

21<sup>st</sup> May 2019

ASX Market Announcements  
Australian Stock Exchange Limited  
20 Bridge Street  
Sydney NSW 2000

**Ocean Reach Advisory Appointed to**  
**Progress Global Search for Exploration and Production Partner**  
**For the Judith Gas Field, Offshore Gippsland Basin, Victoria**  
**100% Emperor Energy Owned**

**Highlights**

- Ocean Reach Advisory has been appointed to carry out a Global Search for a suitable Exploration and Development Partner for exploration and development of the Judith Gas Field, 100% owned by Emperor Energy limited.
- Ocean Reach Principals' Austen Fresson and Rob Singh provide extensive experience with a proven Mergers and Acquisitions track record within the Australian Oil and Gas sector.
- Gas resources in the Greater Judith Closure within VIC/P47 has been apportioned:
  - 2C Contingent Resource of **122 Bcf** Sales Gas recoverable
  - P50 Prospective Resource of **844 Bcf** Sales Gas recoverable
  - as determined by Independent Resource Certifier, RISC (November 2018) in accordance with the Society of Petroleum Engineers' internationally recognised Petroleum Resources Management System (SPE-PRMS 2007).
  - (ref. Emperor Energy market announcement 12<sup>th</sup> November 2018)
- Reservoir Engineering Simulations indicate that each vertical production well could deliver 20 to 30 Million Standard Cubic Feet Per Day (MMscf/d) from Emperor reservoir sandstones (ref. 3D-GEO (2018) - Emperor Energy ASX Announcement 21<sup>st</sup> November 2018)
- A Full Field Production Simulation using a 5 well development plan indicates that a Judith commercial development can deliver 29 Billion Cubic Feet Per Year (Bcf/year) for 20 years (ref. 3D-GEO (2018) - Emperor Energy ASX Announcement 21<sup>st</sup> November 2018)

## Summary

The Directors of Emperor Energy are pleased to announce that Perth based Ocean Reach Advisory has been appointed to assist Emperor Energy in a Global search for a suitable Exploration and Production Partner to participate in the exploration and development of the Judith Gas Field in the Offshore Gippsland Basin, Victoria Australia.

The search will look for a Partner of suitable financial and technical capability to assist in the drilling of an exploration well at the offshore Judith Gas Field by February 2021. Based on successful exploration results the Partner would then proceed with development of the field in conjunction with Emperor Energy.

The Principals of Ocean Reach Advisory, Austen Fresson and Rob Singh, both have extensive experience along with a proven Mergers and Acquisitions track record within the Australian Oil and Gas sector.

On 12<sup>th</sup> November 2018 Emperor Energy Limited (Emperor) advised that an Independent Resource Statement had been completed for the Judith Gas Field within the 100% Emperor Energy owned VIC/P47 Exploration Permit located in the offshore Gippsland Basin, Victoria.

The Independent Resource Certifier RISC apportioned resources in accordance with the Society of Petroleum Engineers' internationally recognised Petroleum Resources Management System (SPE-PRMS 2007), identifying a 2C Contingent Resource of 122 Bcf recoverable Sales Gas within the Judith-1 discovery block and an additional P50 Prospective Resource of 844 Bcf Sales Gas in the Greater Judith structure within VIC/P47. (Emperor Energy ASX Announcement 12<sup>th</sup> November 2018)

Dynamic Reservoir modelling completed by 3D-GEO simulates vertical well production rates up to 30 MMscf/d, with a five well development plan simulating a gas production of 29 Bcf /year totaling 580 Bcf of Raw Gas over a 20-year plateau period. An additional 300 Bcf of gas production is forecast over the following 15-year production decline period. (Emperor Energy ASX Announcement 21<sup>st</sup> November 2018)

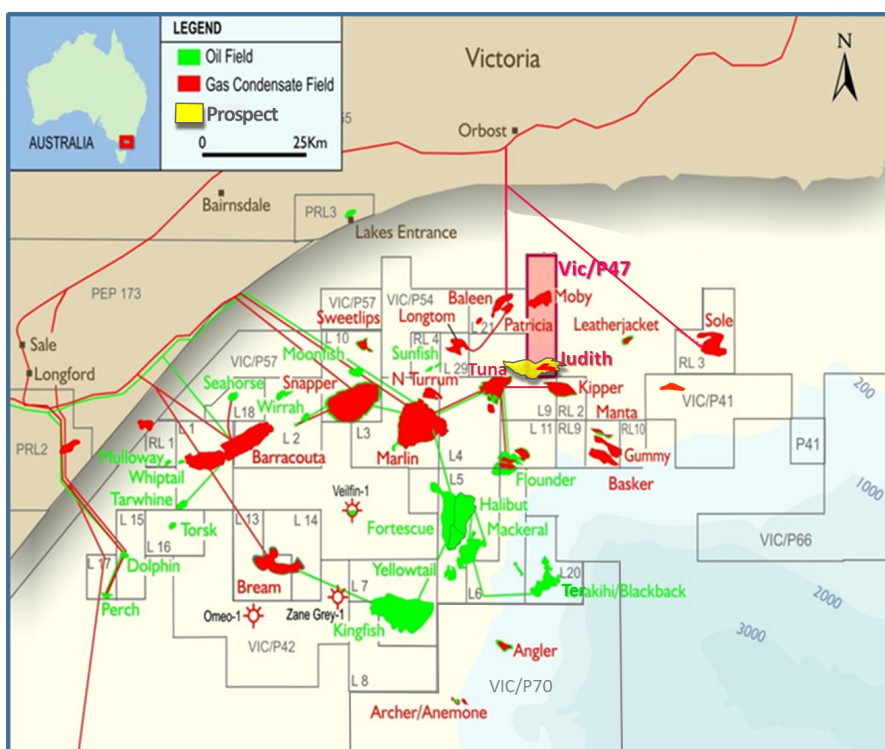
The Emperor Energy Board of Directors is focused on progressing the Judith Gas Field as the Company's cornerstone asset. The Company is also progressing discussions with several entities in relation to both infrastructure and gas sale opportunities. Preliminary design of an Exploration Well and commencement of the Project Approval process are to follow close behind.



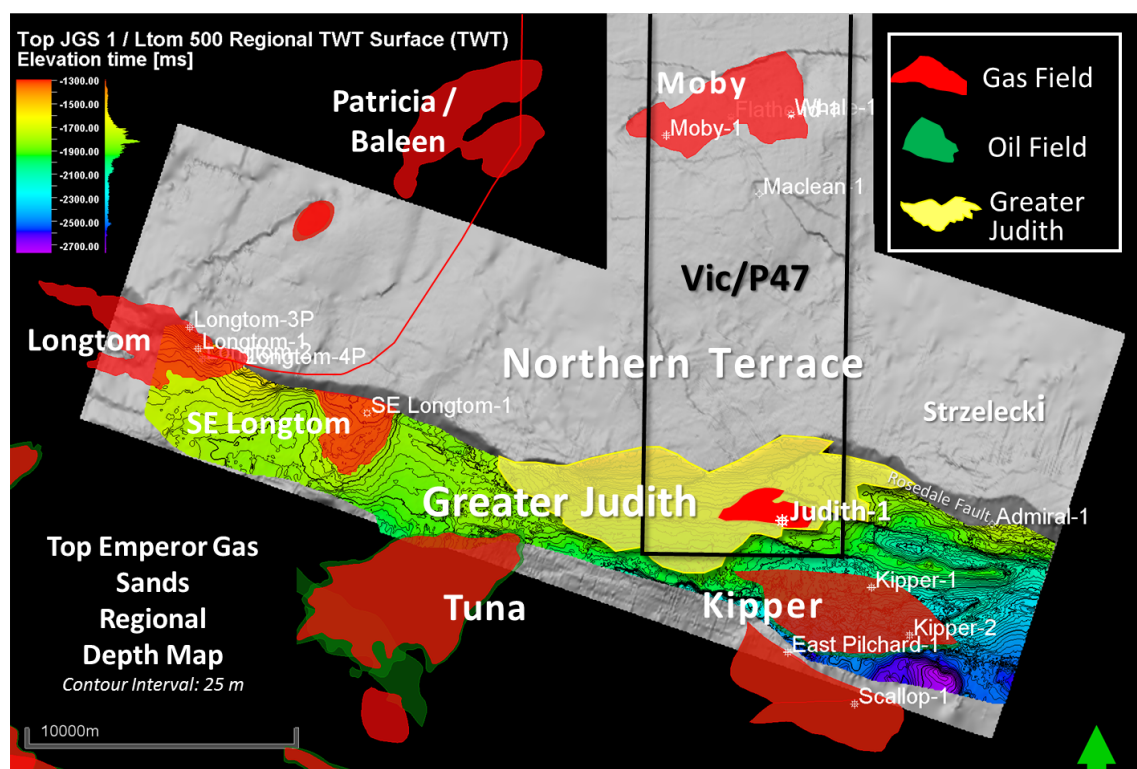
**Figure 1: Summary of 2019 Work Program for VIC/P47**



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**Figure 2: Location of 100% Emperor Energy owned VIC/P47 offshore Gippsland Basin showing regional permits along with oil and gas fields**



**Figure 3: Regional Map of Top Emperor Gas Sands showing oil and gas fields adjacent to VIC/P47**

## Dynamic Modelling

3D-GEO as engaged by Emperor initially constructed and populated a static geological model using Schlumberger's Petrel software with which they evaluated the resources in the Judith Gas Block and across the Greater Judith structure. This static model has been used as the basis for the Independent Resource Statement determined by RISC on 12<sup>th</sup> November 2018.

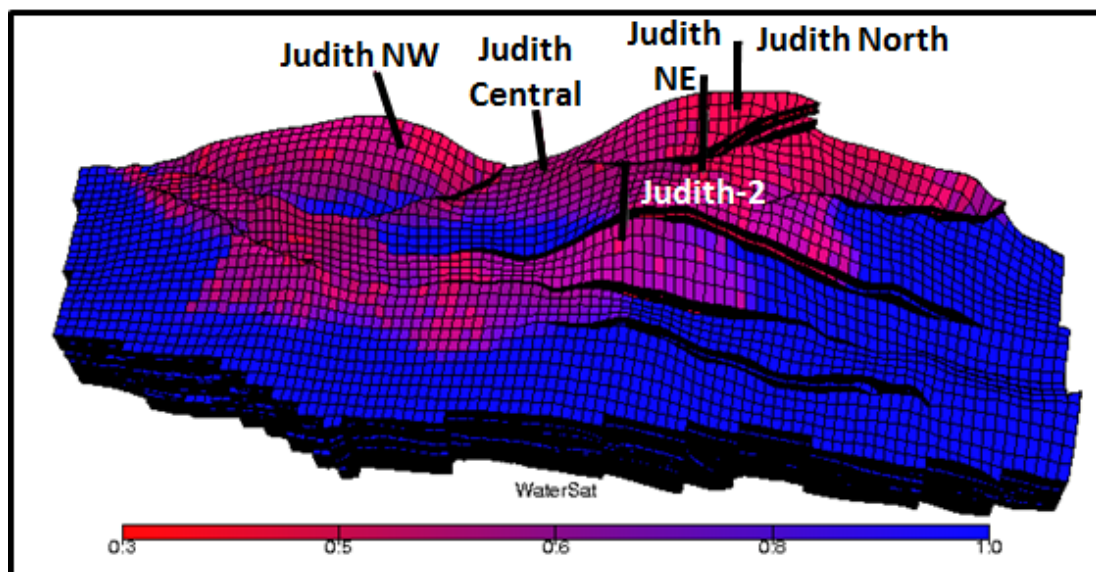
In order to confirm well productivity and gas production forecasts, 3D-GEO then developed a Dynamic Reservoir Model using Schlumberger's Eclipse software (see Figure 4). The Dynamic Model utilized the Petrel Static Model as the base parameter input.

The Dynamic Model simulated hydrocarbon flow for the seven separate reservoirs (four Judith Gas Sands and three underlying Longtom Gas Sands) within seven different structural blocks (see Figure 8). Reservoir parameters and fluid properties from the Judith-1 well were used for the Judith Gas Sands whilst data from the Longtom Gas Field was used for the underlying Longtom Gas Sands at Judith.

The model employed a 350 m maximum gas column in each block, except in the Judith Gas block where the contact was defined as 25 m below the Lowest Known Gas in the Judith-1 well.

Daily production was limited to a nominal 80 MMscf/d with the purpose of reflecting the capacity of the nearby Orbest Gas Processing Plant. Five vertical production wells were modelled, with one well in each of the Judith Gas, Judith Central, Judith Northeast, Judith North and Judith Northwest blocks.

The timing of the wells was staggered. The simulation assumes Well 1, Well 2 and Well 3 being drilled in the first year. The simulation then allows for Well 4 to be drilled in Year 4 and Well 5 to be drilled in Year 8. Well simulation results indicated well production rates ranged between 20 and 30 MMscf/d while total daily production was limited to 80 MMscf/d. Decline rates were controlled by Bottom Hole Pressures in the wells.



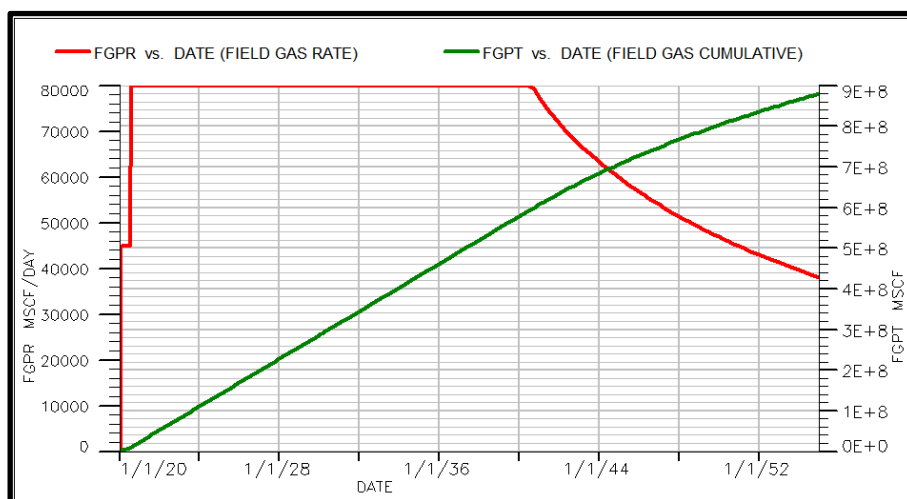
**Figure 4: Dynamic Model of Emperor Gas Sands illustrating the five well development plan**



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The simulation showed the Production Plateau of 80 MMscf/d was maintained for 20 years before declining to 38 MMscf/d at the end of the 35 year production profile (Figure 4).

Total gas production was forecast to be 880 Bcf which is approximately 48% of the Gas-In-Place contacted by the five wells. Cumulative liquids production was 8.8 MMstb. There was little water production (< 30 bwpd) as the model assumes limited aquifer support.



**Figure 5: Dynamic Model Gas Production Forecast for five well development plan (3D-GEO)**

## Potential Project Scale

Nearby Esso-operated petroleum infrastructure is well developed with a network of pipelines transporting hydrocarbons produced offshore to onshore petroleum processing facilities at Longford.

The new gas conditioning plant at Longford which was constructed to process gas from the Kipper and Turrum fields is capable of processing ~147Bcf annually.

Further infrastructure exists at the onshore gas plant owned by APA Limited at Orbost and the associated Patricia/Baleen pipeline infrastructure owned by Cooper Energy. Cooper Energy is currently constructing a pipeline from the newly developed Sole Field and plan to supply 23 Bcf of gas per year (approximately 63 MMscf/d) into the Orbost plant. Cooper are considering how the Manta Field may follow on from Sole.

Gas from these facilities is delivered across the inter-connected South Eastern Australia pipeline network to Sydney, Adelaide and Tasmania.

The Judith Dynamic Modelling results indicate that the Judith Project could potentially operate at a production rate similar to or greater than the Cooper Energy Sole project.

The Table below illustrates the relative position of the Judith Resource compared to other recent developments and field resources under investigation.





**Table 1: Gippsland Basin Current and Potential Future Developments - Field Size**

Field	Production Licence / Permit	Operator	Reserve / Resource Category	Estimated Initial Resource (Bcf)	Source Reference
Judith	VicP47	Emperor	2C Contingent	<b>122</b>	1,2
Judith	VicP47	Emperor	P50 Prospective	<b>844</b>	1,2
Sole	<b>Vic/L32</b>	Cooper	2C Contingent	<b>236</b>	6
Manta	Vic/RL13	Cooper	2C Contingent	<b>101</b>	6
Manta	Vic/RL13	Cooper	P50 Prospective	<b>499</b>	6
Kipper	Vic/L09 & Vic/L25	Esso	Uncategorized	<b>588</b>	5
Turrum		Esso	Uncategorized	<b>1000</b>	5
South East Remora	Vic/RL4	Esso	Uncategorized	<b>265</b>	3,7
Longtom Wells 3 & 4	Vic/L29	SGH Energy	Uncategorized	<b>20</b>	3,4,8
Longtom Proposed Well 5	Vic/L29	SGH Energy	Uncategorized	<b>60</b>	3,4,8

## Background

Judith-1 was drilled and operated by Shell Company of Australia in 1989 and is contained within the VIC/P47 Permit held 100% by Emperor Energy. The Judith Gas Field is located within close proximity of the Kipper Gas Field operated by Esso (ExxonMobil).

On 10<sup>th</sup> August 2017 Emperor Energy announced that the outcomes of seismic reprocessing and subsequent analysis completed during 2017 had resulted in a significant increase in the Gas-in-Place (GIP) estimate for the Judith Structure within VIC/P47.

On 22<sup>nd</sup> February 2018 Emperor Energy announced that the VIC/P47 permit had been renewed for 5 years with a work program including drilling of an exploration well in the Judith North Structure by early 2021.

On 26<sup>th</sup> March 2018 Emperor Energy announced that it had completed a thorough well log evaluation of the Judith-1 well and gas discovery. The Judith-1 results were then compared and contrasted with open file data not previously available from the four wells drilled on the Longtom Gas Field located some 22 km west of Judith-1, the East Pilchard-1 and Scallop-1 gas discoveries and the more recent South East Longtom-1 gas discovery by Esso in 2010.



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Like Judith-1 and the Longtom wells, the South East Longtom-1 discovered gas in multiple Emperor Reservoir sandstones in a structural closure sealed by the Rosedale Fault.

On 7<sup>th</sup> June 2018 Emperor Energy Limited announced that it had engaged respected Independent Resource Certifier RISC to conduct a Resource Statement in relation to the Judith Gas Field in the 100% Emperor Energy owned VIC/P47 Permit in the offshore Gippsland Basin, Victoria.

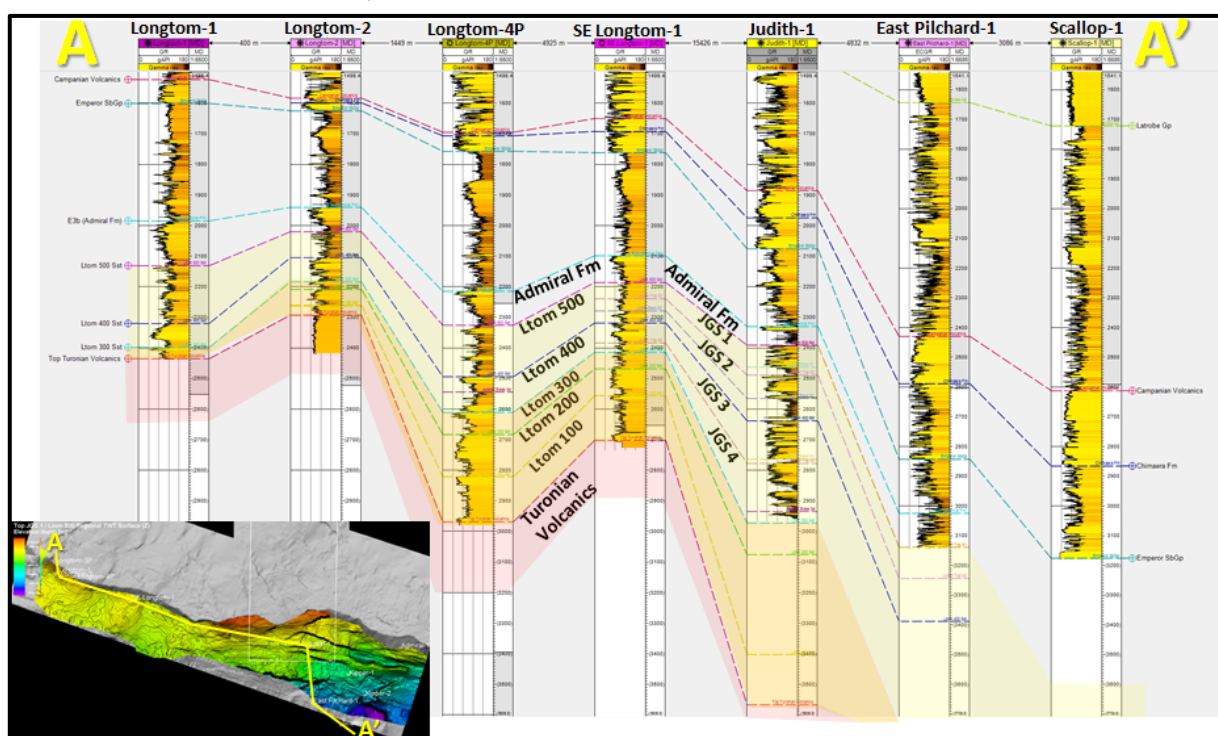
On 12<sup>th</sup> November 2018 Emperor Energy Limited announced that RISC had completed The Resource Statement identifying a 2C Contingent Gas resource of 122 Bcf Sales Gas in the Judith Gas Field, with an additional 844 Bcf prospective gas resource in the Greater Judith closure within the VIC/P47 Exploration Permit (see the Emperor Energy ASX Market Announcement on 12<sup>th</sup> November 2018 for details).

### 3D-GEO Pty Ltd Interpretation and Static Modelling

The 3D-GEO/Emperor evaluation of the Judith resource potential is based on:

- Judith-1 well data
- Merged and reprocessed 3D seismic data completed by 3D-GEO in 2016/17
- Offset well data, including the Longtom and Longtom SE wells, Scallop-1 and East Pilchard-1
- Longtom Gas Field analogue
- Public domain 3D seismic volumes including the G01 Northern Fields 3D seismic surveys

The Judith gas reservoir is subdivided into four main units being Gas Sands S1 to S4. Each of these sandstone units are separated by lacustrine shales that appear to act as effective, regionally-developed, top seals. In addition, 3D-GEO has correlated the Longtom gas sands from the Longtom and SE Longtom wells to extend into the Judith structure, below the TD of the Judith-1 well.

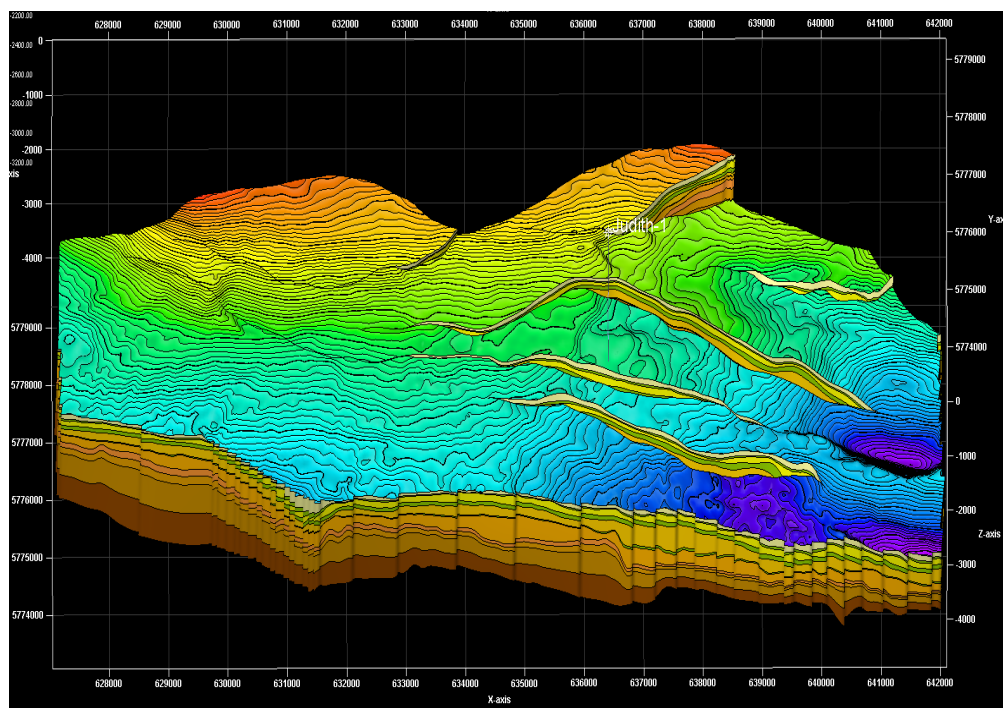


**Figure 6: Well correlation of Reservoir Sands between Longtom Gas Field & Judith Gas Discovery**



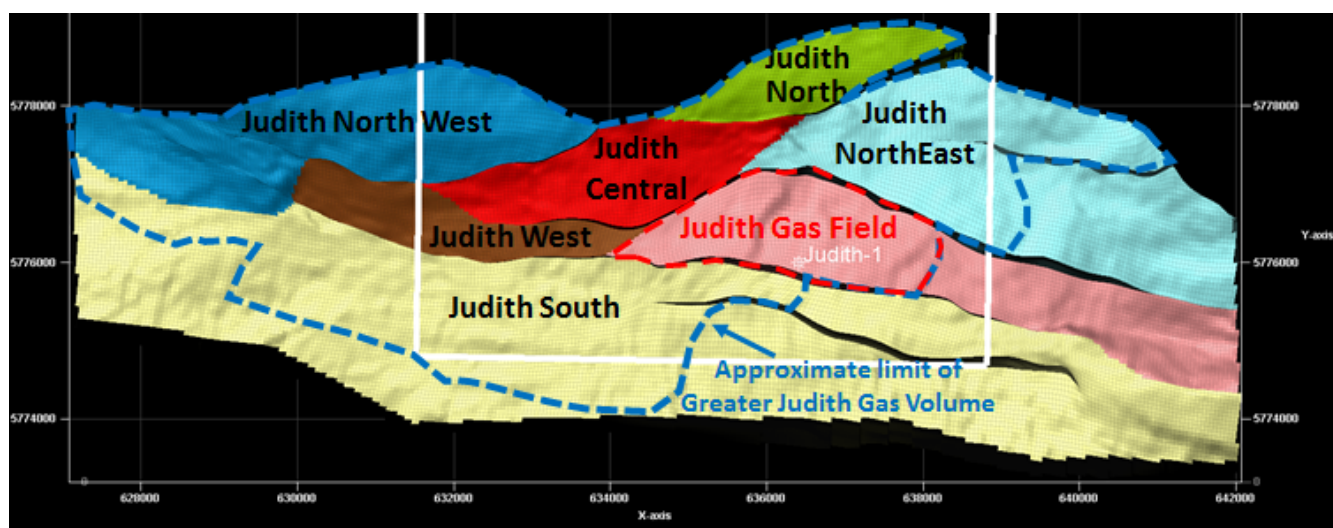
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Interpretation of the reprocessed seismic data was undertaken by 3D GEO and by Emperor's Geoscience Advisor. By utilizing the G01 Northern Fields 3D seismic data, the seismic interpretation was extended beyond the permit area to the key South East Longtom-1 and Longtom Gas Field wells. A 3D structural model of the horizons was generated from the seismic interpretation of the reservoir horizons.



**Figure 7: 3D Structural and Stratigraphic Static Model of the Greater Judith Structure (3D-GEO)**

3D-GEO/Emperor then constructed and populated a static geological model in Schlumberger's Petrel software with which they evaluated the resources in the Judith-1 block and the Greater Judith structure. Parameter averages were then extracted for each fault compartment and fluid contact scenario and input into a Monte Carlo statistics package by 3D-GEO from which probabilistic Gas-in-Place (GIP) and Recoverable Resources were calculated.



**Figure 8: Judith Gas Field, Prospects and Leads (3D-GEO, November 2018)**





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3D-GEO initially used a P50 gas column height of 450 m in each block, slightly less than the gas column height of the main 200 reservoir sandstone in the analogue Longtom Gas Field. This model derived a probabilistic P50 Gas-in-Place of 2.513 Tcf and a P50 Prospective Gas Resource of 1.378 Tcf within the VIC/P47 permit. Geological risking was not applied to these estimates.

The subsequent RISC assessment was based on a P50 gas column height of 350 m in each block, which is the approximate average of gas column heights in different sands in several fields in the region. This reduction in column height derived a P50 Gas-in-Place of 1.822 Tcf, a 2C Contingent Resource of 122 Bcf recoverable

Sales Gas within the Judith-1 discovery block and an additional P50 Prospective Resource of 844 Bcf Sales Gas in the Greater Judith structure within the Vic/P47 permit. (see the Emperor Energy ASX Market Announcement on 12th November 2018 for details).

### Source References

- 1 RISC (2018): Judith Gas Field: Independent technical specialist's report for Emperor Energy Limited, November 2018
- 2 Emperor Energy Limited (2018): Independent resource statement - Judith Gas Field, offshore Gippsland Basin, Victoria, 100% Emperor owned, 12 November 2018. ASX market announcement. Available at <https://emperorenergy.com.au/wp-content/uploads/2018/11/ASX-release-12-Nov-18.pdf>
- 3 AEMO (2018): Victorian gas planning report update. March, 2018. Report available at: [https://www.aemo.com.au/-/media/Files/Gas/National\\_Planning\\_and\\_Forecasting/VGPR/2017/2018---Victorian-Gas-Planning-Report-Update.pdf](https://www.aemo.com.au/-/media/Files/Gas/National_Planning_and_Forecasting/VGPR/2017/2018---Victorian-Gas-Planning-Report-Update.pdf)
- 4 Offshore Technology (2018): Longtom Gas Field, Gippsland Basin. Webpage available at: <https://www.offshore-technology.com/projects/longtom-field/>
- 5 ExxonMobil (2018): Kipper Tuna Turrum (KTT). Webpage available at: <https://www.exxonmobil.com.au/en-au/energy/natural-gas/natural-gas-operations/kipper-tuna-turrum>
- 6 Cooper Energy Limited, 2018: Reserves and contingent resources update at 30 June 2018. Media release available at <https://www.cooperenergy.com.au/Upload/Documents/AnnouncementsItem/01-2018.08.10-ASX-Reserves-and-Resources-at-30-June-2018.pdf>
- 7 The Australian (2017), "Oil giants ExxonMobil and BHP bid for delay on new Bass Strait gas", 30 May 2017, available at <https://www.theaustralian.com.au/business/mining-energy/oil-giants-exxonmobil-and-bhp-bid-for-delay-on-new-bass-strait-gas/news-story/a2fcf1fdce5e889b38344be5678b0d9c> (paywall).
- 8 Seven Group Holdings Investor Presentation 3<sup>rd</sup> May 2018.

### Competent Persons Statement

#### Consents

The technical information in this ASX release is based on, and fairly represents, data and supporting documentation supplied in an Independent Technical Resource Evaluation Report prepared by 3D-GEO Pty Ltd. The preparation of this report has been managed by Mr Keven Asquith who is CEO and Director of 3D-GEO. The Dynamic Modelling was conducted by 3D-GEO senior reservoir engineer Juan Carlos Marroquin Cabrera.



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**Mr Asquith** holds an Honours BSc. Geology - University of Western Ontario, 1978, and a Diploma in Project Management – University of New England, 2000. Mr Asquith has over 35 years' experience in the sector and is a 30 year member of the AAPG.

**Mr Marroquin Cabrera** holds an MSc in Petroleum Engineering from Texas A&M University and a BSc in Petroleum Engineering from the Universidad de America in Bogota, Colombia. Juan Carlos has over 30 years' experience in the petroleum sector and is a member of the SPE, CPIP and ACIPET.

**3D-GEO** was founded in 2001 to provide technical support to companies associated with the oil and gas industry. The company has successfully completed over 200 projects including evaluations in Australia, NZ, Asia, Sub-Continent, Middle East, North and South America. The company currently has offices in Melbourne, Australia and Santa Cruz, Bolivia.

“**Prospective Resources**” are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects. Prospective Resources have both a chance of discovery and a chance of development.

Yours faithfully



**Carl Dumbrell**

**Company Secretary**

Ph +61 402 277 282

[carl@emperorenergy.com.au](mailto:carl@emperorenergy.com.au)

## **Corporate Directory**

### *Board of Directors*

Carl Dumbrell

Philip McNamara

Malcolm King

Nigel Harvey

### *Company Secretary*

Carl Dumbrell

### *Geological Consultant*

Geoff Geary

### *Registered office & Principle place of business*

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Sydney NSW 2000

### *Mailing Address*

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Sydney NSW 2001

### *Auditors*

Deloitte

550 Bourke Street

Melbourne Vic 3000

### *Lawyers*

Hopgood Ganim

Level 27, Allendale Square

77 St Georges Tce, Perth WA 6000

### *Share Registry*

Automic Pty Ltd ACN 152 260 814 Trading as Automic Registry Services

Level 5, 126 Phillip Street

Sydney NSW 2000

Phone: 1300 288 664    Overseas callers: +61 2 9698 5414    Facsimile: +61 2 8583 3040

### *Capital Structure*

The company currently has issued capital (as at 20 May 2019) of:

Ordinary fully paid shares	(ASX: EMP)	1,017,859,728
Options expiring 31 March 2020 (Ex \$0.005)	(ASX: EMPOC)	518,051,398



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**Top 20 Shareholders – 20 May 2019**

<b>Position</b>	<b>Holder Name</b>	<b>Holding</b>	<b>%</b>
1	Citicorp Nominees Pty Limited	105,081,934	10.32%
2	Scintilla Strategic Investments Limited	80,000,000	7.86%
3	Sama Zaraah Pty Ltd	48,855,000	4.80%
4	D J Peters	45,962,954	4.52%
5	Bond Street Custodians Limited	43,747,101	4.30%
6	Raxigi Pty Ltd	33,226,287	3.26%
7	Littlejohn Embrey Engineering Pty Ltd	26,984,589	2.65%
8	M Rowney	25,000,000	2.46%
9	C Dumbrell	22,000,000	2.16%
10	Tomlin Sales Pty Ltd	21,555,885	2.12%
11	Harness Pty Ltd	20,125,000	1.98%
12	Buduci Fond Pty Ltd <Hromin and Tracey Super>	19,067,617	1.87%
13	M O'Leary	18,000,000	1.77%
14	N Misra	17,166,666	1.69%
15	The Australian Special Opportunity Fund LP	16,666,667	1.64%
16	Acec Superannuation Fund Pty Ltd <Acec Super Fund>	15,100,000	1.48%
17	B Pedley	15,000,000	1.47%
18	W & J MARCH <March Family Super Fund>	15,000,000	1.47%
19	Arlam Pty Ltd	15,000,000	1.47%
20	Super MSJ Pty Ltd <MSJ Super Fund>	14,000,000	1.38%