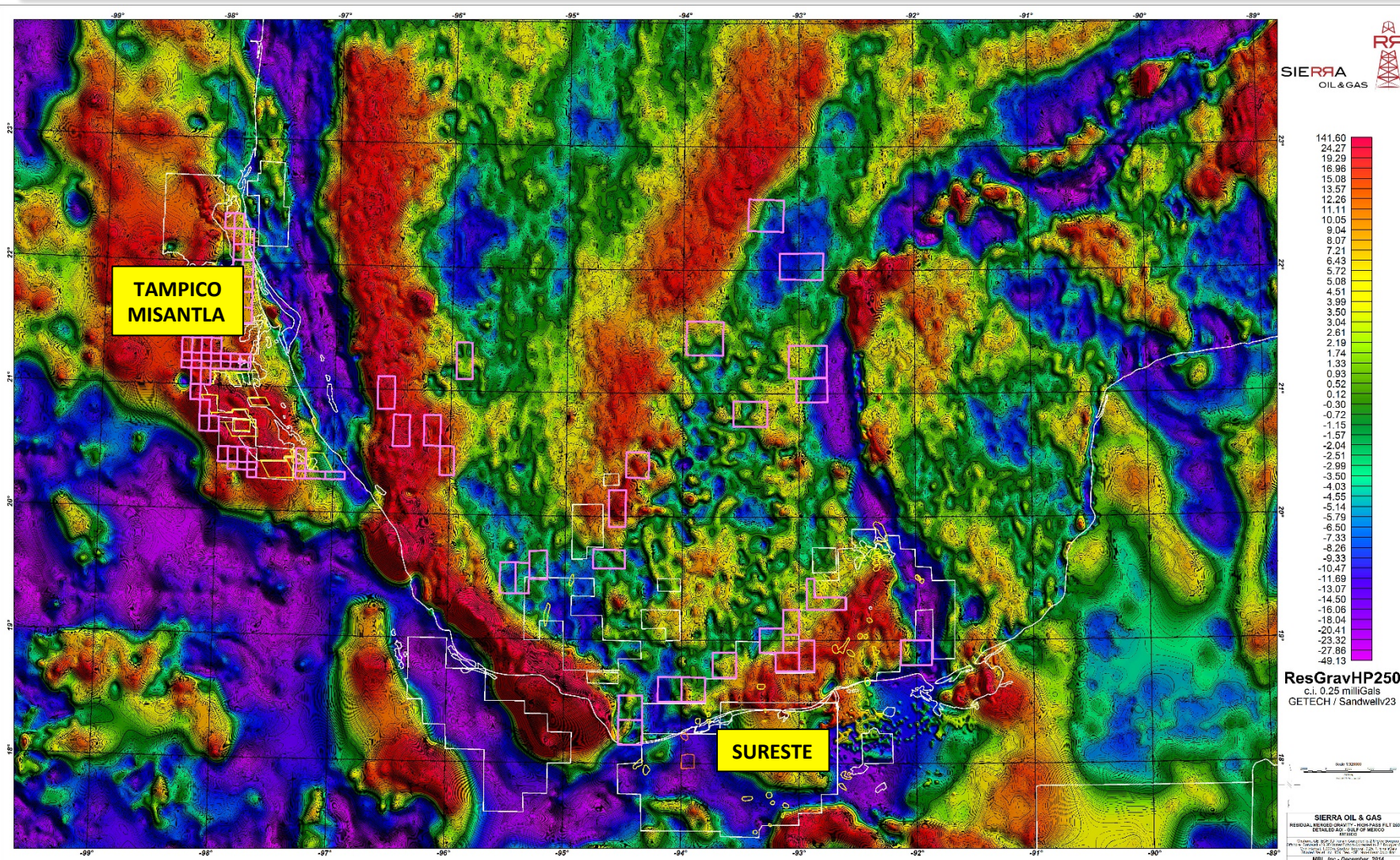


# MEXICO EMERGING WORLD CLASS PETROLEUM PROVINCE



**Finding Petroleum  
Forum**  
**Geological Society, London**  
**17<sup>th</sup> September 2015**



# AGENDA



- **Historical Perspective**
  - 111 years of petroleum history (La Pez 1904)
- **What is driving the pace?**
- **What makes Mexico special?**
  - 560 opportunities in CNH five-year plan
  - Strengths of Petroleum system
- **Some examples of the key plays in Mexico**
- **Original pioneers to the New pioneers & who is Sierra**
- **Challenges & Opportunities ahead**
- **How does it feel to be new at the table / Questions?**

Tampico, Cretaceous Lmsts, 1500 bopd, 4 mmb cumulative  
near surface oil seeps



1904

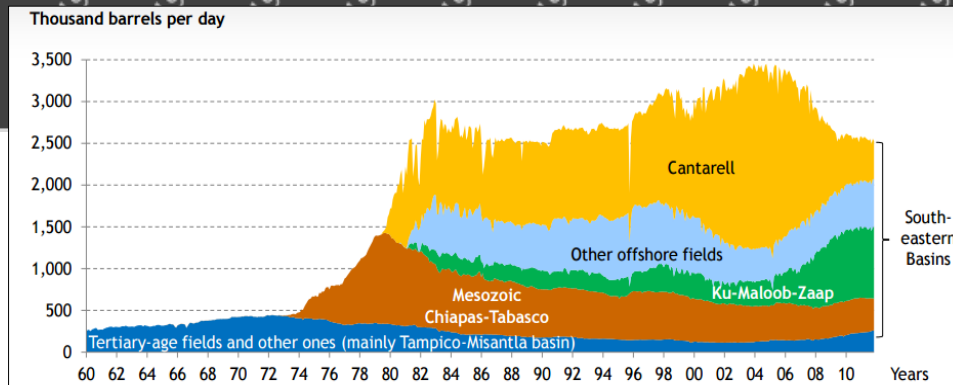
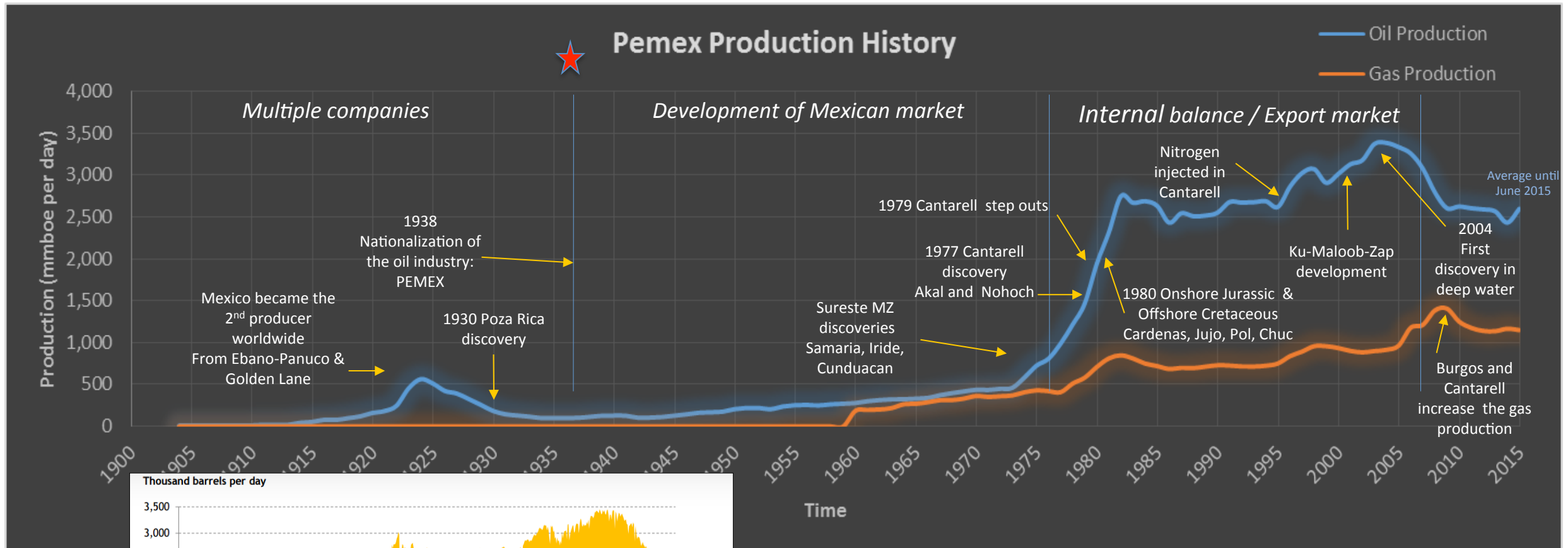
Edward Doheny

Ezequiel Ordóñez

# 110 YEARS OF PETROLEUM HISTORY

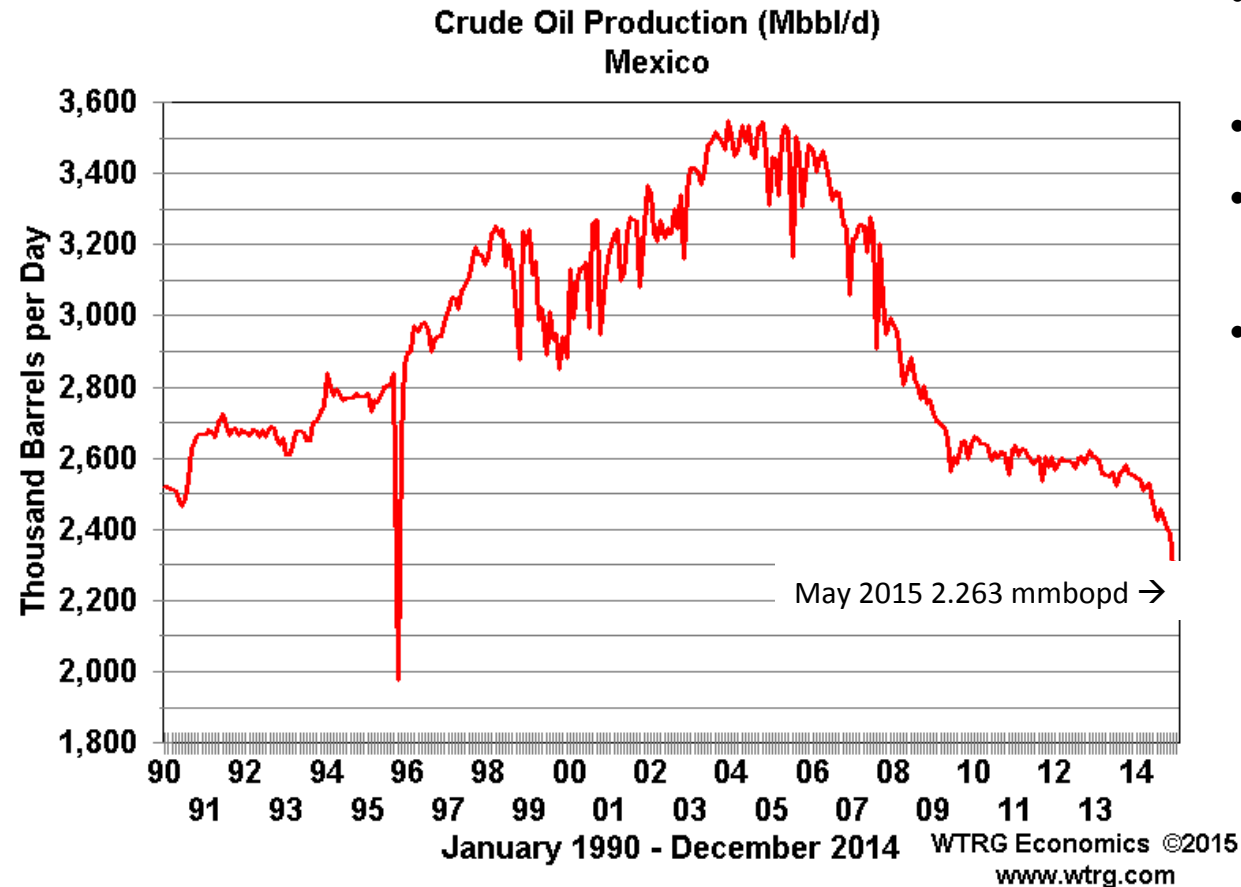


*American companies Golden Lane → Poza Rica → Cantarell → Burgos regeneration → Tsimin Xux Jurassic*



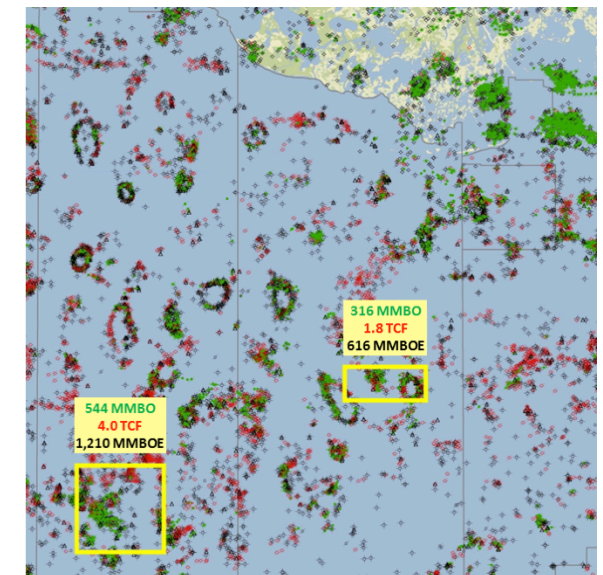
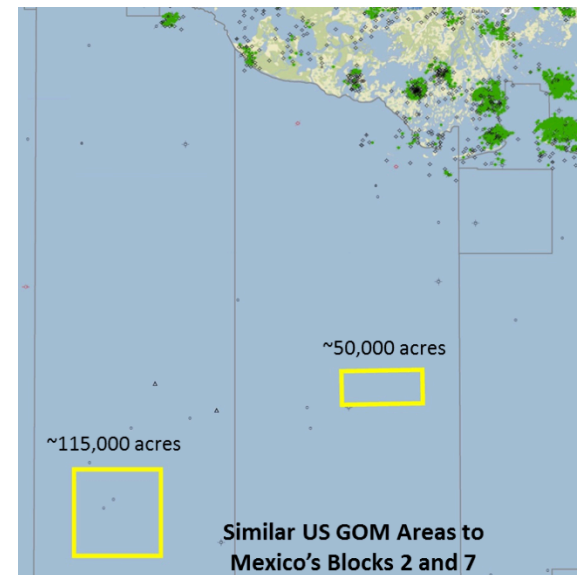
*Pemex production divide by plays and basins (1960-2010)*

# WHY REFORM NOW?



11% decline per year  
source Monthly Energy Review

- Urgent need to reverse the increasing decline, Pemex provides major revenue for government
- 2004 service contracts (fee per barrel) did not reverse decline
- Offshore drilling density comparison with USA, analogous geology but less competition & less offshore infrastructure
- Political reform during economic downturn with wide acceptance of need-for-change, next elections 2018





# MEXICO OPENING TO NEW ENTRANTS



## Positives:

- Opening of high potential energy sector to private investors after 76 years of state monopoly.
- Established, clean and transparent process.
- Decent data set.
- Continuous improvements to process and PSC etc.

## Challenges:

- Cumbersome prequalification process and limits on flexibility to bid.
- Industry in general was not prepared-Sierra differentiator.
- Lack of understanding/interest in Pemex historical successful carbonate reservoirs to North
- Industry had reservations about PSC, fiscal and commercial elements, process,etc. hesitant to jump in (Call 1 34 registered to bid).
- Low oil price environment. Companies rationalizing.

***Opportunity to obtain world class exploration acreage with a globally competitive contract in a low price environment.***



## Comprehensive Changes Formation of 11 New Regulatory Groups



# Mexico Opportunity Set Over 560 Opportunities



## 170 extraction licenses / fields

- 2P 1363 mmb rec oil equivalent

## 13 extra heavy extraction licenses / fields

- 17 bnbbbl resources

## 12 Chicontepec extraction licenses (42 bnbbbl OIP)

Undiscovered ~ 112 bnboe Risked YTF (47% conventional)

Discovered ~ 1p 13 bnboe / 3p 37 bnboe

Remaining OIP 68 bnboe on offer in extraction licenses

## 379 conventional exploration blocks

- 130 onshore, RYTF 1.4 bnboe
- 108 shallow water, RYTF 3.5 bnboe
- 141 deep water, RYTF 9.7 bnboe

## 10 migrated service contracts

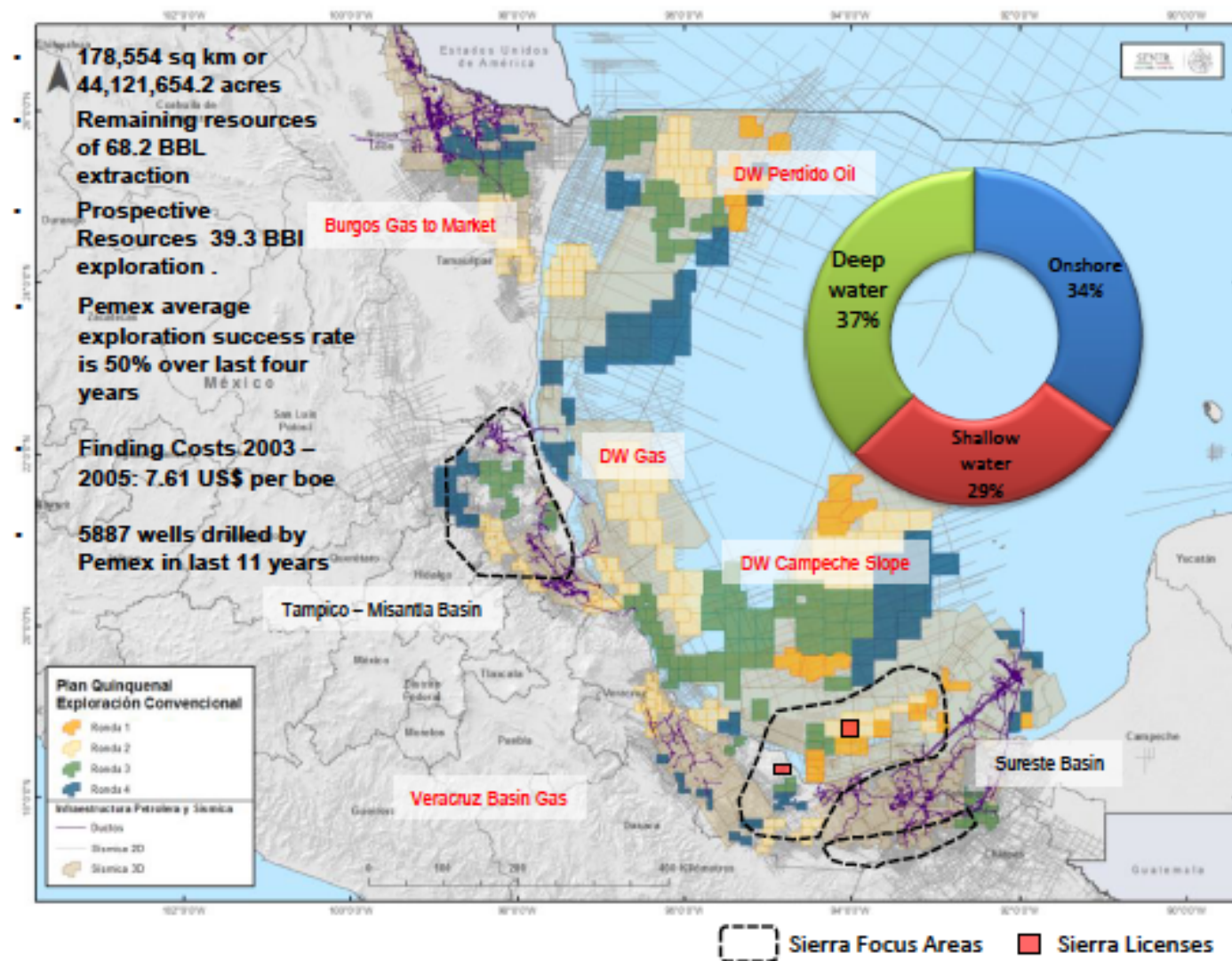
- Humapa
- Arenque
- others

12 Proven Petroleum Systems

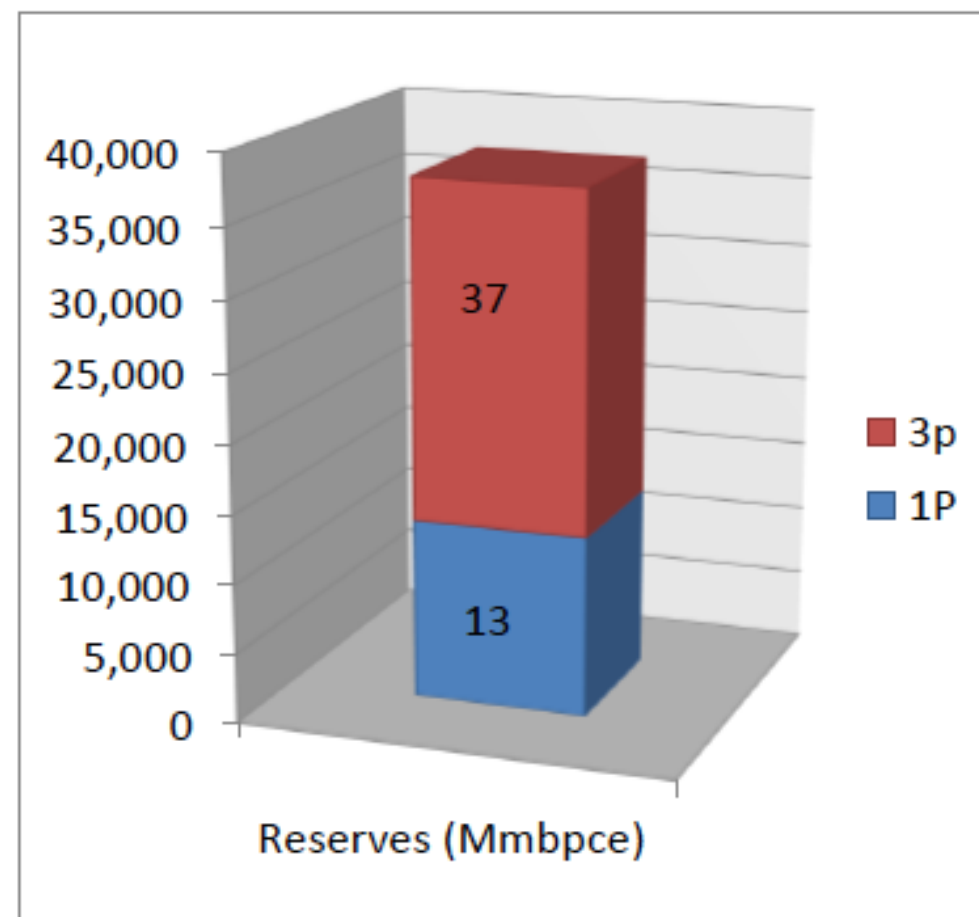
48 Geological Provinces



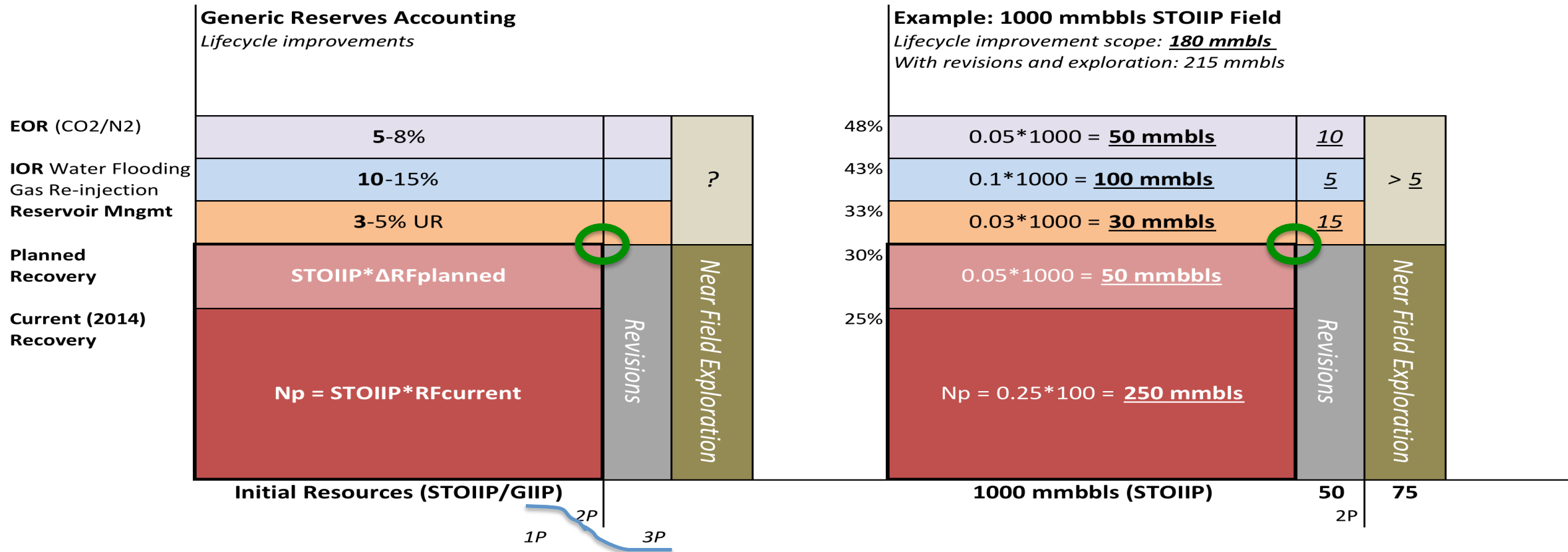
# Looking Ahead CNH 5 year plan



Reserves in 5 Year Plan (BBLs)



# RESOURCE VOLUMES AND RECOVERY INCREMENTS: OIL



- > 400 mmbbls OOIP is a good lower cut-off for target selection
- CNH/SENER, Hacienda expectations are focused on these numbers

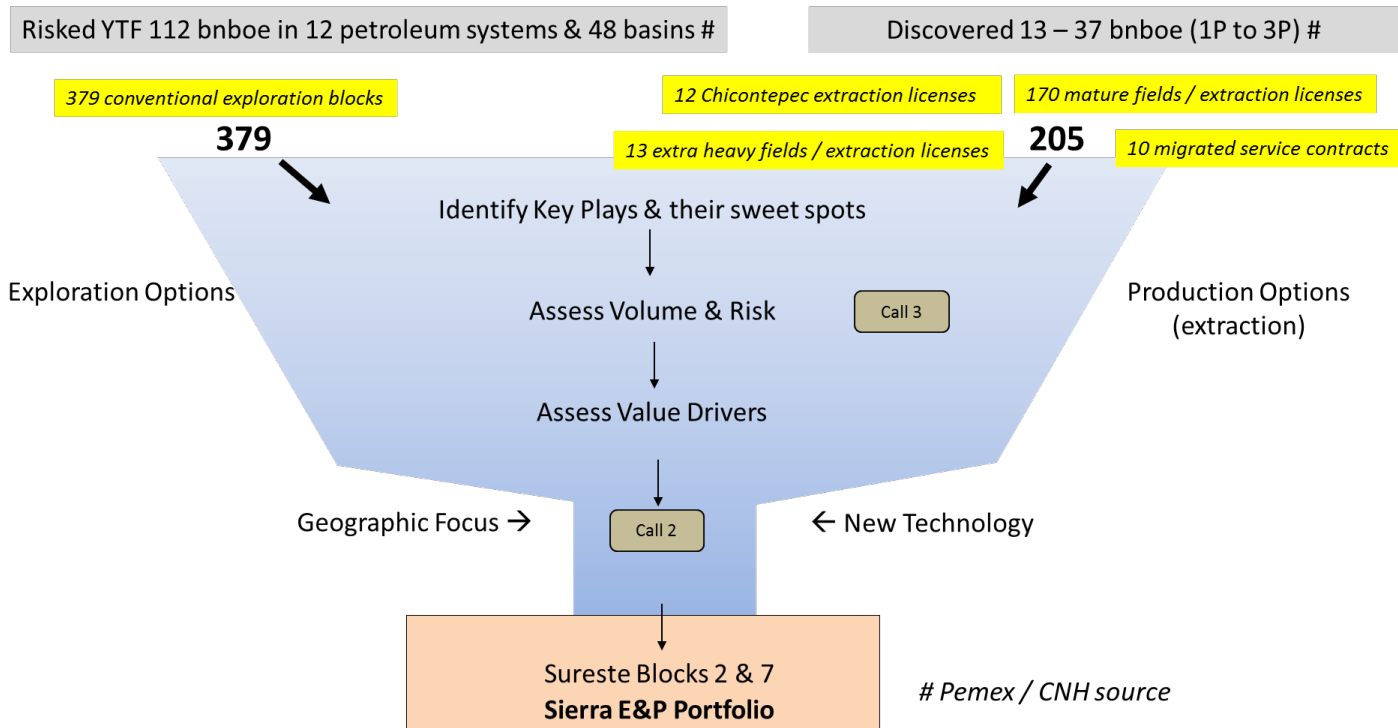




# WHAT MAKES MEXICO SPECIAL?



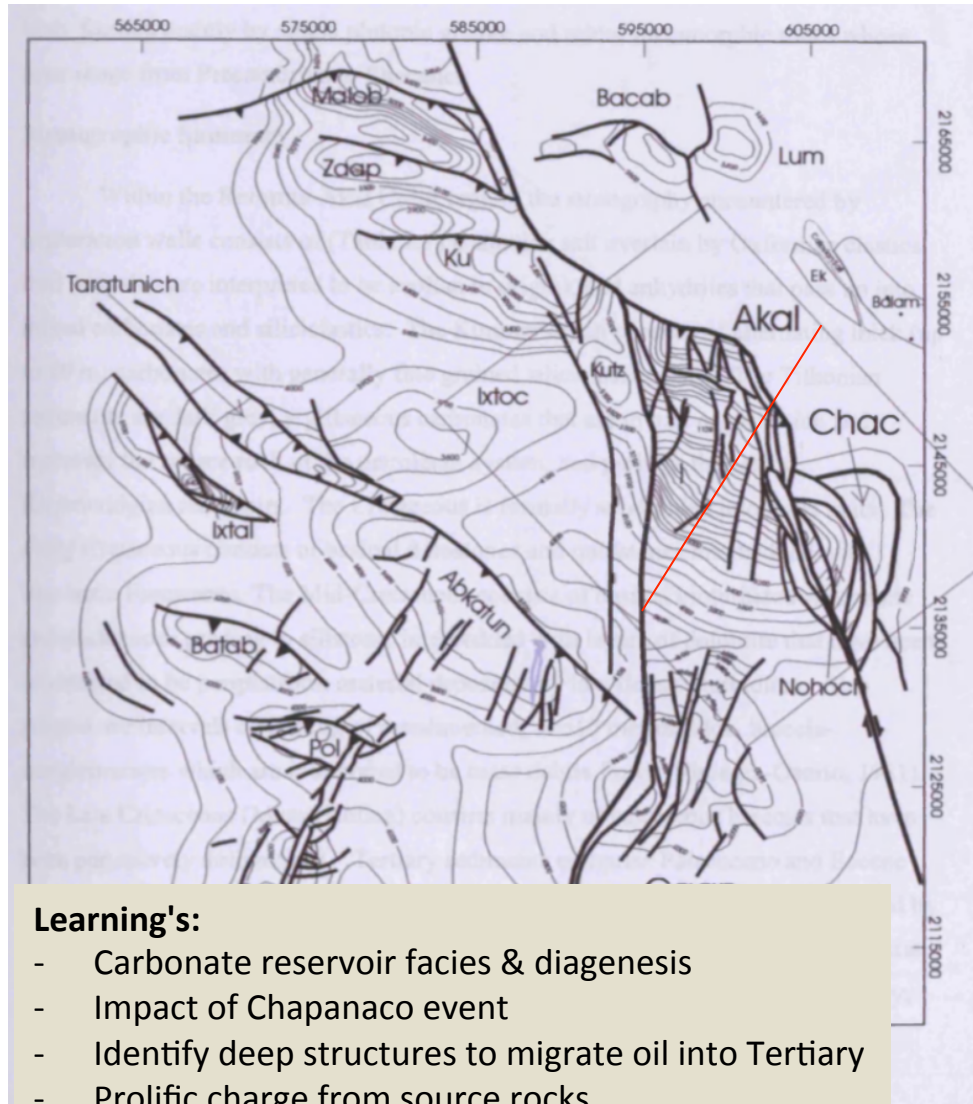
584 assets in Five-Year Plan



Mexico Opportunity Funnel

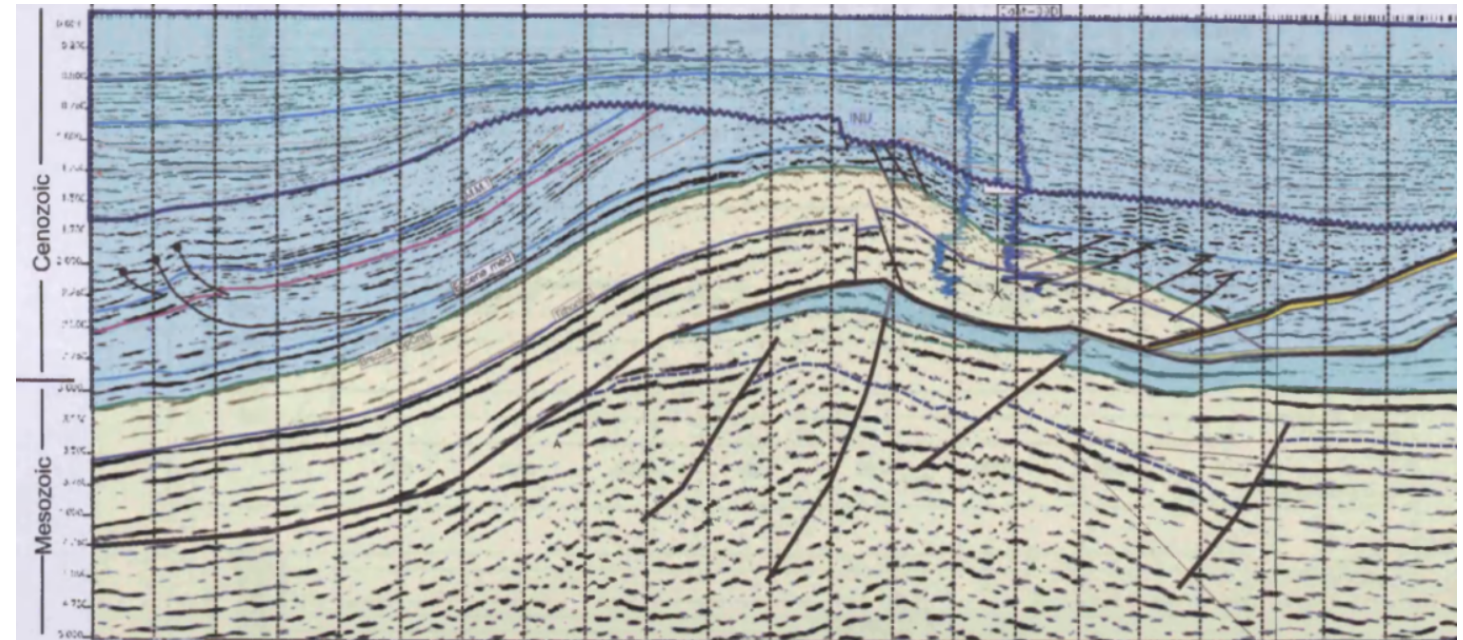
- 68 years under one oil & gas manager, great skills in Pemex but one way of doing things!
- A diversified support base, NAFTA business framework, all major contractors in country
- Opportunity rich: 584 assets to be released in CNH five year plan
- Mexico's Petroleum System
  - Multiple world class oil prone Source Rocks
  - High Trap Density with super-seals
  - 5+ repeated bnbbbl discoveries (Ebano-Panaco, Golden Lane, Poza Rica, Cantarell, Juju-Tecominoacan + DW exploration frontier
  - Complex reservoirs, arkosic sands, prolific carbonate breccias seem unique to Mexico

# CANTAREL: EXAMPLE SURESTE CARBONATE PLAY



## Learning's:

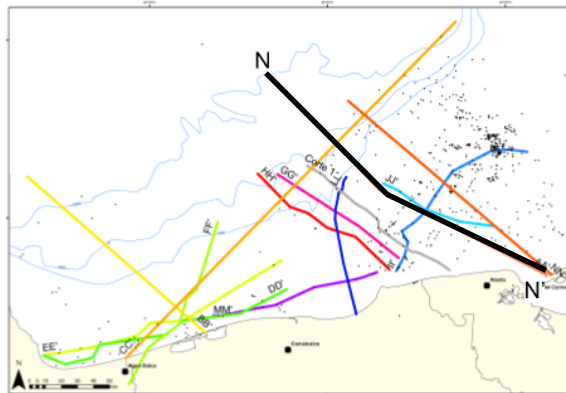
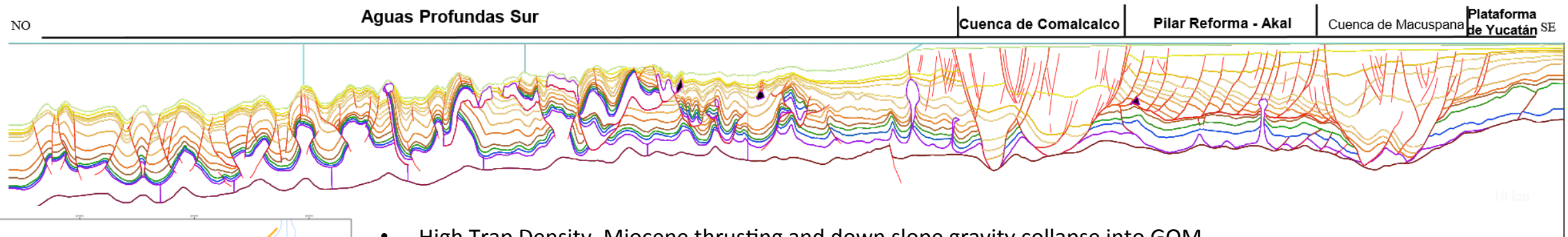
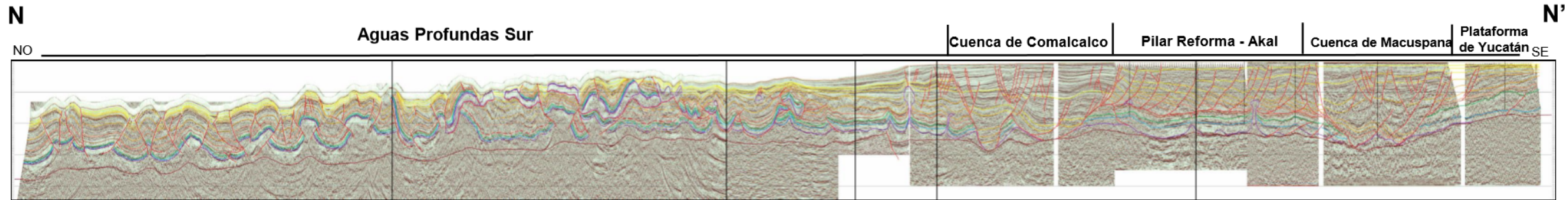
- Carbonate reservoir facies & diagenesis
- Impact of Chapanaco event
- Identify deep structures to migrate oil into Tertiary
- Prolific charge from source rocks



- Crest at 1000 m holding back 2.3 km oil column in high N/G dolomitized carbonate breccias → excellent Tertiary seal.
- 170 km<sup>2</sup> area, 980m dolomitized carbonate breccia, 37 BB OOIP, 13 bn prod.
- Miocene thrusting associated with Chapaneco Chiapas Plate movement
- Step-Out Potential: Sihil (footwall high) discovered in 2007, 30 years later: 400 mmb recoverable oil
- Charge model suggests 15 mmbbl/km<sup>2</sup> generated & migrated from fetch area



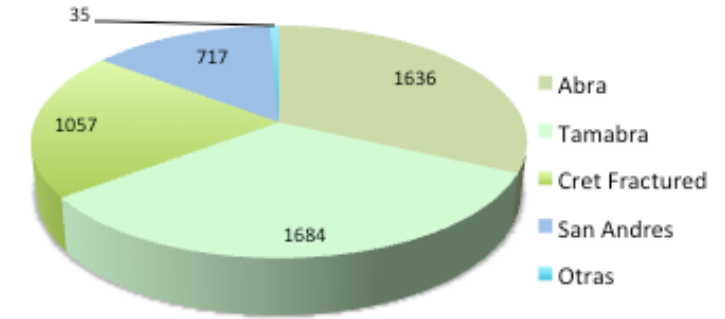
# FUTURE EXPANSIÓN OF PLAYS TOWARDS DEEP WATER



- High Trap Density. Miocene thrusting and down slope gravity collapse into GOM
- Reforma Akal is gently folded but structures become high relief so require great seals to hold back significant oil columns. imaging challenged
- Source Rock burial & temperatures become less potentially heavier oils, but prolific seepage present

# Why Tampico - Misantla

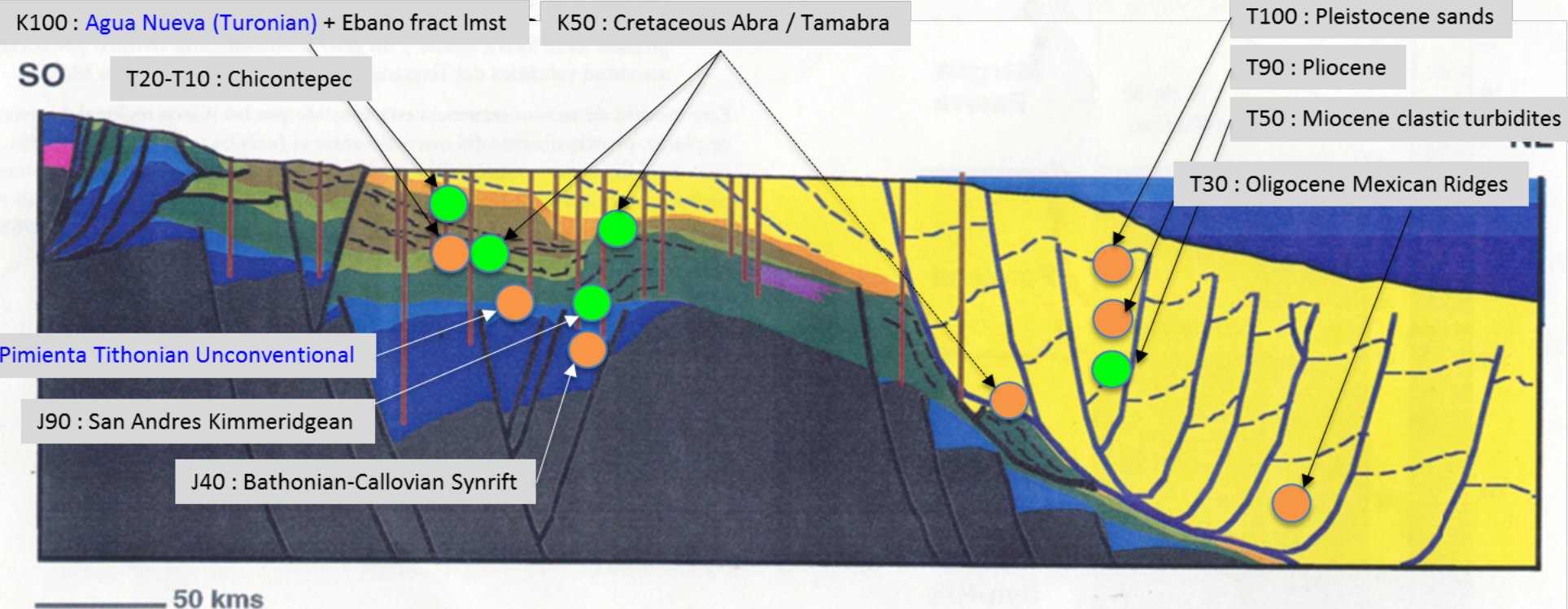
- 3 World Class source rocks: 2 in Jurassic + Late Cretaceous Agua Nueva/Eagleford
- 5+ bnboe province (original rec resources), excluding Chicontepec
- Existing Infrastructure allows cheap tie-backs
- Unconventional focus, with local conventional play upside



4 proven plays (including fractured pelagic lmsts – Ebano)

5.1 bnboe original rec res. (exclude Chicontepec)

+ 8 unproven plays (including 2 unconventional)





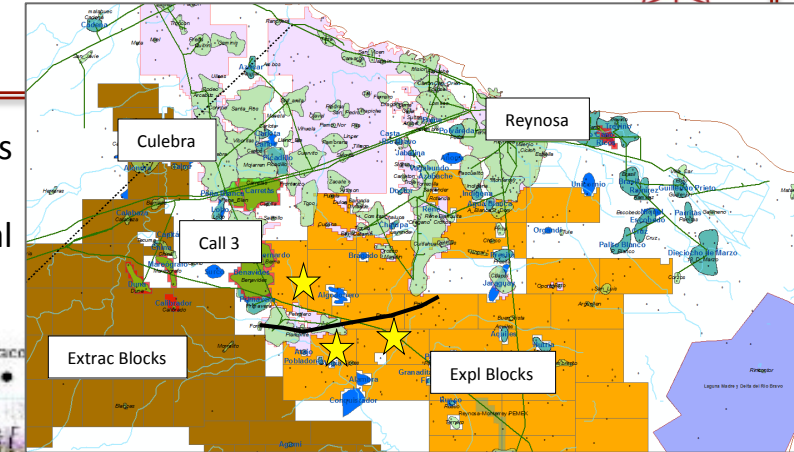




# THE GAS RESERVES AND THE 'SHALE OIL/GAS' IN MEXICO: BURGOS BASIN

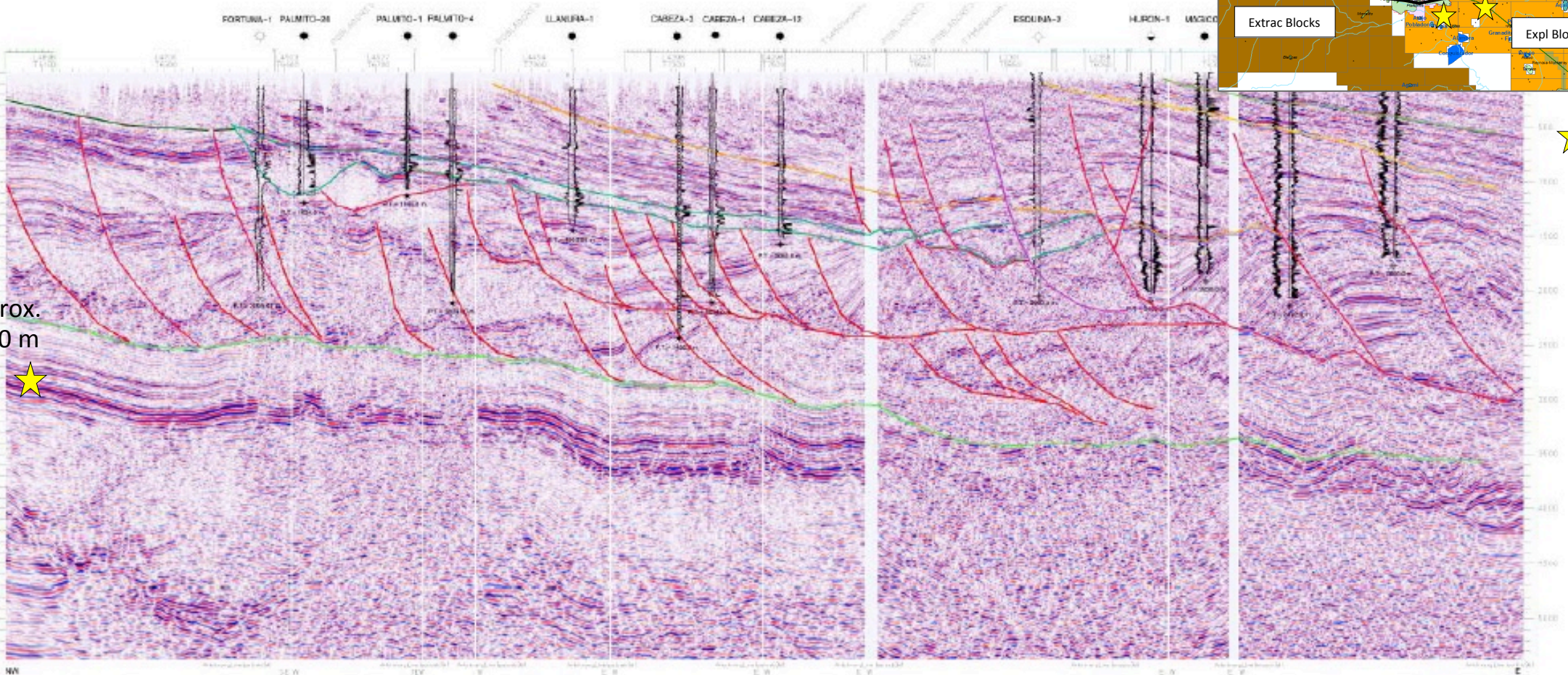


- Burgos have Tertiary Petroleum Systems and it has unconventional potential in Eagle Ford and Pimienta plays
- >12,000 bcf in 230 pools until 2013
- More than 5000 m of clastics and 3000 m of carbonates, with transgressive and regressive events + structural and stratigraphic traps (normal faulting, roll-over w/ clay detachment, growth faults, etc)



★ Opportunity Area

Approx.  
3500 m





# CHALLENGES & OPPORTUNITIES AHEAD

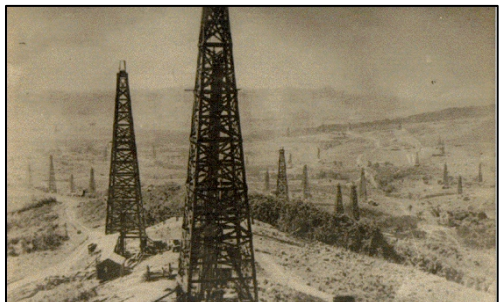


	CHALLENGES	OPPORTUNITIES / MITIGATIONS
Timing / Low Oil Price	Tight Budgets / less bidders	Low contractor costs
First time under new management	Complex contracts	CNH flexible , Highly committed CNH team
Data Release	Incomplete data packs	CNH addendums to data on request
Staying Ahead of the data packages	43,000 wells, 1,200 pools	Dedicated Quilt Maker team
Language	Spanish	Requires base in-country
Security	Local unstable areas	Asset Choice

# PIONEERS IN MEXICO



Everette L. Degolyer on  
The Golden Lane



Cerro Azul 4 260,000 bopd  
C. Azul Field still producing today!



Comisión Nacional  
de Hidrocarburos

Ronda 1, Call 1



Ronda 1, Call 2  
20 companies  
registered to bid

Ronda 1, Call 3  
80 companies  
registered to bid

Ronda 1, Call 4  
Deep Water





## Mexico's first oil and gas independent company

1

**National & International  
Funding**

RIVER  
STONE

  
ENCAP INVESTMENTS L.P.



2

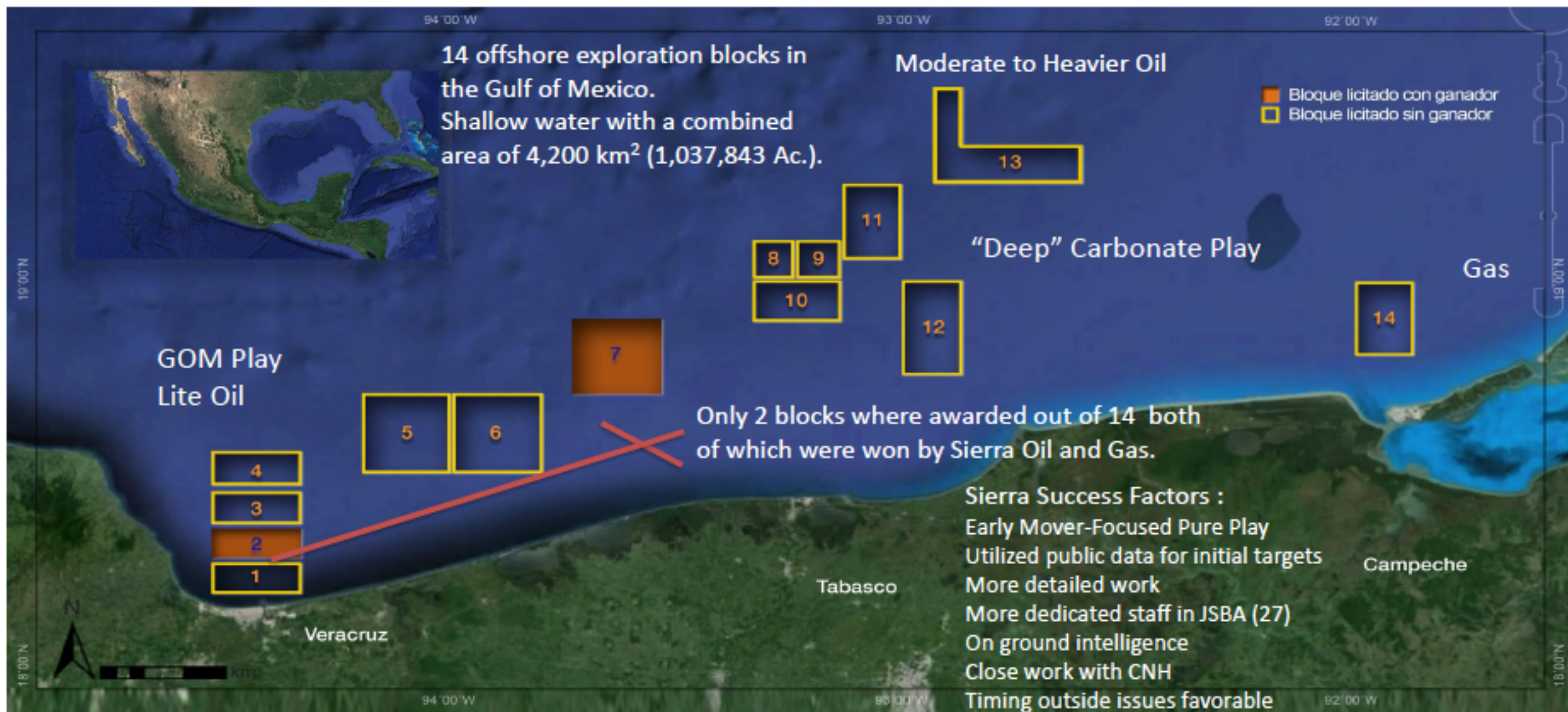
**World-class team in E&P  
Over 400 Years Direct Experience**

3

**Commitment to social & economic  
development**

PE funded in Sept 2014.  
Initial partnerships Dec 2014.  
Reform matures Q1 2015  
First Assets Mexico Offshore June 2015 (Call 1).  
Ready For Bidding End Sept 2015 Call 2.  
Call 3 and selected field evaluations underway.  
First Midstream project in Q4 2015.

# Blocks Round 1 – Call 1 (Offshore shallow waters)





## Bid Round Results Example : Block 7



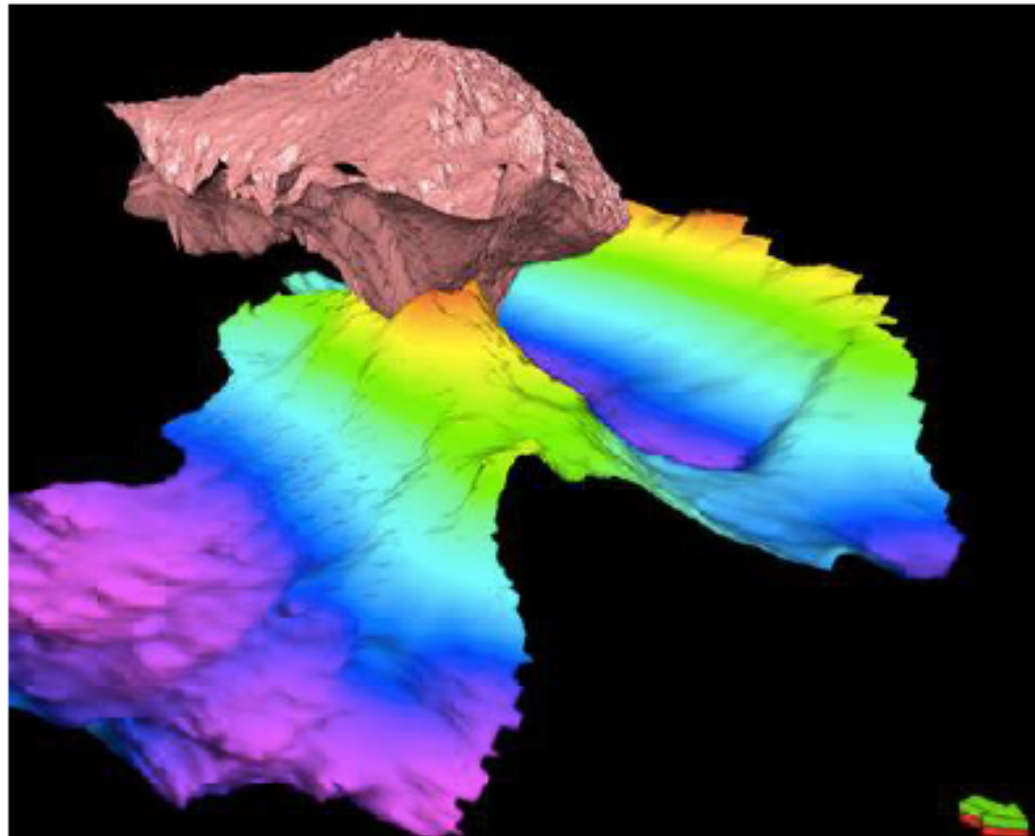
### Resumen de resultados del Área Contractual 7

Individual Company or Consortium	Profit Oil (%)	AIF (%)	Score
<b>Minimum Required</b>	40.00	0	
Sierra Oil & Gas S. de R.L. de C.V., Talos Energy LLC y Premier Oil PLC.	68.99	10	63.672
Statoil E&P México S.A. de C.V.	65.00	86	63.136
Hunt Overseas Oil Company	65.11	15	60.535
Eni International B.V. y Casa Exploration L.P.	57.00	20	53.536
E&P Hidrocarburos y Servicios S.A de C.V. y Pan American Energy LLC.	27.26	6	Desechada
Atlantic Rim México S. de R.L. de C.V.	0.00	0	No presenta
Cobalt Energía de México S. de R.L. de C.V.	0.00	0	No presenta
Murphy Worldwide Inc. y Petronas Carigali International E&P B.V.	0.00	0	No presenta
ONGC Videsh Limited	0.00	0	No presenta

**0.536 (0.84%)  
Difference in  
points**



### Sub Salt Exploration Play Offshore Mexico



### Suggested Improvements:

- Access to early 3D Data will be key to developing technical excellence.
- Access to regular acreage offerings offshore with large areas to stimulate industry.
- Tax with a moderate Royalty for onshore exploration
- Competitive fiscal terms. Drop the R Factor .
- Field areas should include exploration rights.
- Allow flexibility in bidding for Deep water Round.
- Develop incentives for example Pre Salt Deep Plays
- Unconventional assets at right time with tax incentives to promote interest.
- Move Migration contracts through a separate defined sales process. Extended timetable and confusion has turned off potential buyers.
- Flexibility on Bid Bonds vs Letter of Credit.
- New Regulatory groups need time to develop.





- Solid PE financial support having EP expertise and deep connections to industry. Portfolio company expertise adds strengths.
- First Mover advantage in all aspects.
- On ground presence and relationship building with regulatory decision makers gives us knowledge and reaction advantage.
- Data and geotechnical expertise drives decisions..... best people best data at right time.
- Partnerships in technology/data/studies, people. Align for cost efficiency. Ex UNAM, Halliburton etc.
- Building Operations capacity for access to near term cash flow via production and reserves in fields.
- Targeted Midstream plays.
- Pure Play-First Mover advantage to take advantage of high potential areas as industry wakes up.
- Established partner of choice in Mexico growth as a oil and gas destination.

# NEW AT THE TABLE.... HOW DOES IT FEEL ?



- A Big Responsibility (now part of the change)
- Busy, both sides doing this for the first time, with a complex contract to work through
- Need to Stay Focused
- Understand various technology plays in main reservoir zones of interest.
  - Seismic Imaging
  - Drilling
  - Production
- A very exciting future ahead !



**SIERRA**  
OIL & GAS



Thank you