

INVICTUS
ENERGY LIMITED

Additional samples reaffirm light oil, gas-condensate and helium in Mukuyu-1

31 August 2023

HIGHLIGHTS

- **Completed mudgas analysis program reaffirms presence of light oil, wet gas and condensate and helium in Mukuyu-1**
- **Sidewall core analysis also indicates light oil and gas condensate presence, consistent with mudgas results**
- **Organic shales in Upper Angwa show quality source rock with TOC up to 10%, indicating potential for generation of light oil and wet gas**
- **Upcoming drilling at Mukuyu-2 well to cover all prospective intervals, with spud due next month**

Invictus Energy Limited ("Invictus" or "the Company") is pleased to provide an update on results from Mukuyu-1 at its 80% owned and operated Cabora Bassa Project in Zimbabwe.

Comments from Managing Director Scott Macmillan:

"Further results from mudgas samples reaffirm the presence of light oil, gas-condensate and helium at Mukuyu-1, over a 1,000m interval in the Pebbly Arkose and Upper Angwa formations.

"Source rock analysis also demonstrates the presence of organic shales, with total organic content (TOC) up to 10%, in the same interval as our primary reservoirs in the Upper Angwa, which is mature for hydrocarbon generation and expulsion.

"These results validate the presence of multiple hydrocarbon bearing reservoirs in the Mukuyu-1 / ST-1 well, as well as the Company's basin and geological models of the Cabora Bassa project.

"Mukuyu-1 has clearly demonstrated a working petroleum system in this frontier basin and Invictus' exclusive position in the Cabora Bassa basin bodes well for future exploration success.

"The Pebbly Arkose and Dande Formation reservoirs remain exploration targets for future drilling activity and will also be tested in the upcoming Mukuyu-2 well, which is on track to spud in September."

ABOUT INVICTUS ENERGY

Invictus Energy Ltd is an independent oil and gas exploration company focused on high impact energy resources in sub-Saharan Africa. Our asset portfolio consists of a highly prospective 360,000 hectares within the Cabora Bassa Basin in Zimbabwe. SG 4571 and EPOs 1848/49 contain the Mukuyu and multiple Basin Margin prospects

BOARD & MANAGEMENT

John Bentley Non-Executive Chairman	Joe Mutizwa Non-Executive & Deputy Chairman	Scott Macmillan Managing Director	Robin Sutherland Non-Executive Director
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Gabriel Chiappini
Non-Executive Director
& Company Secretary

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Result summary

Analysis of an additional 22 mudgas samples acquired from the Mukuyu-1 / ST-1 well has been completed, with the latest results reaffirming the presence of light oil, gas-condensate and helium, as [announced](#) earlier this year.

The geochemical samples were taken from the Pebbly Arkose and Upper Angwa formations and show a generalised trend of increasing dryness with depth.

The latest results reinforced the presence of consistent, high quality natural gas with low inert content and samples contain less than 1% CO₂, which will require minimal processing.

Whole extract analysis of fluids from a sidewall core obtained from Mukuyu-1 in a reservoir interval in the Upper Angwa has also shown the presence of light oil or gas condensate.

This is consistent with the analysis results from the nearest mudgas sample acquired from the same reservoir interval which displayed elevated gas shows observed while drilling Mukuyu-1 and up to 135 times above background gas baseline and fluorescence.

Organic shales have also been found in rock samples from the Upper Angwa, with total organic content (TOC) up to 10%, and is well within the maturity window for the generation and expulsion of volatile oil, condensate and wet gas.

This finding is consistent with mudgas composition and isotope results, and further basin modelling is underway to better understand the potential of this organic matter to generate hydrocarbons.

Further technical information can be found in **Appendix 1** of this announcement.

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Appendix 1

Mukuyu-1 / ST-1 additional mudgas compositional and isotope analysis

The Company previously [announced](#) compositional data for five prioritised mudgas samples, which indicated the presence of light oil, gas-condensate and helium across multiple Upper Angwa formation sandstone reservoirs.

Analysis has now been completed for all 27 mudgas samples from the Pebbly Arkose and Upper Angwa Formations and results have confirmed these findings, showing a generalised trend of increasing dryness with depth, as shown in Figures 1 and 2.

The samples analysed demonstrate consistent high quality natural gas with low inert content and contain less than 1% CO₂, which will require minimal processing.

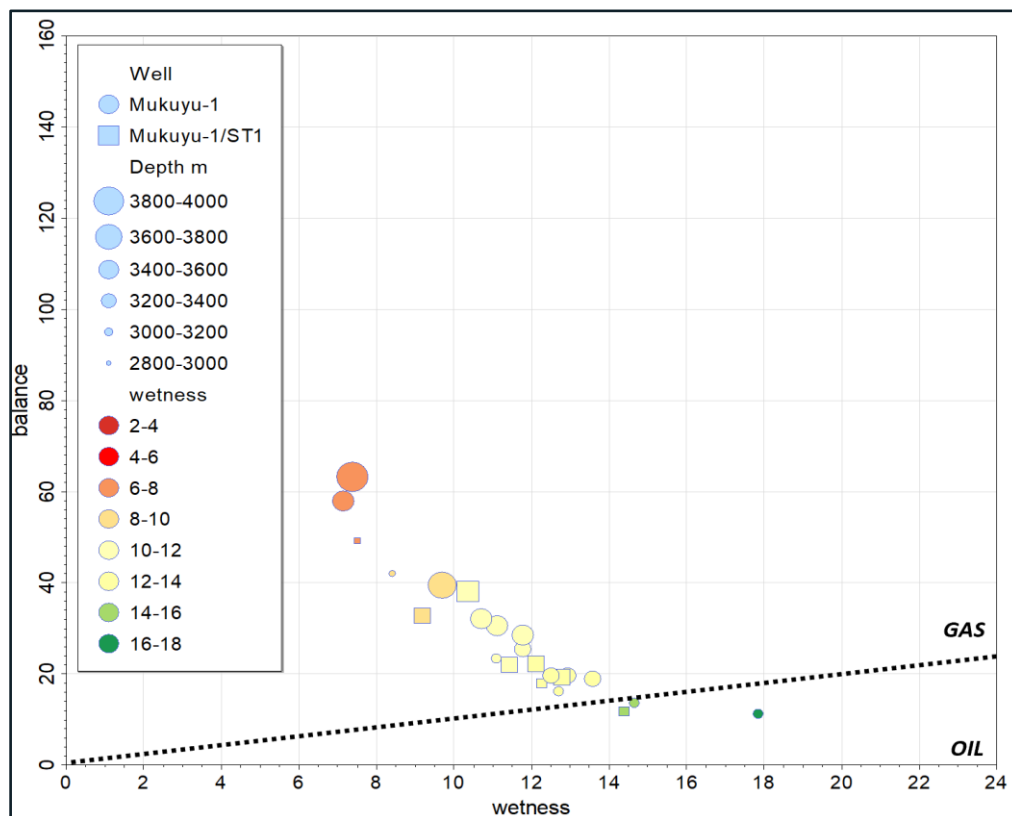


Figure 1 - Mukuyu-1/ST-1 Upper Angwa mudgas wetness vs. balance ratio showing presence of light oil and gas condensate with increasing gas dryness (lower hydrocarbon liquids content) with depth.

The mudgas analysis results are consistent with the wireline log interpretation and fluorescence (up to 100%) ranging in colour from yellowish-white to yellow-blue (indicating light oil and gas condensate) observed while drilling in cuttings and from subsequent capture of sidewall cores throughout the Pebbly Arkose and Upper Angwa reservoirs.

The condensate gas ratio (CGR) is estimated to range from around 135 barrels of condensate per million standard cubic feet of natural gas (bbl/MMscf) in the shallowest reservoir interval analysed, decreasing with depth to <30 bbl/MMscf.



Figure 2 - Mukuyu-1 / ST-1 Upper Angwa mudgas sample analysis of gas balance and wetness ratios vs depth plots showing general trend of increasing gas dryness with depth.

Together with preliminary geochemical analyses on the physical rock samples from Mukuyu-1, including a suite of rotary sidewall cores and drill cutting, these results have provided new insights into the Cabora Bassa petroleum system.

Sidewall core whole extract analysis reaffirms light oil presence

Whole extract analysis was performed on a sidewall core obtained from the Mukuyu-1 wellbore, at a depth of 3,168m measured depth (mMD), in a reservoir interval in the Upper Angwa which displayed hydrocarbon fluorescence.

The gas chromatograph fingerprint from the whole extract shows the presence of liquids (light oil or gas condensate) within the sidewall core and is consistent with the analysis of the nearest mudgas sample (approximately 3172mMD) from the same reservoir interval.

The whole extract sample also coincides with elevated mud gas peaks through this interval (up to 135 times above background gas baseline while drilling through a depth of 3,171 mMD) which were observed during the drilling of Mukuyu-1.

Figure 3 shows the whole extract gas chromatograph fingerprint with heavier hydrocarbons up to C30 extracted from the core.

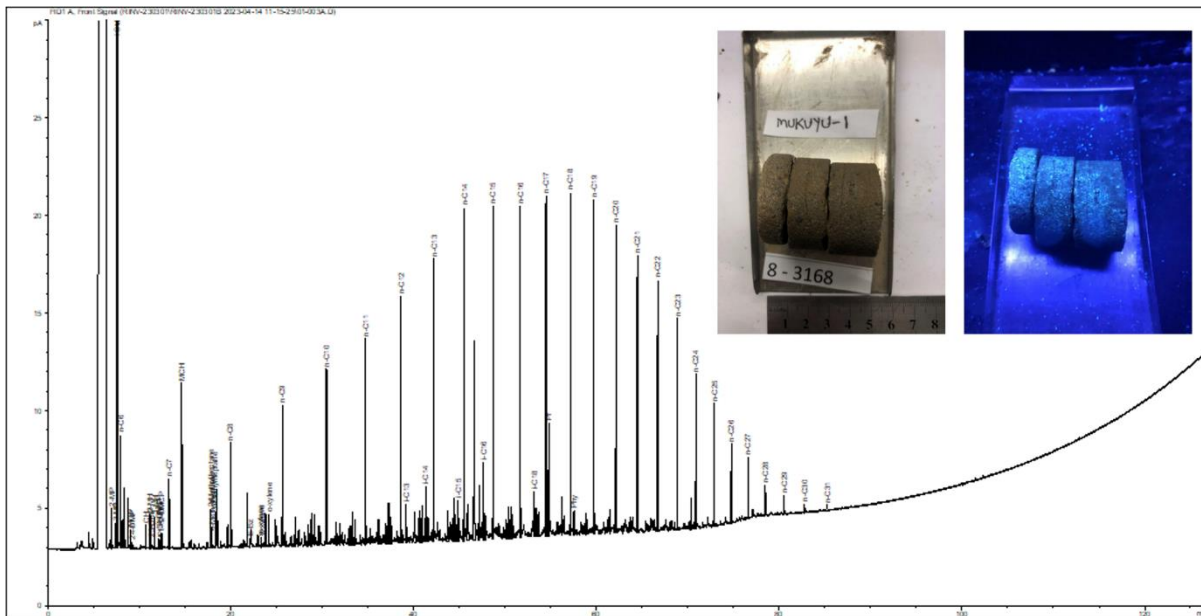


Figure 3 - Sidewall core fluid extract from sample in Mukuyu-1 @ 3168mMD showing light oil / condensate fingerprint consistent with fluorescence observed under ultraviolet light.

Upper Angwa formation shales show positive hydrocarbon generation potential

RockEval (pyrolysis) analyses on sidewall cores and cuttings from the Upper Angwa formation indicate present day total organic carbon (TOC) values, a measure of source rock richness, of up to 10%.

Similarly, vitrinite reflectance measurements, an indication of source rock maturity, range from 0.83%Ro to 1.26%Ro through the Upper Angwa, placing these types of source rocks within the maturity window for the generation and expulsion of volatile oil, condensate and wet gas.

Early extract analysis from these samples indicates the dominant Upper Angwa source rock facies contain land plant-derived organic matter and was deposited under variable oxic-anoxic conditions.

Organic matter of this type has the potential to generate wet gas and condensate or light oil, consistent with the mudgas composition and isotope results. Extract analysis from fluorescence in sandstones suggests a strong relationship between the liquid hydrocarbon component and Upper Angwa source rock samples with the highest land plant organic matter content. Further geochemical analysis will help confirm the nature of this relationship.

Isotopic analysis of the mudgas samples suggests most hydrocarbons recovered from the well are derived from similar source rocks at similar maturities.

The composition and maturity range of the Upper Angwa source rock samples suggest it is the most likely source of these hydrocarbons.

Some mudgas samples show an isotopically different methane contribution suggestive of the presence of additional source kitchens and/or migration pathways. Further basin modelling is underway to understand the implications of these findings.

Mukuyu-2 appraisal well proximal to mature Upper Angwa source rock

Mukuyu-2 is located approximately 6.8km to the north-east of Mukuyu-1, targeting a prominent horst block within the greater Mukuyu structural closure.

The primary target interval, the Triassic Upper Angwa formation, sits approximately 400m shallower at Mukuyu-2 than at Mukuyu-1.

This location will provide excellent information on the distribution and reservoir quality of Upper Angwa sands with the Upper Angwa source rocks modelled to be within the maturity window for light oil and gas condensate.

The Mukuyu-2 well trajectory (Figure 4) is planned to be near vertical from the surface location (maximum inclination of 12°) to provide optimal penetration of several stratigraphic intervals within the same structural horst block, while minimising operational complexity for drilling and formation evaluation activities.

The well will also penetrate multiple additional targets including the Dande (Jurassic-Cretaceous), Forest and Pebbly Arkose (both Triassic) formations within the Mukuyu anticline in the central horst structure as shown in Figure 4 (overpage).

The well will be drilled to a planned total depth of approximately 3,700m to penetrate seismic reflectors, interpreted to be the Lower Angwa sequence.

Mukuyu-2 remains on track to spud in September.

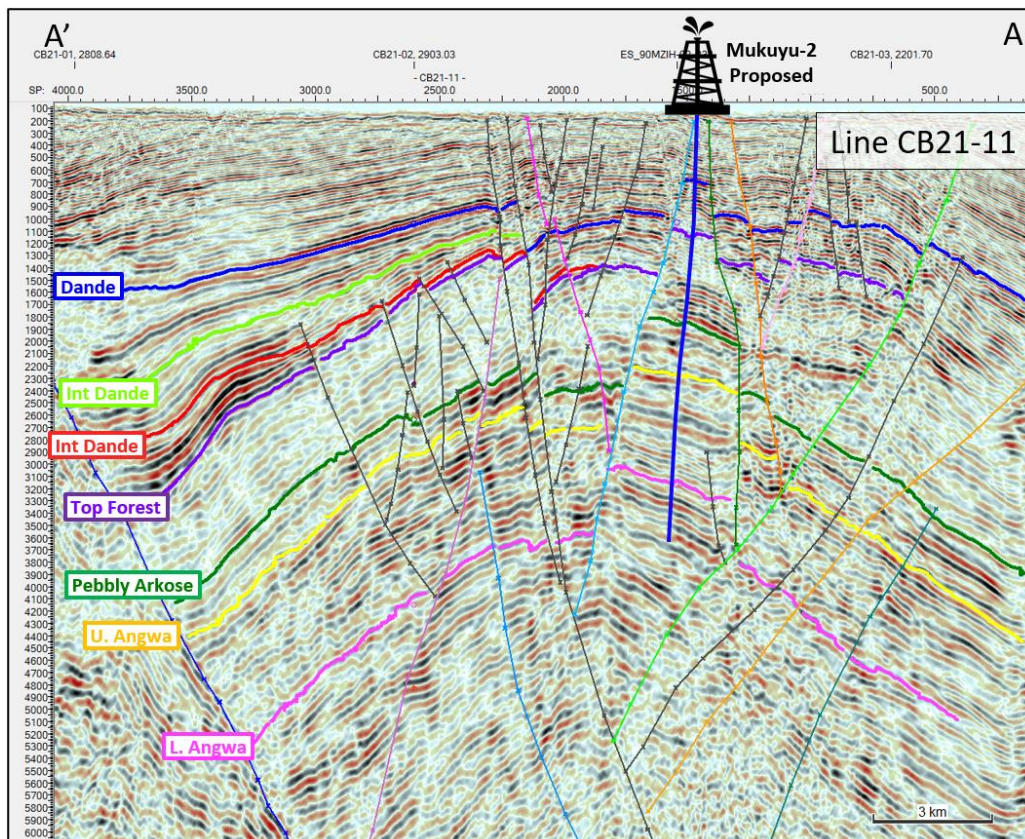


Figure 4 - Mukuyu-2 planned well trajectory and seismic cross section.

Approved for release by the Board

Questions and enquiries

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About Invictus Energy Ltd (ASX: IVZ)

Invictus Energy Ltd is an independent upstream oil and gas company listed on the Australian Securities Exchange (ASX: IVZ). The Company is headquartered in Perth, Australia and has offices in Harare, Zimbabwe. Invictus is opening one of the last untested large frontier rift basins in onshore Africa – the Cabora Bassa Basin – in northern Zimbabwe through a high impact exploration programme.

Invictus Energy is committed to operating in a safe, ethical and responsible manner, respecting the environment, our staff, contractors and the communities in which we work.

#Cautionary Statement: *The estimated quantities of petroleum that may be potentially recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration, appraisal and evaluation are required to determine the existence of a significant quantity of potentially movable hydrocarbons. Prospective Resource assessments in this release were estimated using probabilistic methods in accordance with SPE-PRMS standards.*

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