

# Larus Energy Limited

### ANNUAL GENERAL MEETING, 6TH JUNE, 2019 COMPANY UPDATE

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#### Torres Basin – type section Seismic Stratigraphy - the major G&G exploration tool Lithology Predictor





Note: extreme H:V exaggeration 10:1

#### Torres Basin Sunday and Vekwala Prospects Structures are quite clear





#### Torres Basin Proven Petroleum System - oil

Tel: (281) 856-9333 GEOMARK GEOCHEMICAL SUMMARY SHEET info@geomarkresearch.com www.geomarkresearch.com U. Depth (ft) Lab ID: AU1196 Country: Australia State/Prov L. Depth (ft) Sample ID: RLEN-180501-000 Basin Res. Age Client ID Field Res. Formation Lat APL Well: A.B.C. Water Sample Long: **BULK PROPERTIES** Stable Isotope Composition C15 + Composition API Gravity: 215+ 813C Saturate: -28.42 % VPDB %<C15:46.4 % Sat: 70.2 -813C Aromatic: -26.32 % Aro: 23.3 % S: 0.03 Canonical Variable: 1.82 % NSO: 6.6 ppm V: % VPDB Whole Oil 813C: -27.66 % Asph: 0.0 nom Ni: Whole Oil 834S 56 VCDT Sat/Aro: 3.02 EOM: Miscellaneou WHOLE CRUDE GAS CHROMATOGRAPHY Pr/Ph: 4.53 Pp/nC17: 0.95 Ph/nC18: 0.25 nC27/nC17: 0.12 C19\*2/(nC18+nC20): 0.99 CPI: 1.21 **OilMod Ratio** OUANTITATIVE SATURATE BIOMARKERS C19/C23: 1.55 ppm C30 Hopane: 6 C22/C21: 0.3 C24/C23: 0.66 C26/C25: 1.19 Tet/C23: 1.08 C27T/C27: 0.10 Terpanes C28/H: 0.02 C29/H: 0.66 m/2.191 C30X/H: 0.16 OL/H: 0.12 C31R/H: 0.16 GA/C31R: 0.14 358/C348: 3.12 Ster/Terp: 0.66 Dia/Reg: 1.69 %C27: 33.4 %C28: 34.4 %C29: 32.2 Steranes C29 205/R: 0.94 m/z 211 29 bbS/aaR: 0.70 C27 Ts/Tm: 1.96 C29 Ts/Tm: 0.40 DM/H: 0.07 C26/Ts: 0.23 Projected Source Rock Type 400 Thermal Maturity Level: Degree of Biodegradation 1 of 2 14-Jun-18 55300 80300 45300 55300 55300 25300 25300 15300 5.00 40.00 45.00 50.00 " datab " " Astab " " Astab " " Astab 1.000 Aryl Isoprenoids Aromatic Dinosteroids m/z = 133m/z 245 2 of 2 14-Jun-18

- 1. The oil is a very light oil at the surface but was probably in the gas phase in the subsurface (i.e. a gas condensate).
- 2. The oil has experienced no significant liquids to gas cracking in the reservoir maturation indicates 4 km deep source?
- 3. The oil was formed from a clastic (clay rich) source rock of late Cretaceous to Paleogene age containing a mixture of marine algal and land-plant organic matter.
- 4. The likely depositional environment is a paralic-marine deltaic setting with transported land-plant organic matter deposited under open-water (suboxic to oxic) marine conditions.
- 5. The geochemistry of the oil does not place it among any previously identified fluid family.
- 6. The molecular composition of the oil indicates a source rock with a tendency to produce mixed oil and gas, with a slight bias towards gas-condensates.
- 7. Source rocks of this type would be expected to lead to both oil and gas resources.





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Torres Basin Oil migration into pre-existing structures Oil and Gas 'kitchens' possible







- Regional dip and structure implies general north to south migration.
- Paleogene source oil fill spill migration to Upper Cretaceous reservoirs.
- Jurassic source oil/gas fill spill and/or fault migration to any trap.

#### Torres Basin Plays are numerous – blue sky region





- 9. Jurassic, fluvio-lacustrine thrust anticline
- 10. Triassic, fluvio-lacustrine thrust anticline
- 11. Permian Basin rotated fault block.

#### Torres Basin Multiple Petroleum Systems Possible





Time-space p



## **Farm-in Factors**



Economic Risk = Price/bbl/mcf

#### PPL579 Gravity Data





Risk reduced and resource more certain



Gravity data can often be used as An inexpensive regional mapper. It gives shape but not height.

Saxon Palmer From data to discoveries Eastern Papuan Basin PNG Mining & Petroleum Conference Port Moresby, PNG 25th November 2015

#### PPL579 Magnetic Data





Figure 2. Bara aeromagnetic survey Total Magnetic Intensity (RTP) image showing location of Gobe to V modelled profile.



Figure 12. Final Gobe-Wamanu magnetic profile with variable basement susceptibilities, minor adjustment to Ieru Formation/Kerabi Sandstone structure and input of variable Orubadi to Recent magnetic susceptibilities.



Scotford, Pratt and Shi (Proceedings of the 3<sup>rd</sup> PNG Convention 1996 Petroleum Exploration, Development and Production in Papua New Guinea Edited by Peter G. Buchanan) Magnetic data can often be used as an inexpensive regional mapper. It gives shape but not height.

#### PPL579 Planned airborne geophysics to reduce structural risk and Open up the onshore region

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#### PPL579 Planned regional review to reduce reservoir risk



**ENERGY** 

# Summary

- PPL579 work program favourable within the current exploration climate. Years 1 & 2 commitment met.
- Favourable work commitment for Years 3 & 4.
- Seismic database improvements consolidate Larus geological model. Seismic data trade to give further improvements.
- The first oil seep discovery in the Torres Basin greatly reduces the exploration risk. Ongoing analysis will further reduce risk.
- Farmout efforts are targeted and on-going. Risk reduction through further G&G.
- Larus still of the view that the Sunday and Vekwala prospects are ready to drill.