



**EMPYREAN**  
ENERGY PLC

● Sacramento Basin Project  
**California**

● Block 29/11  
**China**

**ANNUAL GENERAL MEETING, 22 SEPTEMBER 2020**

● Duyung PSC  
**Indonesia**



# Forward Looking Statements

This presentation may contain forward-looking statements and information that both represents management's current expectations concerning future events and are subject to known and unknown risks and uncertainties.

A number of factors could cause actual results, performance or events to differ materially from those expressed or implied by these forward-looking statements



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## Introduction and Milestones





# Company Overview

- AIM quoted company focused on building a low cost, high value company
- Diversified asset portfolio in China, Indonesia and United States
- Executive management has a proven track-record of discovering hydrocarbons and returning capital to the shareholders
  - Extensive experience in Asian region
  - Comprehensive technical capabilities
  - Effective relationship with upstream players, service providers, governments, national oil companies and regulators
- Experienced management team aligned with shareholders
  - Approximately 26% ownership in Empyrean equity
  - Management has directly invested over £1.6million since 2016

AIM Quoted LDN: EME	
Shares on Issue	475,197,281
Options in Issue	6,000,000
Market Cap (18 September 2020)	~£22.38m@ 4.75p

# Why invest in Empyrean?

- Empyrean team has a proven track-record with several hydrocarbon discoveries
- A proven track-record of returning capital to shareholders
- A balanced portfolio including an existing gas discovery and highly leveraged oil exploration
- China-
  - World-class conventional oil exploration targets in most energy hungry country in the world
  - Massive upside potential upon exploration success
  - 1.28 billion barrels of P10 Prospective Oil In-Place Resources estimate by Gaffney Cline & Associates in two prospects
- Indonesia-
  - 8.5% of existing gas discovery - already appraised & moving towards updated POD approval, gas sales negotiations, FID and development
- USA Sacramento basin-
  - Gas and liquid exploration targets with extensive nearby infrastructure creating an early production scenario upon exploration success at a premium to Henry Hub Natural Gas Spot Price

# The PAST YEAR- DELIVERING ON OUR OBJECTIVES

Block 29/11, China

**Transformational  
Potential Matured**

- Issue-focussed technical work completed including Post Stack Seismic Inversion Project
- As a result, quantitatively confirmed a world-class carbonate reservoir both at Jade as well as Topaz prospects
- Proactively managed Covid-19 pandemic by securing 12-month extension to the first exploration phase

Duyung PSC, Indonesia

**Created a solid &  
stable asset base**

- Safely completed 4-months long appraisal drilling program
- Appraisal drilling results confirmed Mako Field as potentially Largest Undeveloped Gas Field in West Natuna Basin, Indonesia
- Crucial data collected in appraisal wells resulted in a significant increase in contingent resources of the field

Sacramento Basin, California

**Borba prospect  
drill-ready**

- Operator faced significant challenges due to Covid-19 pandemic in planning for drilling the Borba well
- Regular monitoring of the situation in California is continuing for drilling well in a safe manner



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## Portfolio Overview

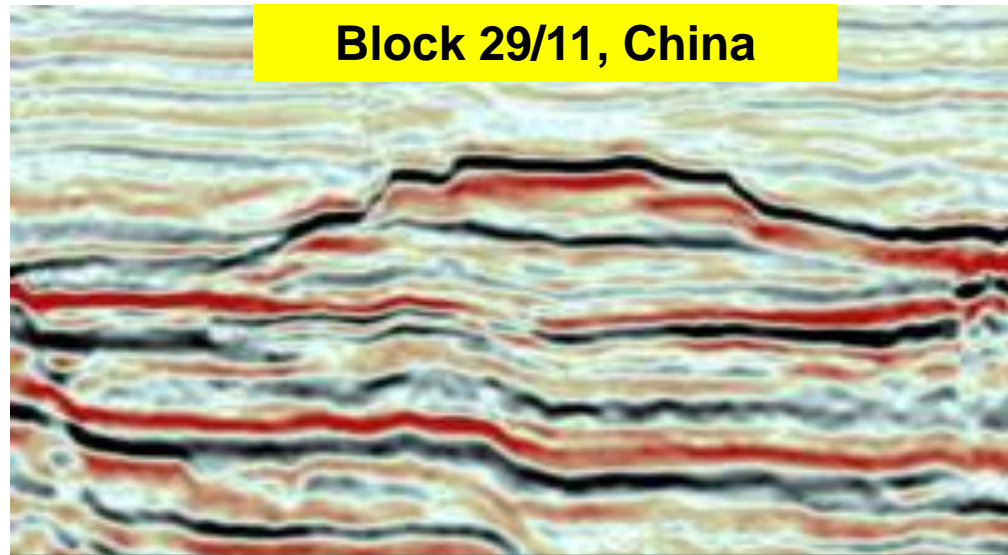




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**Block 29/11, China**



**Transformational value proposition**

Jade Prospect, Block 29/11



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# Block 29/11 China (100%WI in exploration- 49% WI post commercial discovery): Key Milestone achieved

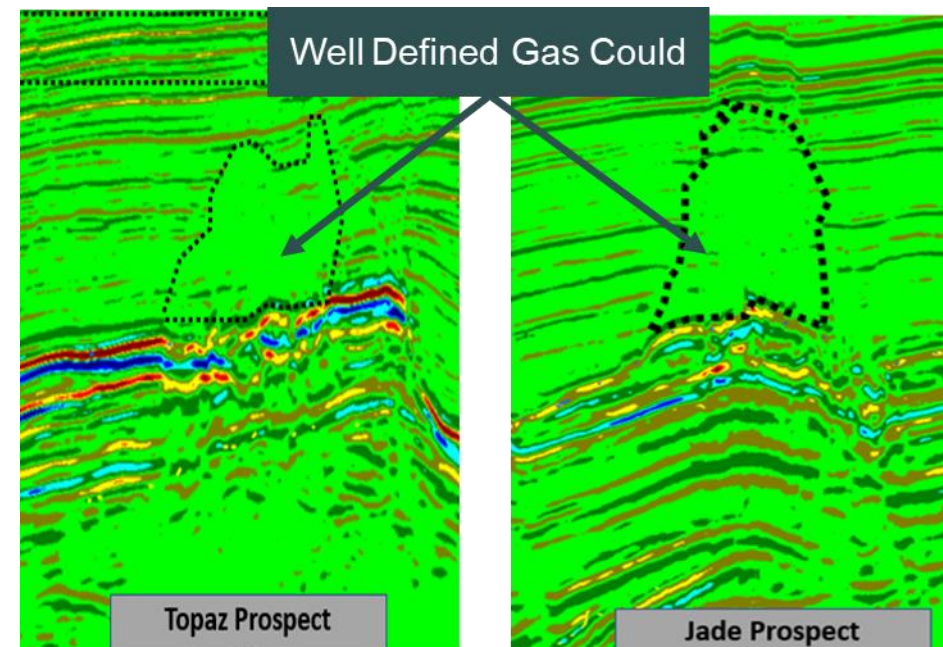
- Proactively acted on account of Covid-19 pandemic, and secured 12-months extension to the first phase of exploration
  - As a result, significant flexibility in timing of drilling the first commitment well has been achieved
- Issue-specific technical work completed that has added enormous confidence in quality of reservoir
  - Post stack seismic inversion results show higher resolution of reservoir and seal facies
  - It supports more accurate interpretation of the carbonate reservoir, and
  - Confirms a world-class carbonate reservoir at Jade and Topaz prospects

## Block 29/11 China: Oil in Place MMbbl

Prospect	P90	P50	P10	Mean	GCoS
Jade	93	187	395	225	32%
Topaz	211	434	891	506	30%
Pearl	38	121	302	153	15%

# Block 29/11- World class conventional oil targets

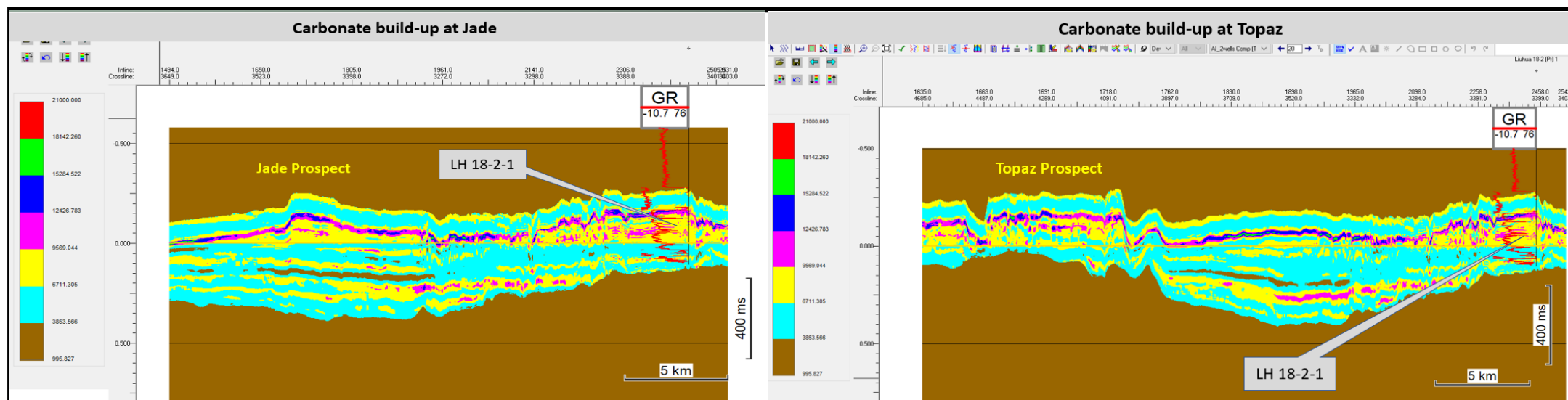
- Gaffney, Cline & Associates (GCA) audit in 2018 confirmed close to a 1-in-3 chance of geological chance of success (GCoS) with over 1.28 billion barrels of potential oil in-place, combined, on a P10 basis un-risked
- Empyrean has subsequently completed oil migration, thermal maturity and basinal reconstruction
  - These studies confirm CNOOC discoveries to west of Block 29/11 had a valid trap at the time of oil migration in the basin
  - At the same time, no valid trap at the time of oil migration was mapped at the dry wells in CNOOC area as well at two wells drilled in our block
  - In contrast, it has been confirmed that both Jade and Topaz traps were in place at the time of oil migration in the basin
- CNOOC 4 discoveries to the west have well-defined gas clouds in the overburden whereas dry wells don't have any gas clouds
- Both Jade and Topaz prospects have well defined gas clouds
- In summary, these prospects are very large conventional oil targets with a very high GCoS confirmed by GCA which has been further enhanced by subsequent technical work completed by Empyrean



## Block 29/11 -

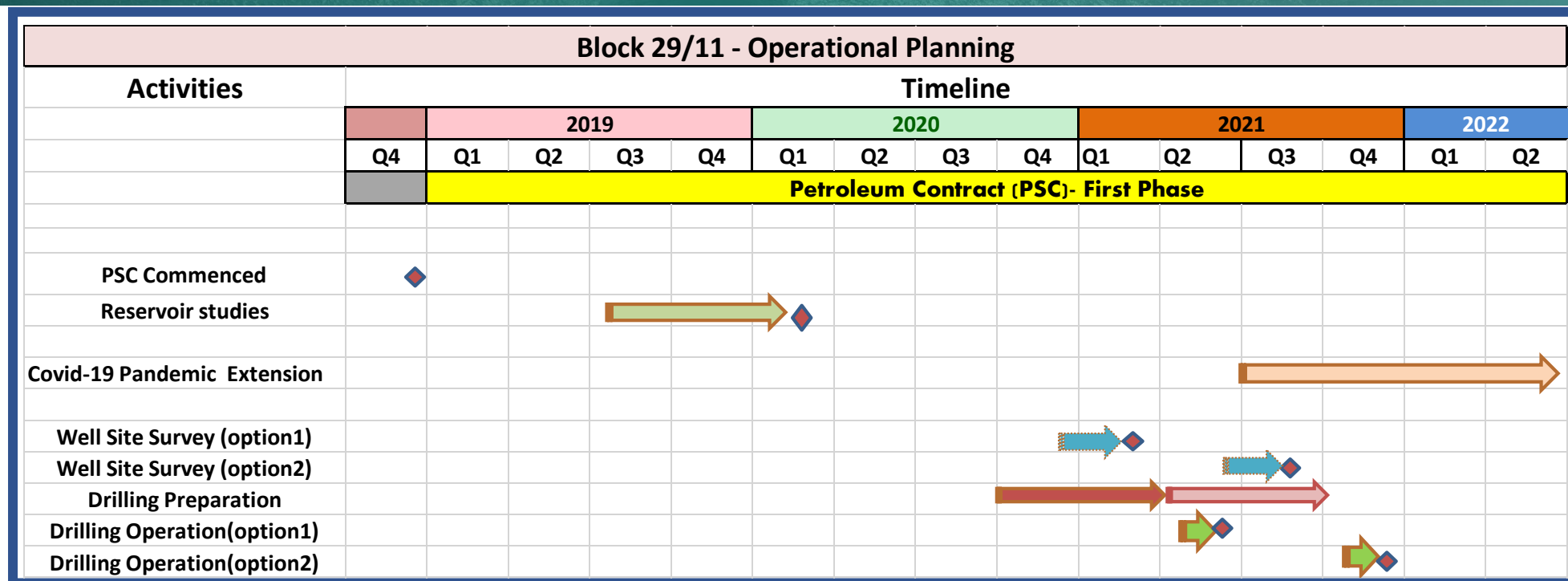
# Excellent Carbonate Reservoir quality confirmed from seismic Inversion

- Integration of log data of key wells with 2017 3D seismic data resulted in a successful Post Stack Seismic Inversion Project
- CNOOC provided crucial well log data of an oil discovery from their area (outside Block 29/11) for the inversion project
- Rigorous close coordination between EME and COSL resulted in a clear definition of reservoir and seal facies
- Excellent Carbonate Reservoir quality interpreted with confidence at Jade and Topaz prospects





# Block 29/11 Forward Plan



- Closely monitor Covid-19 situation, particularly for travel restrictions and mandatory quarantine in China and Australia
- As soon as normality return, commence planning process for drilling the well
  - Set up of an operational office in China,
  - Acquire site survey,
  - Secure a suitable rig, and finalise rig contract,
  - Secure long lead items
- Prepare to spud the well





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Mako Gas field



**Largest Undeveloped Gas Field**  
West Natuna basin, Indonesia



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# Mako Gas field (8.5% WI)

## Key Milestones achieved

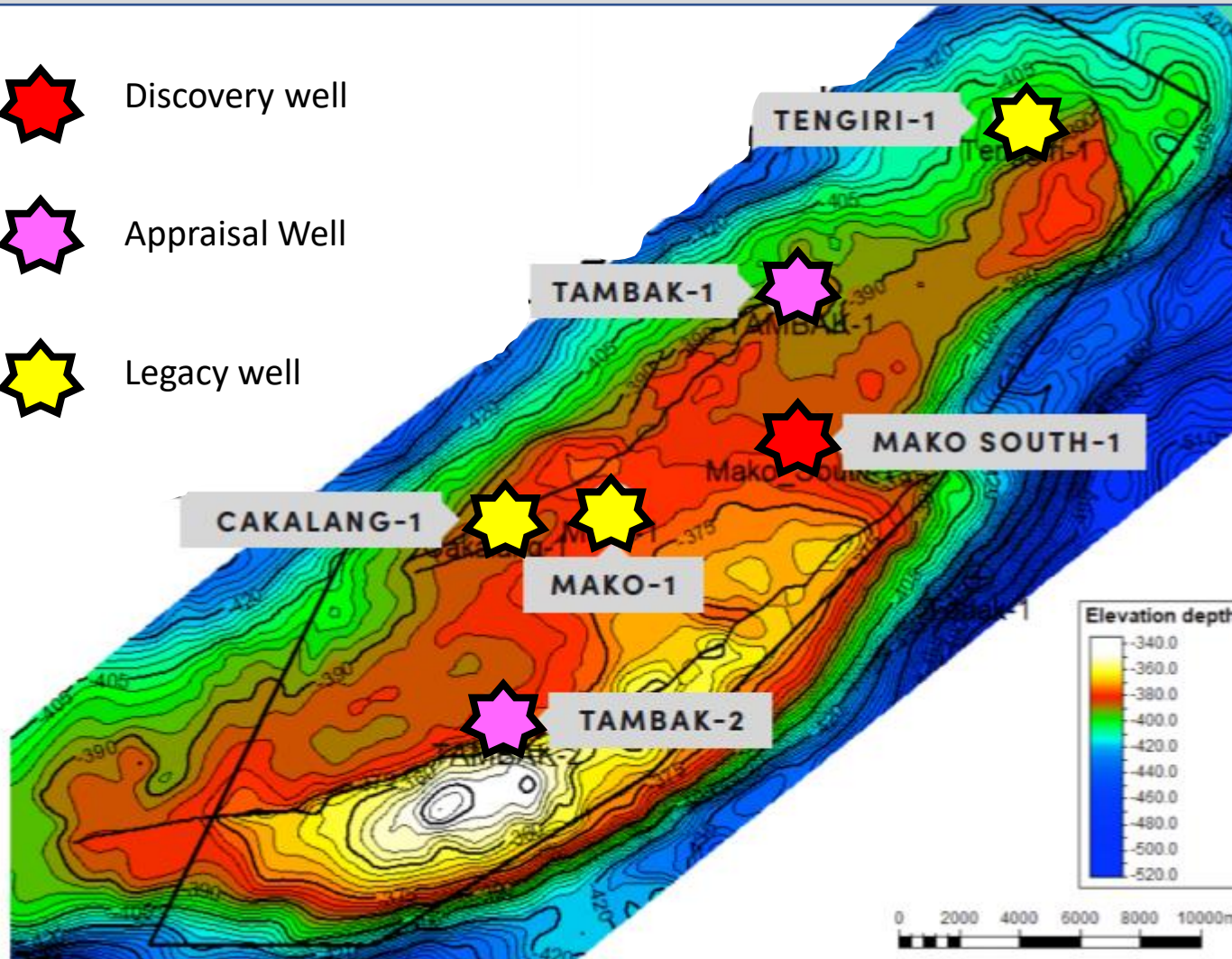
- Highly successful appraisal program designed and executed with complete safety and in a timely manner
- Post appraisal drilling program, Gaffney Cline & Associates ("GCA") independently upgraded the prospective resource since discovery of the field

Contingent Resource			GCA Audit 2019 <i>Post Discovery Well</i>	GCA Audit 2020 <i>Post Appraisal Wells</i>	Increase
			Bcf	Bcf	%
1C (low Case)			184	287	56
2C (Mid Case)			276	495	79
3C (High Case)			392	817	108

# Mako Gas Field- Largest Undeveloped Gas field in West Natuna Basin

Large Mako structure ~ 47 km long and 16 km wide  
Approximately 350 sq. km. closure above Gas Water Contact (GWC)

-  Discovery well
-  Appraisal Well
-  Legacy well



- Biogenic gas accumulation
- Meticulously appraised the field- six wells have penetration
- Shallow, Pliocene-age Intra-Muda sandstone reservoir
  - Reservoir logged, cored & tested compressively
  - 20%+ porosities, multi-Darcy permeability
  - Well defined gas water contact at 393m TVDSS
- Dry gas, no H<sub>2</sub>S, minimal CO<sub>2</sub>, over 97% methane
- Extensive testing program completed
  - Discovery well (Makos South 1) flowed 10.8 MMscf/d
  - Appraisal well (Tambak -1) flowed 11.4 MMscf/d





# Highly successful Appraisal program

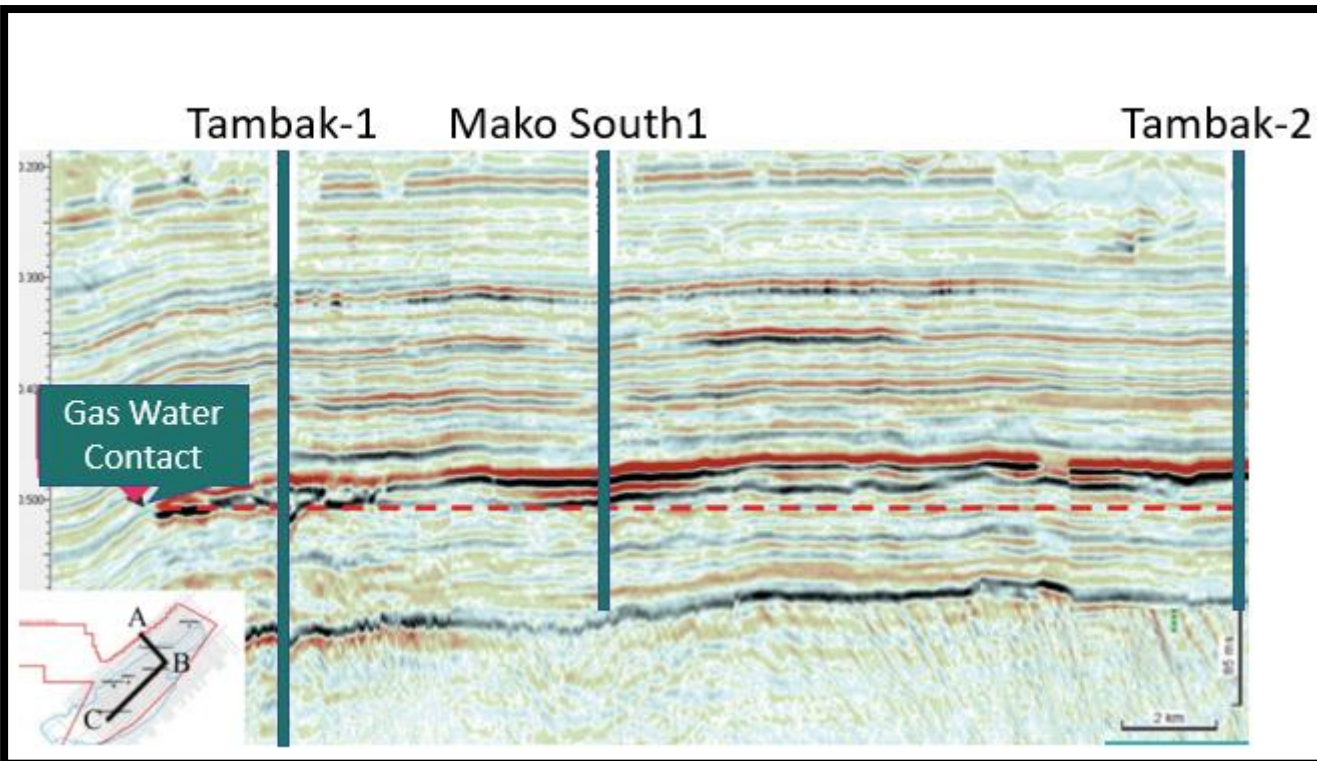


- Appraisal drilling campaign conducted between September 2019 - January 2020
- It confirmed
  - Mako Gas Field as a large, single gas tank
  - Extensive High Quality Reservoir distributed over large areal extent
- Extensive Log & Core data and testing data confirmed excellent porosity, multiDarcy Permeability
- Multiple successful DSTs conducted
- Ultimately the successful appraisal program resulted in a 79% increase in 2C contingent resources and much better understanding of the Mako gas field reservoir and characteristic and deliverability
- Revised development scenarios are under review that may be able to achieve a plateau production rate of 150 MMscf/d, which is up from the previously modelled 44 MMscf/d





# Mako Gas Field -Forward Plan



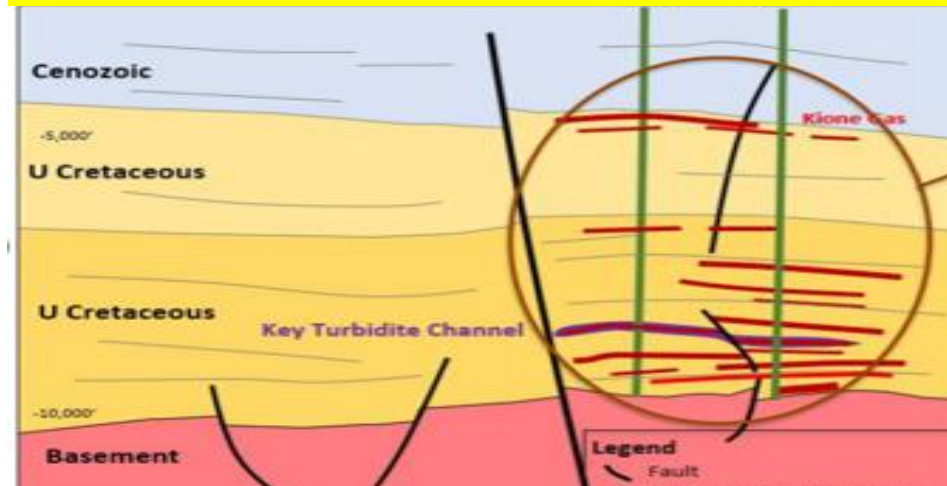
- Closely work with the JV to
  - Submit revised POD with updated contingent resource to Indonesian government
  - Execute gas sale agreement (GSA) as soon as feasible in light of Covid-19 pandemic
- Crystalize monetisation plan



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## Sacramento Basin, California



## Borba Prospect

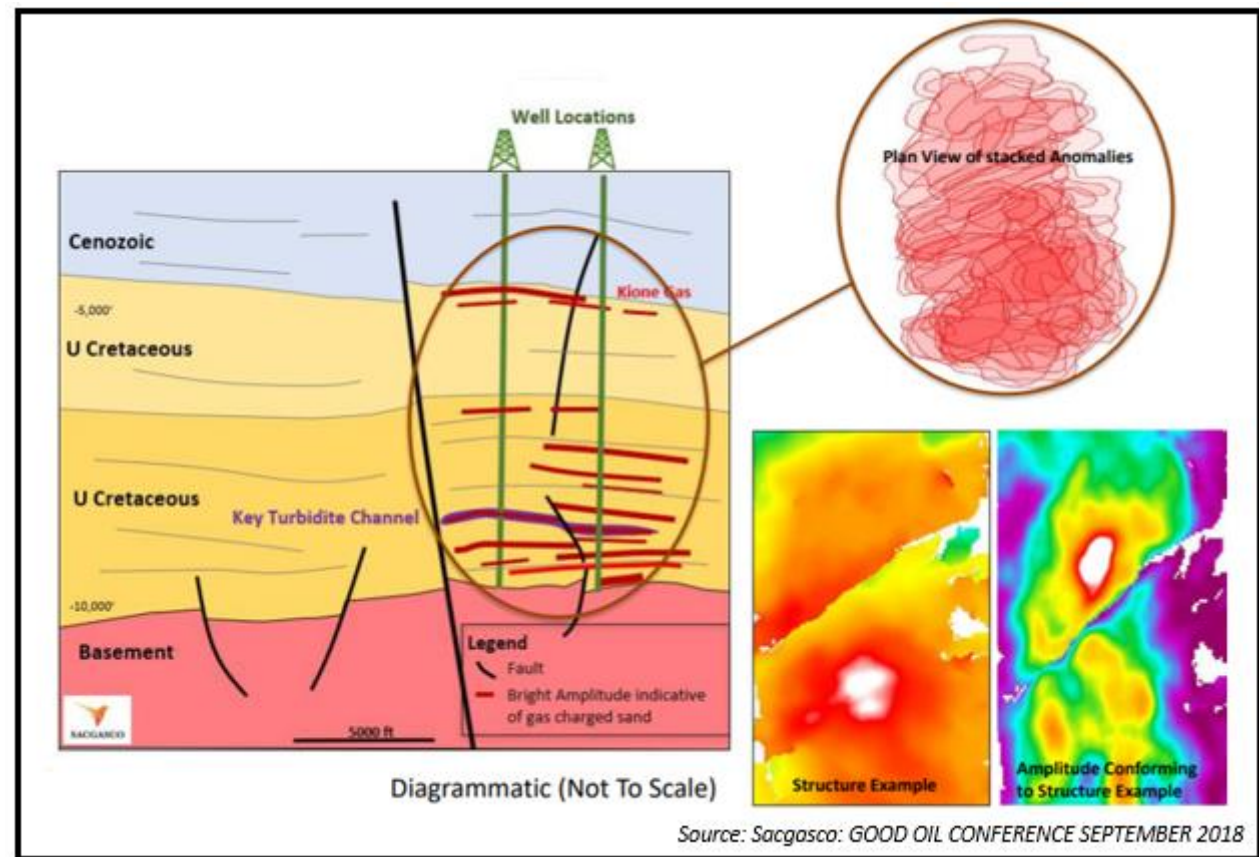
Ideal location for Potentially improved reservoir





# Sacramento Basin, California: Key Milestone achieved

- Activities were severely impacted by Covid-19 pandemic
- Operator's focussed on low-cost work-over program which resulted in modest increases in gas flows from two existing natural gas wells
- Other workovers are being assessed
- Timing for Borba spud is being regularly assessed, and is based on the COVID-19 situation and risk assessment to protect shareholders against potential cost blowouts



Source: Sacgasco: GOOD OIL CONFERENCE SEPTEMBER 2018



# Well position for the future



**China:** 12-months extension provides significant flexibility for drilling a safe well

**Indonesia:** Successful appraisal program confirmed a world-class gas project



Excellent relationship with host governments and JV partners  
Proactively managed business outcome in response to Covid-19 pandemic



Management focus remains on creation of shareholder value by drilling first exploration well in China as soon as Covid-19 pandemic is resolved





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