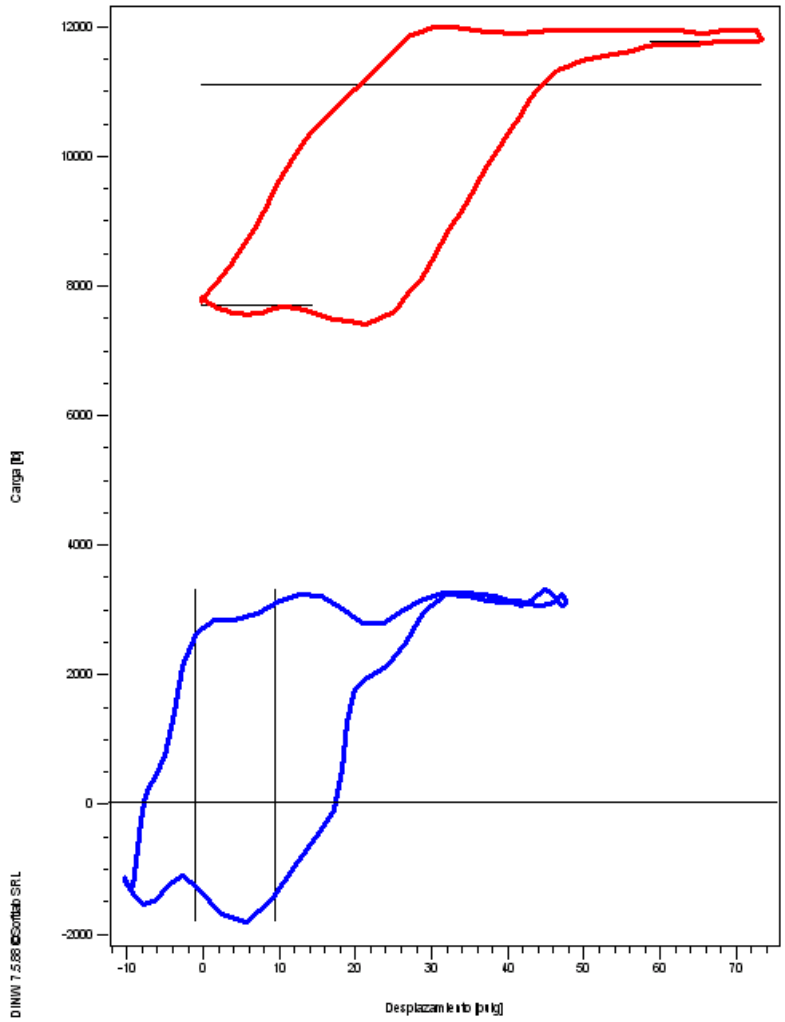
SH 1 Of 1 | DWG. NO. | REV. -

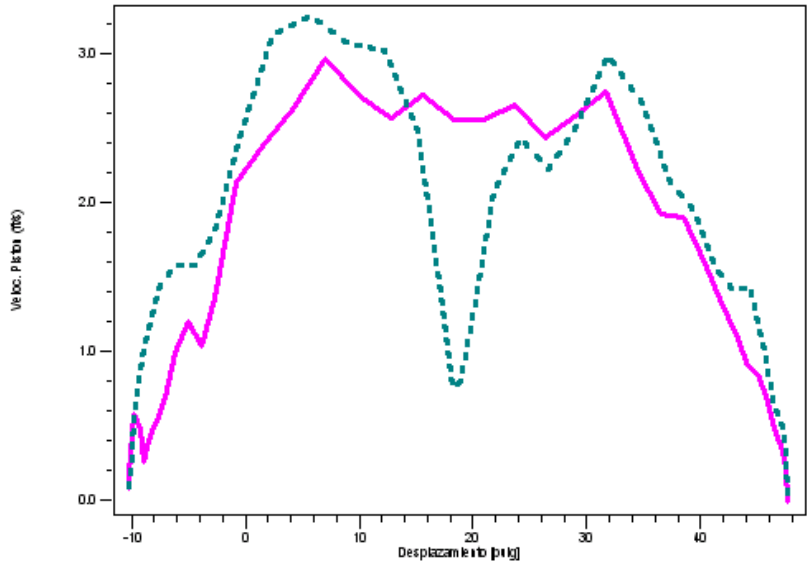
TA 1053

This well was reactivated by changing the extraction system from plunger lift to mechanical pumping. Historically, the gas flow limited the system application.

By using the filter, it was possible to produce the well with GOR 2500 without gas interference and showing a fluid strike on dynamometer cards.

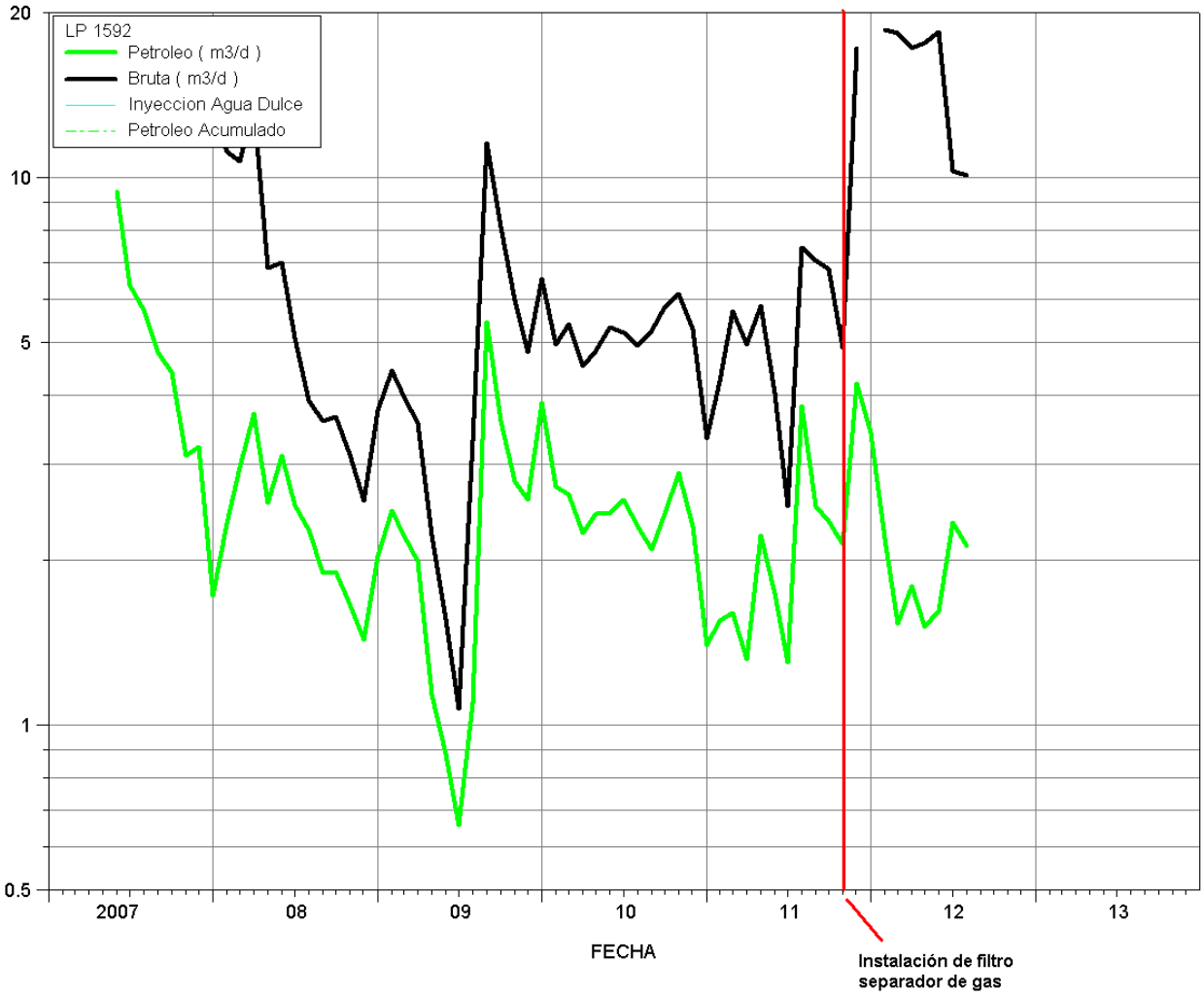



12000
10000
8000
6000
4000
2000
0
-2000
Carga [lb]
-10
0
10
20
30
40
50
60
70
Desplazamiento [pulg]

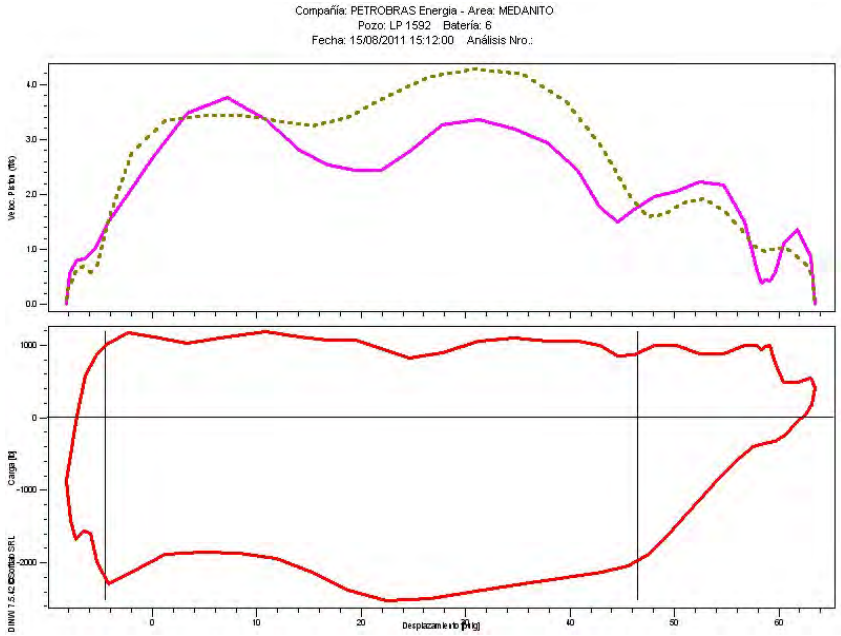

3.0
2.0
1.0
0.0
-10
0
10
20
30
40
Desplazamiento [pulg]

LP 1592

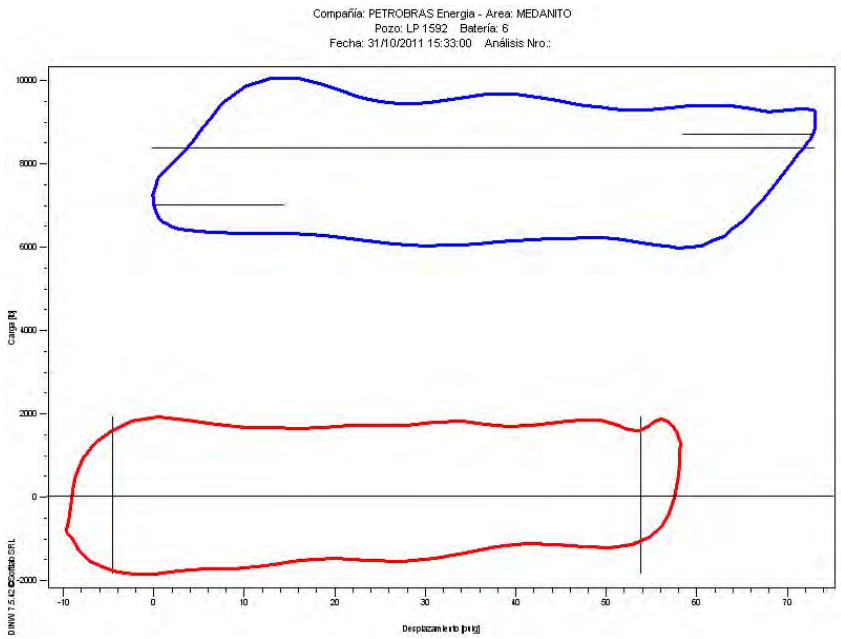
As shown, before the filter installation it showed gas interference. Later, the diagram appears to be full and the gross production increased from 7 m^3/d to 17 m^3/d.



Dynamometer diagram before installing the gas separator filter.

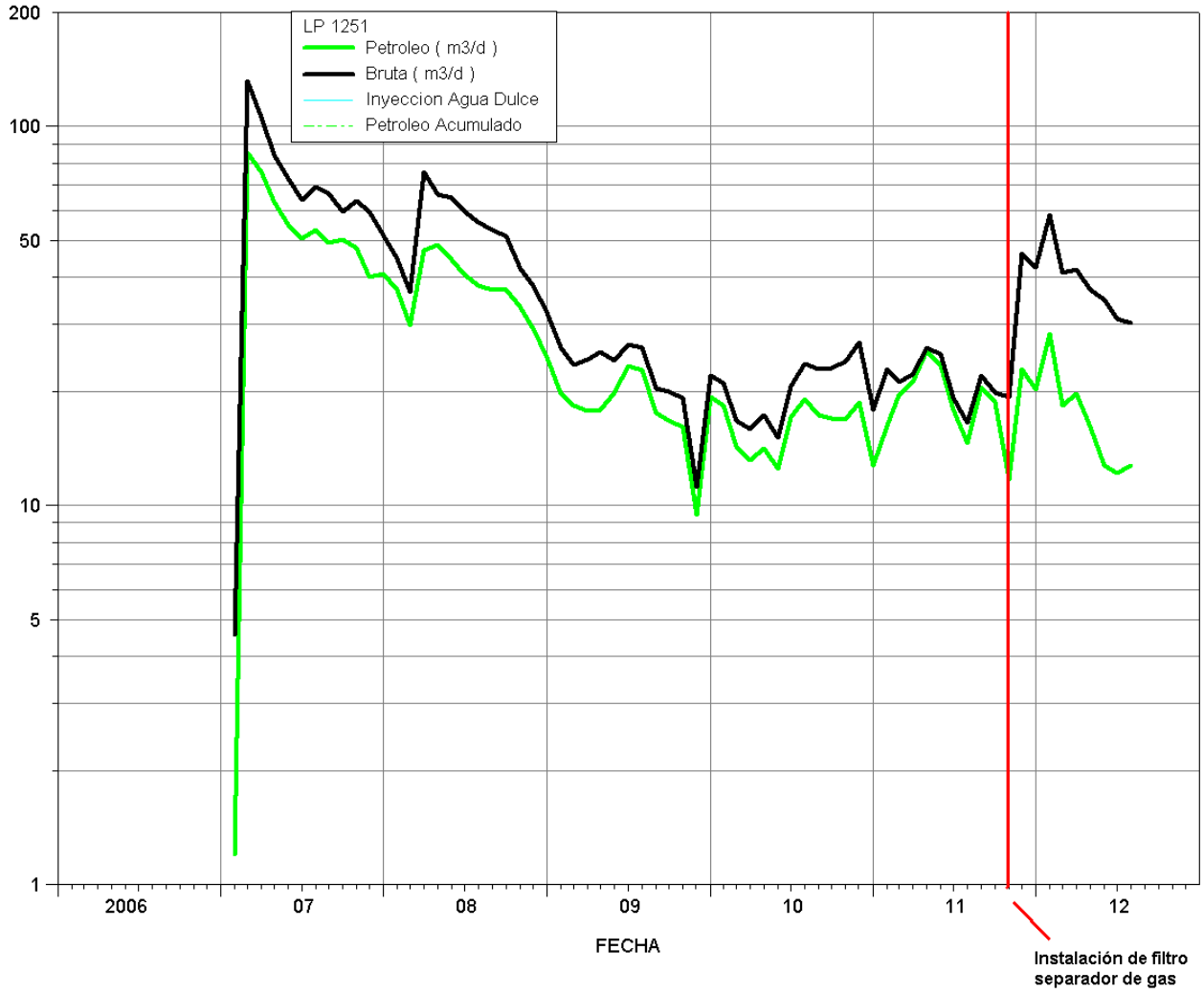


Dynamometer diagram after installing the gas separator filter.

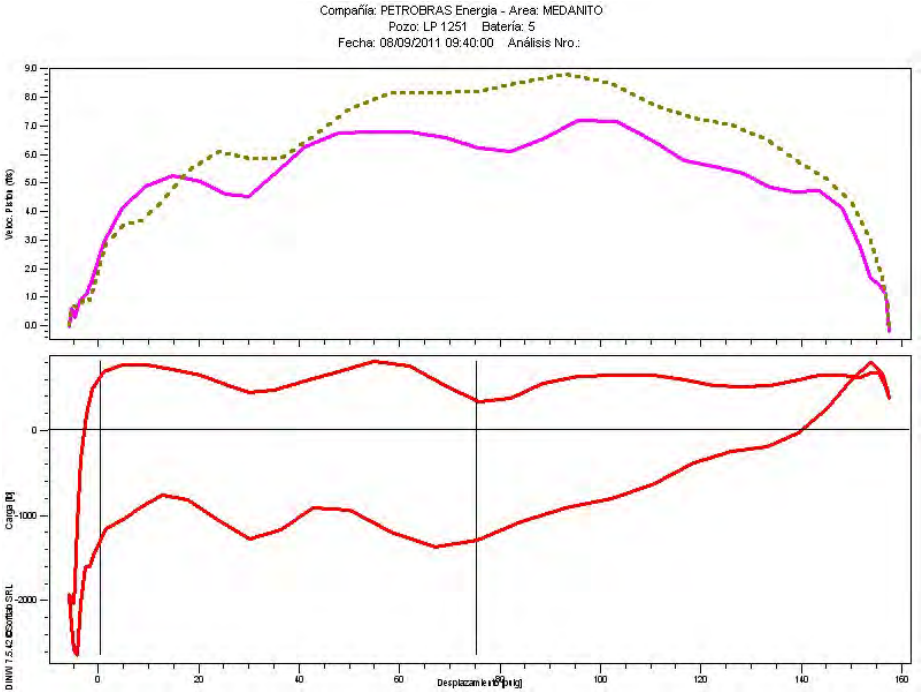


LP 1251

As shown, before the filter installation it showed gas interference. Later, the diagram appears to be full and the gross production increased from 23 m^3/d to 46 m^3/d.



Dynamometer diagram before installing the gas separator filter.



Dynamometer diagram after installing the gas separator filter.