



# Sureste Basin as an Emerging Big Oil Province

London  
October 2017

SIERRA  
OIL & GAS

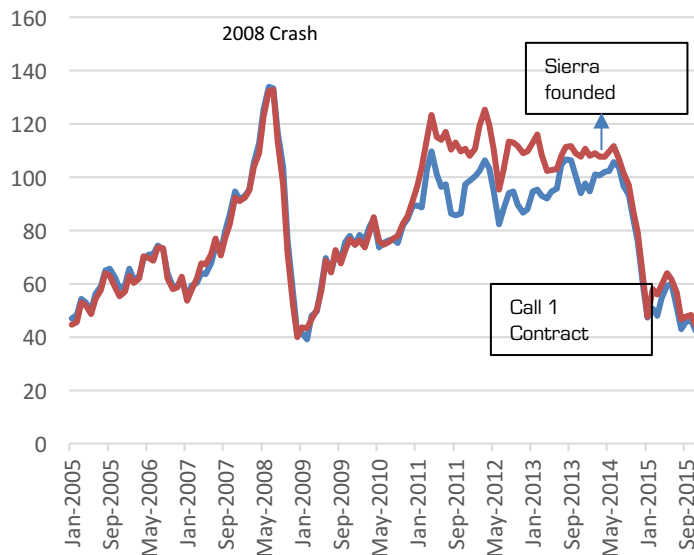


# Timing is Everything

## Strengths and Challenges



Brent and WTI Prices (2005-2015)

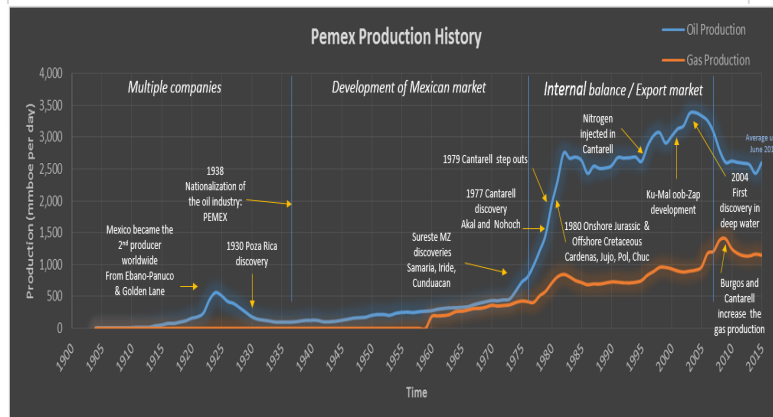


### Before Pena Nieto Reform:

- Mexico historically peaked 529k bopd (1904-1921)– 25% world's oil production
- Pemex Nationalization 1938. Producing 107,000 bopd
- Giant fields discovered that reversed decline up to 1MM bld (1977) peaking at 2.25M bld (1979) 3.4M b/d 2004
- Production declines
- 2008 Initial reforms and service contracts

### Extensive Mexico Reform Offering > 90bnbls

- High Quality Fast Process
  - Transparent
  - High qualification standards limits entry options
  - Evolving process creates a set of challenges
- Global oil price issues and lack of understanding of contracts affected interest in beginning
- Growing number of high quality players.
- Cycle is changing now ex Brasil Mexico
- Pemex as a new competing player has its own issues.
- Low cost service environment Reduced 5% to 40%.
- Large high quality talent pool.



# Sureste Basin

Mexico's Most Productive



MMMboe (billion barrels of oil equivalent)

Basin	Cum. Prod.	Reserves			Prospective Resources	
		1P (90%)	2P (50%)	3P (10%)	Conv.	Non Conv.
Southeastern	46.5	11.8	17.0	23.4	16.8	
Tampico Misantla	6.5	1.1	6.6	15.7	2.4	34.8
Burgos	2.4	0.3	0.5	0.7	3.0	10.8
Veracruz	0.8	0.2	0.2	0.3	1.4	0.6
Sabinas	0.1	0.0	0.0	0.1	0.4	14.0
Deepwater	0.0	0.1	0.4	2.0	27.1	
Yucatán Platform					1.5	
<b>Total</b>	<b>56.2</b>	<b>13.4</b>	<b>24.8</b>	<b>42.2</b>	<b>52.6</b>	<b>60.2</b>

Development and  
Exploitation  
Projects

Exploration  
Projects

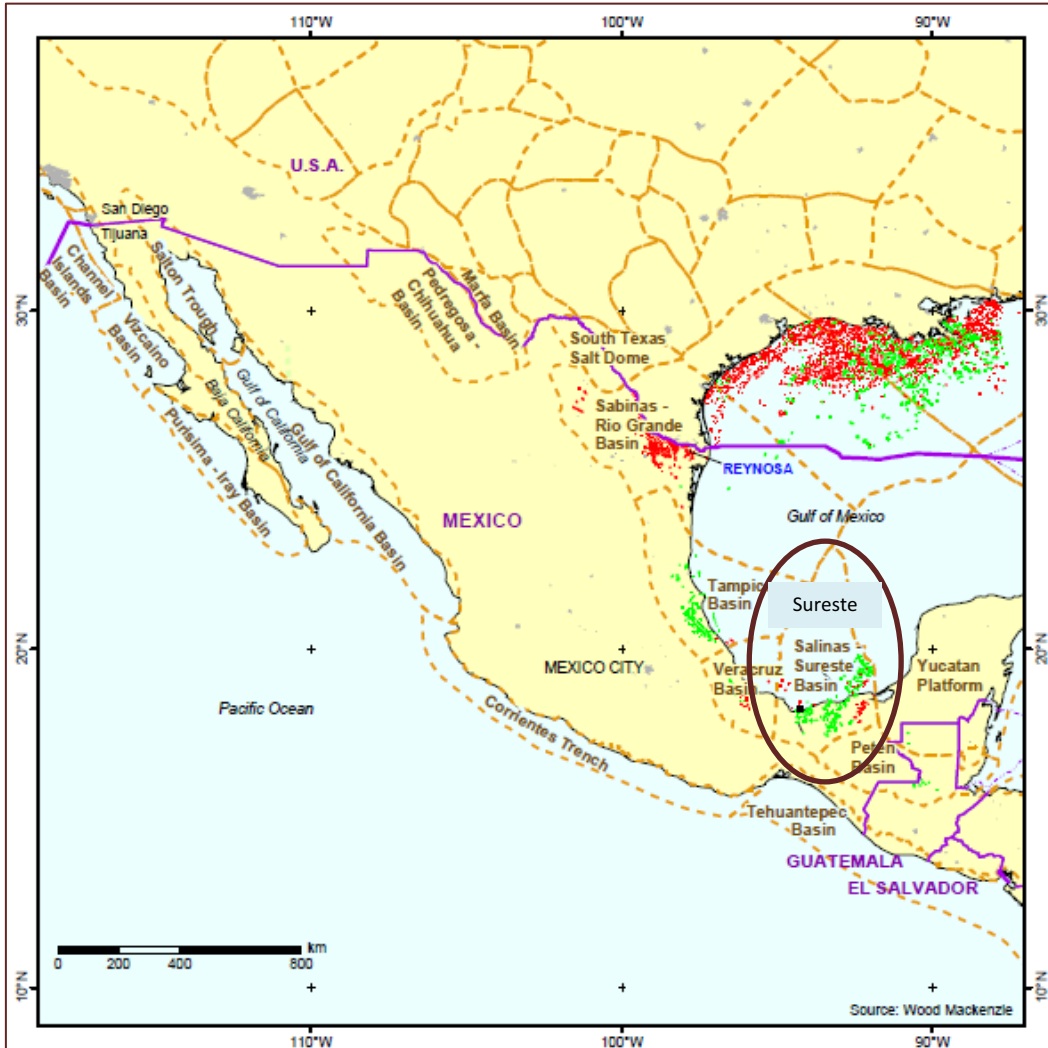
www.pemex.com

1 As of January 1, 2014.  
2 Numbers may not total due to rounding.



# Sureste Basin

## A World Class Oil Province



Sureste is a major proven petroleum province with 460 discoveries in 40 mm km<sup>2</sup> (1 billion acres), 61 bn bbl rec oil

Another 40 mm km<sup>2</sup> remains to be explored with only 14 wells drilled to date beyond Hokchi

- Same rich oil prone source rock, as US GOM (5% TOC, HI 600, 120 m thick av.) continues fully across basin, 50+ mmb / km<sup>2</sup> expelled
- Multiple stacked play systems including deep carbonates, shallow clastics only produced onshore Sureste to date (Pemex limited clastic experience)
- 250+ salt domes mapped across underexplored area on Sierra 3D, each with multiple trap potential
- Modern high technology 3D seismic to unlock USGOM style province faster & more effectively
- Only 8% of existing 450 fields have had reservoir simulation studies, average Rec Factor 25% by primary depletion, major IOR water flood and EOR potential exists, to date <5% fields with water flood

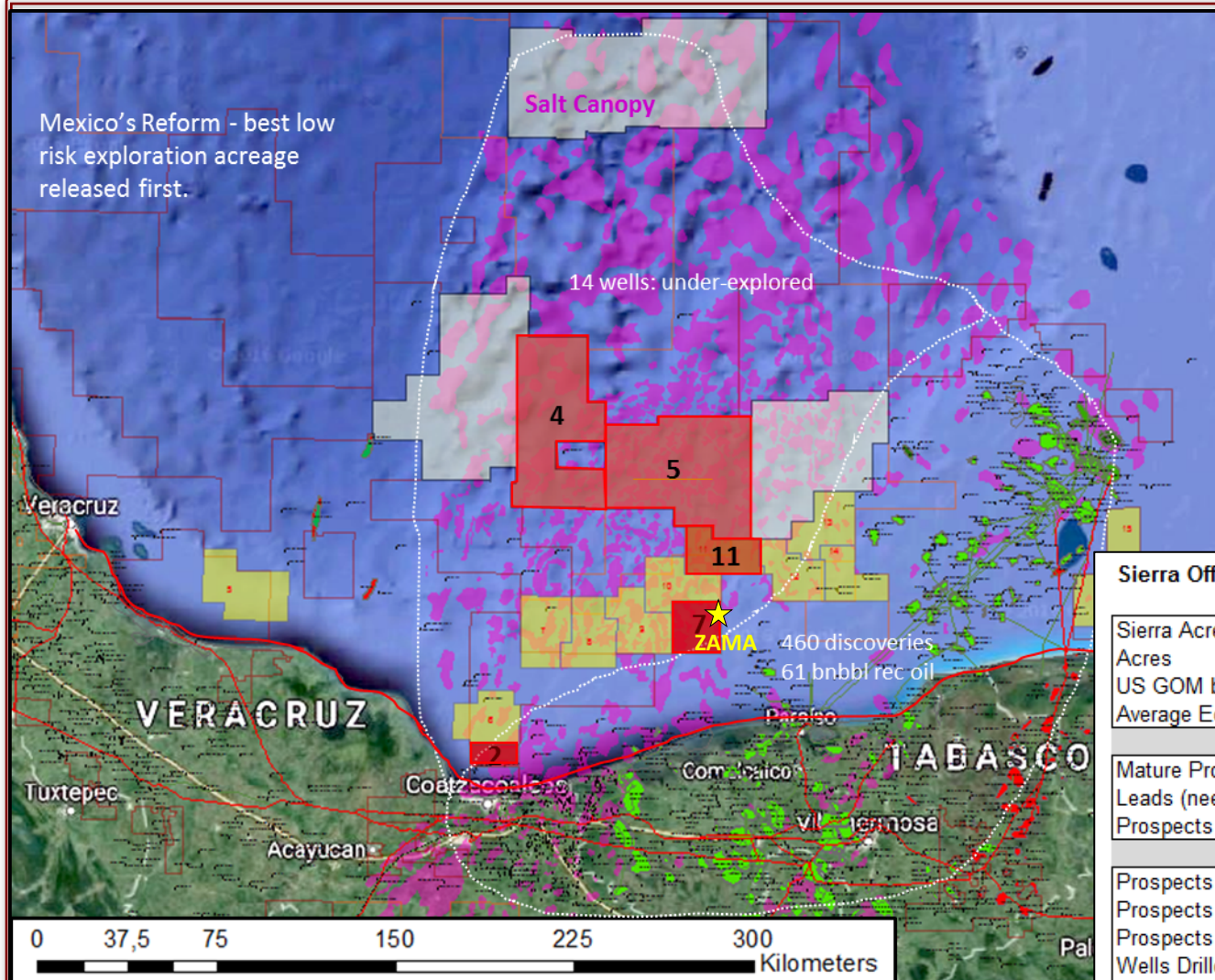
Key Issues being worked

- Reservoir Quality Understanding
- Charge Migration prediction from deep Jurassic SR to shallower reservoirs (some DHI support extra salt canopy)
- Energy to repressurize fields for IOR, EOR



# Sierra In The Offshore Sureste

## First Mover Advantage



- Sierra is involved in five offshore exploration leases, with an average 38% net equity
- Acreage position equivalent of > 300 US GOM leases in under-explored extension of prolific Reforma -Akai petroleum system, with only 14 wells drilled to date
- 59 prospects and leads identified to date
- Zama successful play test

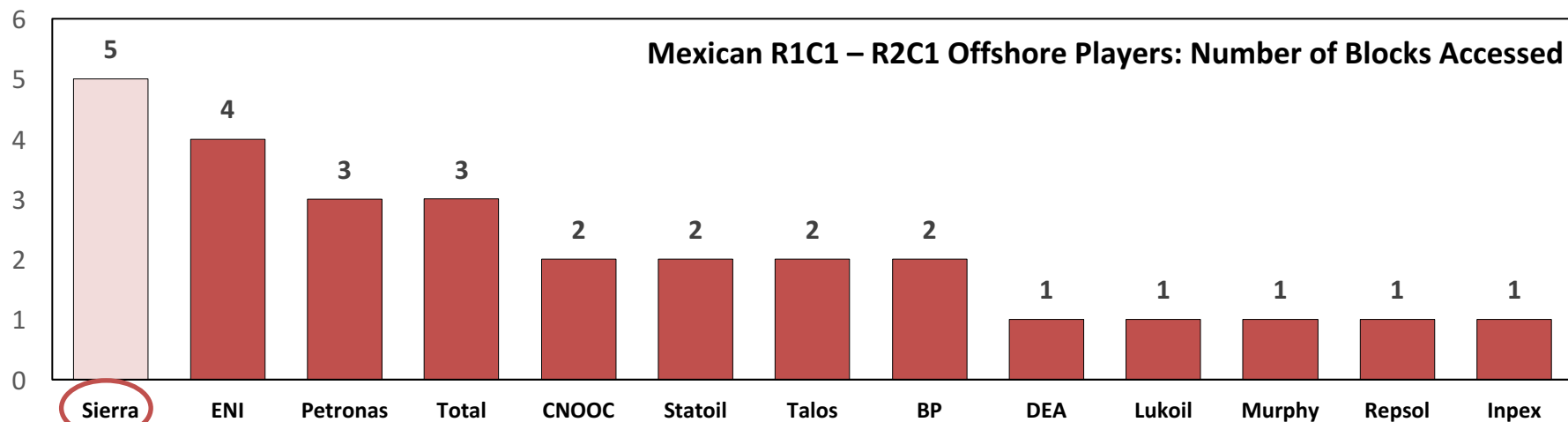
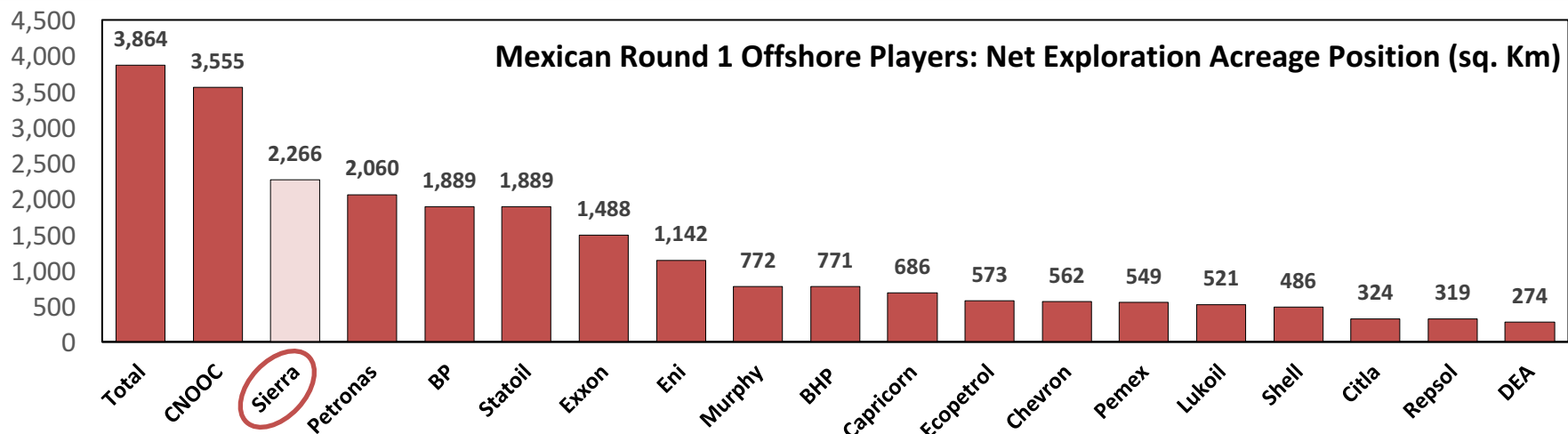
### Sierra Offshore Mexico Portfolio

Sierra Acreage (km2)	6124
Acres	1,512,74
US GOM blocks - equivalent	266
Average Equity interest (%)	0.38

Mature Prospects (volumes/risk)	30
Leads (need 3D trap maturation)	29
Prospects and Leads	59

Prospects in Zama charge fairway	18
Prospects w. DHI	8
Prospects >500m column height potential	5
Wells Drilled	1
Discoveries	2 zones

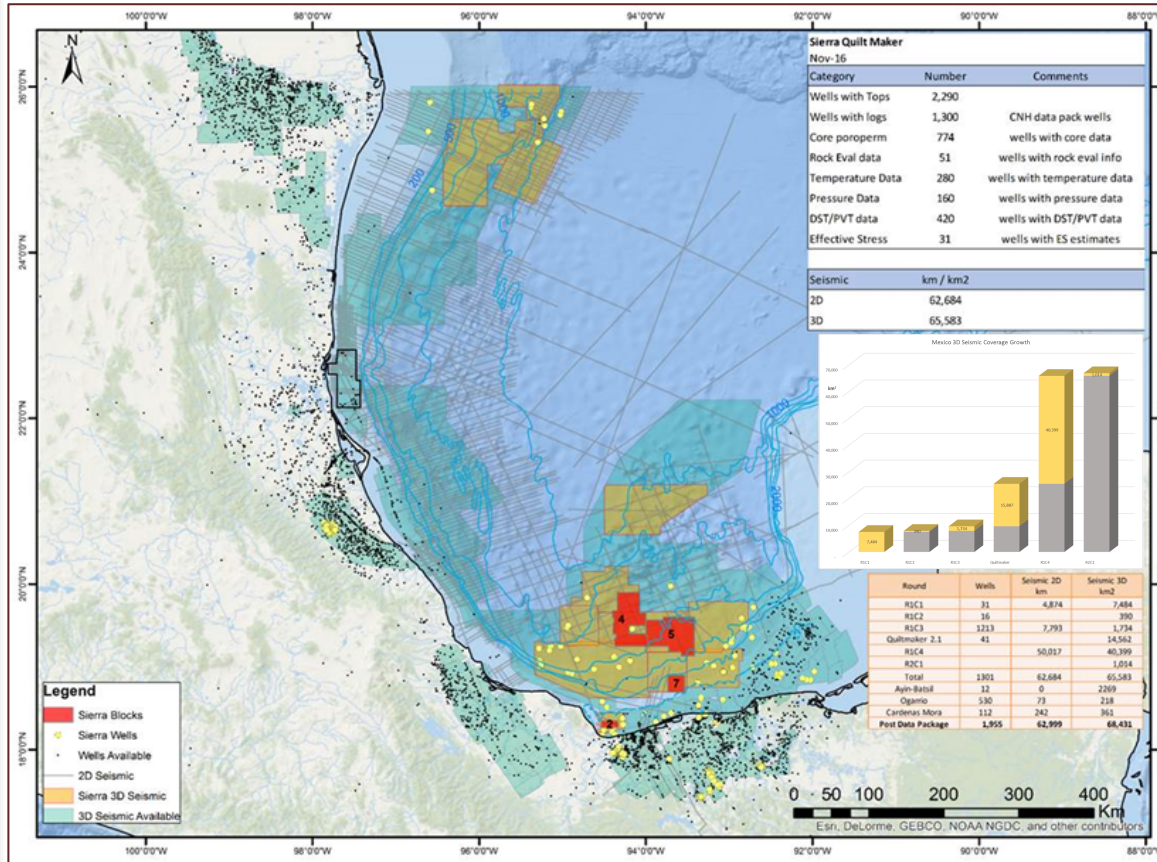
# Company Ranking by Net Acreage Position



Note: Some WI% are not disclosed yet but based on preliminary info TOTSA was assumed to have a 50/50 WI% split with XOM; STO/BP/TOTSA were assumed to have 33.3% WI ea; and CVX, PMX and Inpex were assumed to have 33.3% WI ea.

# Sierra's Data Base

People, Technology, and Data as Key Drivers of Success



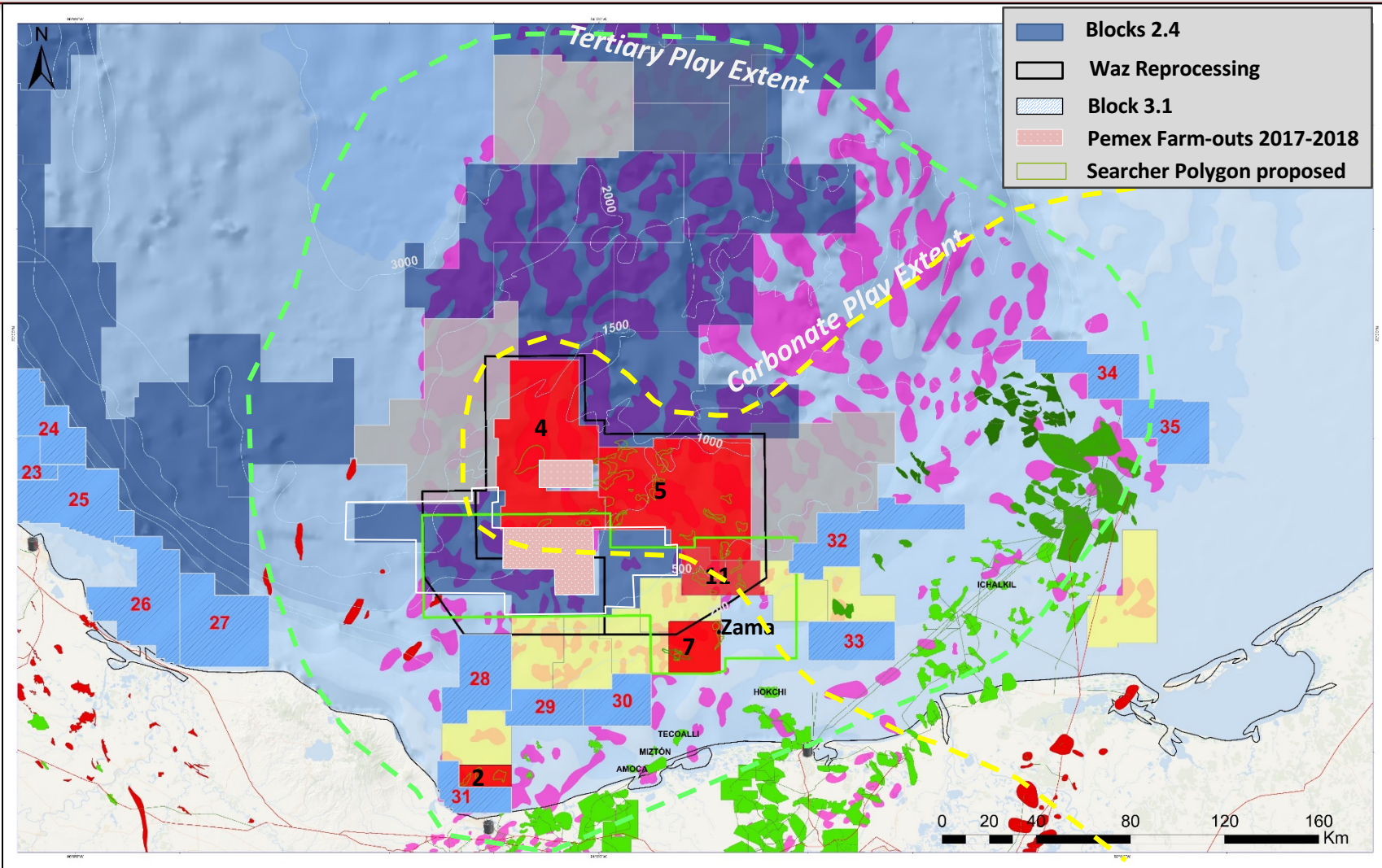
- Sierra has 8 master data bases divided into:
  - Well tops
  - Temperature-Pressure
  - Fluid data (DST and PVT)
  - Porosity and Permeability from cores
  - Rock-Eval
  - Check shot
  - Effective Stress
  - PI Discoveries
- Data bases are updated every time a bid round is concluded
- Information taken from data packs, public information, data room visits and core visits
- 5 dynamic models have been developed in fields offered in farm-outs and bid rounds.
- 2 master projects (north and south of Mexico) developed in software visualizing platform
- 2 master projects developed in petroleum system modelling

**Positioning as Partner of Choice**



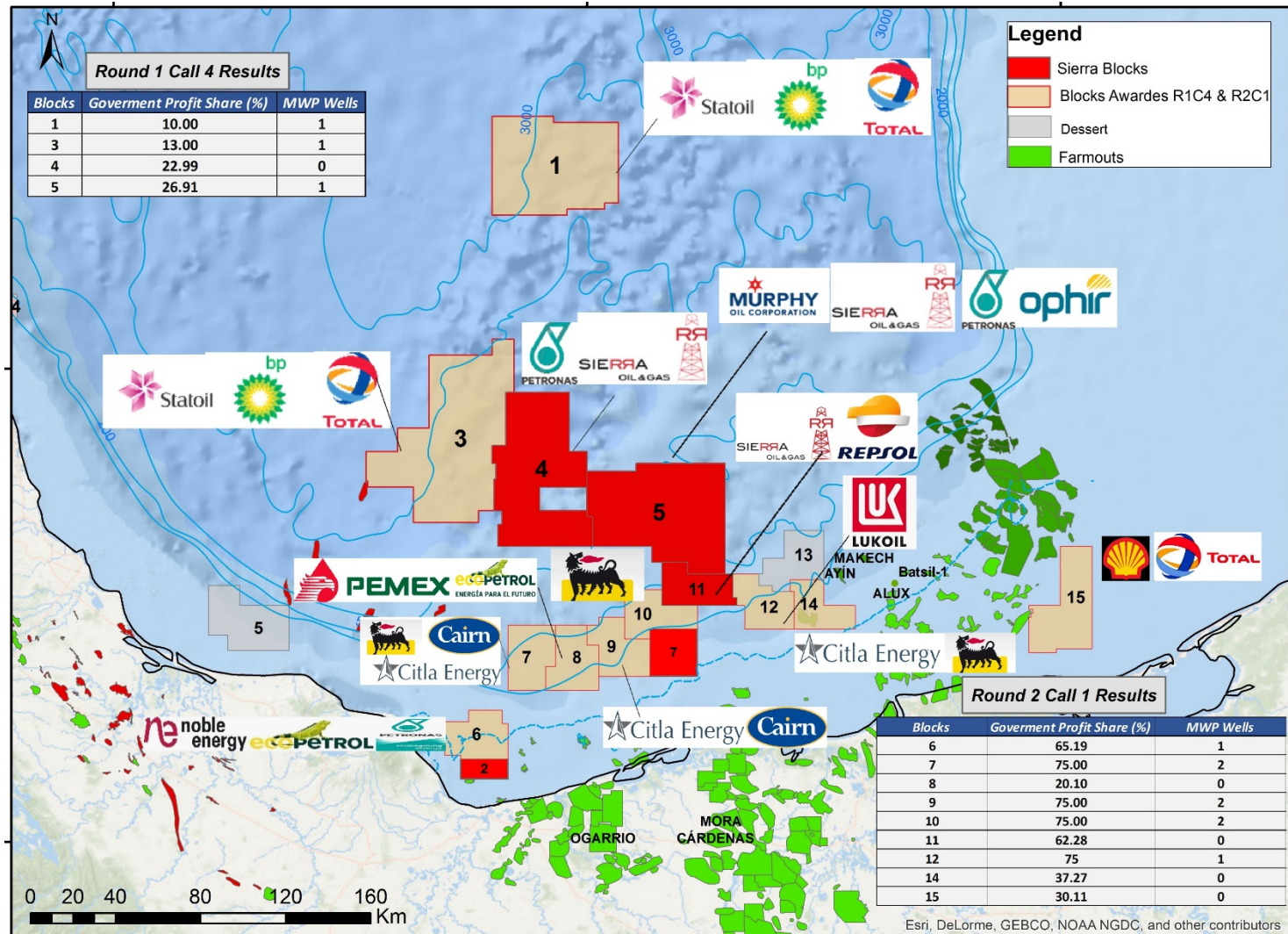
# Sierra Assets And Priorities

Zama, De-risk Portfolio And Continue To Evaluate Selective Opportunities



# Call 1.4 & 2.1 Results

## Winning Bids







**RIGZONE**

**Mexico Oil Privatization Pays Off With Billion-Barrel Find**

**THE WALL STREET JOURNAL.**

## Investors Find Major Oil Deposit in Gulf of Mexico

Premier Oil, Talos Energy and Sierra Oil & Gas uncover 'world-class' formation in boon for Mexican government



"The Zama discovery by Talos is the most important achievement so far of the Mexico's Energy Reform. According to our data, Zama is one of the 20 largest shallow-water fields discovered globally in the past 20 years," said Pablo Medina, an analyst at industry consultancy Wood Mackenzie.

**The New York Times**

## Oil Discoveries Suggest Mexico's Bet to Open Energy Sector Is Paying Off

The consortium, made up of Premier Oil of Britain, as well as Talos Energy of Texas and the Mexican company Sierra Oil and Gas, said that it had [discovered a field](#) containing more than one billion barrels of oil in shallow water 40 miles off the Mexican coast. Riverstone Holdings, an American [private equity](#) firm that specializes in energy investments, owns 45 percent of Talos Energy and 43 percent of Sierra Oil and Gas.

Sierra Oil & Gas Announces Major Oil Discovery Offshore Mexico

London, UK (12 July 2017) – Sierra Oil & Gas, a Riverstone Energy Limited ("REL") portfolio company, has announced that the Zama 1 well has discovered significant quantities of oil in its primary target formation.

### RIVERSTONE ENERGY INVESTMENT SIERRA OIL & GAS MAKES MAJOR DISCOVERY

Ivan Sandra, Sierra's CEO, stated "we are extremely happy with the results and look forward to finalizing drilling operations of the well safely over the coming weeks. The Block 7 consortium is formed by three companies that, together, bring highly specialized technical skills, hundreds of years of accumulated industry experience, and robust financial capacity. This first result is extremely encouraging for Sierra, for our partners, and above all for Mexico.

Zama Oil Discovery, Mexico

offshore  
technology.com



The Zama oil discovery is located in Block 7 of the Sureste Basin off the shore of Mexico, at a water depth of roughly 165m.

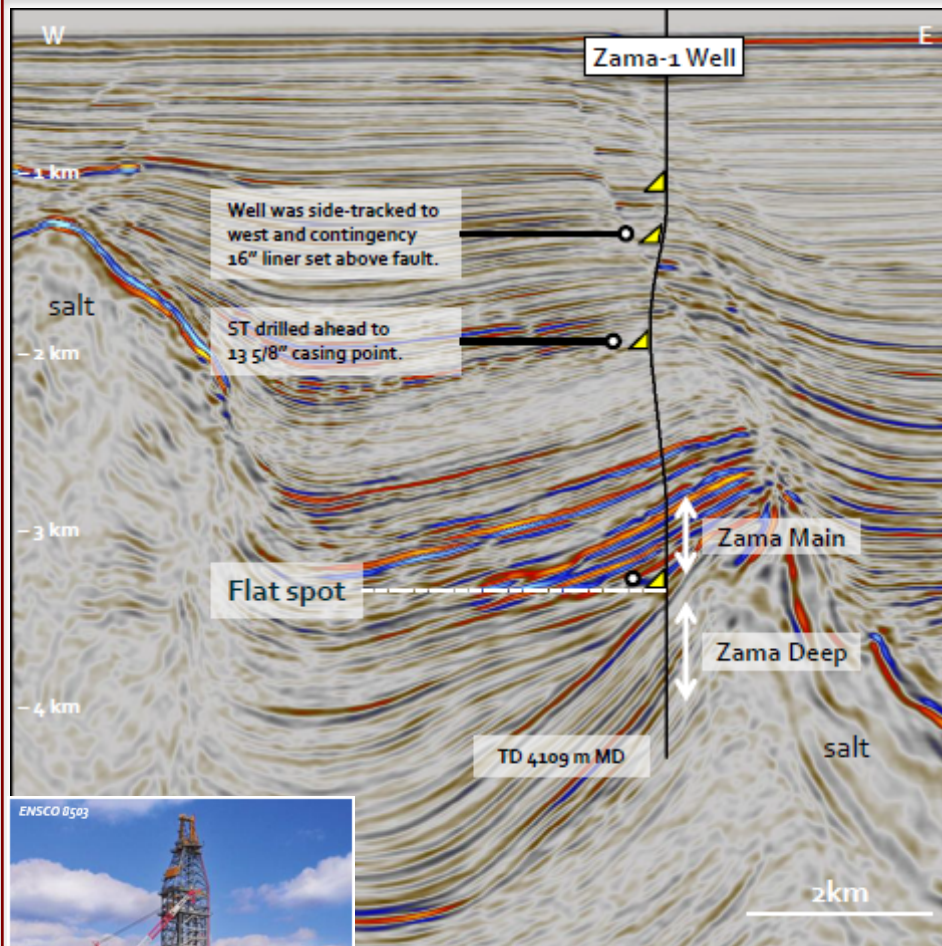
## Bloomberg Billion-Barrel Mexico | Find Could Spur Rush on Next Oil Auctions

A billion-barrel crude discovery in Mexico could be just the lure the country needs to boost investment from oil majors as it lacks the wherewithal to reverse years of sagging output.

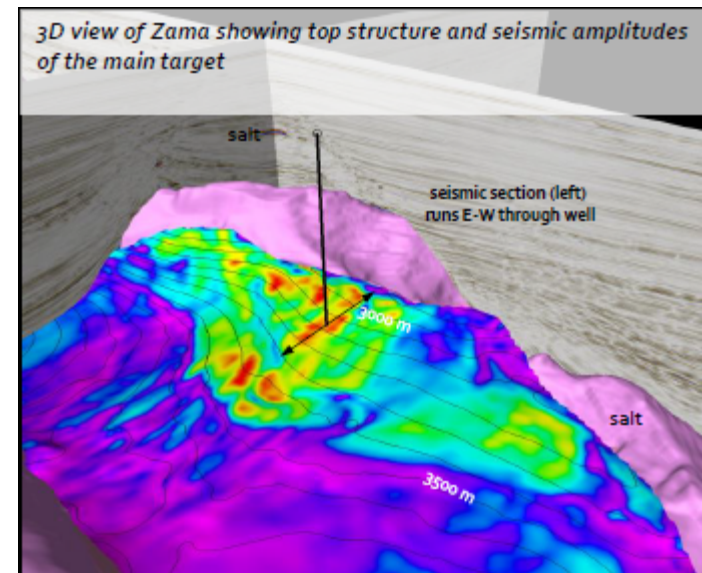


# Zama-1 July 2014

## First Exploration Discovery Of The Energy Reform

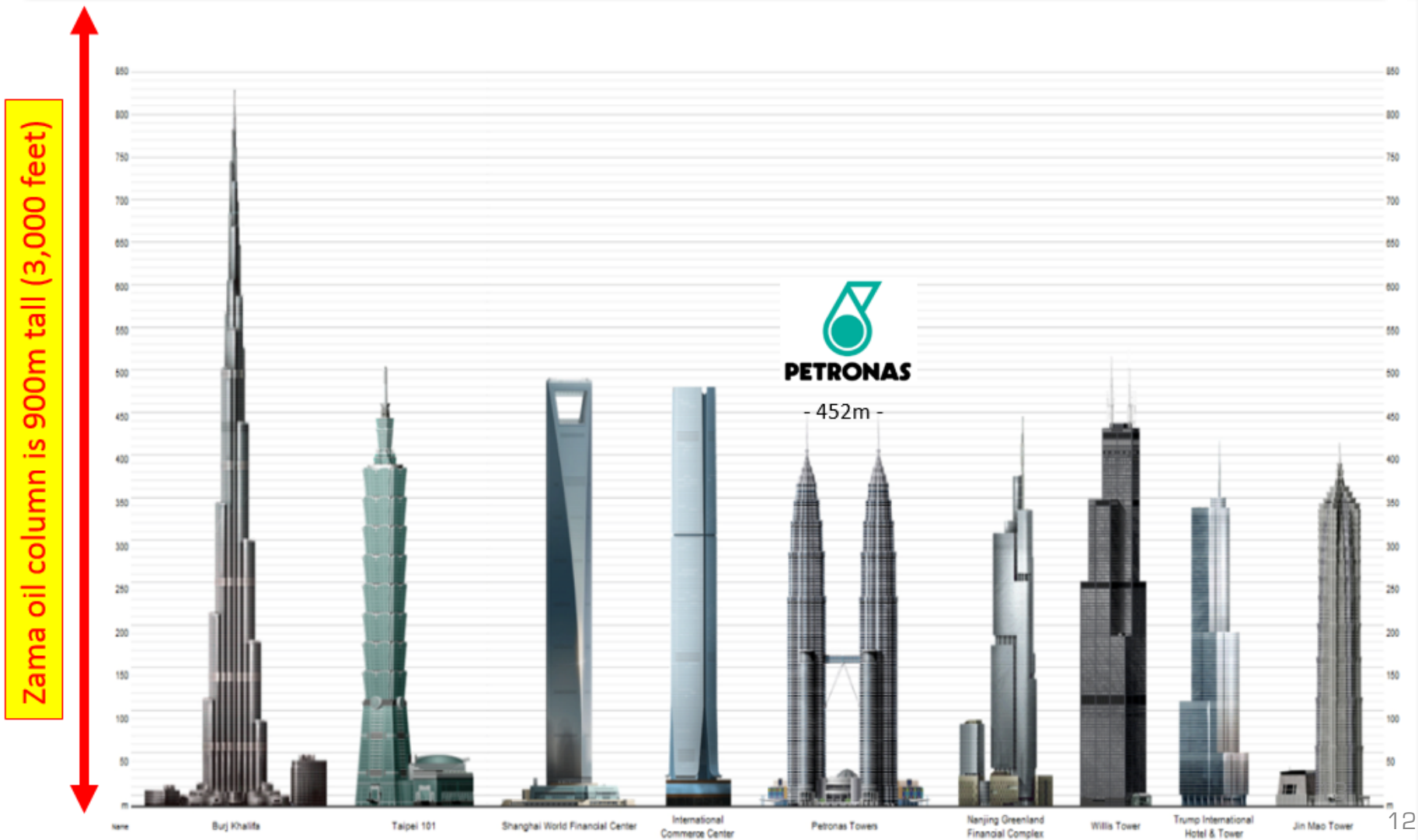


- Reached a total depth of 13,480ft (4,109m)
- Well results confirmed the base of the reservoir section, with no penetration of an oil-water-contact
- The initial oil in-place volumes for the Zama-1 well are from 1.5 to 2.0 billion barrels
- The well encountered over 1,100ft (335m) of gross contiguous pay in Upper Miocene oil-bearing sandstone reservoirs
- Drilled with ENSCO 8503 at a water depth of 166m

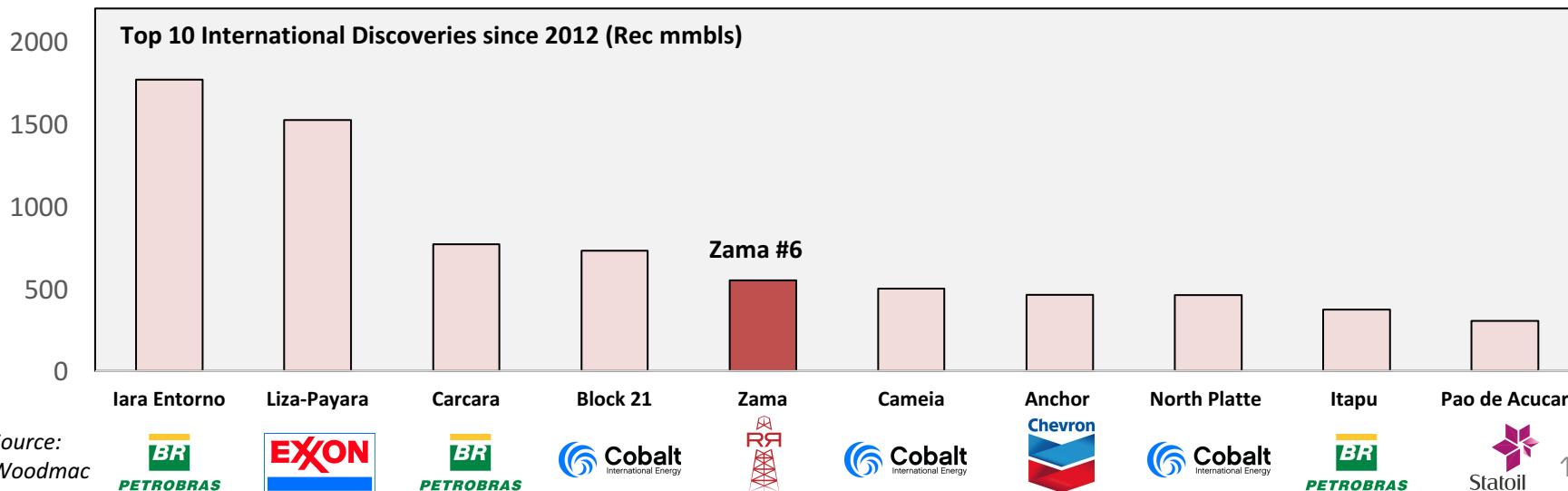
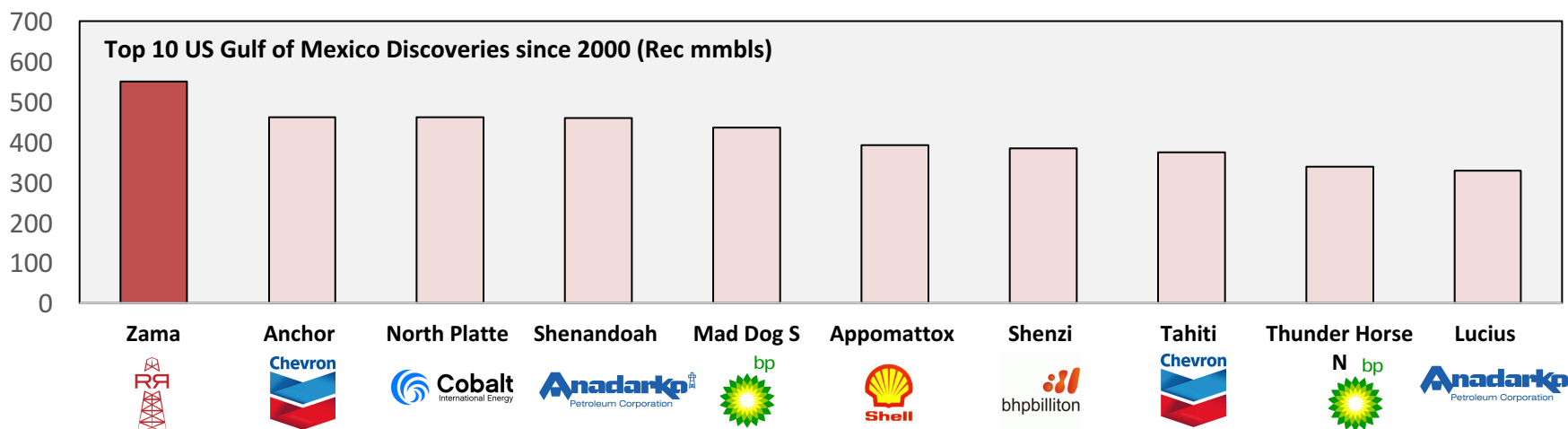


# What is Zama

## Size of Zama



# Zama's US GOM and International Ranking



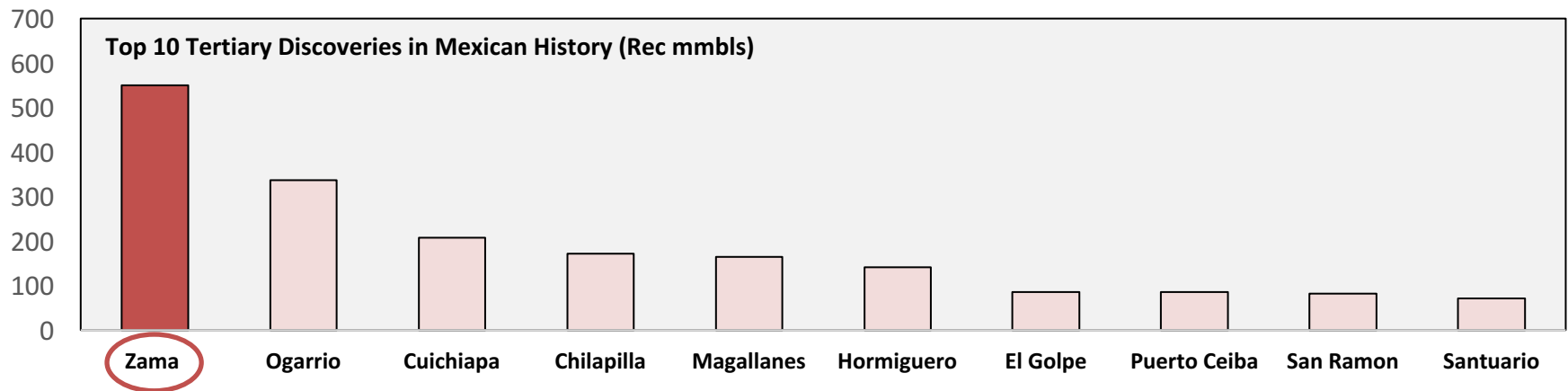
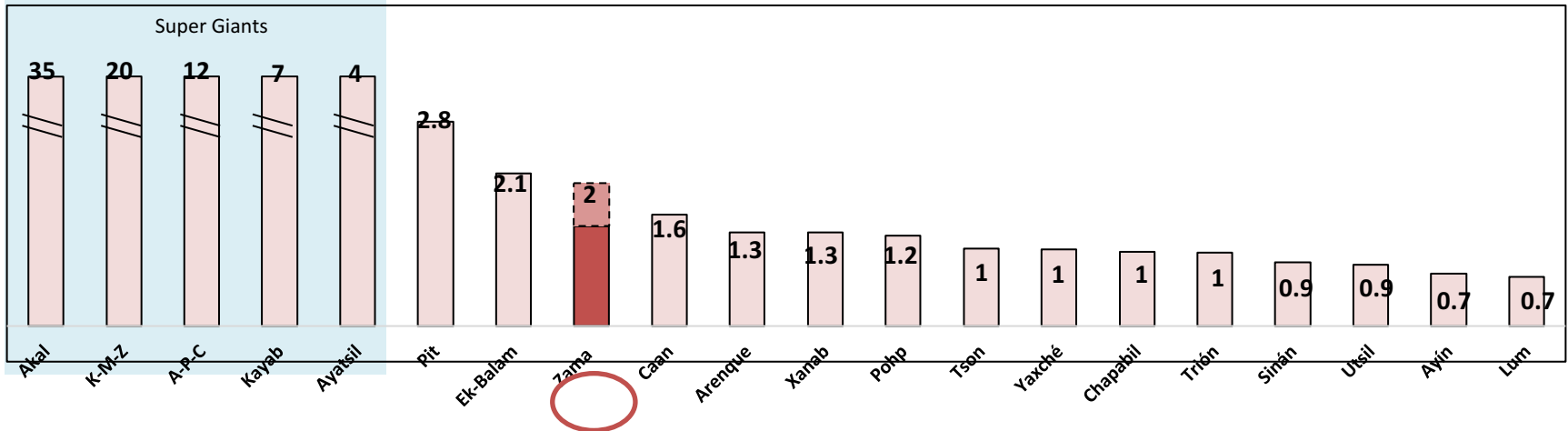
Source:  
Woodmac



# Zama's Mexico Ranking



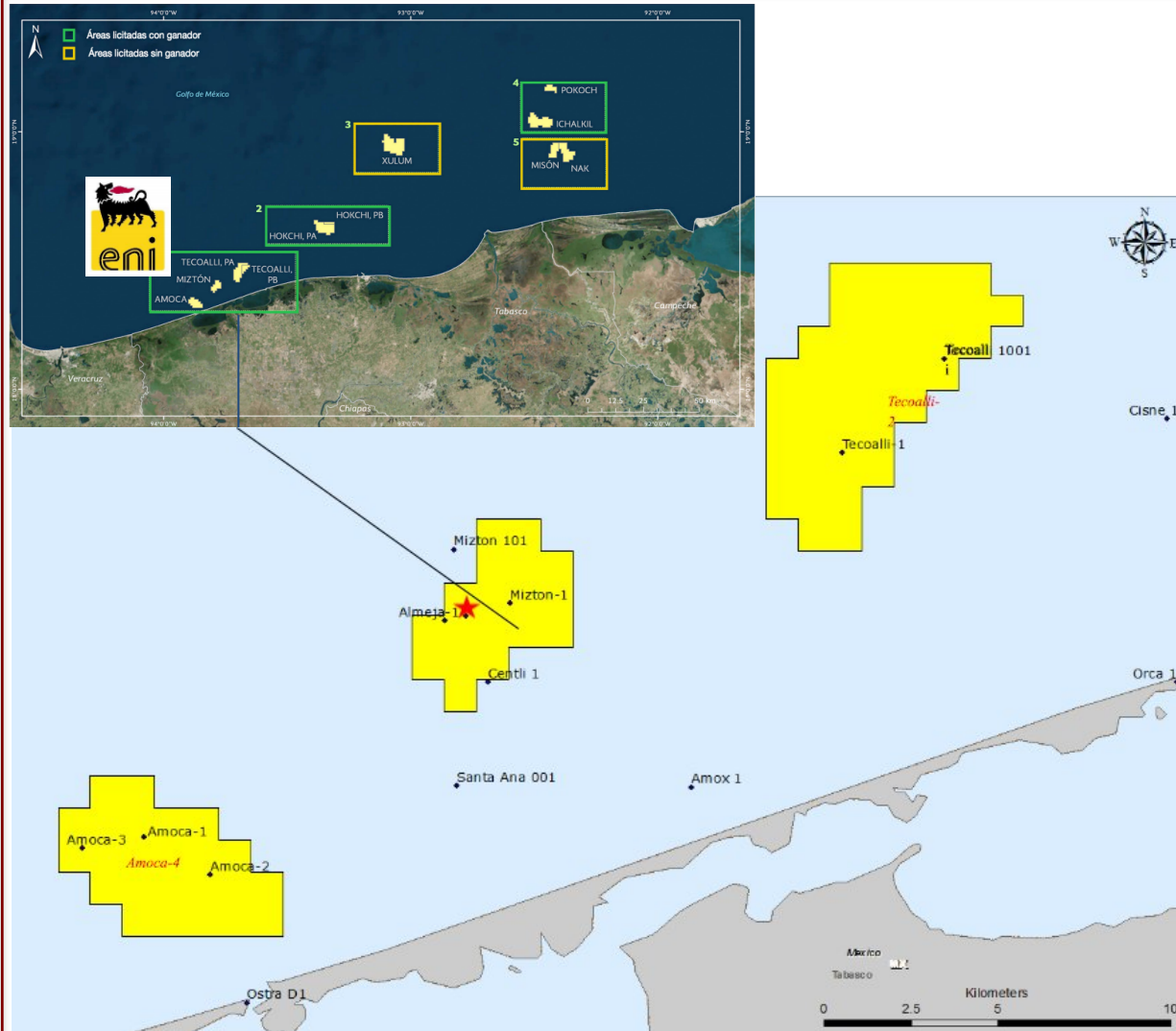
Top 20 Oil Discoveries in Mexican History (STOOIP Bn bls)



Source: CNH

# Sureste Basin Appraisals

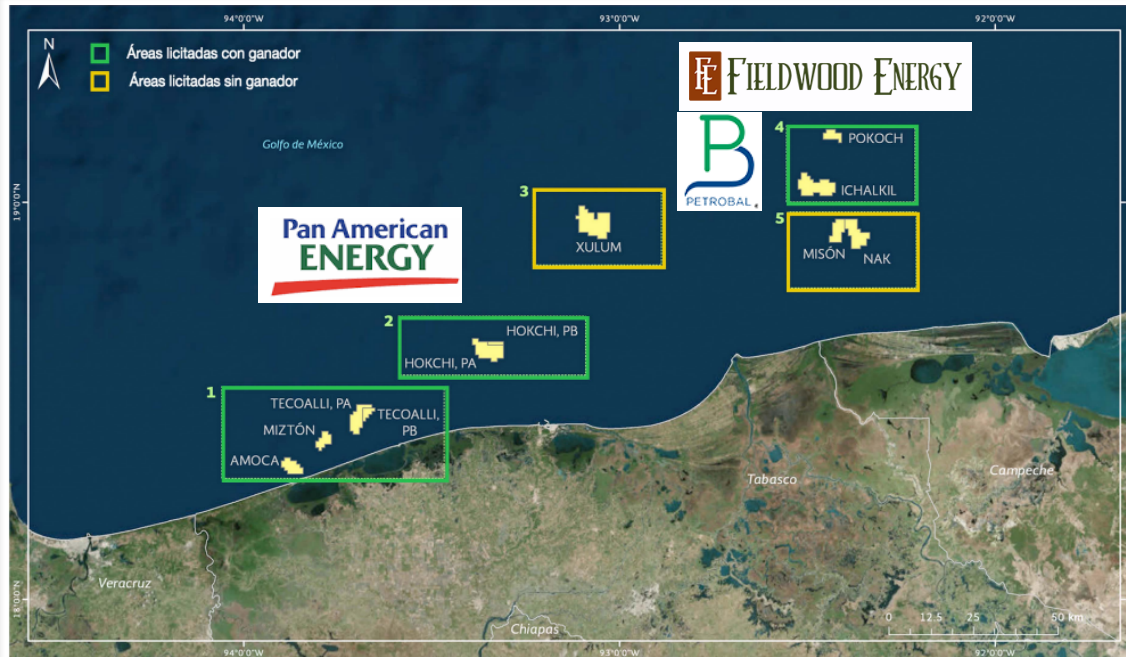
## Eni Round 1.2 AMT Area



- Eni drilled Amoca-2: 03/2017
- Amoca field:
  - Discovered by Pemex 2003
  - Amoca-2: 110m of net oil pay, 18° API
  - Amoca-3: 410m of net oil pay, 25-27° API
- Mizton field:
  - Discovered by Pemex 2003
  - Mizton-2: 280m of net oil pay, 28-30° API
- Resource potential of Area now 1 to 1.4Bboe
- The exploration campaign will continue with the drilling of a well on the Tecoalli discovery (2008)
- Round 2.1, Eni signed three new E&P licenses for Blocks 7, 10 and 14, all located in the Sureste Basin

# Sureste Basin Appraisals

## PanAmerican/Fieldwood Round 1.2 Hokchi and Ichakali Areas



Block 2 awarded: Pan American Energy and E&P Hidrocarburos and Servicios

- Discovered by Pemex 2009
- Hokchi field: 61 mmbbl of light oil and 29 Bcf of gas
- Activities:
  - Hokchi-2DEL (01/2017)
  - Hokchi-3DEL (02/2017)
  - Hokchi-4DEL (05/2017)
    - 29.4°API
  - Hokchi-5DEL (07/2017)
  - Hokchi-6DEL (in progress)

Block 4 awarded: Fieldwood Energy (50%) and Petrobal (50%)

- Discovered by Pemex 2005
- Ichalkil and Pokoch fields: 68 mmbbl of light oil and 92 Bcf of gas
- Ichalkil-2DEL (02/2017)
- Pokoch-1DEL (06/2017)



# Onshore Pemex Farmouts

## Bid Round Results-The Mexican Premium



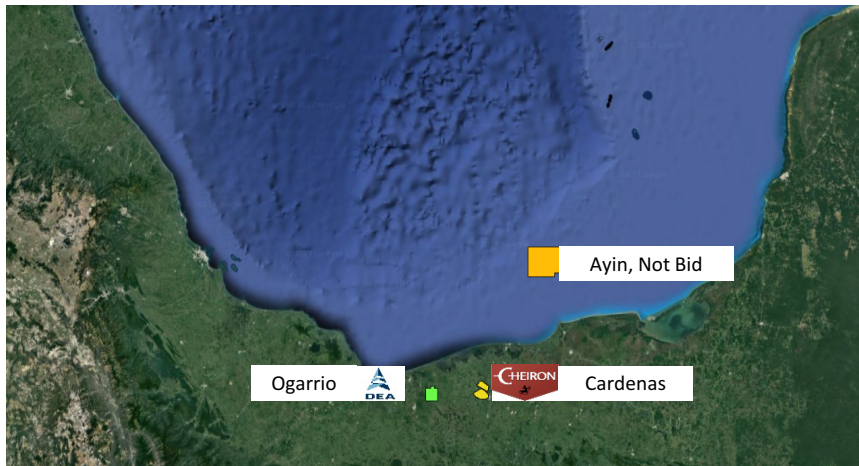
### Executive Summary

- Ogarrio was the most contested asset with 4 bids. DEA won by offering the maximum additional royalty possible (13%) and additional bonus of **\$213.87 MM** on top of the **\$190 MM** required by Pemex. DEA offer four folded the second highest bid from California Resources & Petrobal with an additional royalty of 13% and a signing bonus of \$52 MM.
- Cardenas-Mora received 2 bids. Cheiron outbid Gran Tierra & Sierra by offering the maximum additional royalty possible (13%) and an additional bonus of **\$41.5 MM** on top of the **\$125 MM** required by Pemex.

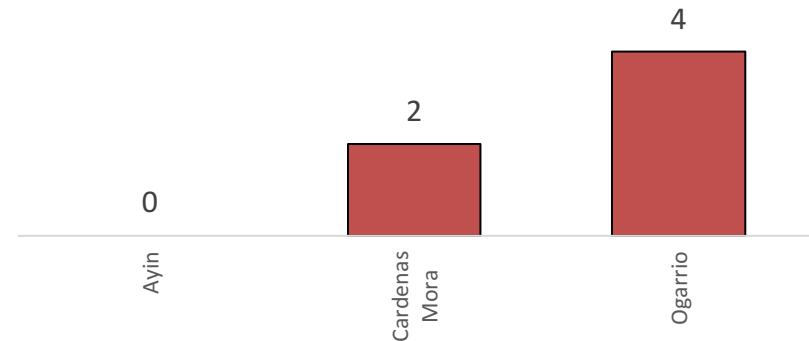
PSC Block	Bid Rank	Add. Royalty	Total Cash	Block Characteristics
Ayin		Dessert	Dessert	-1,091 km2 - ~23 API

License Block	Bid Rank	Add. Royalty	Total Cash Exposed <sup>1</sup>	Block Characteristics
Cardenas	1	Cheiron	13%	\$167 MM
	2	Gran Tierra/Sierra	5.09%	\$125 MM
Ogarrio	1	DEA	13%	\$404 MM
	2	California/Petrobal	13%	\$242 MM

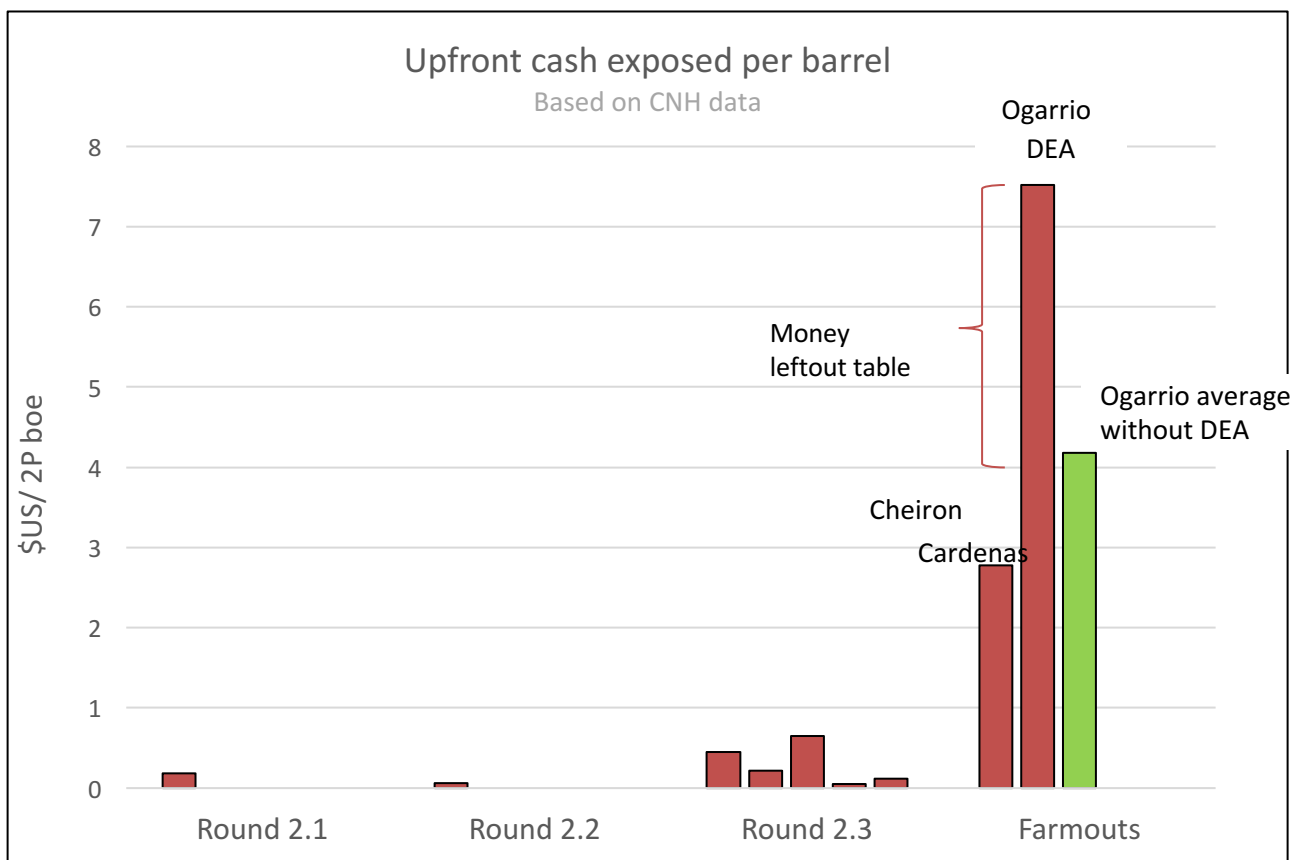


Farmouts, bids per block



<sup>1</sup> Includes mandatory and additional cash bonus

# Mexico Rounds Upfront Cash Exposed Per Barrel



# Mexico And Brazil Offer Some Of The Most Attractive Exploration Acreage Available



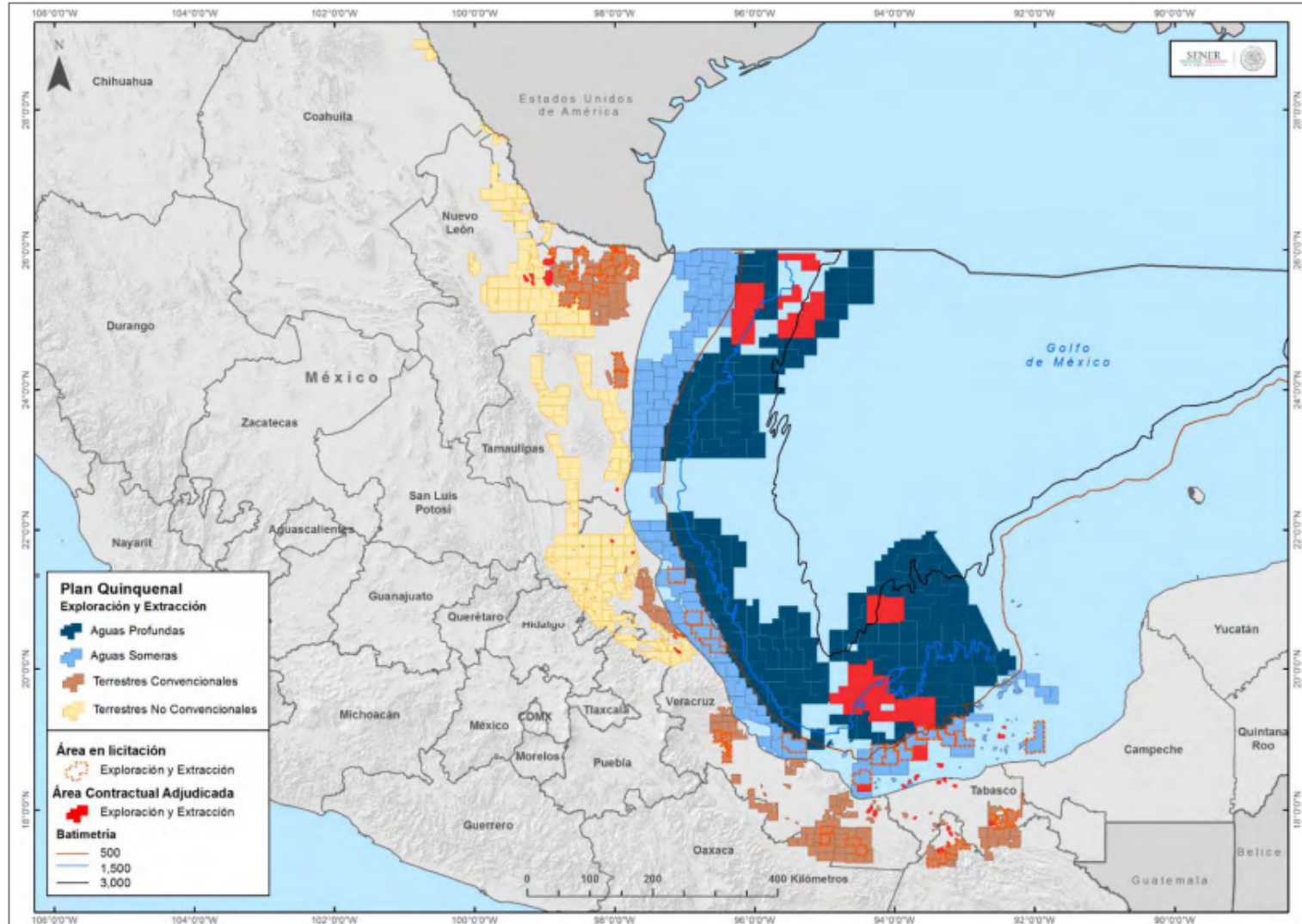
## Overall Bid Round Factors Comparison

	Brazil pre-salt	Mexico deepwater
<b>Materiality</b>	World's largest new oil play of recent years, over 22Bboe YTF	17 discoveries under 1300 mmboe discovered to date
<b>Fiscal Terms</b>	Heavy front-end loading; Flexible bidding element	Moderate taxation geared towards progressive royalty terms
<b>Maturity</b>	Abrupt heterogeneity in porosity distribution, uncertain flow rates	Frontier. Play remains underexplored with only a handful of wells drilled to date
<b>Access</b>	"Over"-supply of acreage in short-term; bid calendar to 2019	Country has successfully improved each round with lessons learned
<b>Other issues</b>	Environmental license timing unknown	Lack of infrastructure
<b>Competitive landscape</b>	In recent rounds, competitive landscape has been lukewarm; Bidders may face lower competition due to high signature bonus	Interest in almost every round since 2014 reform has been high. The most prospective acreage may be licensed at a premium
<b>Cycle times</b>	Multi-year delays induced by regulatory uncertainty (environmental licenses, unitization across various fiscal regimes) and issues around commercializing abundant associated gas	Uncertain at this stage, but can expect 4 to 5 years to first oil



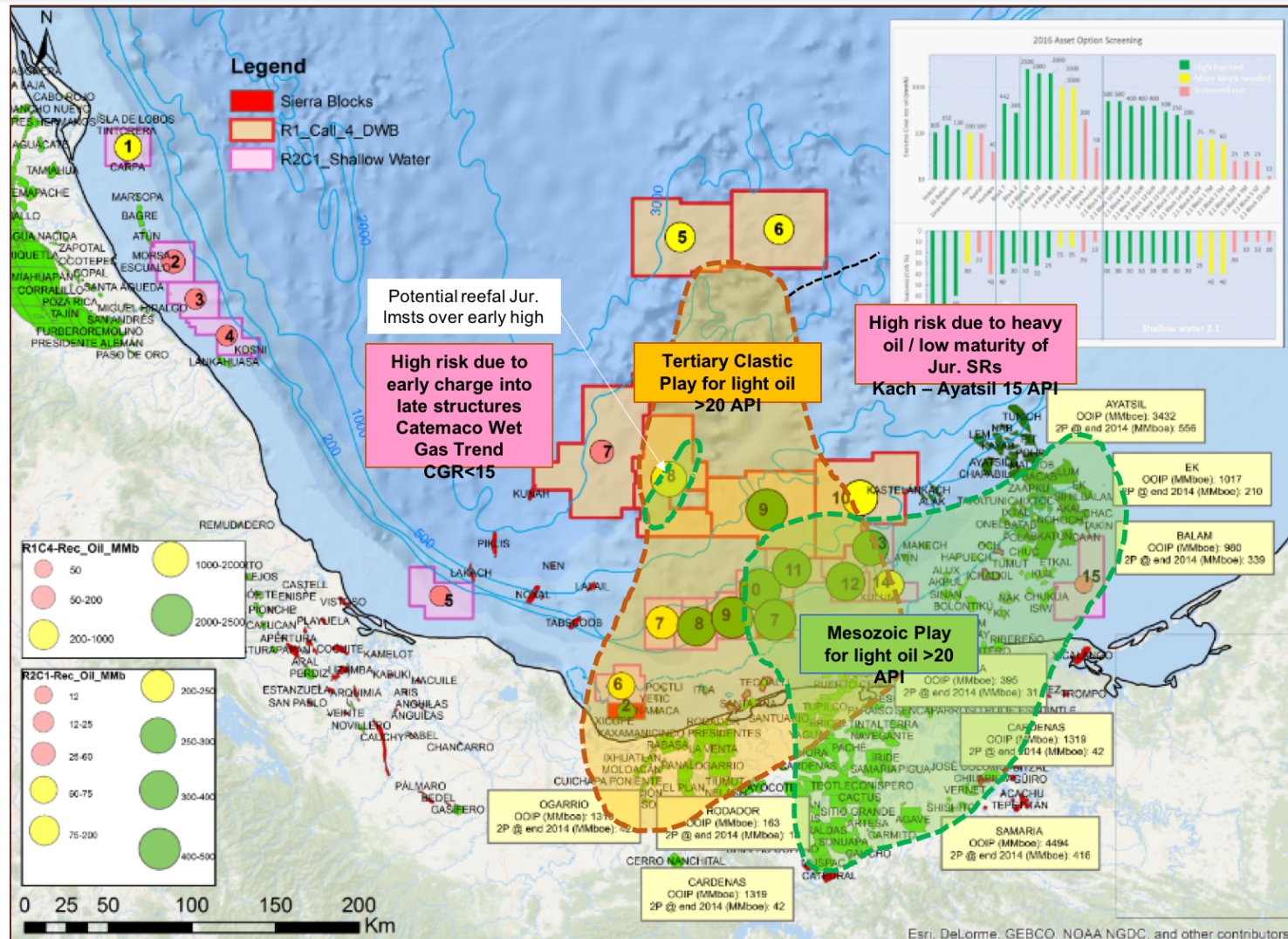
# What's Next ?

## CNH 5-year Plan



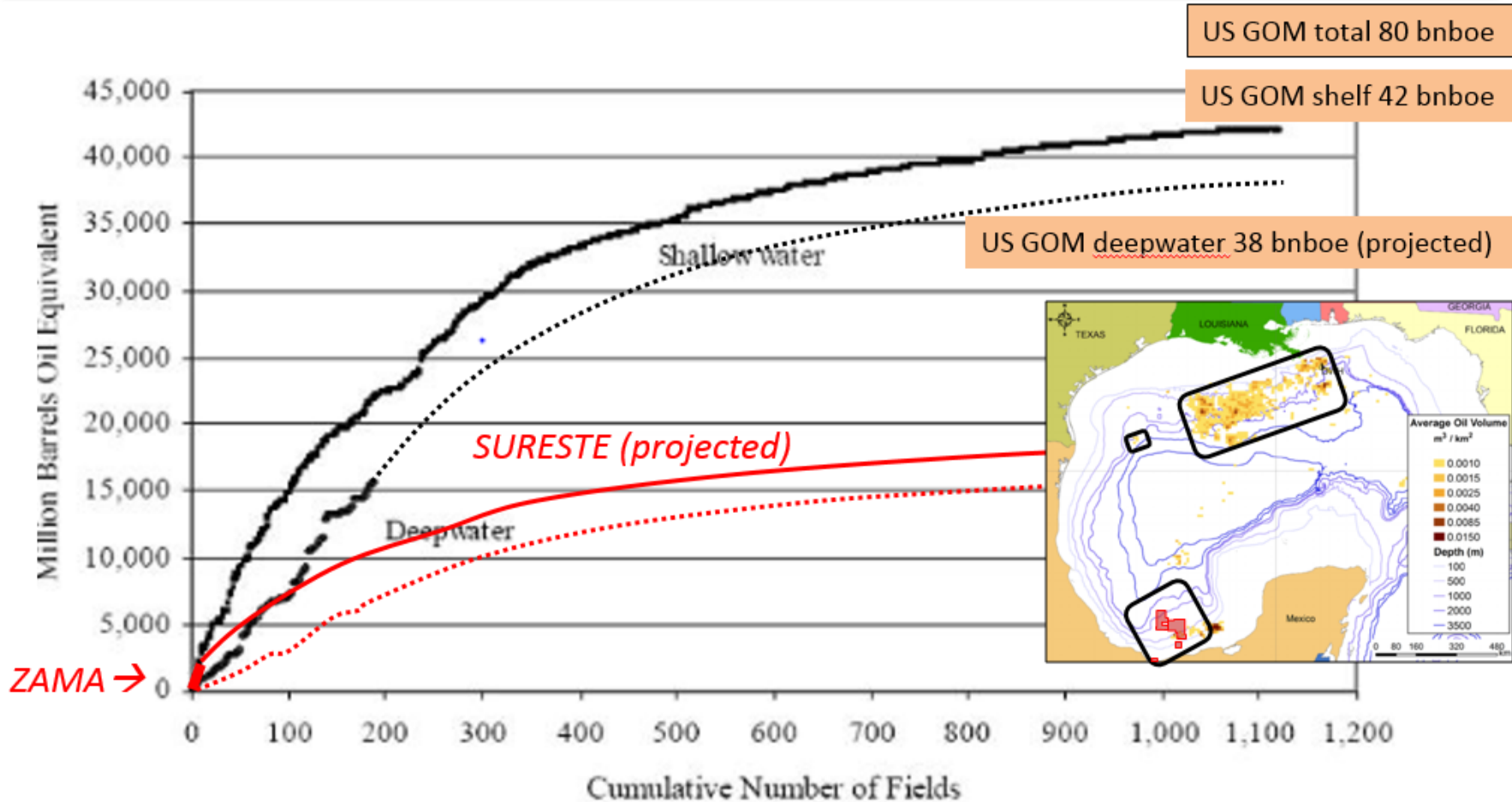
# Sureste Basin

## Understanding The Geology Is Key



# What The Future Could Hold

## Repeating the Tertiary Prize in Sureste



Sureste GOM Tertiary play area is 35% of US GOM productive area  
 should imply 30 bnboe present (Sierra consortia hold 25% .... 7.5 bnboe potential) @ 38% equity 3 bnboe



# North Americas Next Best Unconventional Play

## Shale Development Opportunity



### Mexico's Next Production Frontiers - Shale

#### Competitive Advantages

- Eagle Ford and Woodford have continuity across the border
- Bakken and Haynesville are analogues of plays in Mexico
- EIA estimates Mexico has the 6th largest shale reserve worldwide
- Geological and geochemical analyses have identified 6 potential shale oil/gas plays:
  - Chihuahua
  - Sabinas
  - Burro-Picachos
  - Burgos
  - Tampico-Misantla
  - Veracruz



# Development of a Secondary Market

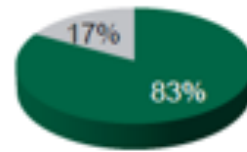
What will Pemex look like in 3 Years ?



## Round Zero Resolution

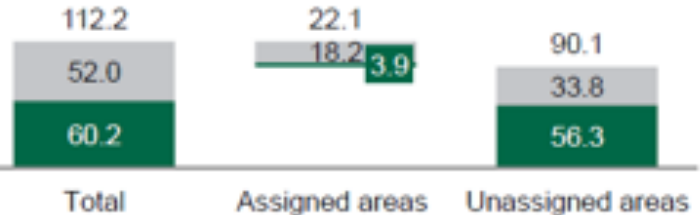
Area	2P Reserves	Prospective Resources
	MMMboe	MMMboe
Conventional	20,589	18,222
Shallow Waters	11,374	7,472
Onshore: Chicontepec	3,556	-
Onshore: Other <sup>1</sup>	5,263	5,913
Deepwater <sup>2</sup>	397	4,837
Non-conventional	-	3,904
<b>Total</b>	<b>20,589</b>	<b>22,126</b>

**2P Reserves**  
MMMboe  
100% = 24.8



■ Requested and assigned areas  
■ Unrequested areas

**Total prospective resources**  
MMMboe



**% of prospective resources**

**21%**

**79%**

### Resolution

PEMEX obtained:

- 100% of its 2P Reserves request.
- 67% of its Prospective Resources request.

### Rationale

Sustain current output levels, while holding onto strategic exploratory prospects to facilitate organic growth in the future.

### Objective

Strengthen PEMEX and maximize its long-term value for the Mexico.

[www.pemex.com](http://www.pemex.com)

<sup>1</sup> Includes: Southern, Burgos and other Northern.

<sup>2</sup> Includes: Perdido and Hoot-Man.

Note: Reserves as of January 1, 2014.

Note: This slide is presented based on the announcement and reports made by the Ministry of Energy.

Significant opportunities for investment will exist with Pemex

# Despite Low Oil Prices, Mexico Presents Ideal Geologic And Contractual Conditions For Competitive Investment



## 5 year bid round plan

- Entails total prospective resources and remaining volumes of more than 90 Bboe
- 25-50% recoverable

## Aggressive farm-out strategy

- Approximately 175 blocks for farm-out across onshore and offshore areas in conjunction with the new five-year plan

## Possible political changes open unique window of opportunity

- Current scale of E&P opportunities and the accompanying attractiveness of terms and conditions will not be sustained over the 2018–24 period
- The Peña Nieto government is in a race to secure as many upstream deals as possible before it leaves office

## Successful taxation plan

- Only two components made up government share: royalties or Take and income tax
- Royalties in Round 2.4 are composed of three elements: one related to oil price level, another related to profitability (using an R factor), and a flat rate that is biddable

## Lower upfront payments and higher IRR

- Strategies to restore exploration economics to profitability: reducing costs, avoid complexity, avoid tough fiscal regimes and add acreage at low cost
- Current conditions have lead to low appetite for high taxation and early expenditure commitments



# Challenges



- **CNH & Competition Pricing i.e. Smart Money May be out of market “Mexico Premium”**
- **Labor Unions**
- **Local Communities**
- **Presidential Election July 2018**
- **CNH Clarity- JOA’s with Pemex, environmental liabilities, contract recession, etc.**
- **Access to infrastructure and fees**
- **Unitization**



**Read Taylor**  
**Upstream Executive Director, Sierra Oil & Gas**

**email: [Read.Taylor@sierraoil.mx](mailto:Read.Taylor@sierraoil.mx)**