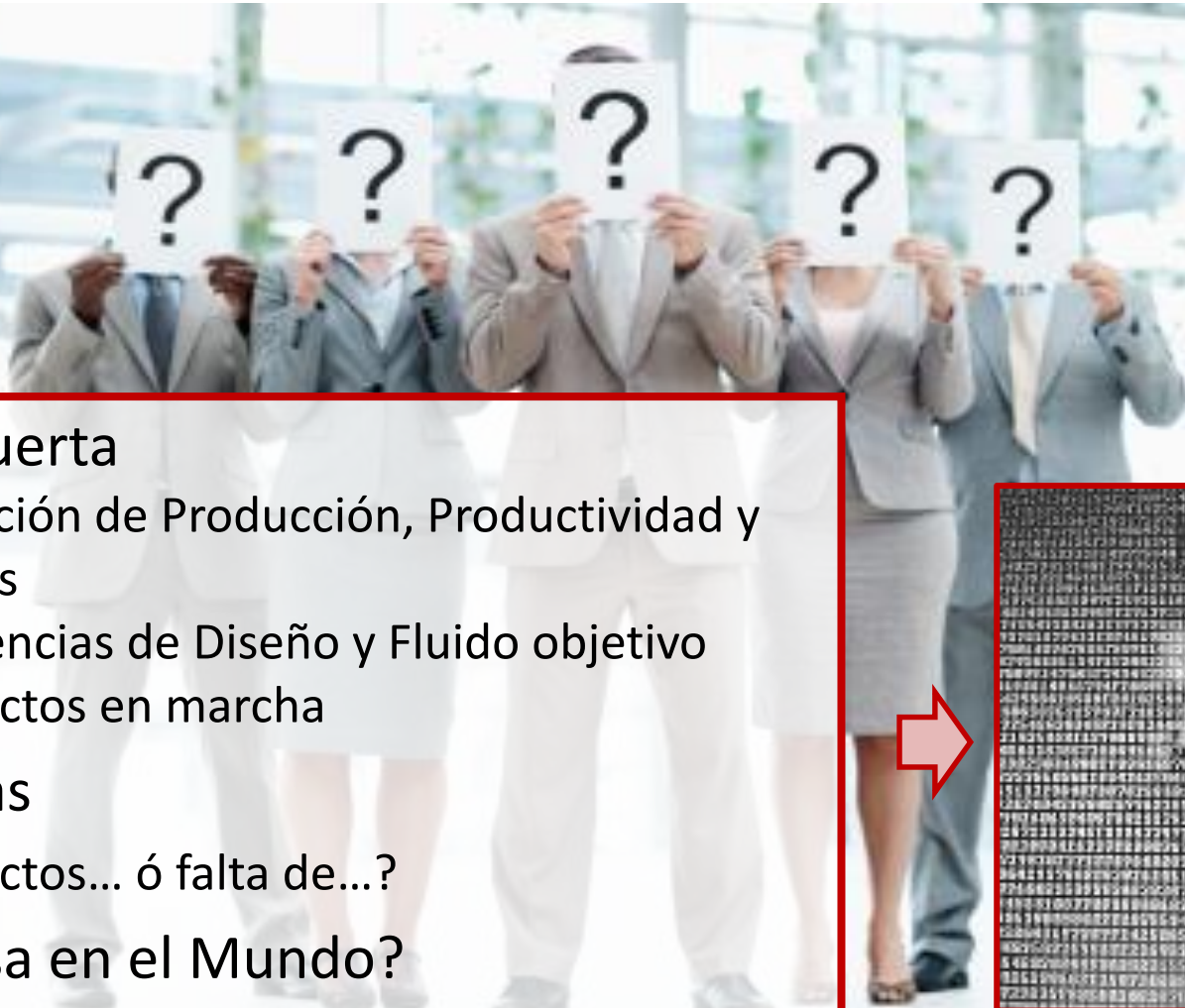


Actualidad de los  
**No Convencionales**  
en Cuenca Neuquina  
y el mundo

23 de mayo 2017



- ✂ Vaca Muerta
  - ✂ Evolución de Producción, Productividad y Costos
  - ✂ Tendencias de Diseño y Flujo objetivo
  - ✂ Proyectos en marcha

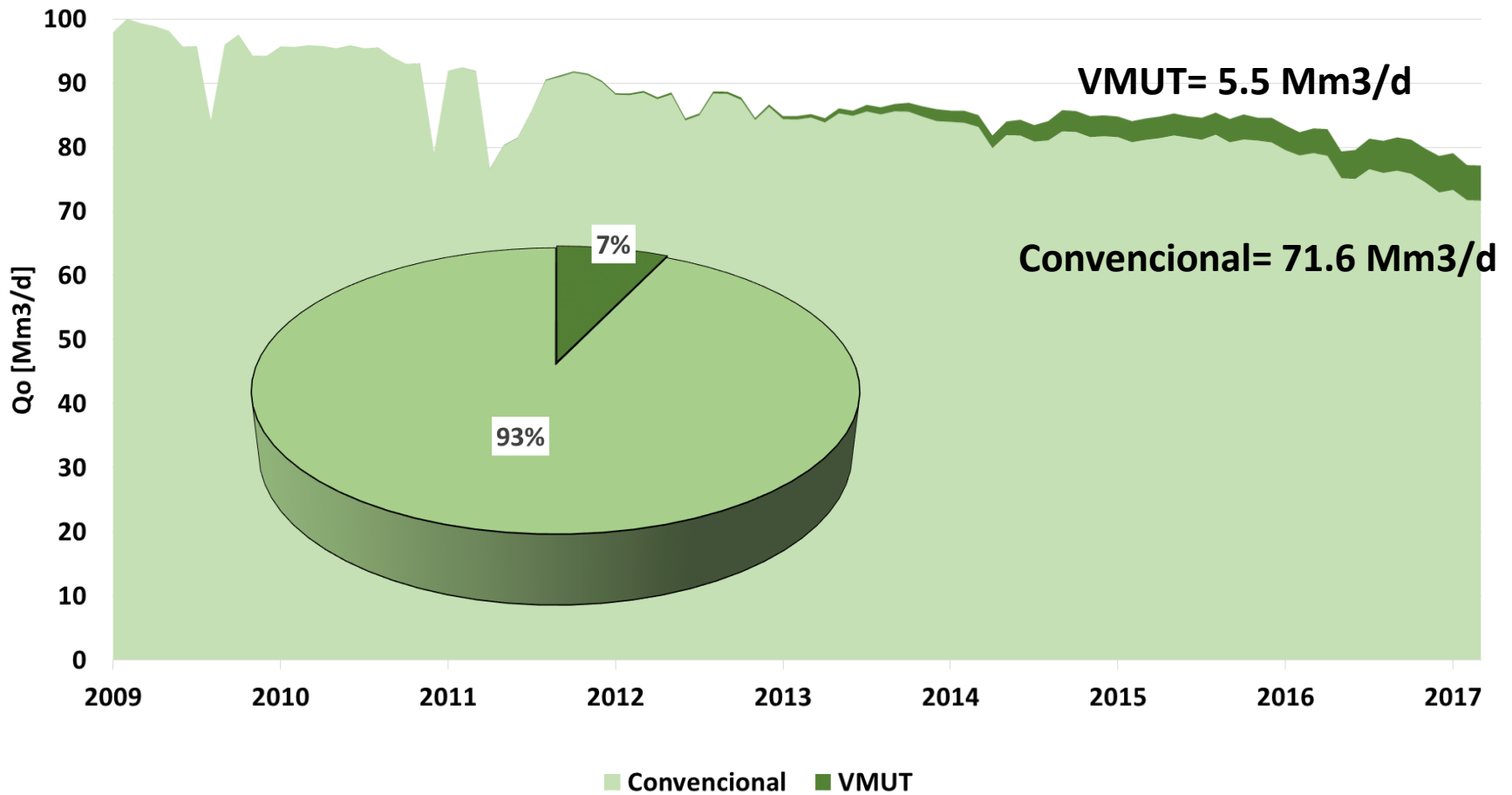
- ✂ Tight Gas
  - ✂ Proyectos... ó falta de...?

- ✂ Que pasa en el Mundo?
  - ✂ Permian; el nuevo boom. Actividad, recursos, productividad, costos



# Producción Nacional Petróleo

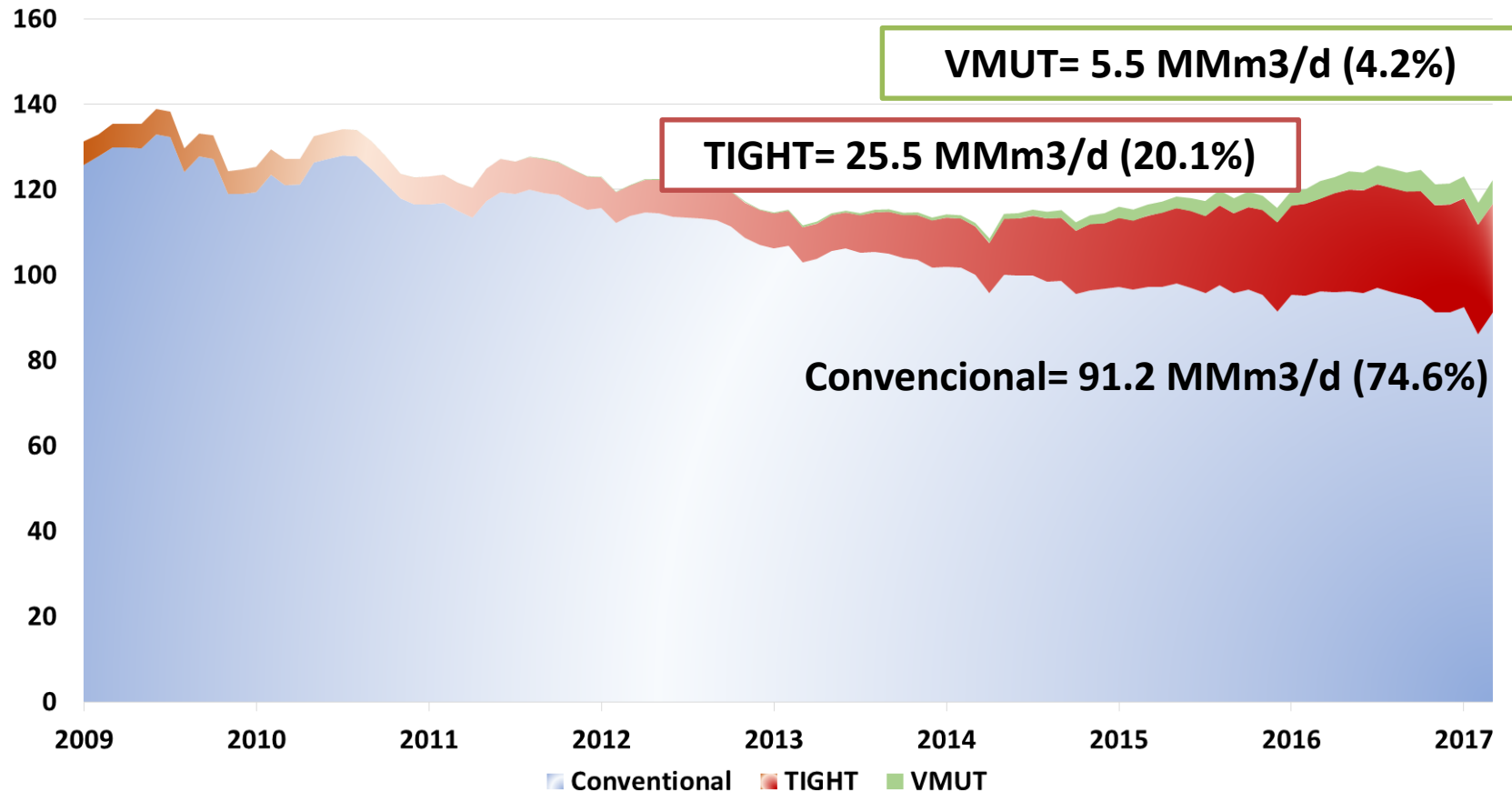
**Prod Nac = 77.1 Mm<sup>3</sup>/d (484 kbbl/d)**



# Producción Nacional Gas

**Prod Nac = 122.2 MMm3/d (4.3bcfd)**

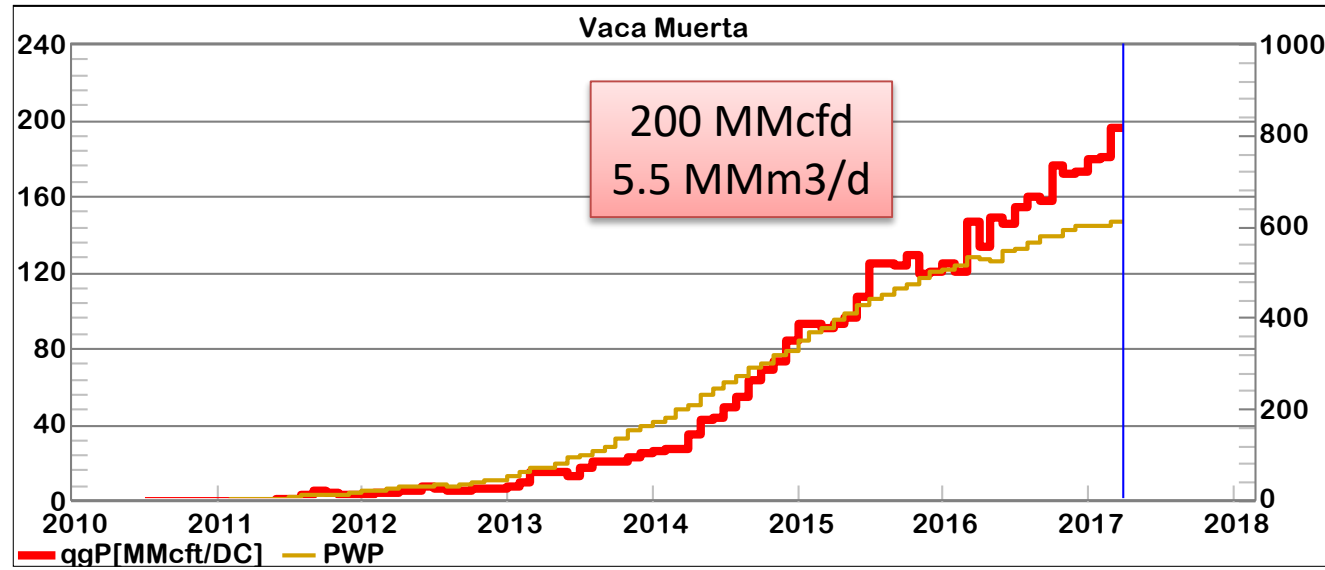
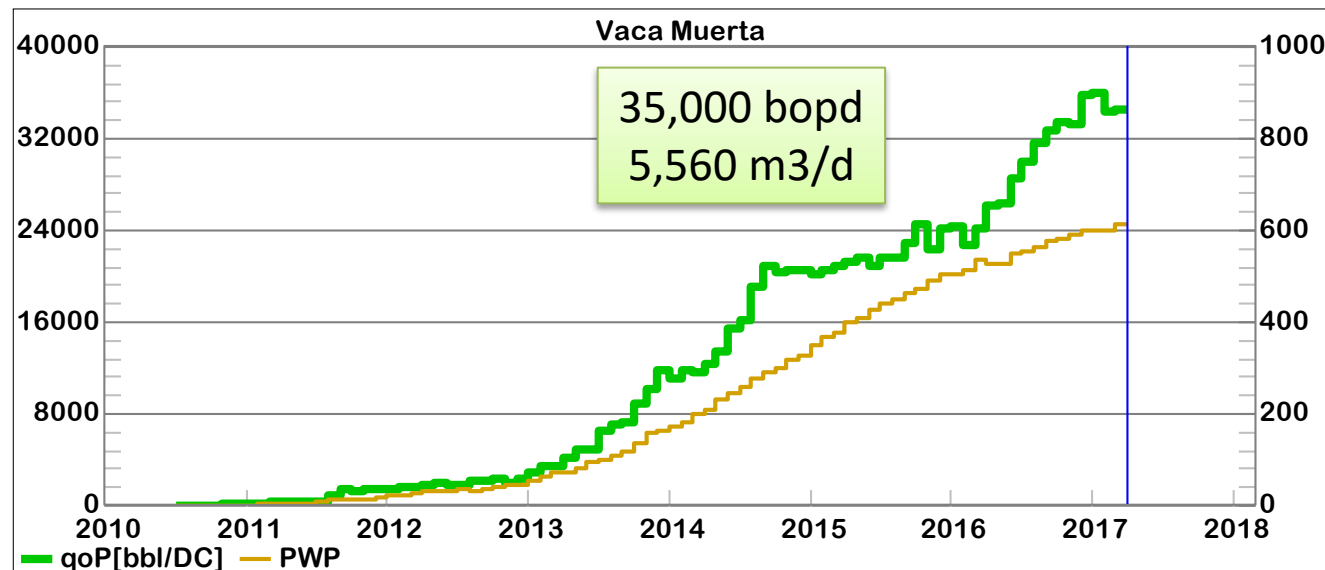
Millones m3/d



# Estadísticas y Tendencias VM



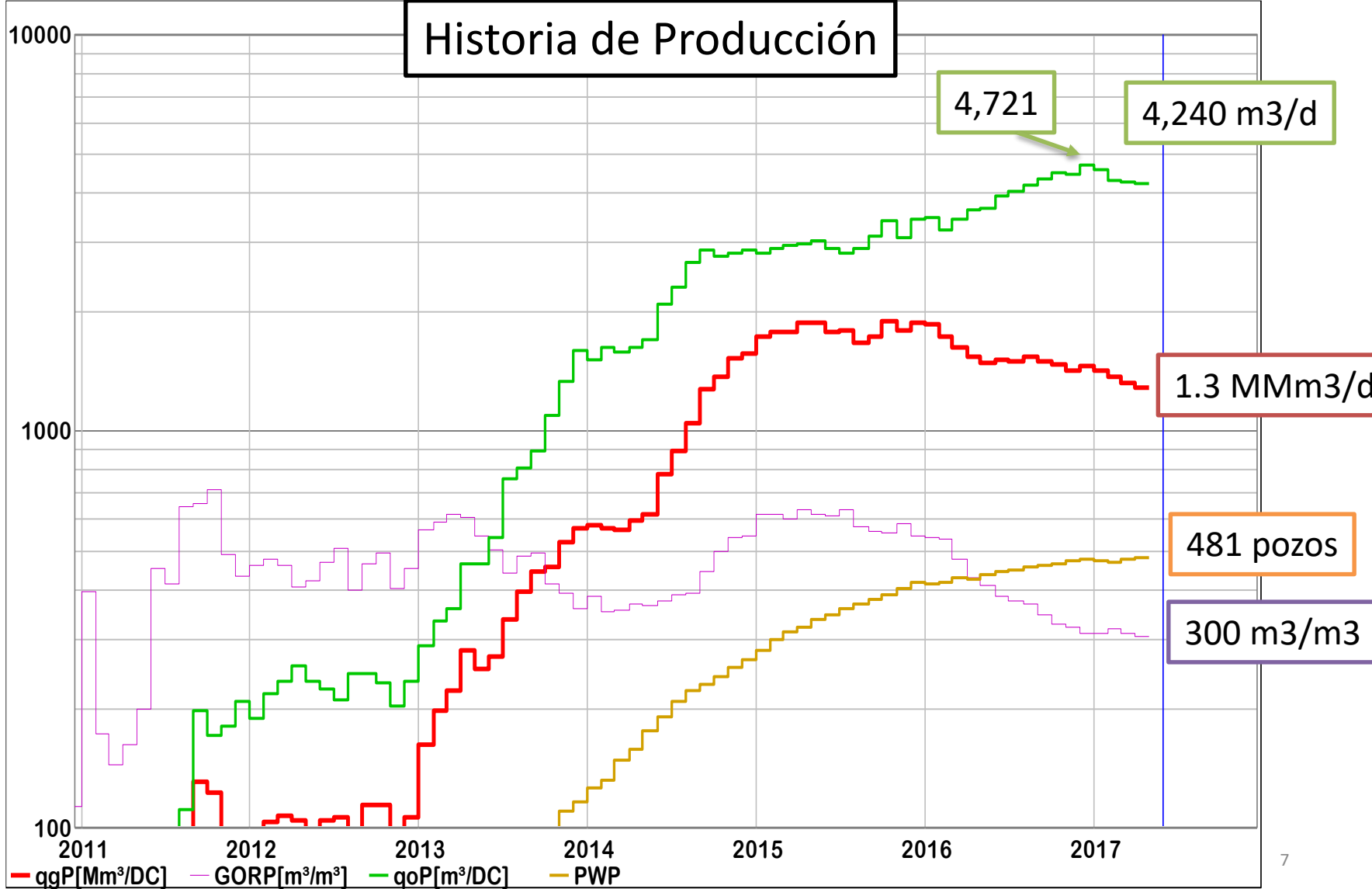
# Producción VM



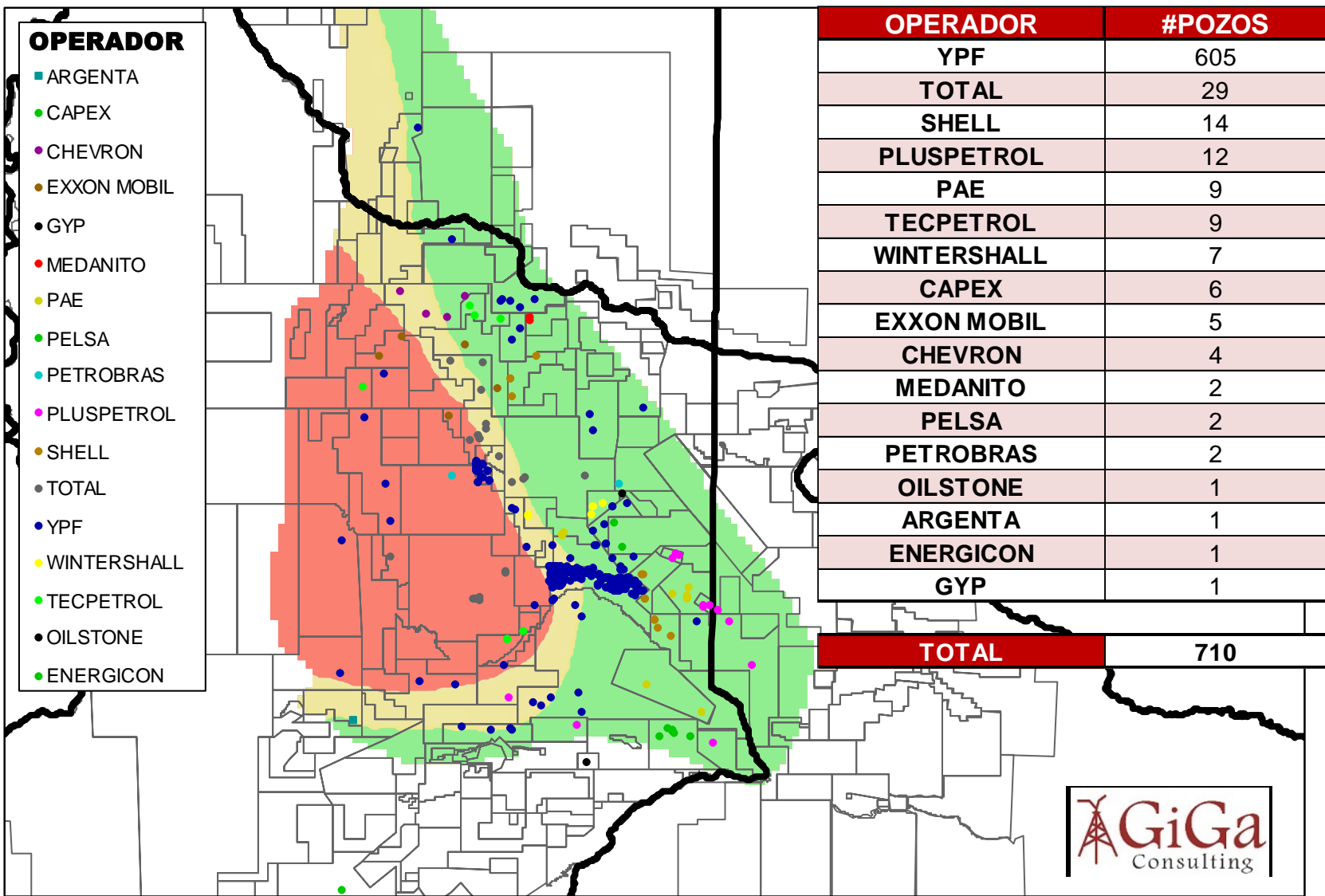
# Loma Campana



## Historia de Producción



# Operadores

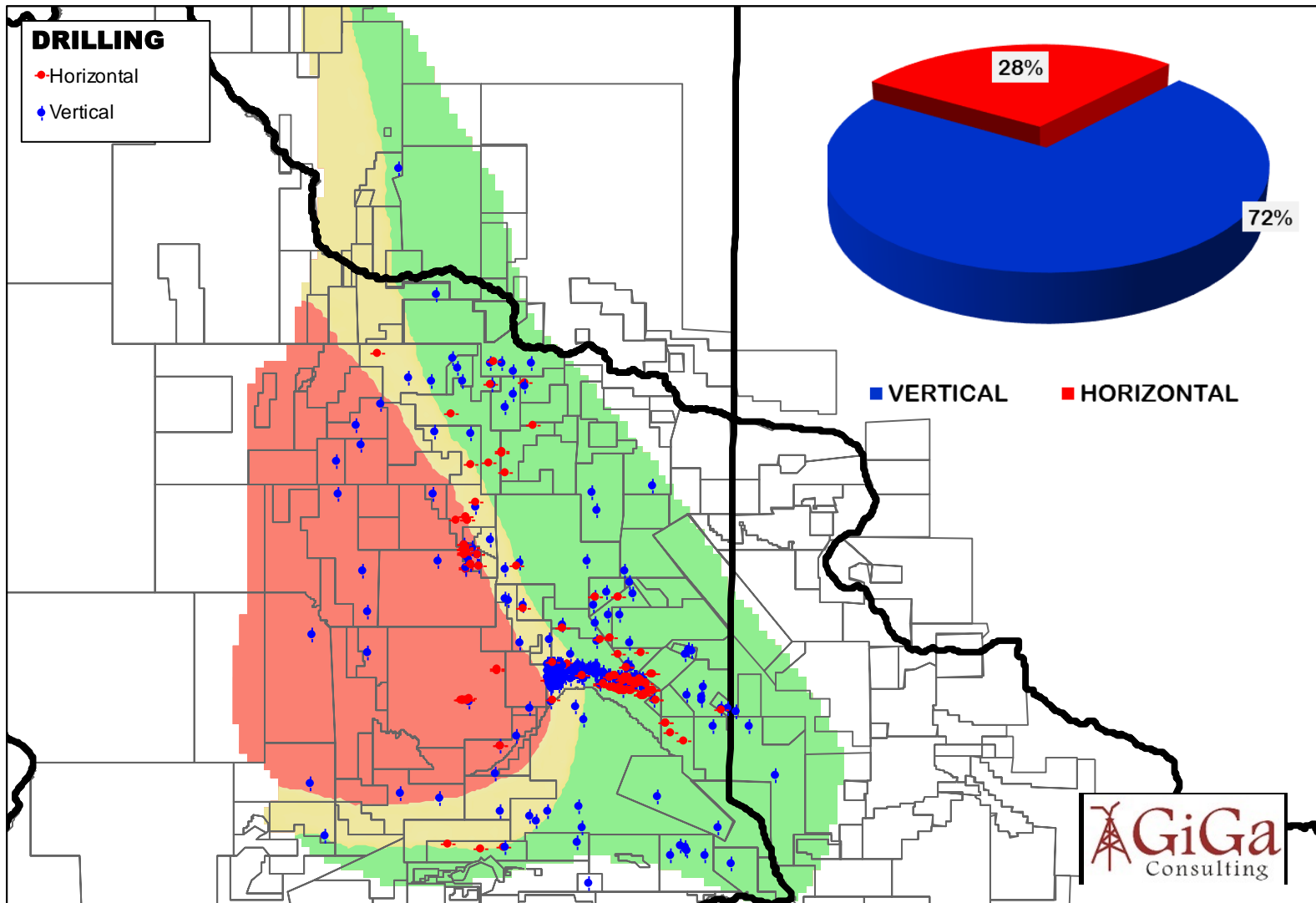


- OPERADOR**
- ARGENTA
  - CAPEX
  - CHEVRON
  - EXXON MOBIL
  - GYP
  - MEDANITO
  - PAE
  - PELSA
  - PETROBRAS
  - PLUSPETROL
  - SHELL
  - TOTAL
  - YPF
  - WINTERSHALL
  - TECPETROL
  - OILSTONE
  - ENERGICON

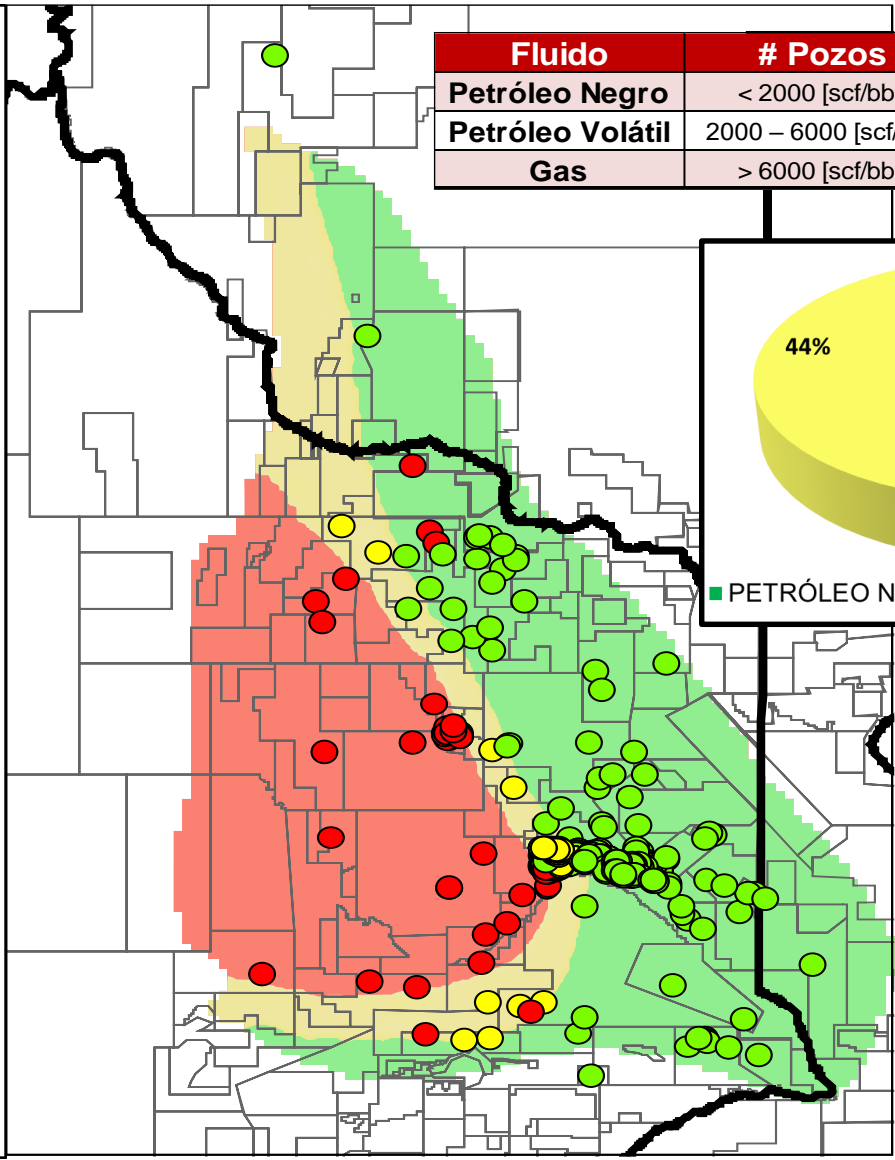
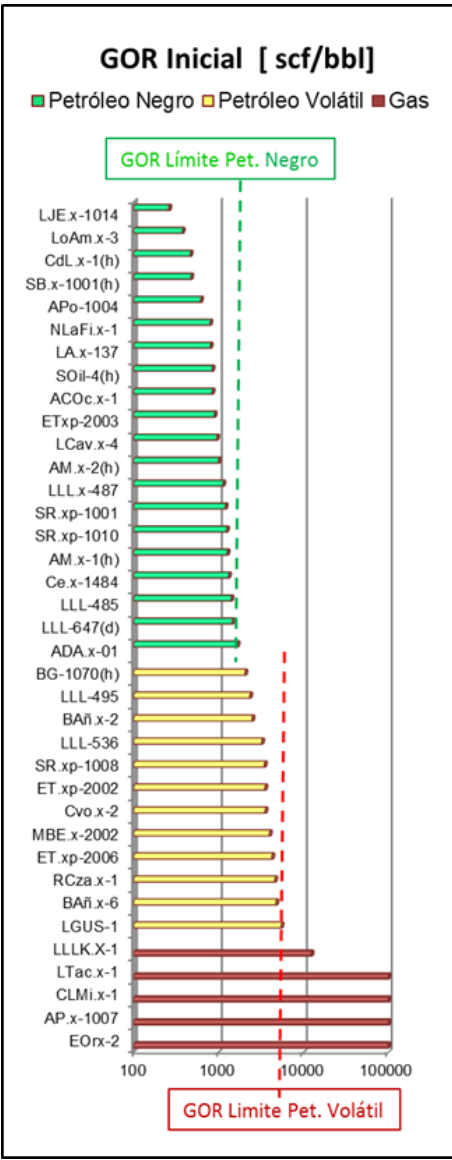
OPERADOR	#POZOS
YPF	605
<b>TOTAL</b>	<b>29</b>
SHELL	14
PLUSPETROL	12
PAE	9
TECPETROL	9
WINTERSHALL	7
CAPEX	6
EXXON MOBIL	5
CHEVRON	4
MEDANITO	2
PELSA	2
PETROBRAS	2
OILSTONE	1
ARGENTA	1
ENERGICON	1
GYP	1
<b>TOTAL</b>	<b>710</b>

85%

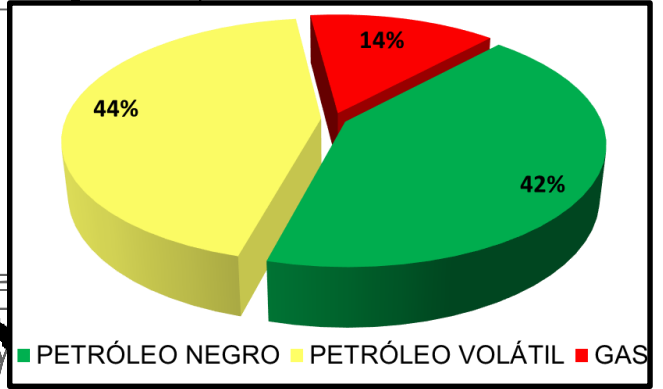




# Análisis GOR



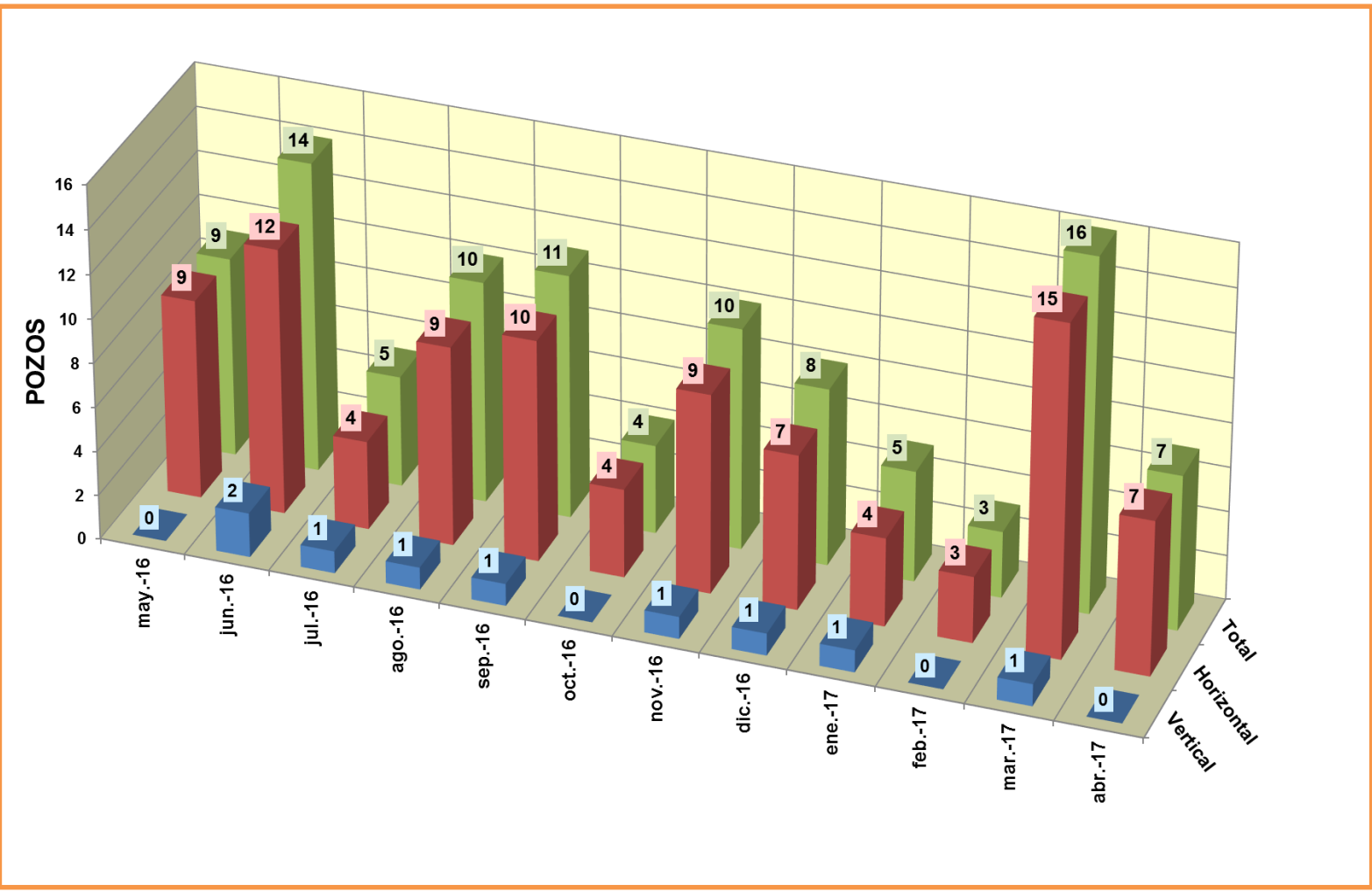
Fluido	# Pozos
Petróleo Negro	< 2000 [scf/bbl]
Petróleo Volátil	2000 – 6000 [scf/bbl]
Gas	> 6000 [scf/bbl]



# Pozos perforados



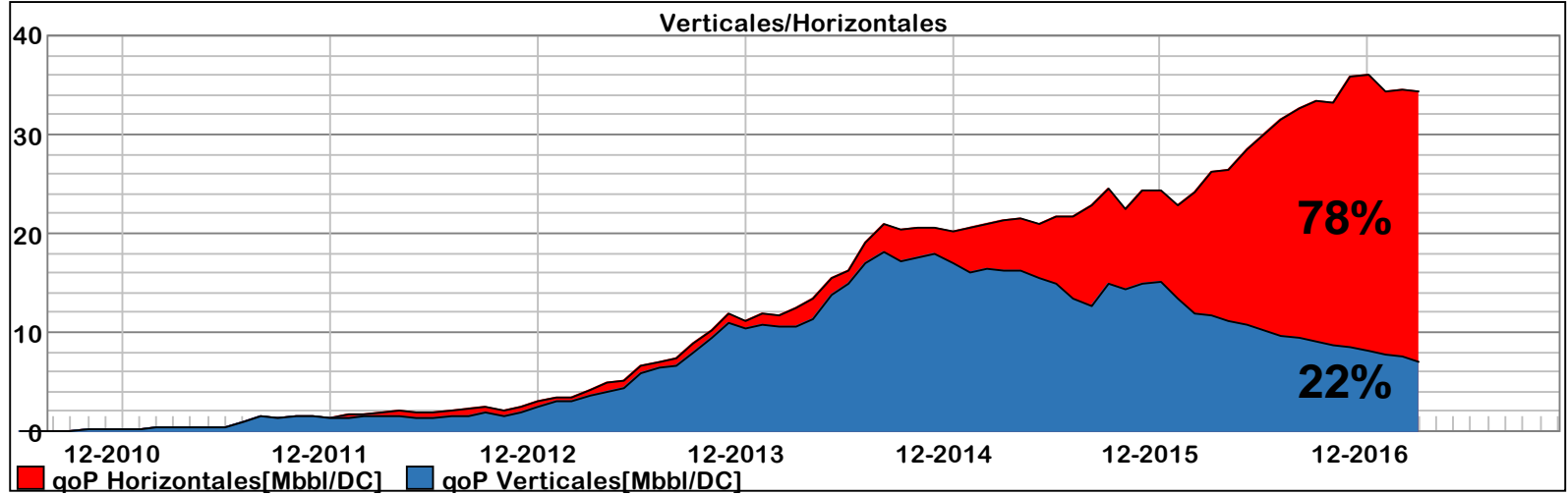
# Cambio de tendencia



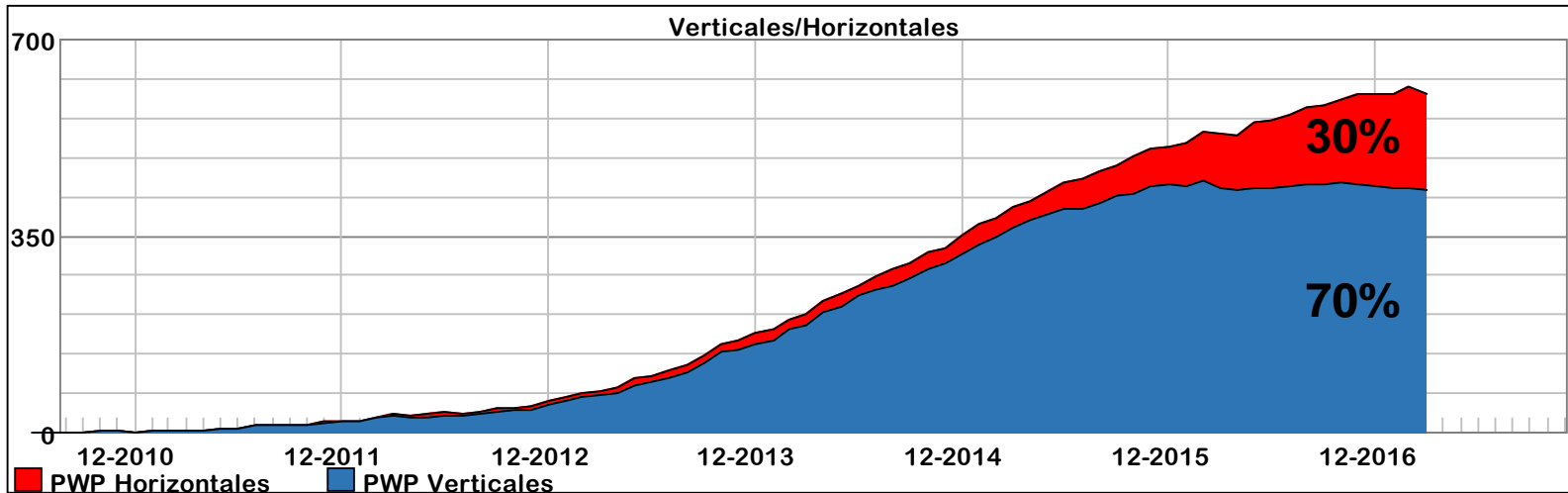
# Producción petróleo VMUT



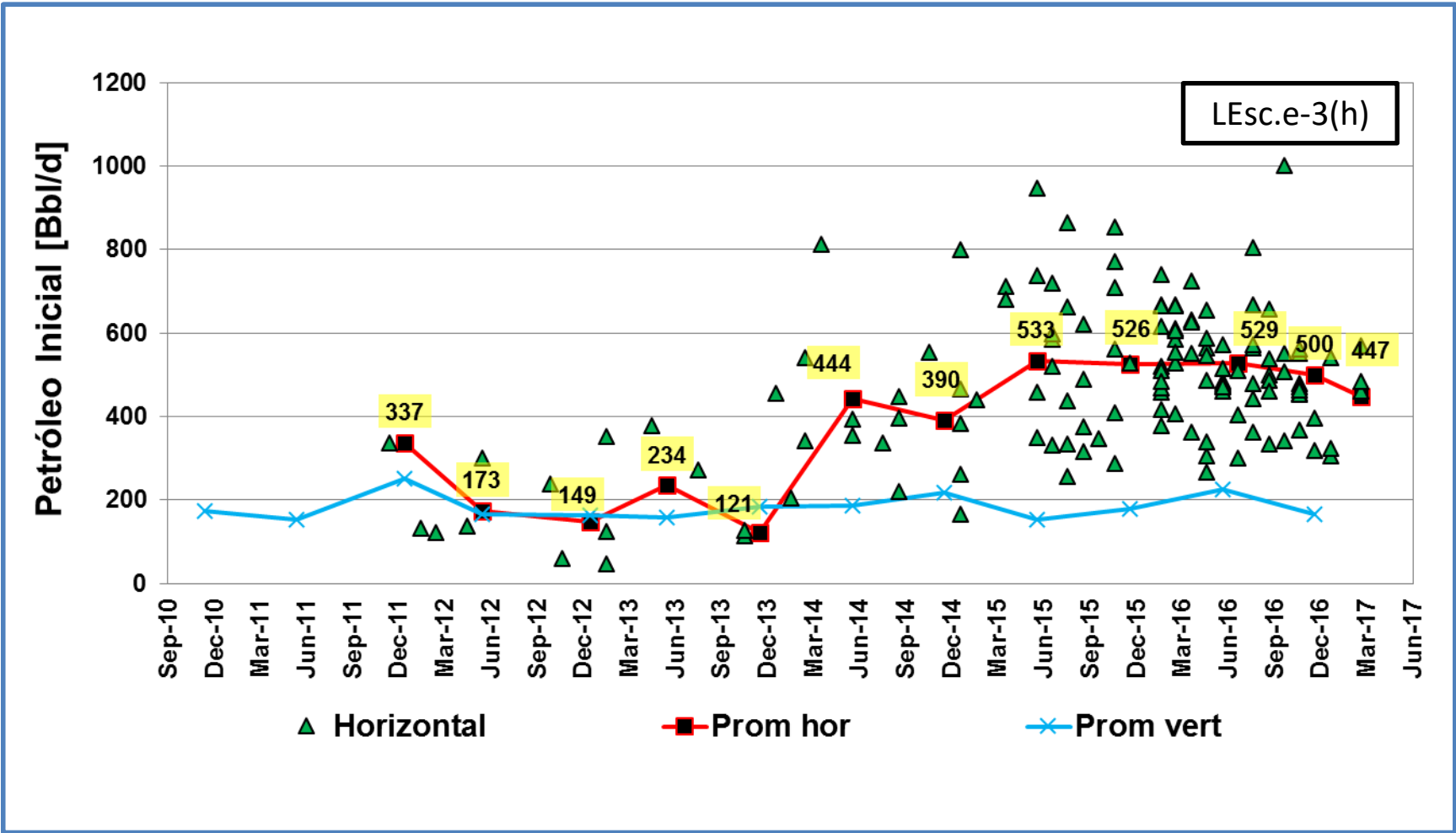
## Producción de Petróleo



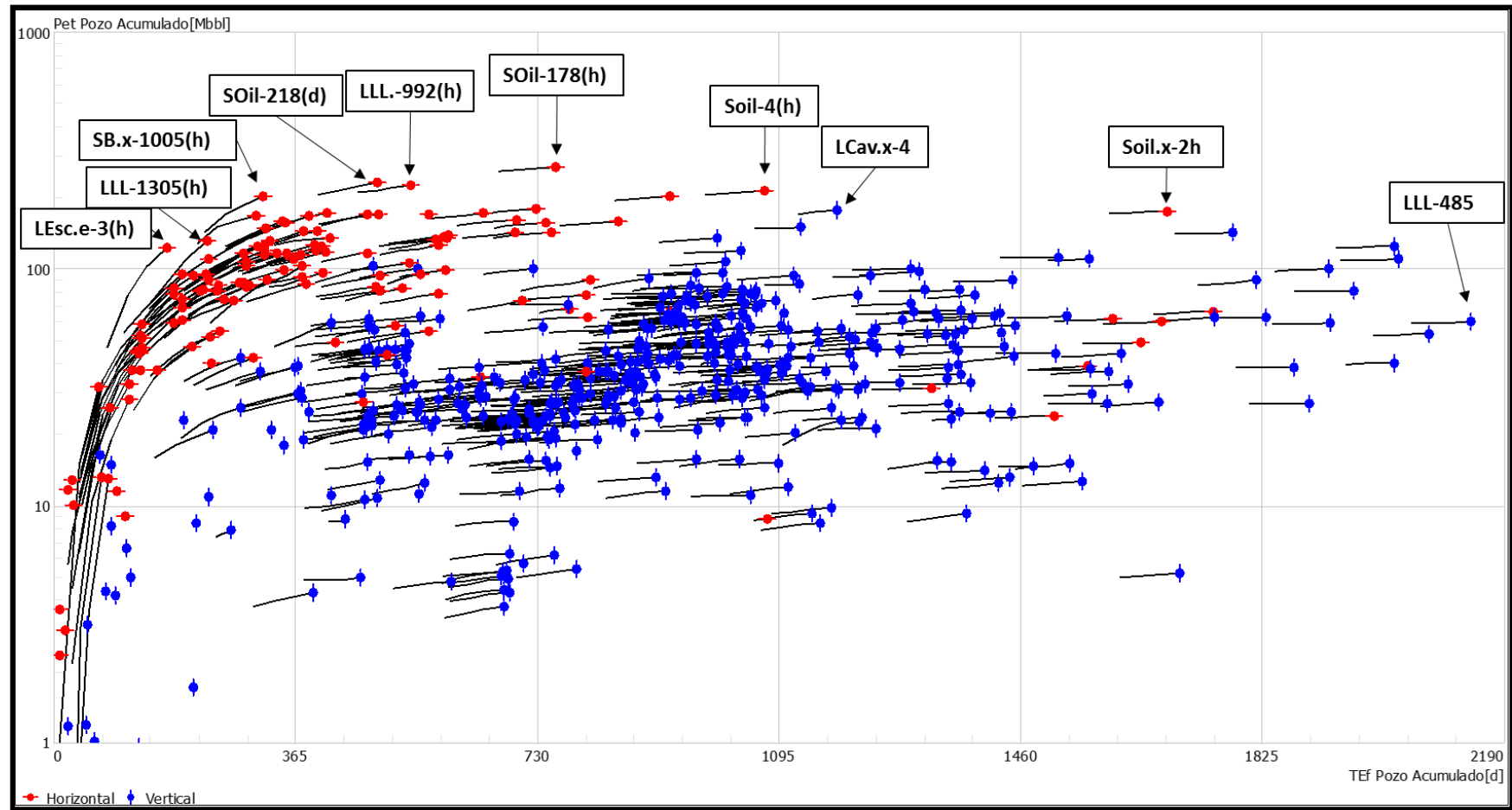
## Cantidad de pozos

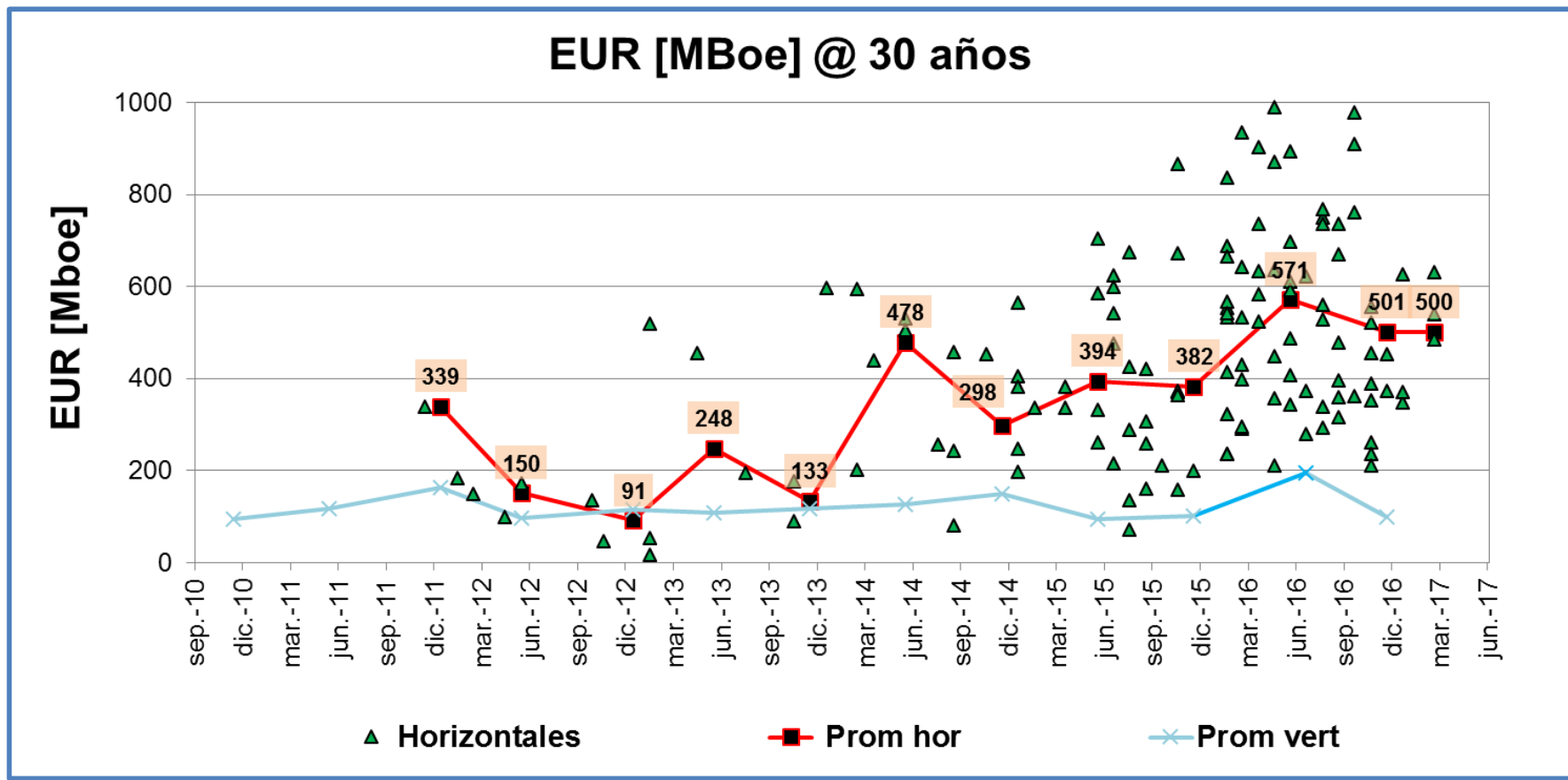


# Caudales Iniciales



# Ritmo de producción



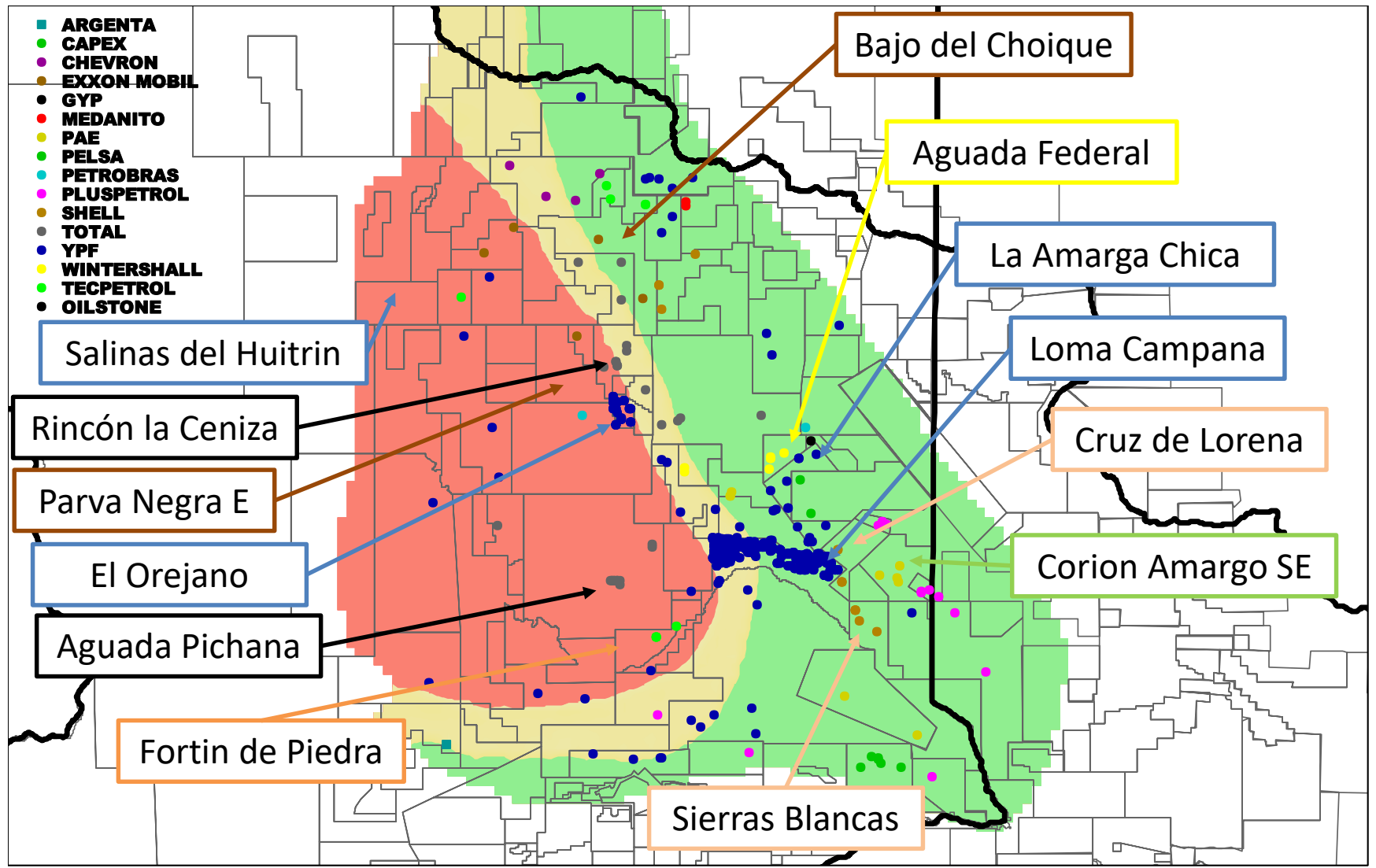




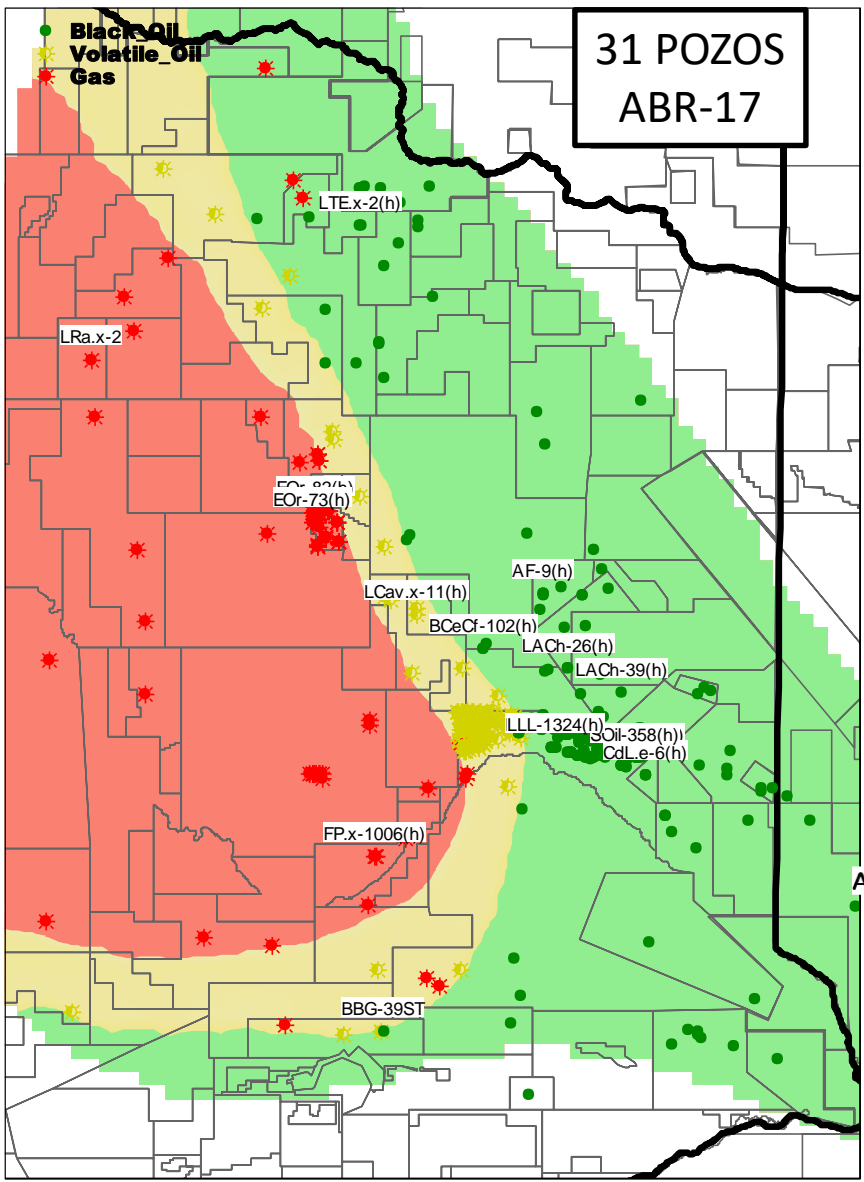
# Operadores, Equipos y Costos



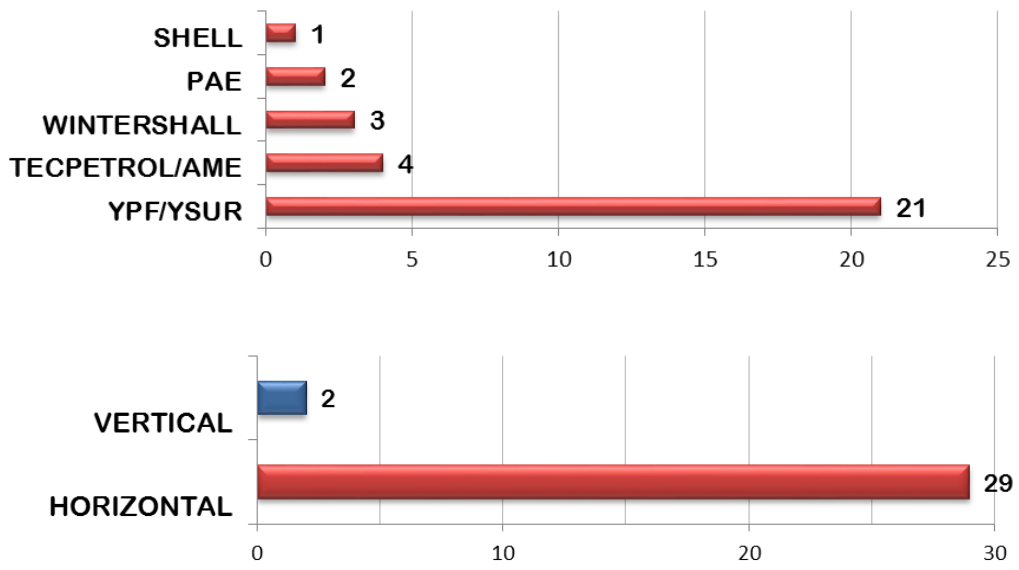
# Áreas con actividad de perforación



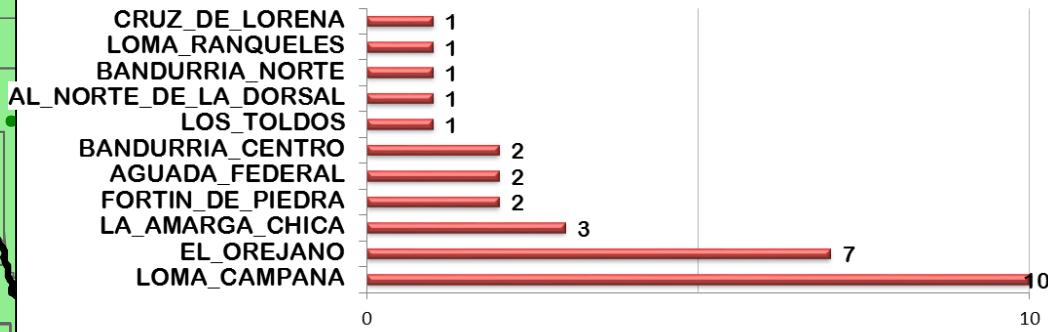
# Ultimo Cuatrimestre



## OPERADORES



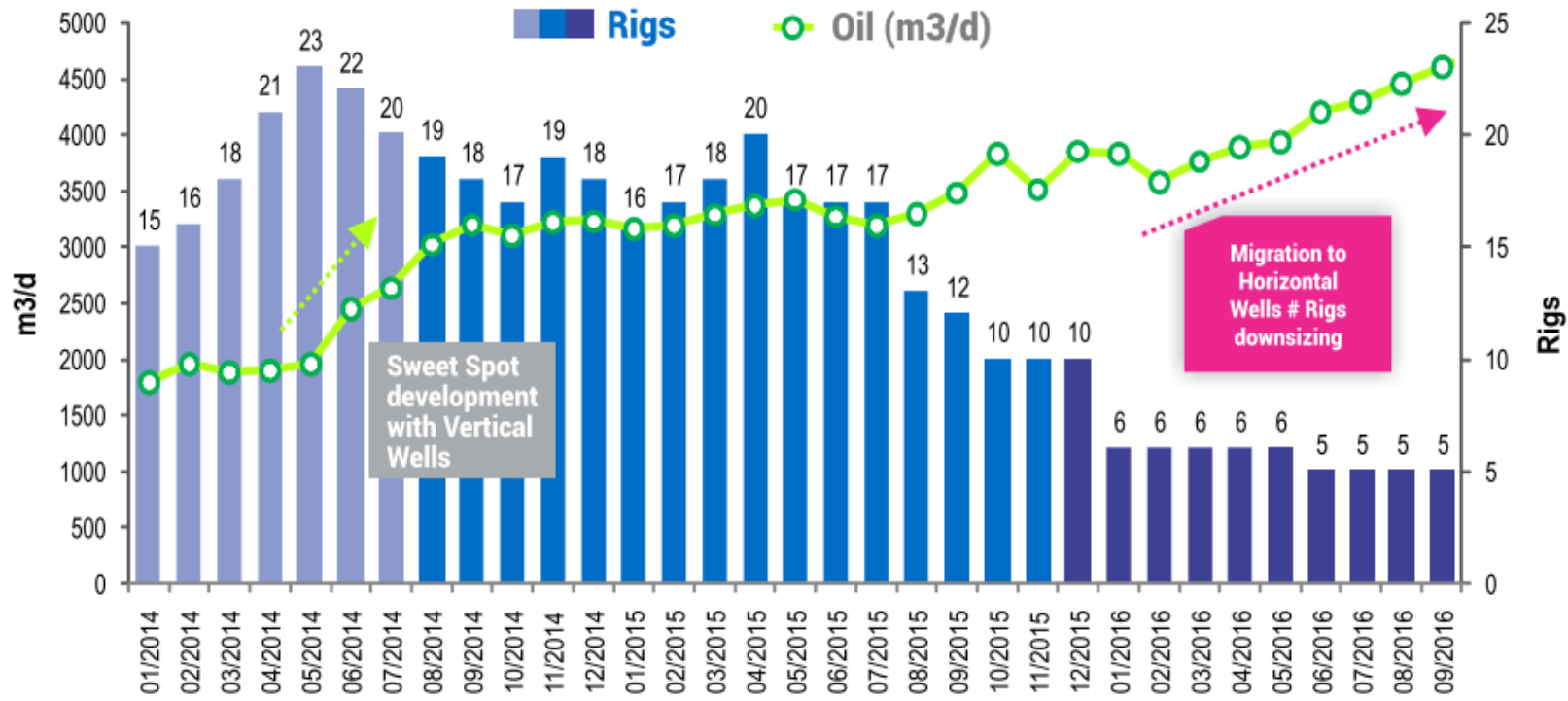
## ÁREAS



# Menos equipos , Mas producción

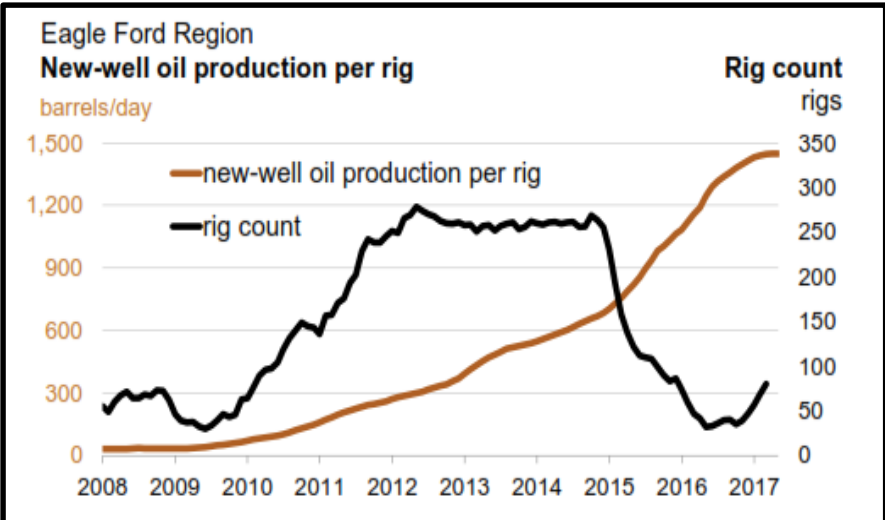


Loma Campana Oil Production (m3/d) – Drilling Rigs (#)

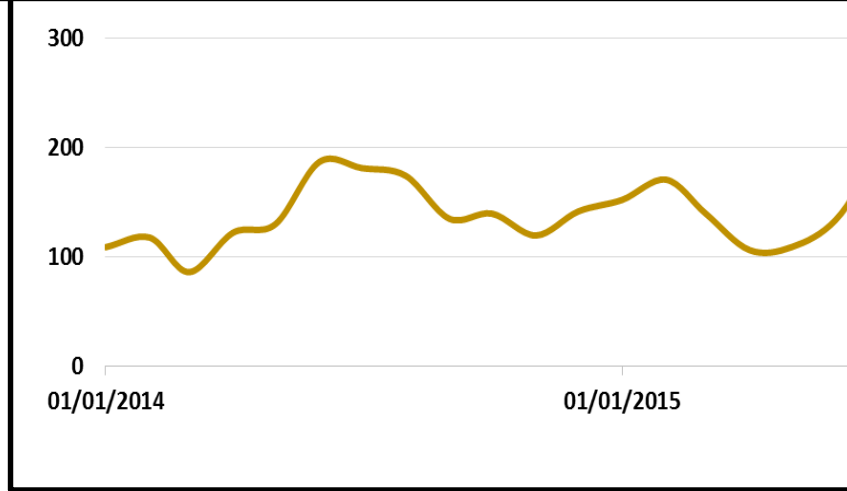
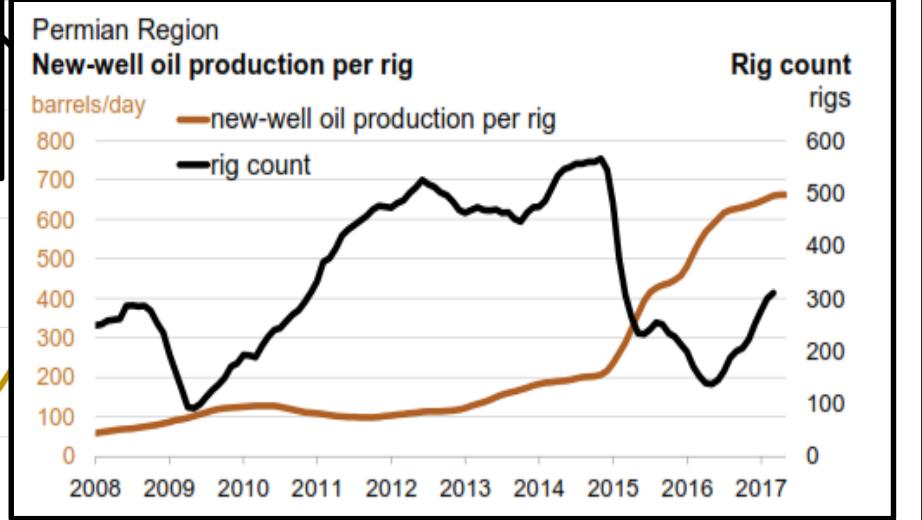
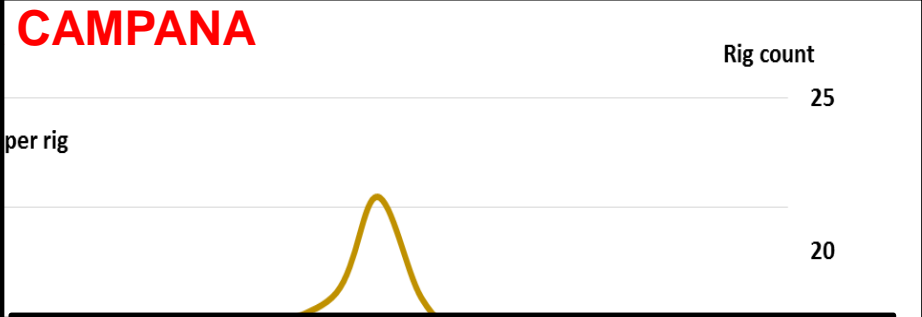


Fuente: YPF

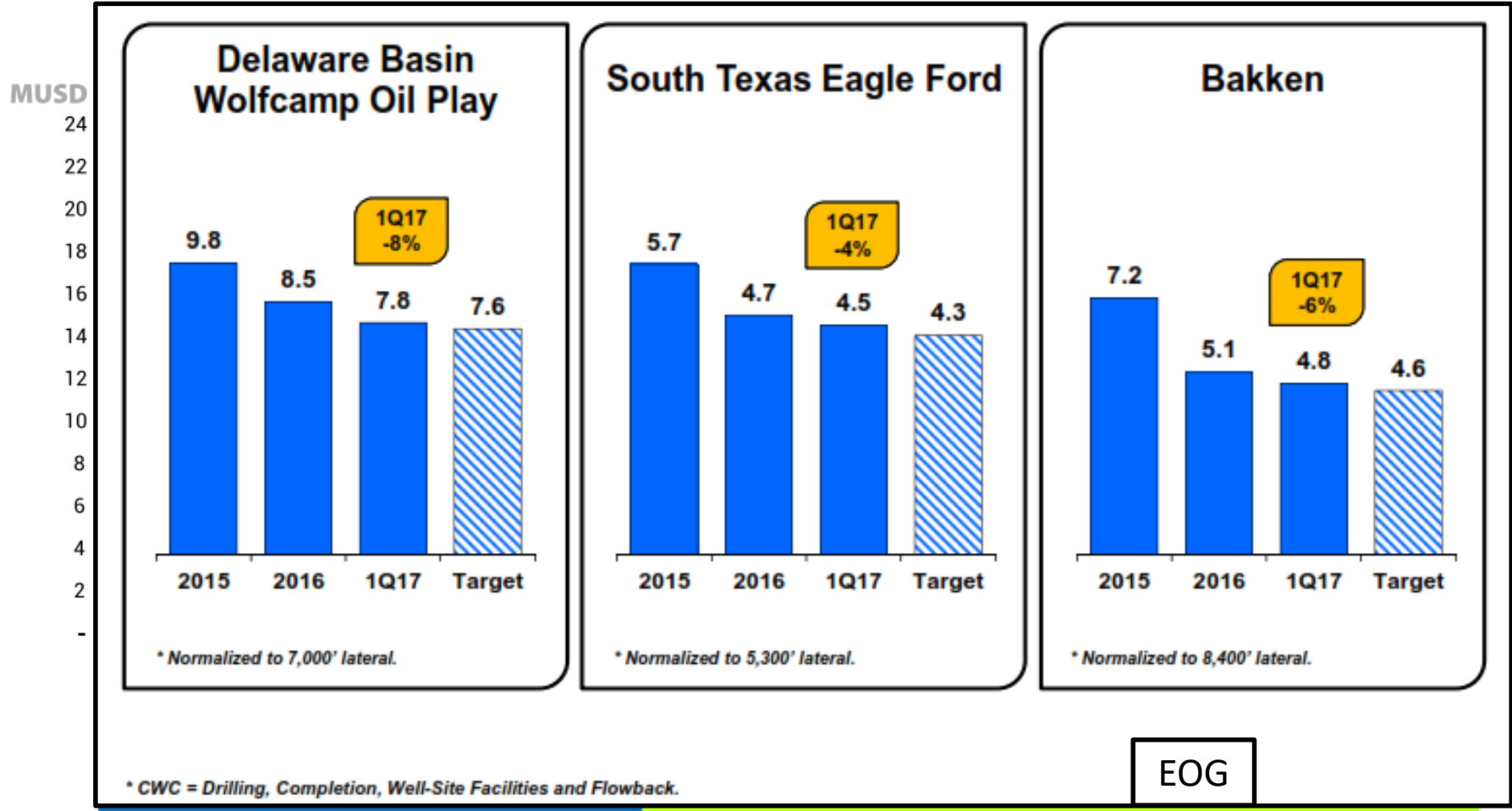
# Menos equipos , Mas producción



## CAMPANA



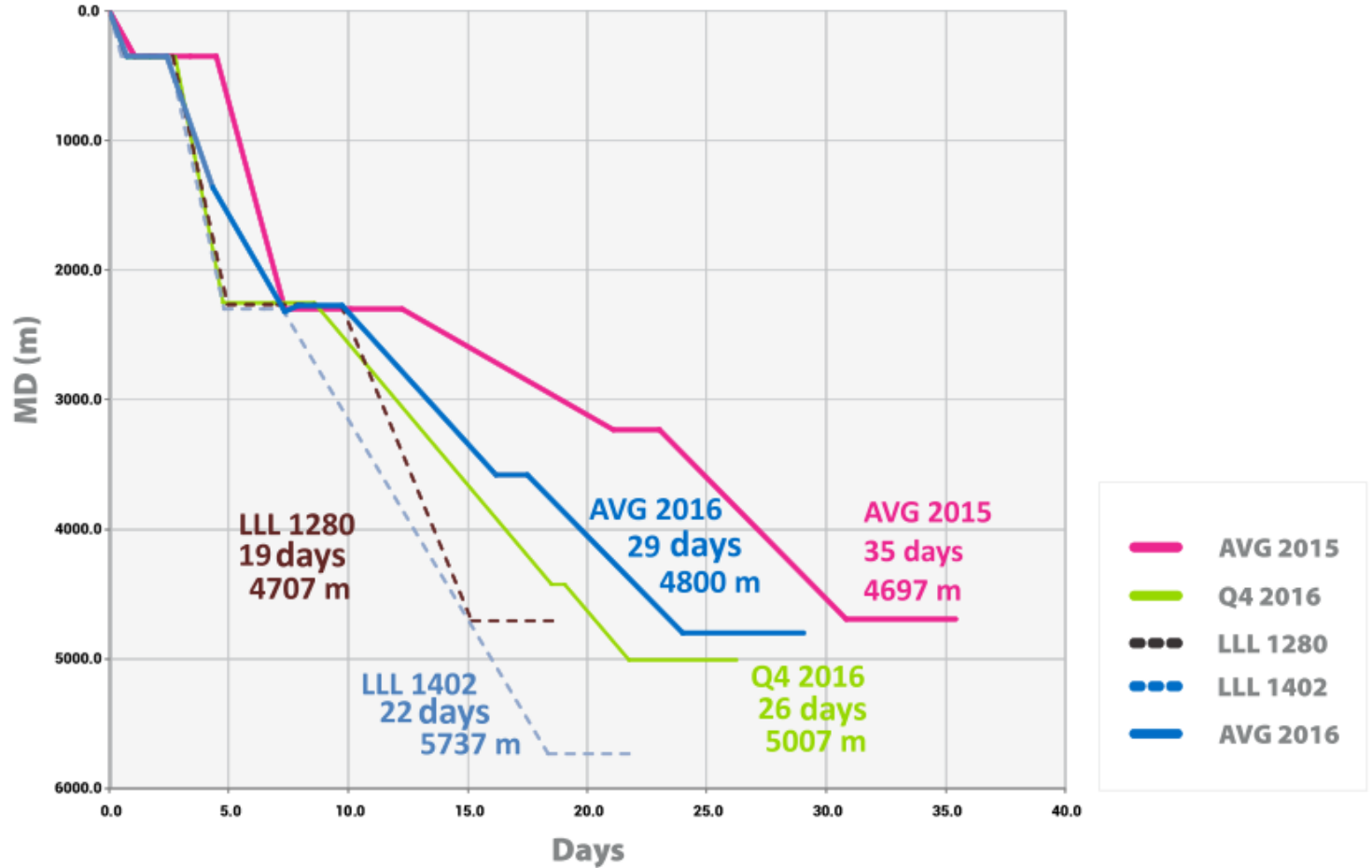
# COSTO POZO - FRACTURAS



# CURVA DE AVANCE – LOMA CAMPANA

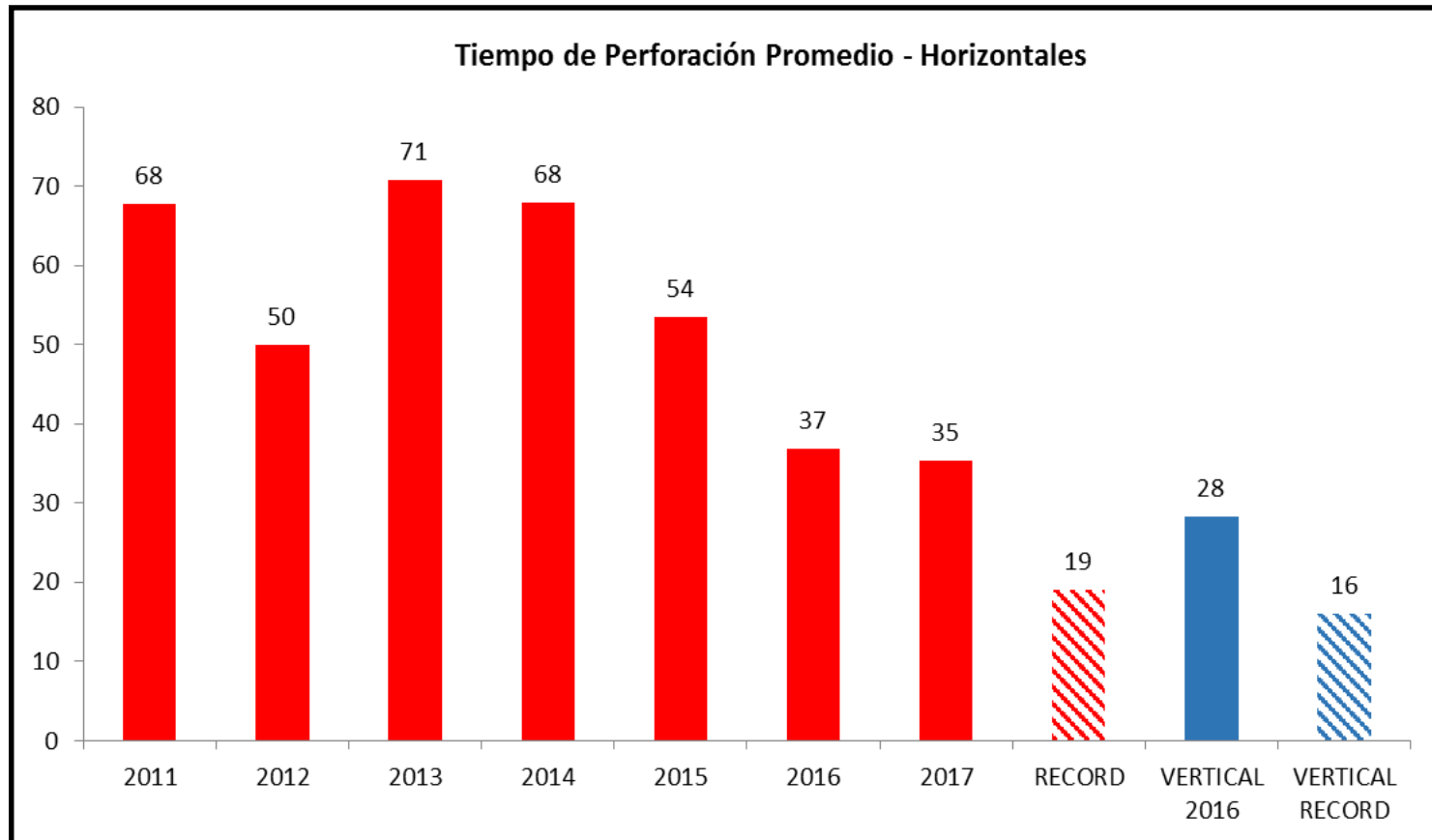


## 2015 / 2016 Loma Campana Drilling Days vs. Depth



Fuente: YPF

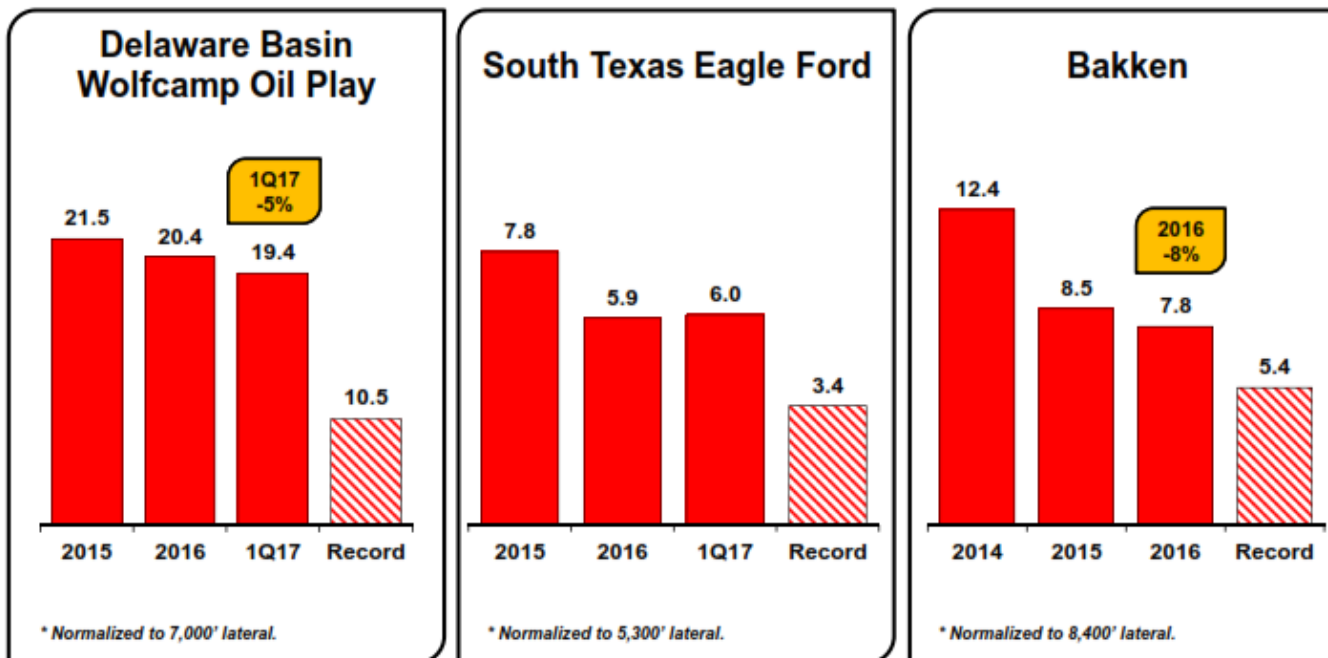
# Tiempos de Perforación



EOG

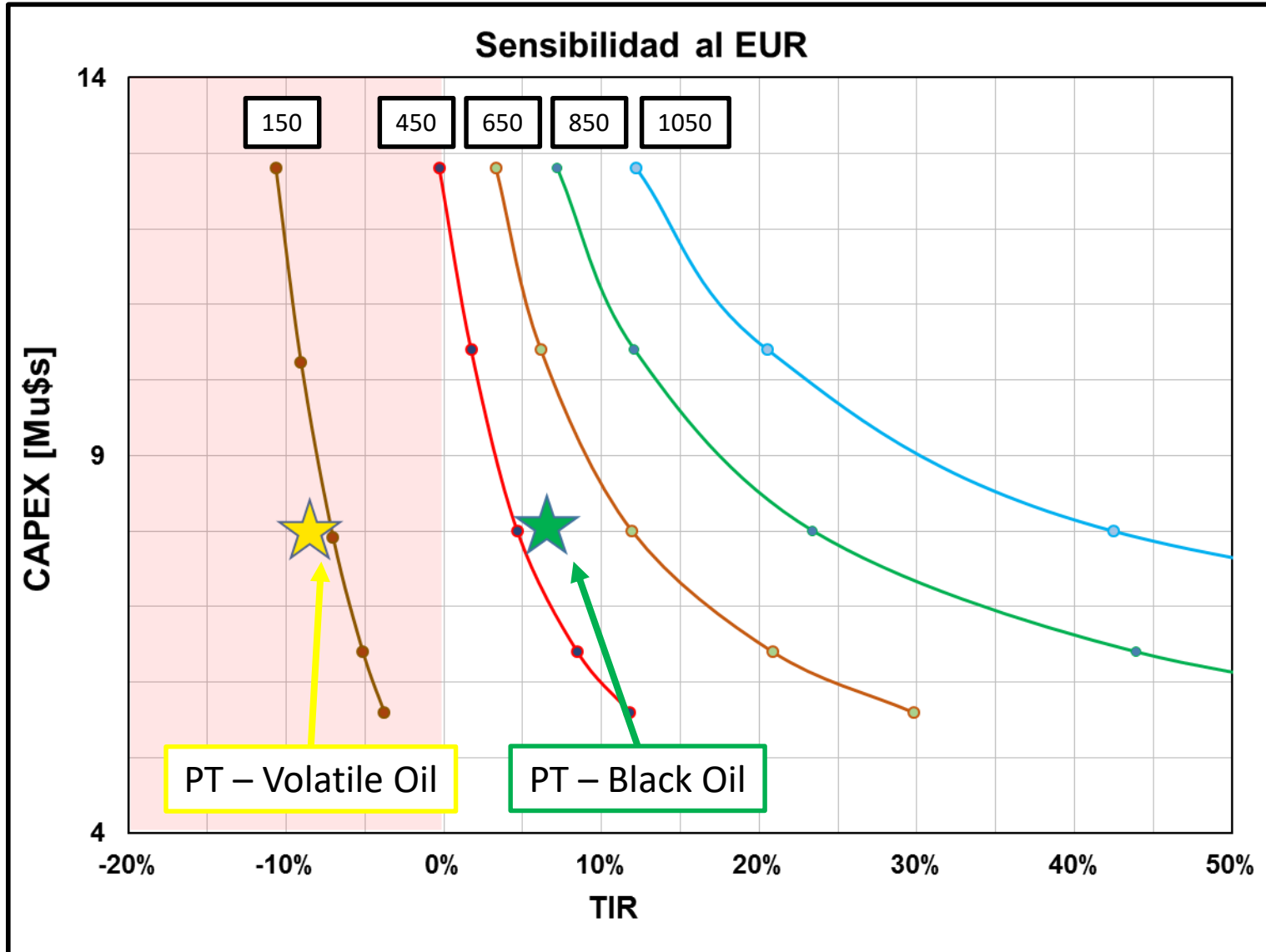


## Average Drilling Days\* (Spud-to-TD)



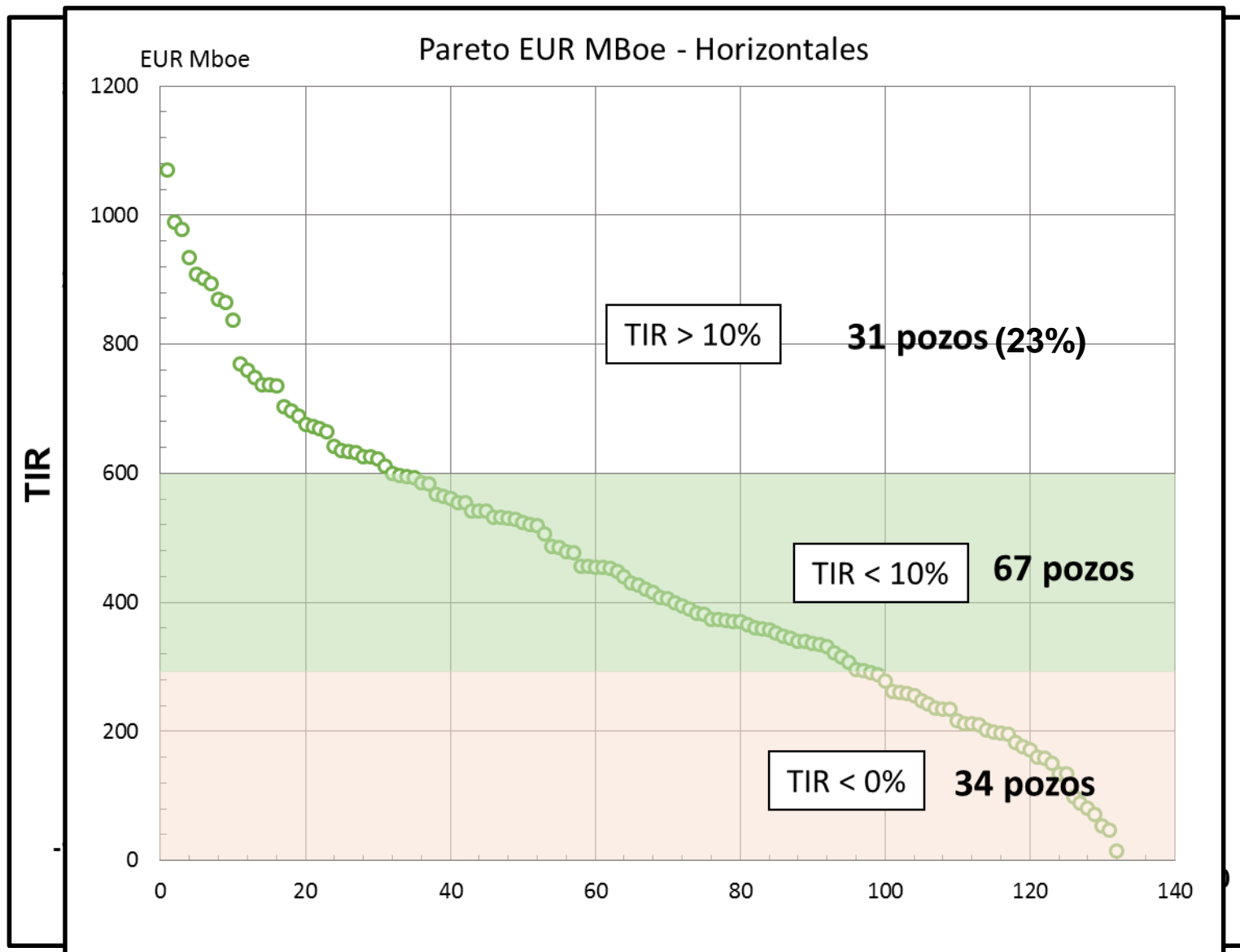
# Análisis Económico

## Horizontales

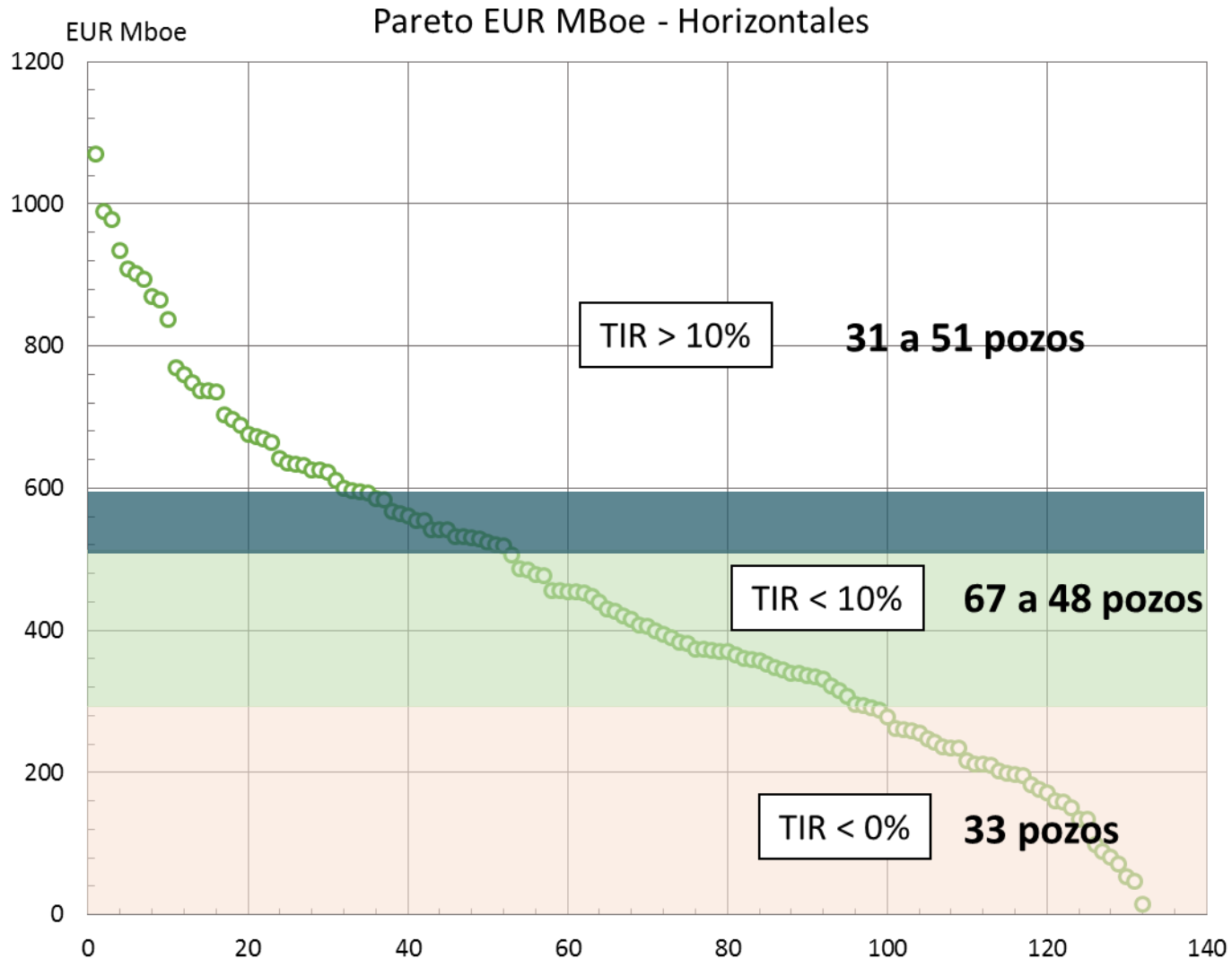


# Análisis Económico

## Horizontales

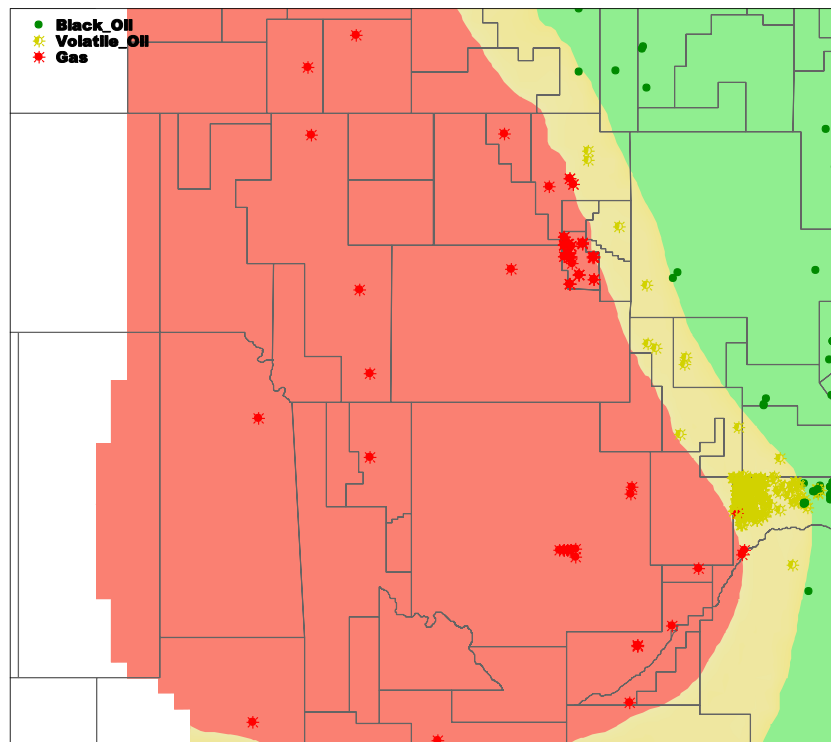


# Y con un incentivo fiscal?



# Gas – No Convencional

# VMUT – Zona Gas



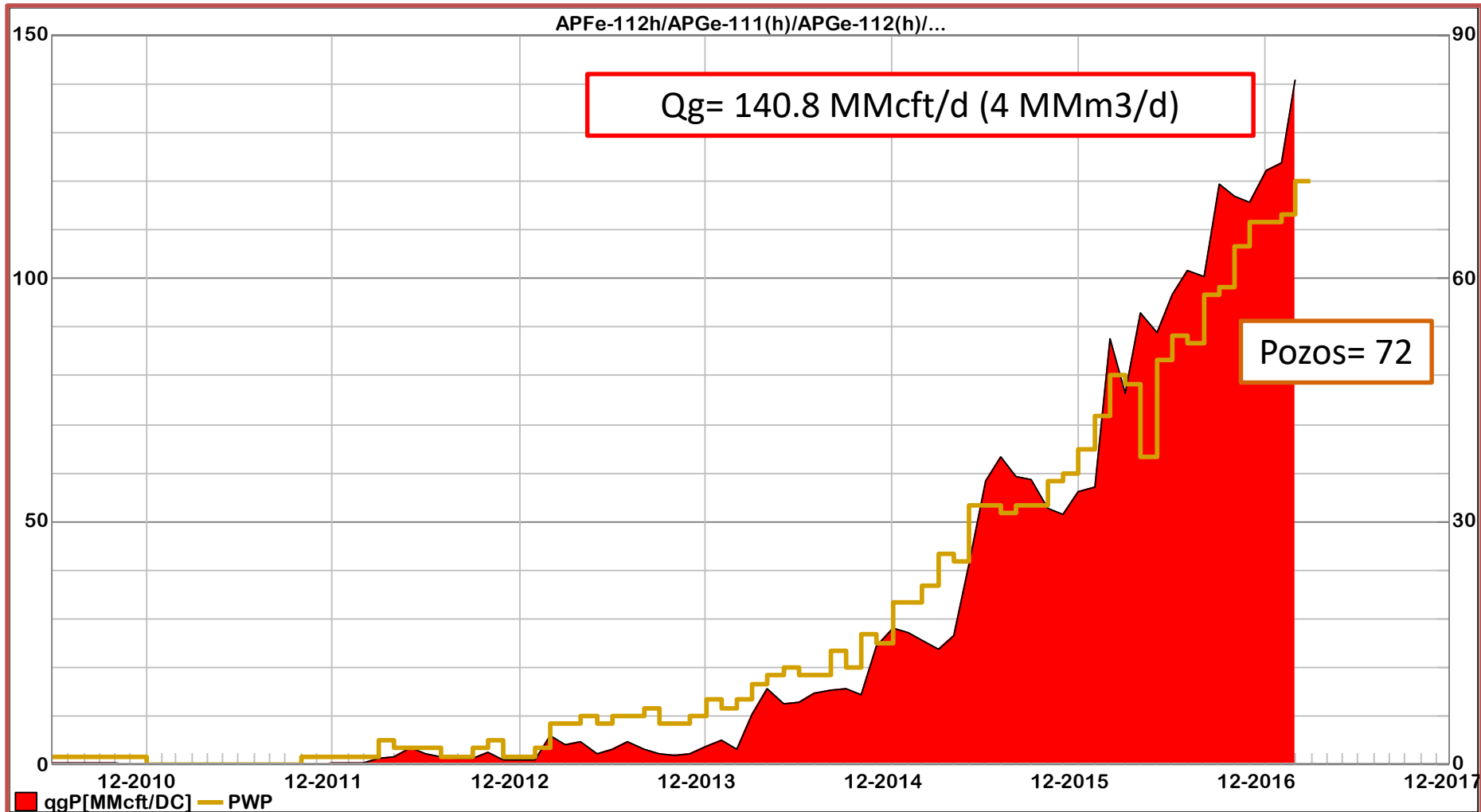
OPERADOR	#POZOS
YPF	69
TOTAL	19
TECPETROL	6
EXXON MOBIL	3
CHEVRON	1
PETROBRAS	1

<b>TOTAL</b>	<b>99</b>
--------------	-----------

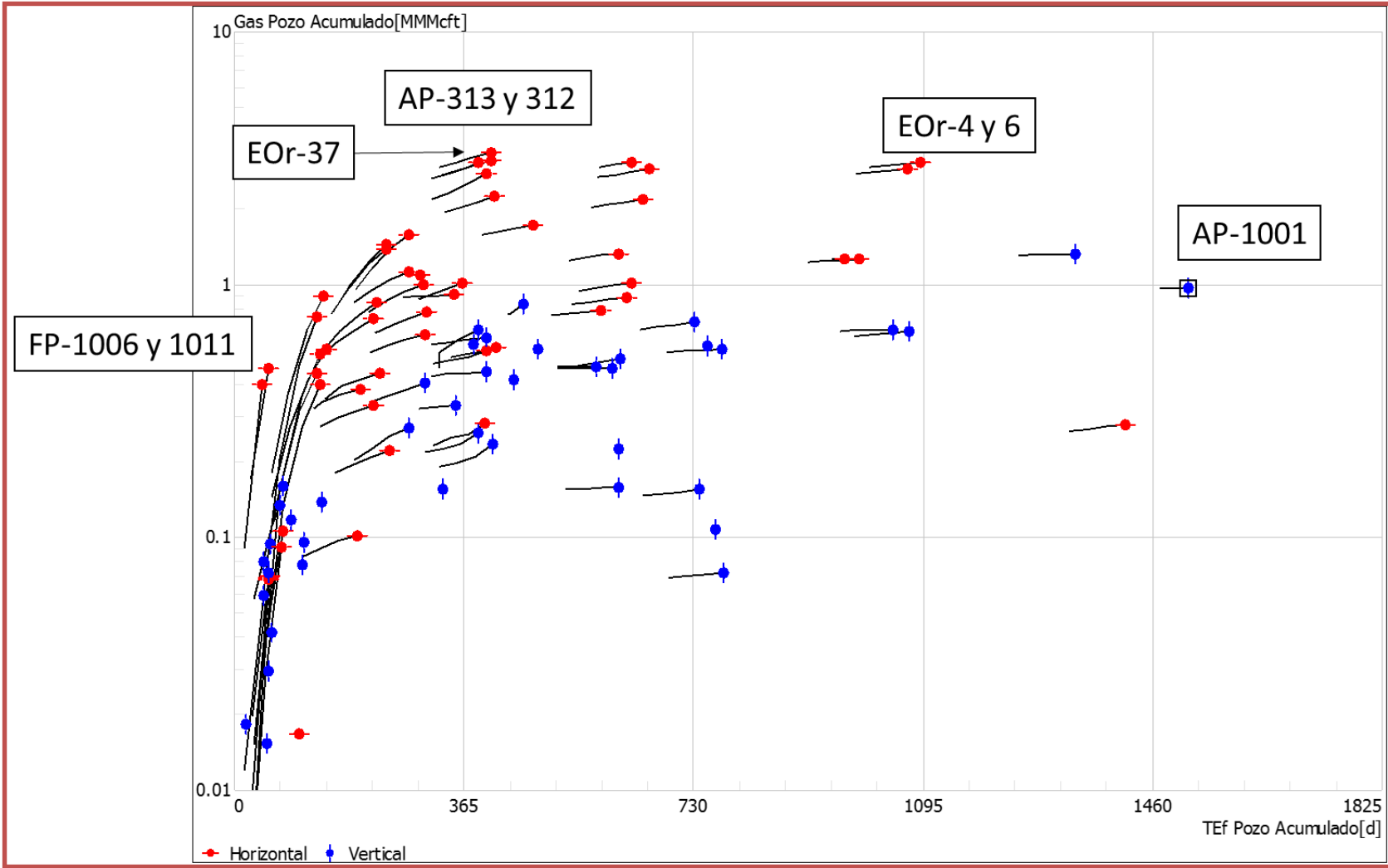
LEASE	#POZOS
EL_OREJANO	52
AGUADA_PICHANA	13
RINCON_LA_CENIZA	5
FORTIN_DE_PIEDRA	4
LOMA_LA_LATA-SB	4
CERRO_ARENA	3
LOMA_DEL_MOLLE	2
LAS_TACANAS	2
AGUADA_DE_CASTRO	1
LOS_TOLDOS	1
CERRO_LAS_MINAS	1
CERRO_PARTIDO	1
CORRALERA	1
EL_TRAPIAL-CURAMCHED	1
AL_NORTE_DE_LA_DORSAL	1
HUACALERA	1
LOMA_CAMPANA	1
LOMA_RANQUELES	1
LA_RIBERA_BLOQUE_I	1
LA_RIBERA_BLOQUE_II	1
PAMPA_DE_LAS_YEGUAS_I	1
SIERRA_CHATA	1

<b>TOTAL</b>	<b>99</b>
--------------	-----------

# VMUT – Zona Gas

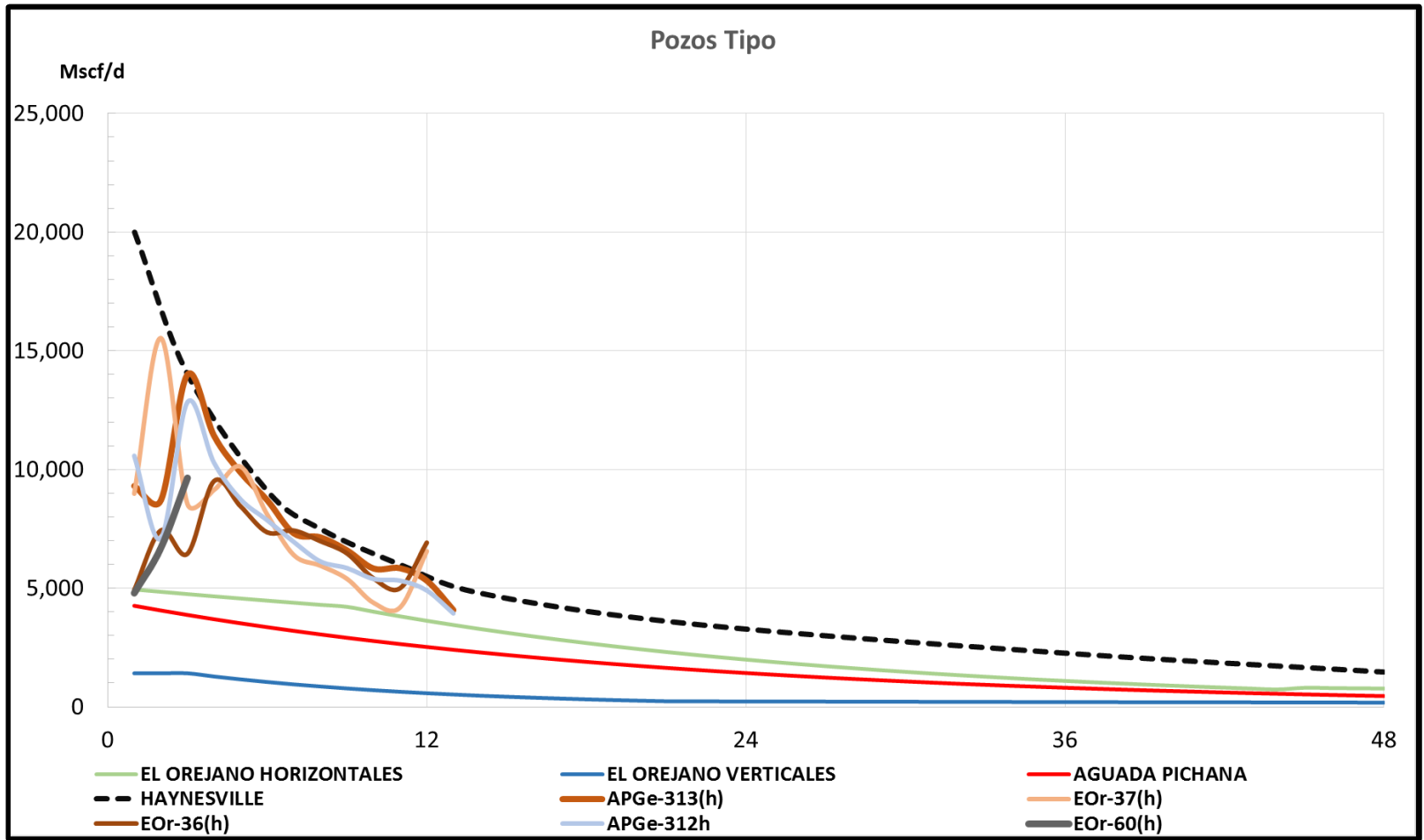


# Ritmos de producción

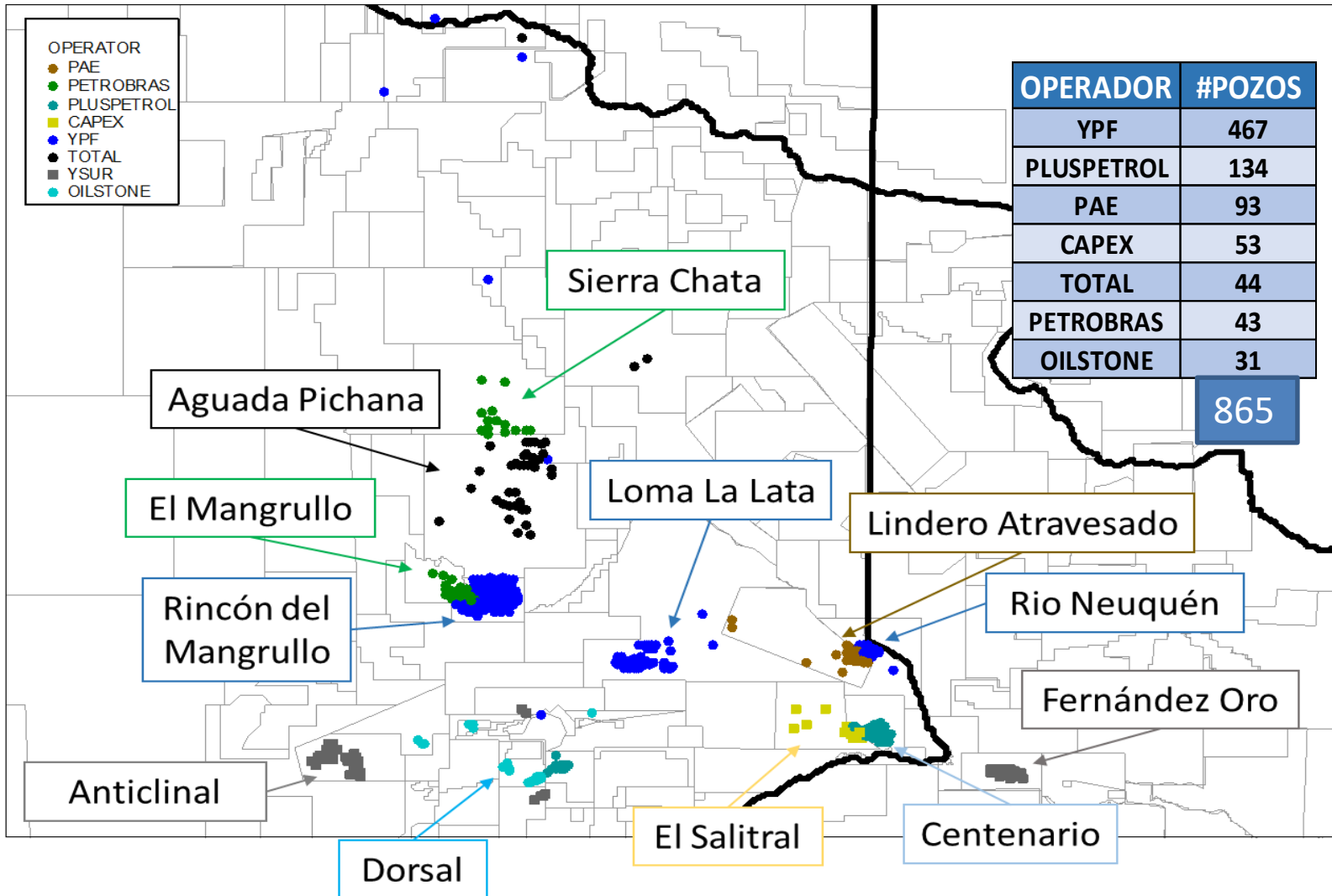




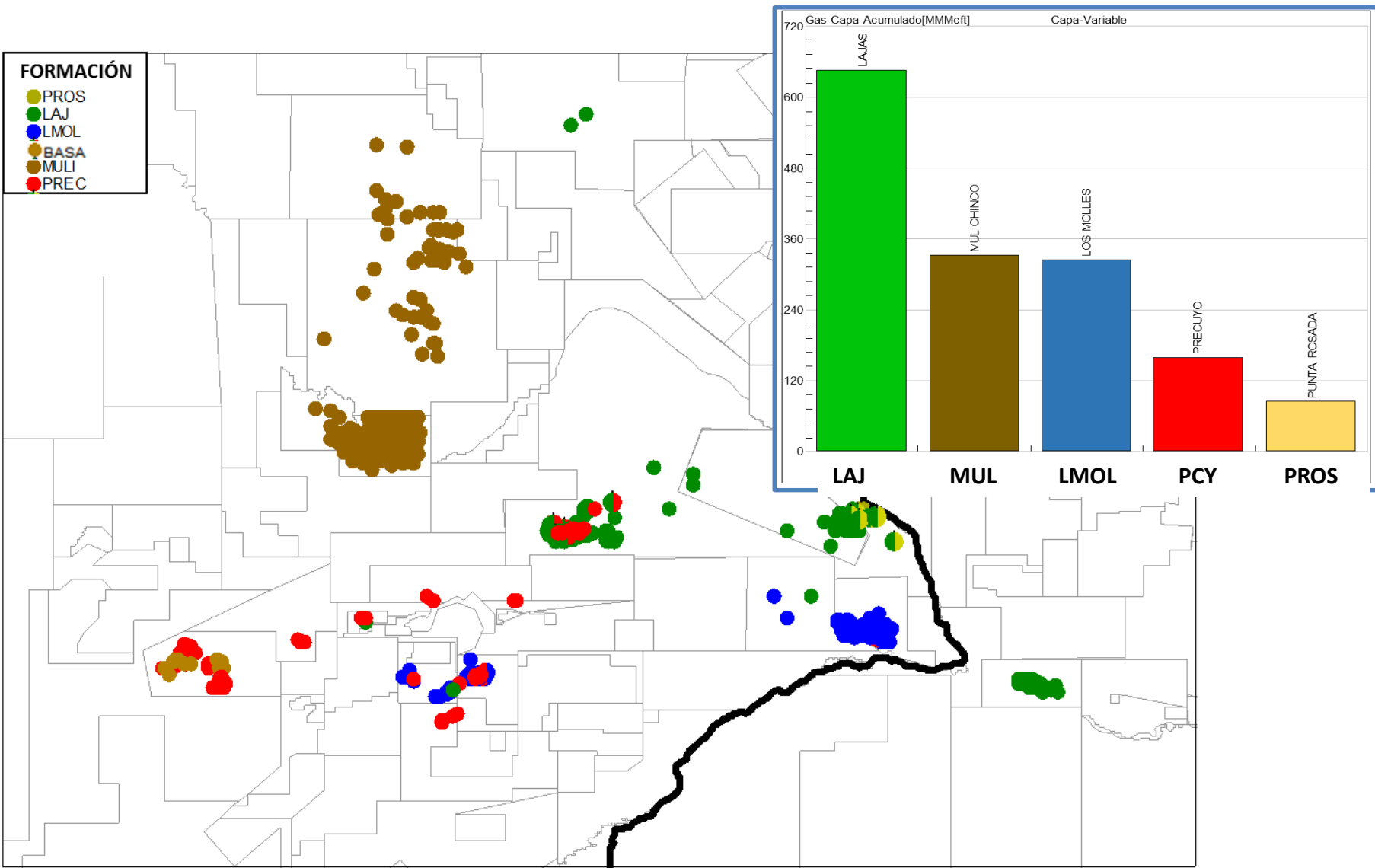
# Pozos Tipo VMUT - Gas

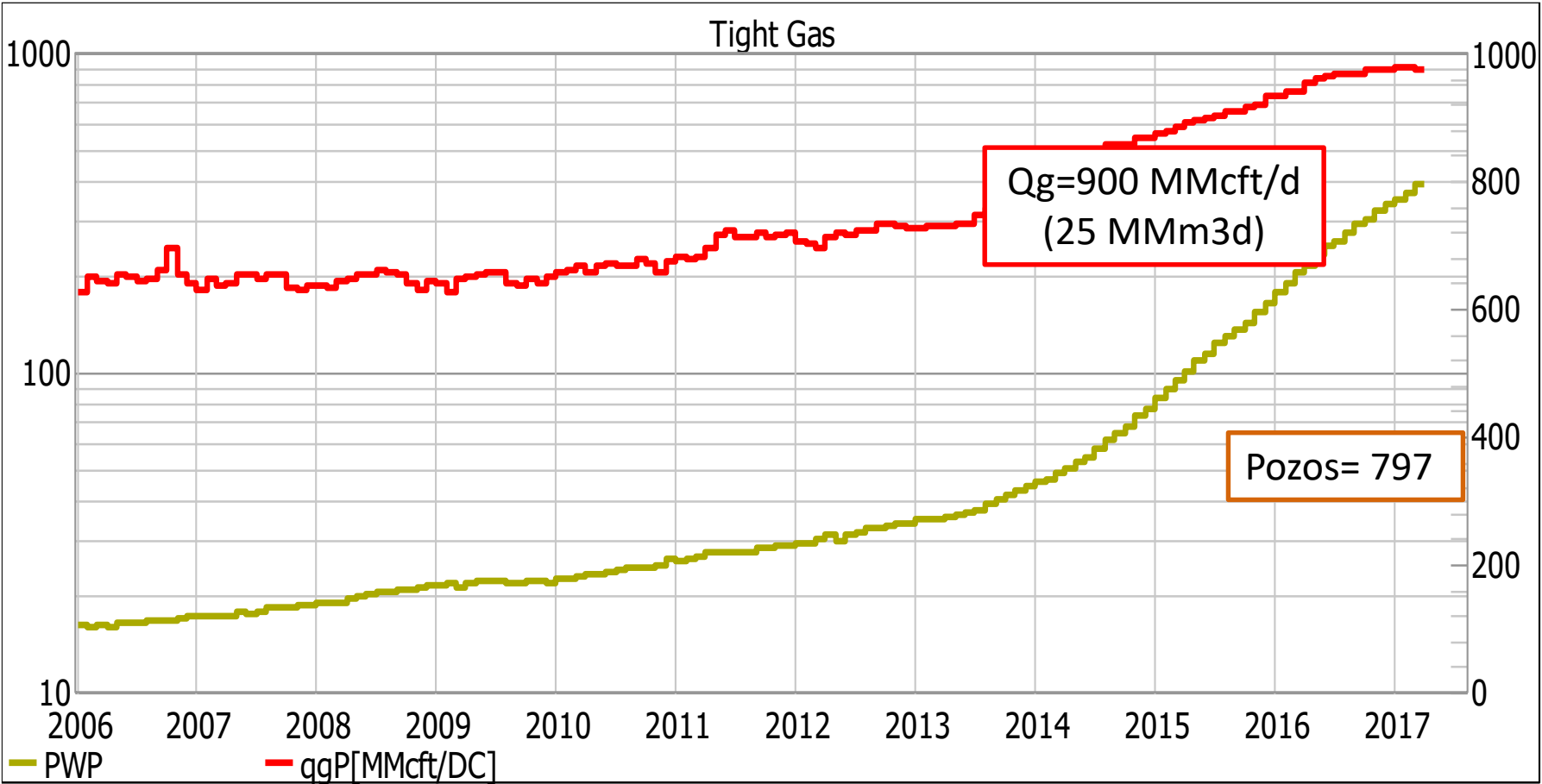


# Tight Gas



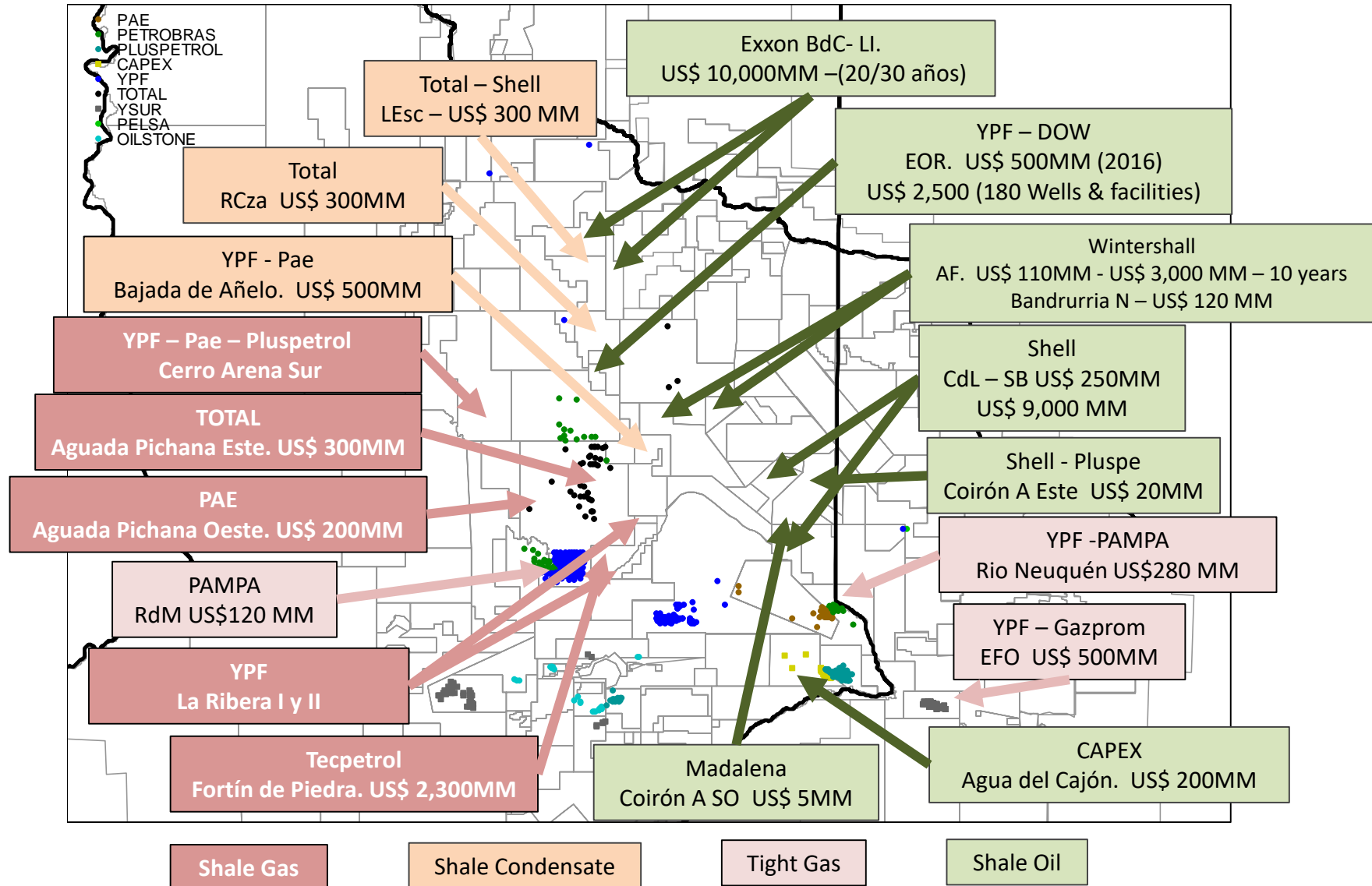
# Formaciones productivas





..estable desde oct-16

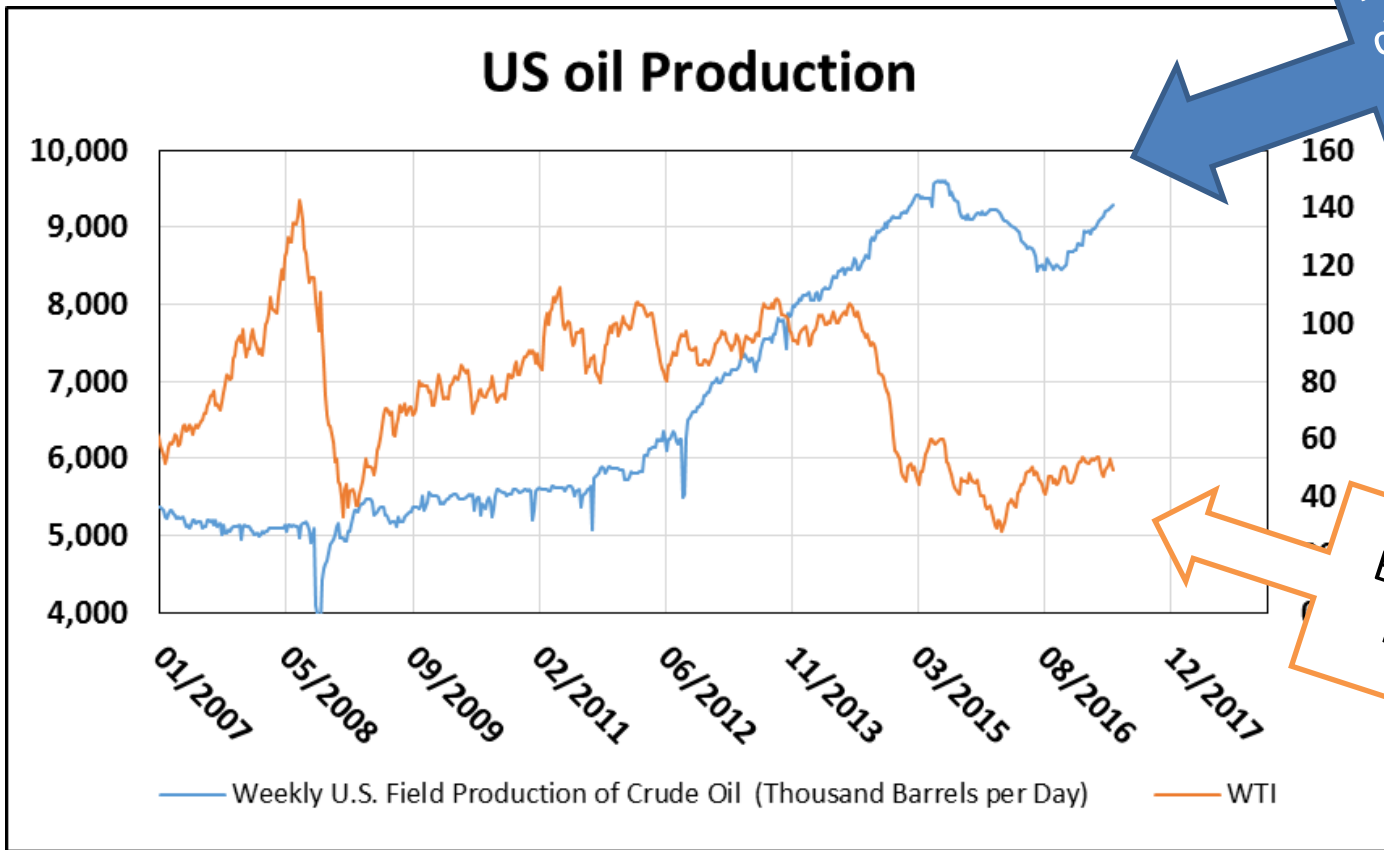
# No Convencional Inversiones





# El mundo

# Que pasa en el Mundo ?



Pero la producción de US crece como en los mejores momentos.....

El precio no recupera

# Que pasa en el Mundo



PERMIAN:  
El nuevo Gigante



La eficiencia en  
perforación sigue  
aumentando

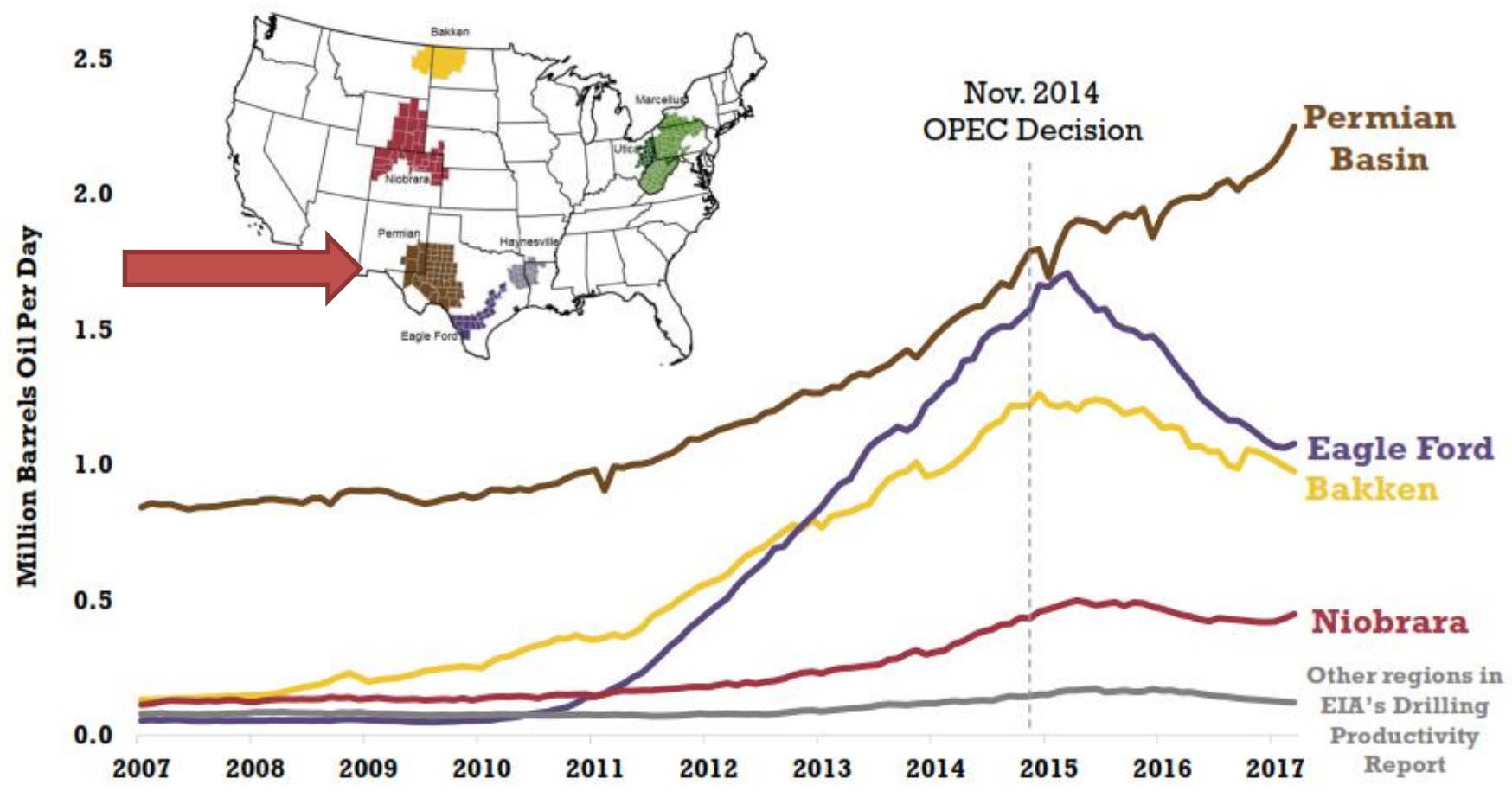


Cada vez mas etapas y  
más arena, generan  
mas EUR



# PERMIAN - El nuevo Gigante

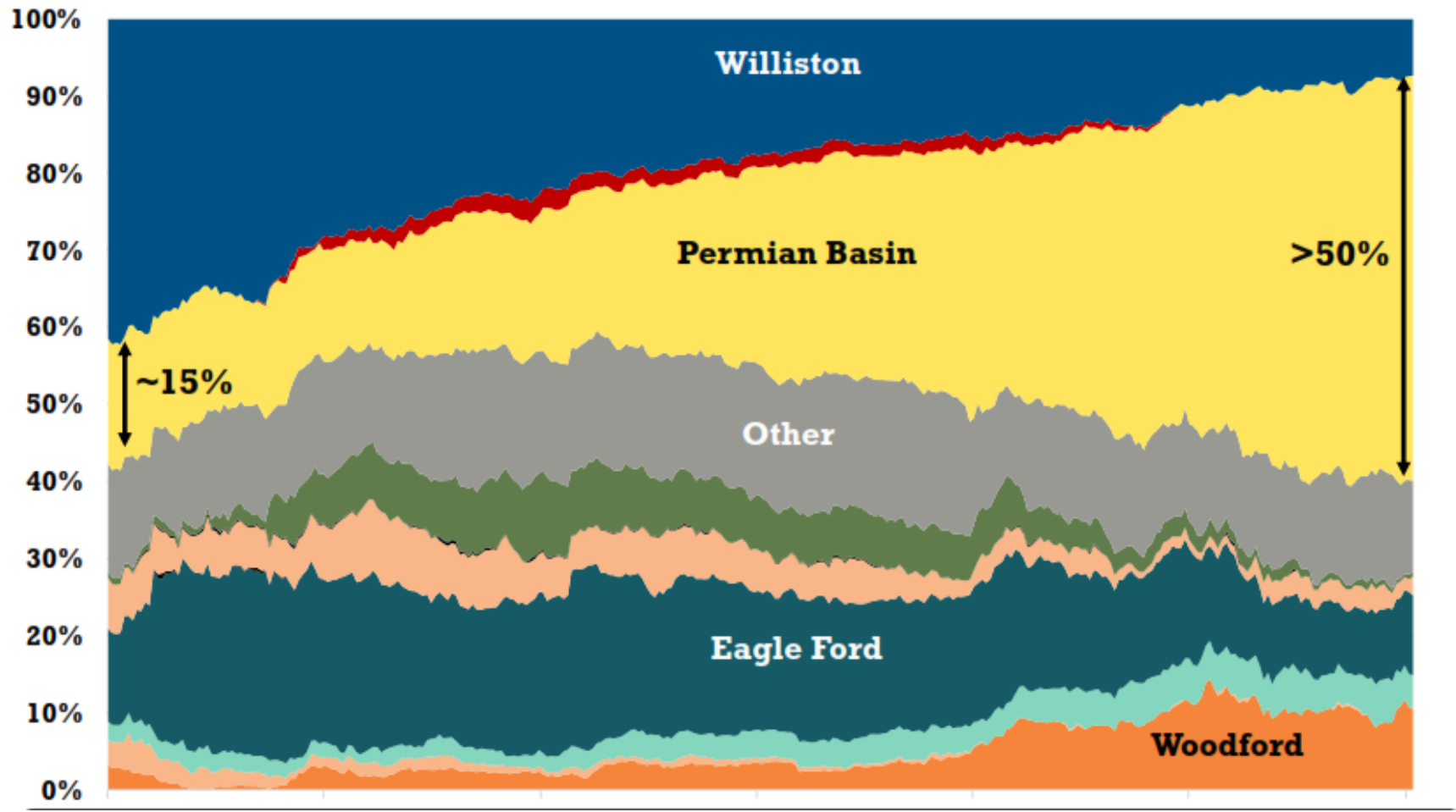
**Permian Basin is the only growing major U.S. oil shale since downturn began**



Source: IPAA Oil&Gas Symposium - Pioneer

# PERMIAN - El nuevo Gigante

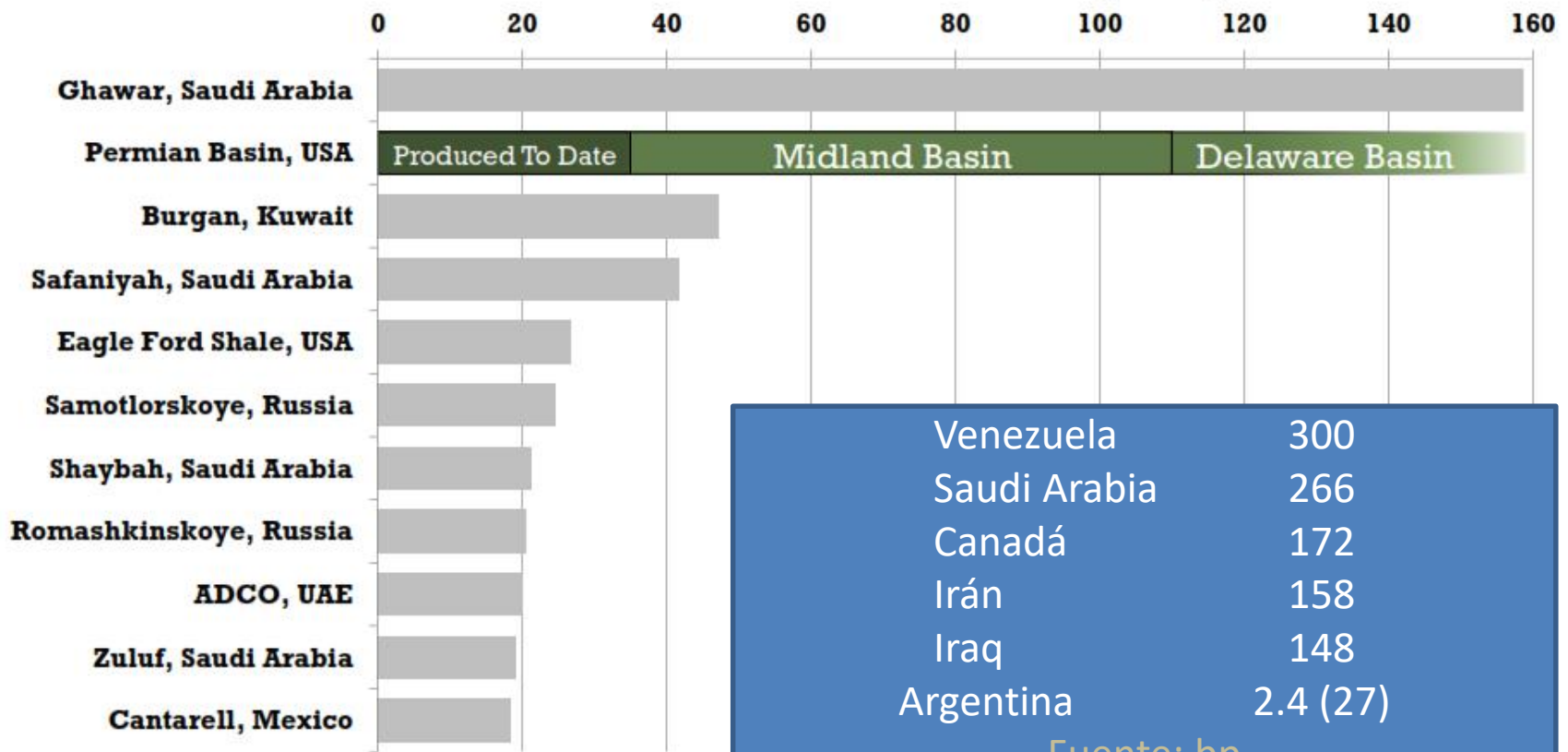
### % U.S. Horizontal Oil Rigs By Basin



Source: IPAA Oil&Gas Symposium - Pioneer

# PERMIAN - El nuevo Gigante

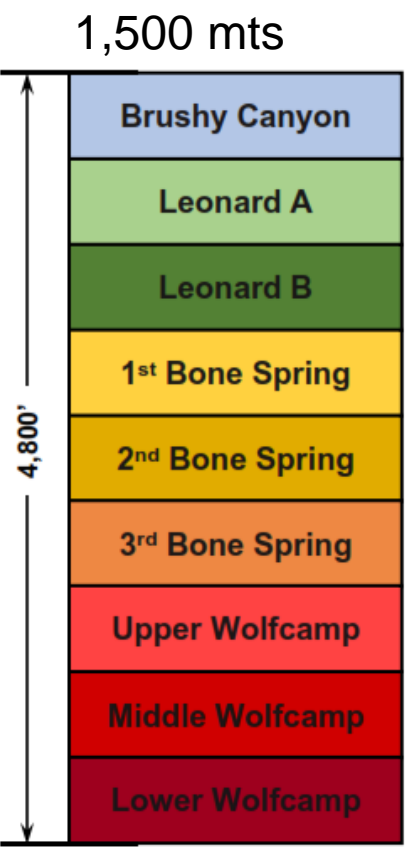
**Total Recoverable Resource (BBOE)<sup>1</sup>**



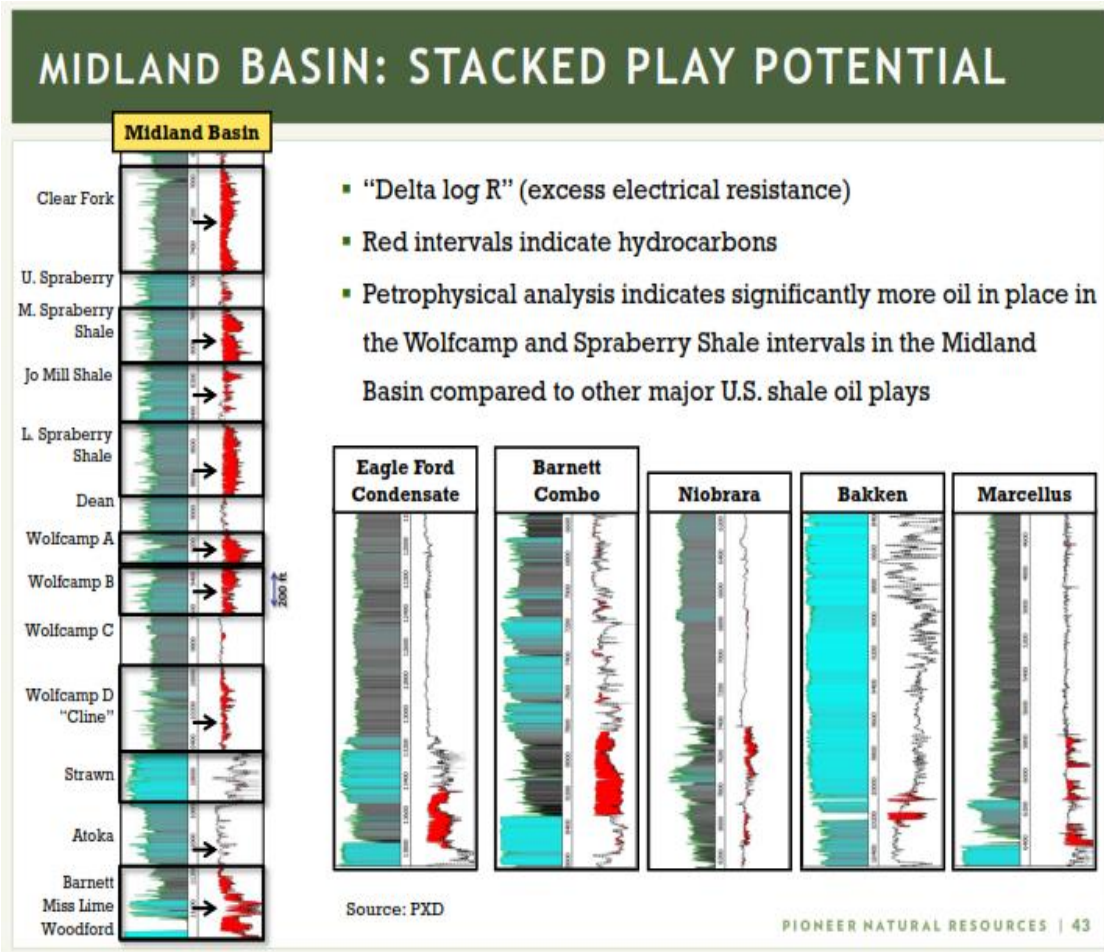
Venezuela	300
Saudi Arabia	266
Canadá	172
Irán	158
Iraq	148
Argentina	2.4 (27)

Fuente: bp

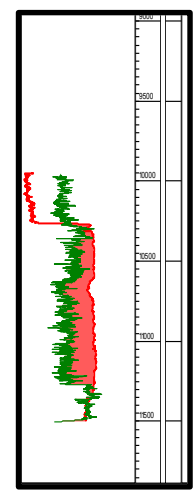
# PERMIAN - El nuevo Gigante



Fuente = EOG



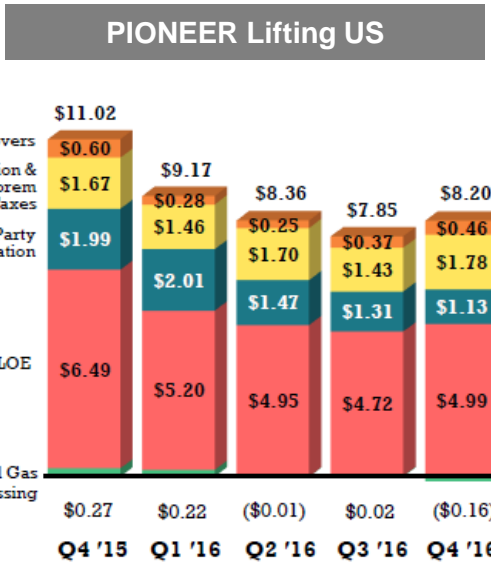
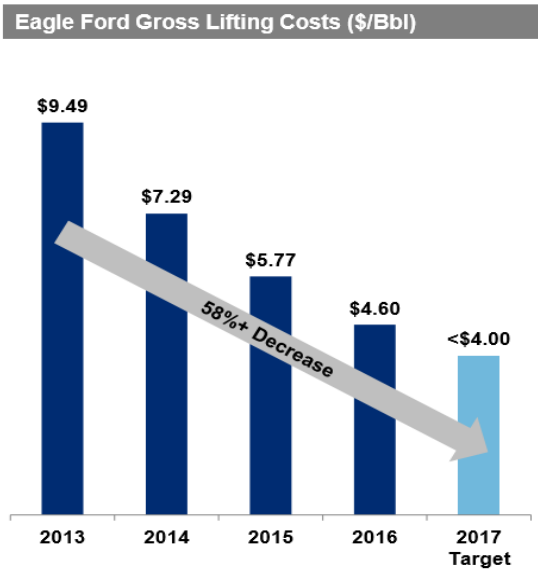
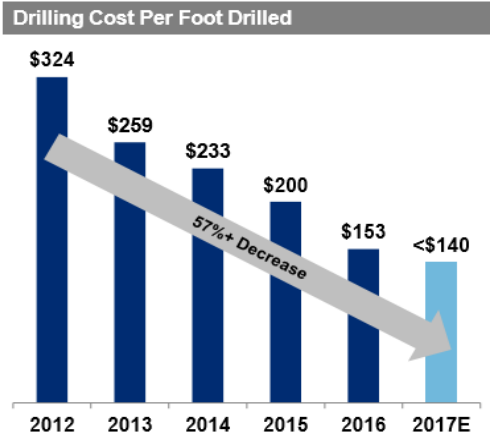
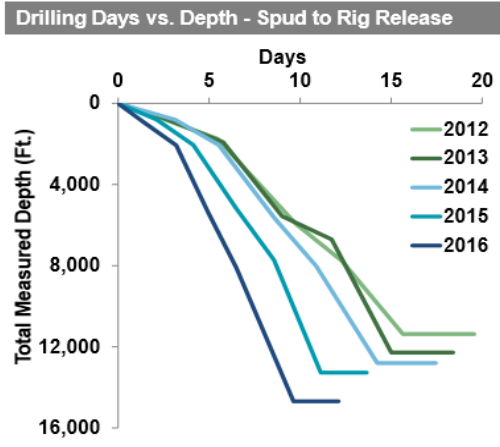
Vaca Muerta



# La eficiencia sigue aumentando



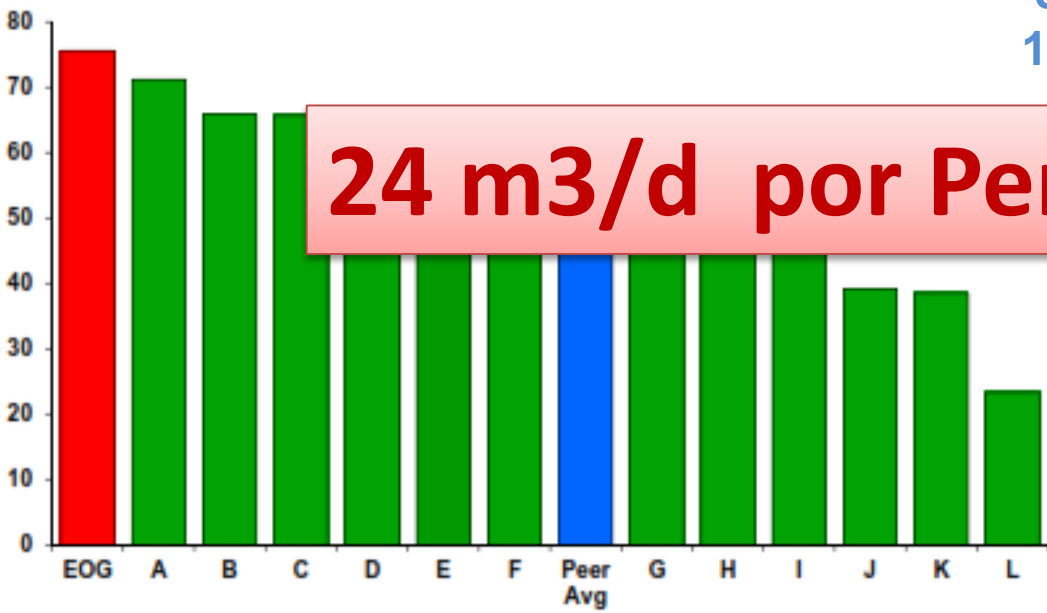
## Cabot's Marcellus Drilling Efficiencies



**Locación Premium (EOG)**  
**TIR > 30%**  
**Con 40 \$/bbl y 2.5 MMcfd**

## Efficient and Productive Operations 2016 Production Per Employee (MBoe)

Producción media por empleado  
55,000 boe/año  
150 boe/dia

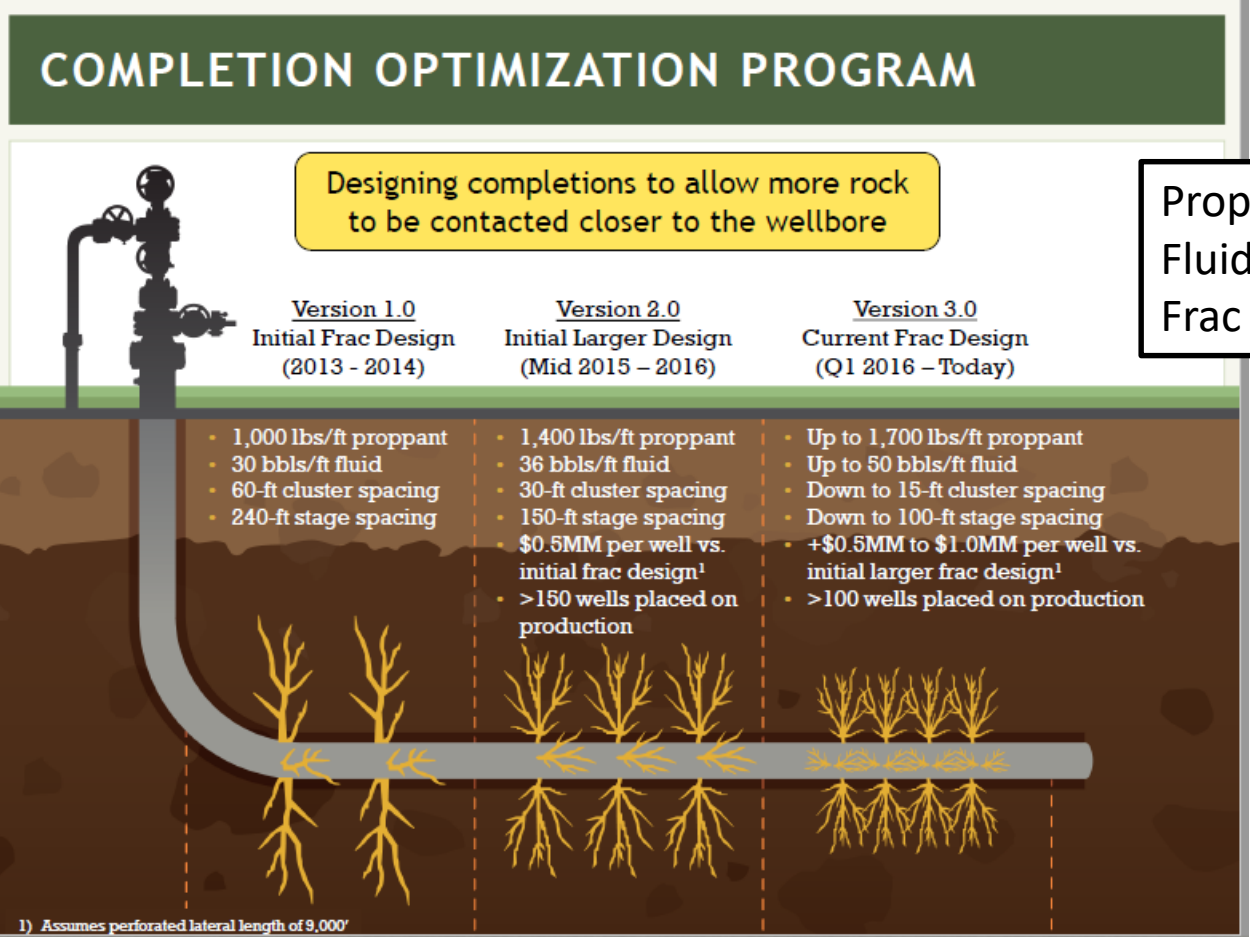


**24 m3/d por Persona!!!**

Source: Company Reports. Natural gas converted at 6:1.  
Peer Group: APA, APC, CLR, COP, CXO, DVN, HES, MRO, NBL, NFX, FXD and XEC.

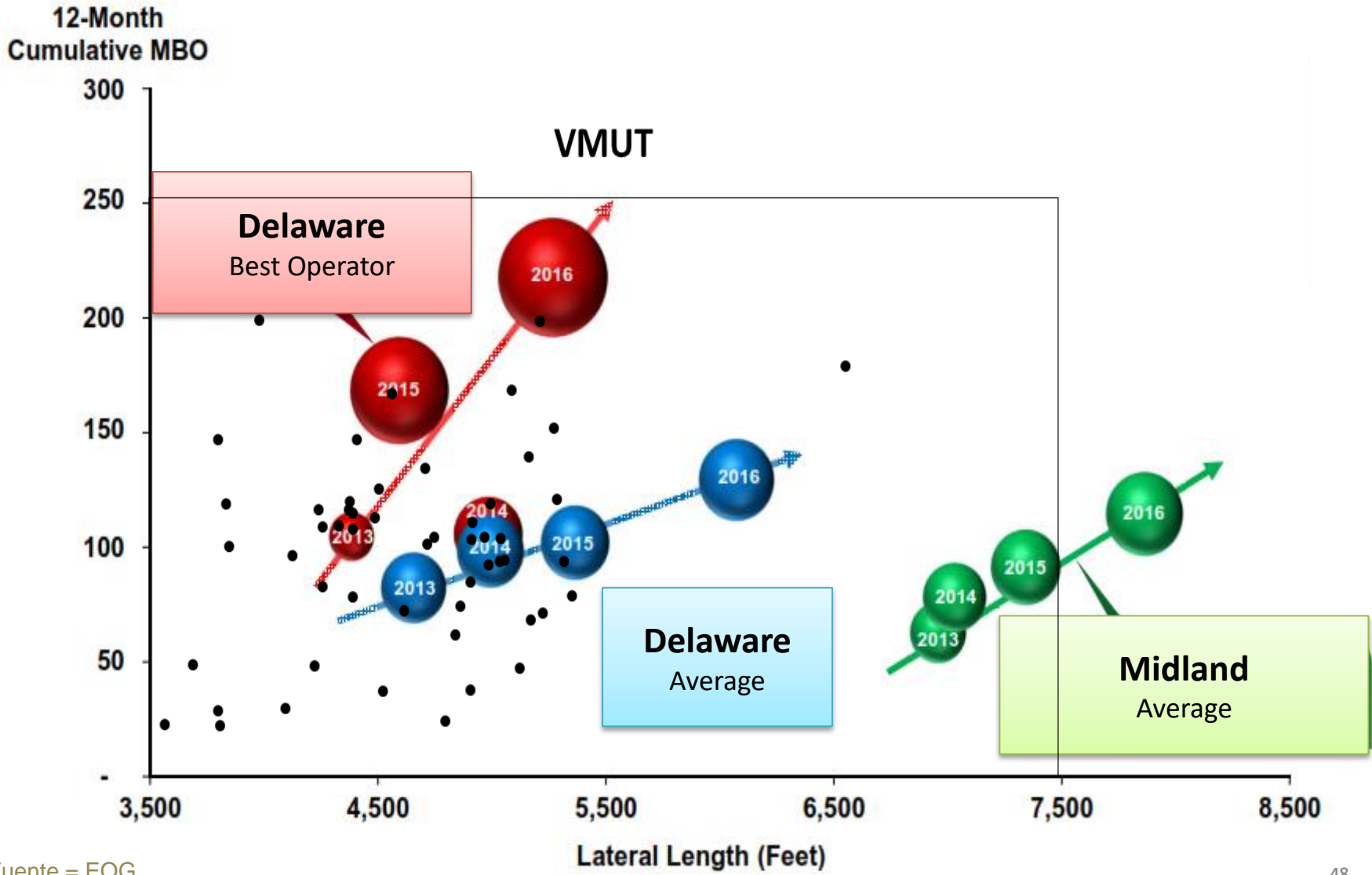


# Más arena - más etapas



Proppant (lb/ft)	1,000-1,700
Fluid (bbl/ft)	30 - 50
Frac Spacing (ft)	240 - 100

# Mas lateral



Fuente = EOG



# Records

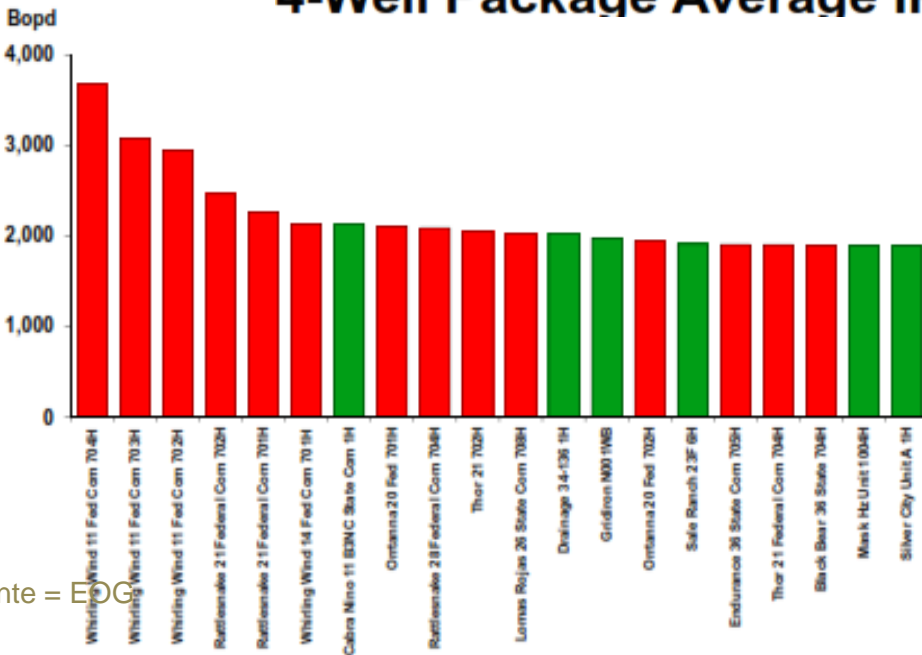


**Eagle Ford** ● 1Q 2017 65 Gross Wells 30-Day IP Bopd 1,130 Boed 1,390 Lateral 6,500'

**Permian** ● Wolfcamp Oil and Combo Plays  
- 4Q 2016 17 Gross Wells 30-Day IP Bopd 1,595 Boed 2,405 Lateral 4,900'

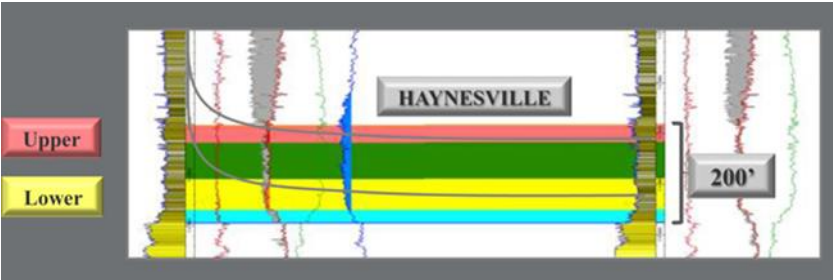
● Wolfcamp Oil and Combo Plays  
- 1Q 2017 33 Gross Wells 30-Day IP Bopd 1,850 Boed 2,855 Lateral 5,600'  
- Whirling Wind 4-Well Pattern 3,510 5,060 7,100'

## 4-Well Package Average IP-30 5,060 Boed Each

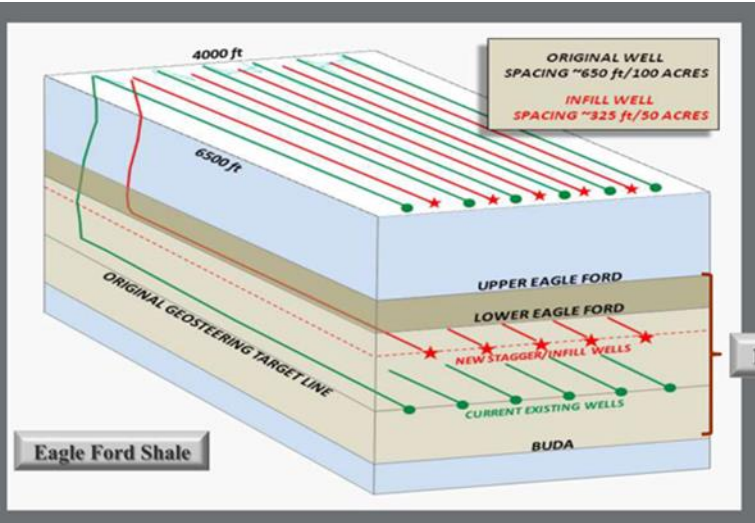
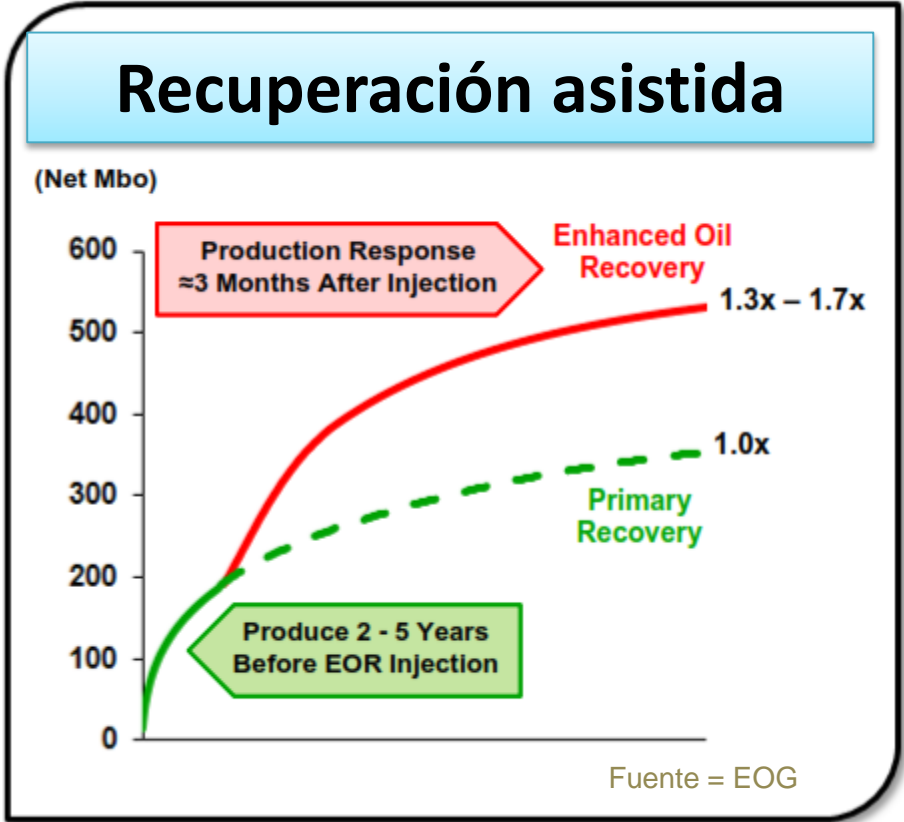


Fuente = EOG

# Lo que viene (?)



Fuente = Comstock



Fuente = Comstock

# Conclusiones

- ✦ **Estamos en el buen camino.**
  - Horizontales, y cada vez más largos
  - EUR estables en niveles aceptables
  - Reducción de Tiempos => Costos
  - Más operadores
  
- ✦ **Para asegurar rentabilidad**
  - Más arena – Más lateral – Más EUR
  - Más eficiencia – Menos costos
  - Incentivo fiscal





Muchas Gracias !!!



Edificio Concord, Sección Zafiro, Of. 102

Pilar - Buenos Aires - Argentina

Tel: (0230) 4300-191/192

[hgiampaoli@gigaconsulting.com.ar](mailto:hgiampaoli@gigaconsulting.com.ar)

[agagliano@gigaconsulting.com.ar](mailto:agagliano@gigaconsulting.com.ar)

[www.gigaconsulting.com.ar](http://www.gigaconsulting.com.ar)