

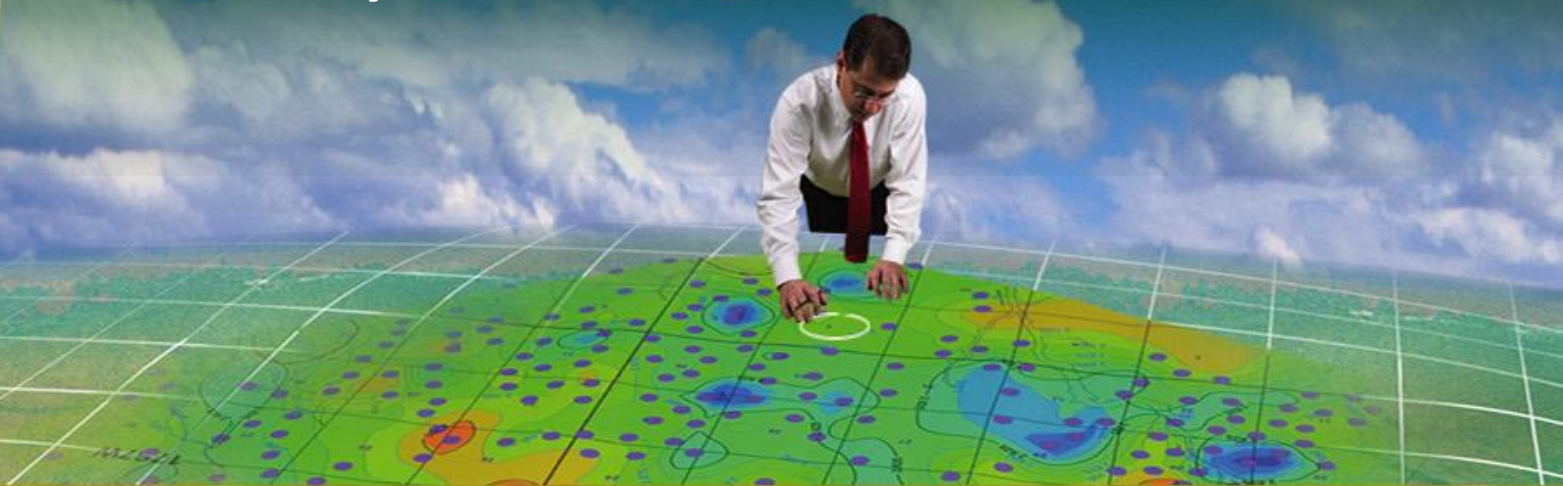
*Houston • Denver • Calgary*



## **Maturation of Resources from Exploration to Delineation to Development**

**Herman G. Acuña**

**Ryder Scott Petroleum Consultants**



## Pakistan's massive oil and gas discovery report to be out in April

### Pakistan Prime Minister Imran hints at finding massive oil reserves

I will give you a good news soon regarding massive oil reserves, says Imran

Published: March 25, 2019 18:19  
Ashfaq Ahmed, Associate Editor - Online



### AKER BP MAKES NORTH SEA OIL, GAS DISCOVERY

04/01/2019

Aker BP confirmed an oil and gas discovery with a gross resource estimate of 60-130 million boe from the Froskelar Main exploration well in license 869 in the North Sea's Alvhelm area. The nearby 24/9-3 (Gamma) oil discovery can be viewed as being part of this discovery, and part of the discovery may extend over to the UK sector. The licensees

COMMODITIES FEBRUARY 7, 2019 / 1:45 AM / 3 MONTHS AGO

### Total's South Africa discovery could hold 1 billion barrels oil equivalent: CEO

PARIS (Reuters) - French oil and gas major Total's South African offshore discovery could contain 1 billion barrels of total resources and is "probably quite big", Chief Executive Patrick Pouyanné said on Thursday.

Newsroom

News  
Feb. 6, 2019



### ExxonMobil announces two new discoveries offshore Guyana

IRVING, Texas — ExxonMobil said today it made two additional discoveries offshore Guyana at the Tilapia-1 and Haimara-1 wells, bringing the total number of discoveries on the Stabroek block to 12.

The discoveries build on the previously announced estimated recoverable resource of more than 5 billion oil-equivalent barrels on the Stabroek block.

Newsroom

News  
Feb. 28, 2019



## ExxonMobil makes natural gas discovery offshore Cyprus

IRVING, Texas — ExxonMobil today said it has made a natural gas discovery offshore Cyprus in the Eastern Mediterranean at the Glaucus-1 well.

Based on preliminary interpretation of the well data, the discovery could represent an in-place natural gas resource of approximately 5 trillion to 8 trillion cubic feet (142 billion to 227 billion cubic meters). Further analysis in the coming months will be required to better determine the resource potential.

## Resilience

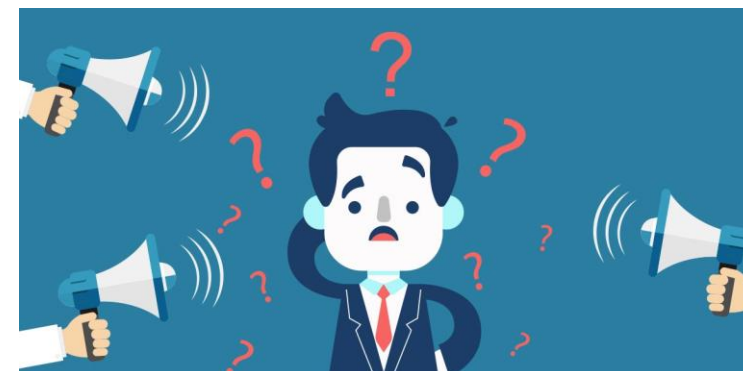
HOME / ENERGY

### CLARIFICATION OF THE HUGE CHEVRON GULF OIL DISCOVERY

By [Randy Kirk](#), originally published by Energy Bulletin

The [September 5th announcement](#) by Chevron and Devon and Statoil of the huge Gulf of Mexico discovery should be clarified. The announcement claims that the discovery could increase US proven reserves of oil by as much as 50%. However, the total amounts are highly speculative. Additionally, the discovery likely won't impact oil markets but could potentially impact natural gas markets since the discovery is probably mainly natural gas. The area will

- The “Headlines Classification System:”
  - “Massive Oil Reserves”
  - “Barrels of Total Resources” and “Probably Big”
  - “Gross Resource Estimates”
  - “Recoverable Resources”
  - “In-Place Natural gas Resources”
- And my Favorite Ones:
  - “Proven Reserves However Total Amounts are Highly Speculative”
  - “Probably Mainly Natural Gas”



## The “Small Print” – I don’t expect you to be able to read it in the back of the room so don’t even try.

### NOTICE

#### **CAUTIONARY STATEMENTS RELEVANT TO FORWARD-LOOKING INFORMATION FOR THE PURPOSE OF “SAFE HARBOR” PROVISIONS OF THE PRIVATE SECURITIES LITIGATION REFORM ACT OF 1995**

*This press release contains forward-looking statements relating to Chevron’s operations that are based on management’s current expectations, estimates and projections about the petroleum, chemicals and other energy-related industries. Words or phrases such as “anticipates,” “expects,” “intends,” “plans,” “targets,” “forecasts,” “projects,” “believes,” “seeks,” “schedules,” “estimates,” “positions,” “pursues,” “may,” “could,” “should,” “budgets,” “outlook,” “trends,” “guidance,” “focus,” “on schedule,” “on track,” “goals,” “objectives,” “strategies,” “opportunities,” and similar expressions are intended to identify such forward-looking statements. These statements are not guarantees of future performance and are subject to certain risks, uncertainties and other factors, many of which are beyond the company’s control and are difficult to predict. Therefore, actual outcomes and results may differ materially from what is expressed or forecasted in such forward-looking statements. The reader should not place undue reliance on these forward-looking statements, which speak only as of the date of this press release. Unless legally required, Chevron undertakes no obligation to update publicly any forward-looking statements, whether as a result of new information, future events or otherwise.*

- *“No Obligation to Update Publicly any Forward-Looking Statements whether as a result of New Information, Future Events or Otherwise”*
- *E&P Companies are not just reading the headlines; they are progressing the strategy:*
  - *Identify uncertainties, risks and mitigation activities*
  - *Define clear maturations plan and executioners of those plans*

*Cannot leave decision makers at “The Headlines” levels without a corporate mechanism to follow-up*

## Cause

- Exploration
  - Needs to hunt “Elephants” to justify exploration expenses
  - Needs to keep volumes high & finding costs down
- Development
  - Needs to incorporate reserves and meet reserves replacement targets
  - Needs to develop commercial projects

## Effect

- Exploration
  - Over-optimism in volume promise & under estimation of de-risking activities
  - Premature handover of opportunity to development
- Development
  - Adjusts (generally reduces) volumes to compliant classification & categorization
  - Projects may not meet commercial KPIs as handed over

**Opportunities may fall in no-man’s land and progression stops.**

- Avoid traditional handover of discovery from Exploration to Development.
- Establish an “Opportunity Maturation Team” or “Transition Team”
  - Focuses on advancing the opportunity without the business KPIs associated with Exploration and Development
  - Expertise from both Exploration and Development teams and continuity of analysis
  - Designated opportunity maturation budget
  - Unified handover to development with clearly defined the "Sponsor" responsible for the progression



# HOW TO PROGRESS THE OPPORTUNITY

## Exploration Team

- Search for opportunities
- Define and de-risk prospects
- Drill exploration well
- Discovery
- Delineation

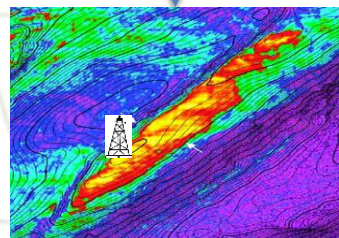
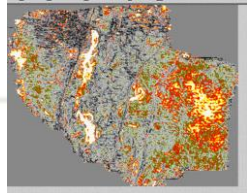
## Opportunity Maturation Team Transition Team

- Additional delineation
- Early reservoir characterization
- Define entire opportunity
- Conceptualize commercial development

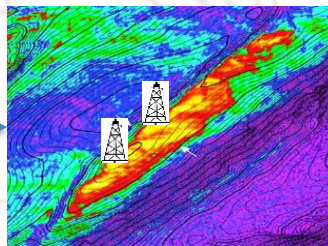
## Development Team

- Project and Value assurance Process
- Concept Selection
- Project Definition
- Cost Optimization, EPC
- Execution
- Commercialization
- Delivery

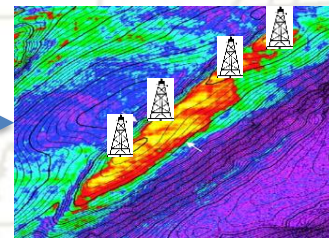
### Prospecting



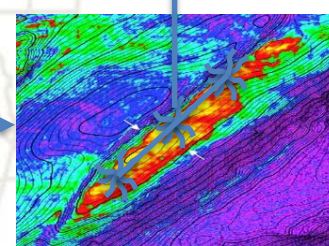
Discovery



Delineation



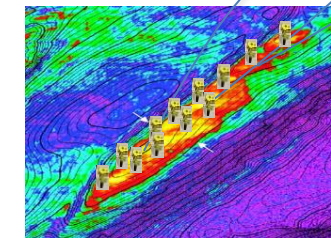
Opportunity  
Definition



Development  
Characterization



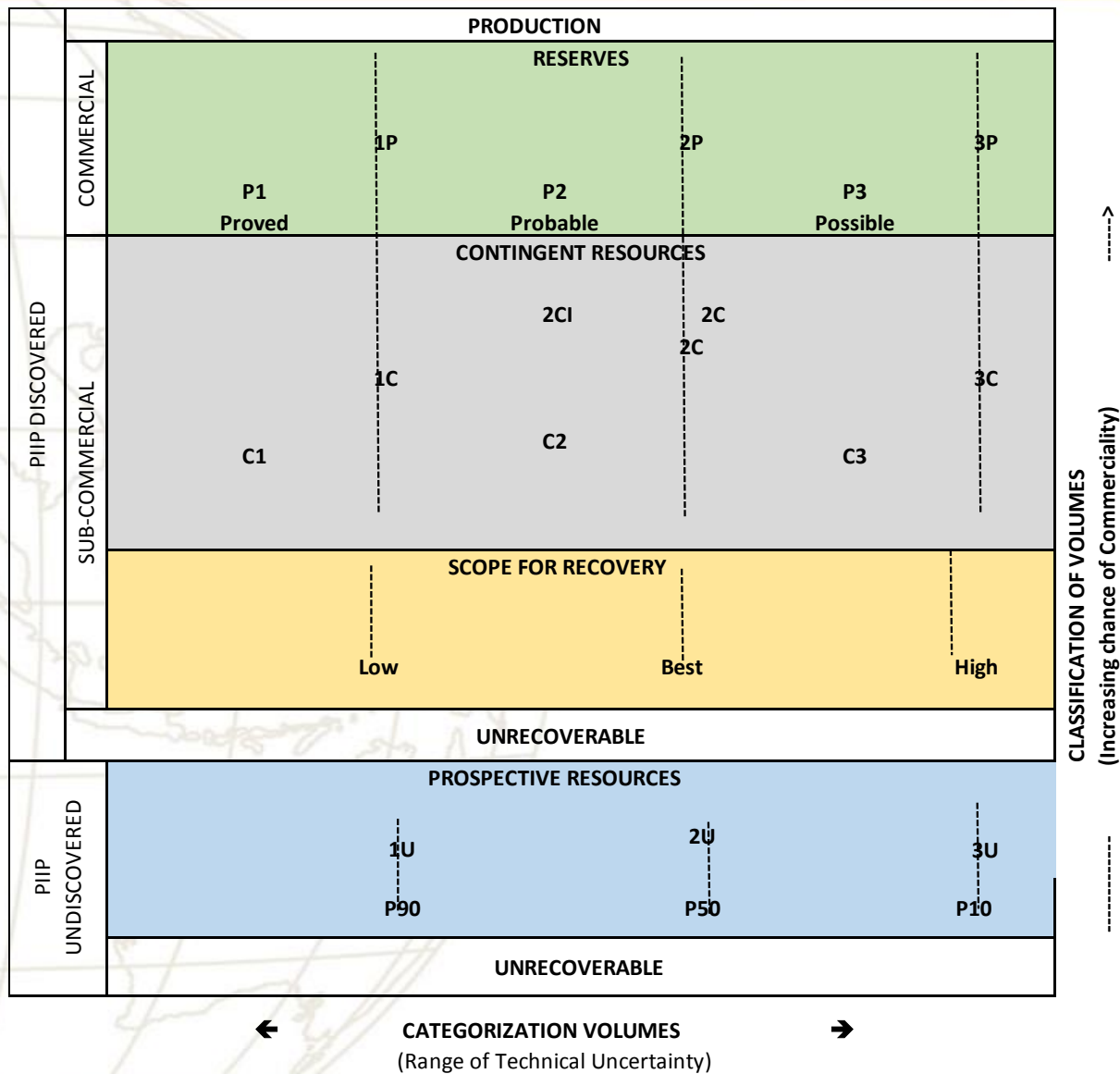
Facilities



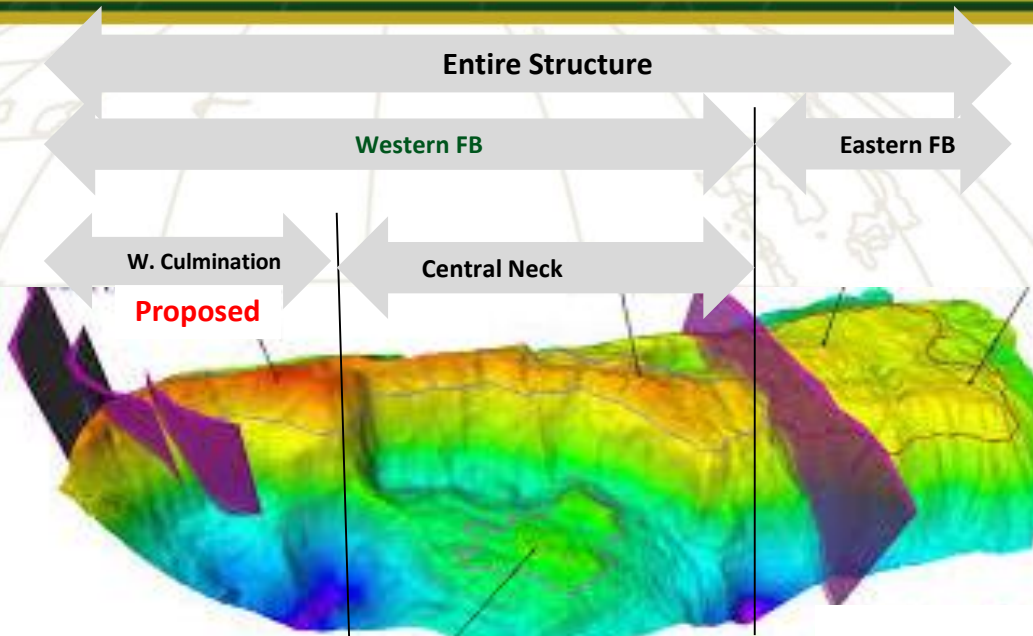
Subsurface  
Configuration

- The SPE-PRMS provides a tool to track the progression of opportunities.
- The SPE-PRMS may need to be adjusted to properly track the opportunity according to the company's strategy and workflows
- Reserves require commerciality and commitment
- Contingent resources require certain levels of technical rigor that may be too restrictive for a discovery declaration:
  - Without new technical data, there should be no change in distribution of technically recoverable volumes when projects are reclassified from contingent resources to reserves
- **So, how do we classify remaining discovered volumes that fall outside Contingent Resources?**

# ADAPTED SPE-PRMS



# EXAMPLE APPLICATION OF ADAPTED SPE-PRMS

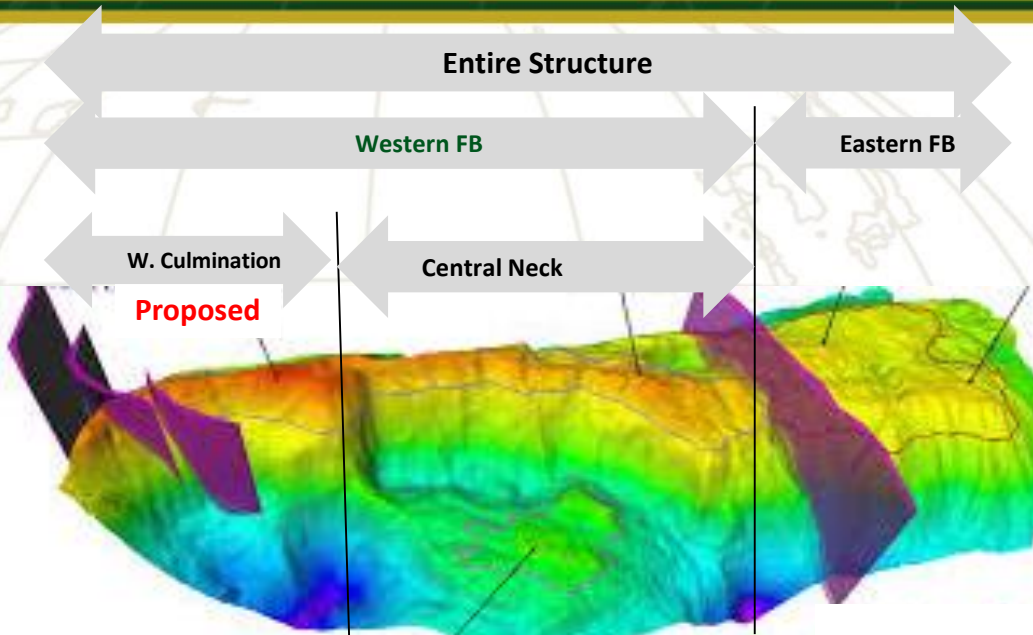


	West Culm	Cent. Neck	West FB	East FB	Entire Structure
P90	52	67	127	53	197
P80	63	85	152	66	234
P70	72	100	176	77	267
P60	80	116	200	77	298
P50	89	133	225	99	330
P40	99	152	252	112	367
P30	111	175	286	128	409
P20	126	207	327	148	464
P10	150	257	396	181	550

- How many wells will most likely be required to declare the entire Structure as discovered:
  - 1? 2? 3? More
- Will the proposed well be likely do result in continent resources for:
  - Entire structure?
  - Western FB only?
  - Drilled Western culmination only?
- What is likely distribution of resources after first well?

	1C	2C	3C
CR			
	Low	Best	High
SR			
	1U	2U	2U
PR			

# EXAMPLE APPLICATION OF ADAPTED SPE-PRMS



	West Culm	Cent. Neck	West FB	East FB	Entire Structure
P90	52	67	127	53	197
P80	63	85	152	66	234
P70	72	100	176	77	267
P60	80	116	200	77	298
P50	89	133	225	99	330
P40	99	152	252	112	367
P30	111	175	286	128	409
P20	126	207	327	148	464
P10	150	257	396	181	550

- How many wells will most likely be required to declare the entire Structure as discovered:
  - 1? 2? 3? More
- Will the proposed well be likely do result in continent resources for:
  - Entire structure?
  - Western FB only?
  - Drilled Western culmination only?
- What is likely distribution of resources after first well?

	1C	2C	3C
CR	52	89	150
	Low	Best	High
SR	67	133	257
	1U	2U	2U
PR	53	99	181



**THANK YOU**