



INVICTUS  
ENERGY LIMITED

# Multi Tcf prospectivity identified in Eastern Cabora Bassa

3 September 2024

## HIGHLIGHTS

- **Prospective Resource<sup>#</sup> of 2.9 Tcf gas and 184 million bbl condensate (gross mean unrisks<sup>#</sup>) estimated across eight prospects in eastern Cabora Bassa Basin**
- **Vertically stacked prospects enables individual exploration wells to test multiple targets**
- **Eastern basin prospectivity significantly de-risked by Mukuyu gas field and well data**
- **Evidence of oil migration in Mukuyu-2 Dande Formation sidewall cores proves hydrocarbon migration**
- **An exploration well at Musuma targeting > 1 Tcf of gas is planned for 2025 to test the Dande play**

Invictus Energy Limited ("**Invictus**" or "**the Company**"), is pleased to provide an update on activities at its 80% owned and operated Cabora Bassa Project in Zimbabwe.

Following the completion of the interpretation of the CB23 Seismic Survey data and a review of prospectivity in the eastern Cabora Bassa basin, eight key prospects have been defined in the Company's Exclusive Prospecting Orders (EPOs) 1848 and 1849, totalling 2.9 Tcf gas and 184 MMbbl condensate<sup>#</sup> (gross mean unrisks basis).

The Company will focus its next exploration drilling campaign, initially targeting the Musuma prospect (estimated to contain 1.17 Tcf - gross mean unrisks basis<sup>#</sup>) to test the eastern gas prospectivity, in addition to further appraisal drilling in the Mukuyu gas field.

*<sup>#</sup>Cautionary Statement: These estimated quantities of petroleum that may be potentially recovered by the application of a future development project relate to undiscovered accumulations. The estimates have both a 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 recoverable hydrocarbons. Prospective Resource assessments in this release were estimated using probabilistic methods in accordance with SPE-PRMS standards.*

### 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 newly discovered Mukuyu gas field and multiple Basin Margin prospects

### BOARD & MANAGEMENT

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

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## Managing Director Scott Macmillan commented:

*"We're extremely pleased with the results from the CB23 seismic survey which has identified material prospectivity in the eastern portion of our acreage.*

*Exploration success at these prospects would prove up a further material play within Invictus' acreage.*

*"This would also assist with unlocking additional significant value in the portfolio and ultimately aligns with the Company's early gas monetisation strategy.*

*"We have identified some high-confidence drill targets for the Company's next exploration campaign - I look forward to providing further updates as we progress the Mukuyu gas field testing and appraisal, farm out, and the wider Cabora Bassa exploration program."*

## **Eight high potential prospects identified**

The Company previously [announced](#) the identification of new prospects in the Dande Formation in the east of the basin. Further work has since been completed to mature these and additional prospects in the deeper Pebbly Arkose (Upper Triassic) and Angwa (Lower-Mid Triassic) Formations to assess prospective volumes (Figure 1) and high-grade drilling candidates.

The interpretation of the 2023 2D (CB23) seismic survey data identified multiple prospects with high potential gas volumes at multiple stratigraphic levels.

The targets' relatively shallow depths and, in some cases, stacked prospective intervals can be tested with simple vertical wells.

Based on the Company's 80% share in the Cabora Bassa project, Invictus' net share of this prospective resource would equate to 2.3 Tcf and 147 MMbbl condensate (mean unrisks basis, prior to the exercising of any back-in rights)<sup>4</sup>.

These central fairway gas prospects in the eastern portion of Invictus' exploration portfolio are in addition to the prospective resource associated with the previously reported [Basin Margin prospects](#) (Figure 1).

The Company will conduct a further evaluation of the Basin Margin play to select additional prospects for a future drilling campaign.

A summary of the estimated prospective resources associated with these new prospects are provided in Table 1.

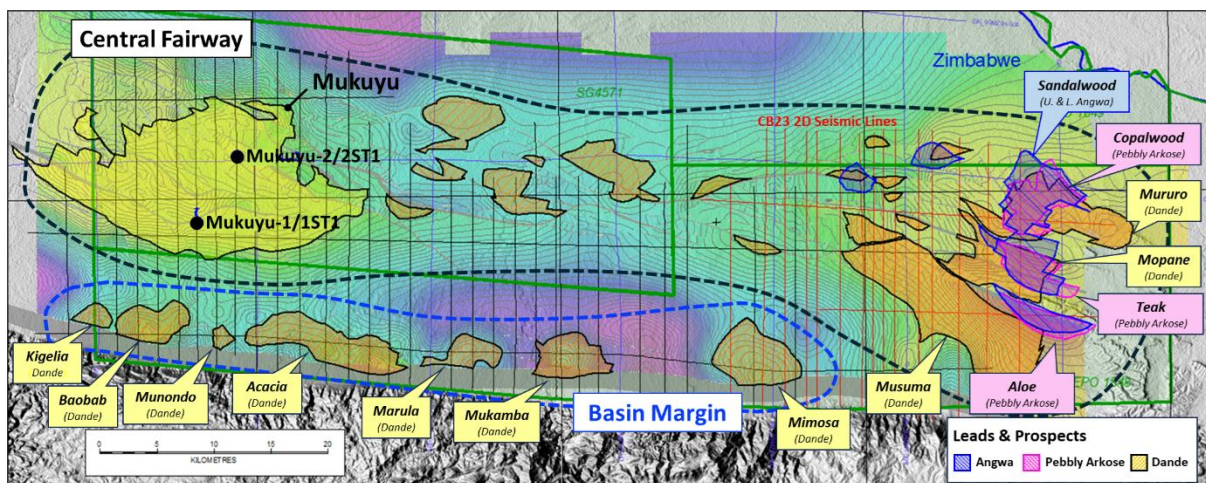


Figure 1: Invictus' Cabora Bassa basin exploration portfolio

Play	Prospect	Estimated Prospective Resource (Unrisked)							
		Gas, Bcf (100%)				Condensate, MMbbl (100%)			
		Mean	P10	P50	P90	Mean	P10	P50	P90
Dande	Musuma	1,170	3,157	539	92	73	197	34	6
	Mopane	316	876	122	18	20	54	8	1
	Muroro	296	827	108	15	19	51	7	1
Pebbly Arkose	Aloe	157	393	95	22	10	24	6	1
	Copalwood	109	302	47	7	7	18	3	1
	Teak	172	474	81	14	11	28	5	1
Angwa	Sandalwood UA	370	1034	74	6	23	63	5	0
	Sandalwood LA	331	932	75	6	21	56	5	0
<b>TOTAL (100% Gross)</b>		<b>2,921</b>				<b>184</b>			
<b>TOTAL (80% Net)</b>		<b>2,337</b>				<b>147</b>			

Table 1 - Summary of estimated prospective resources associated with Invictus' eastern Cabora Bassa basin prospects

Play	Prospect	Chance of Success, %						
		Source	Migration	Reservoir	Trap Presence	Trap Effectiveness	Overall excl. DHI Boost	Overall incl. DHI Boost
Dande	Musuma	90	70	80	60	73	18	38%
	Mopane	90	50	55	70	20	13	24%
	Muroro	90	50	55	70	19	13	22%
Pebbly Arkose	Aloe	90	90	70	70	10	26	26%
	Copalwood	90	90	70	90	7	26	26%
	Teak	90	90	70	90	11	26	26%
Angwa	Sandalwood UA	90	90	35	95	23	24	31%
	Sandalwood LA	90	90	35	95	21	24	31%

Table 2 - Assessed chance of success elements by prospect for Invictus' eastern Cabora Bassa basin prospects

**Musuma target firms as favoured candidate to test Dande play in 2025**

The Musuma prospect (Figure 2) has emerged as the favoured candidate to test the Dande play in the eastern Cabora Bassa. The prospect has interpreted seismic amplitude support and is estimated to have a recoverable prospective resource of 1,170 Bcf and 73 million barrels of condensate (gross mean unrisked basis)<sup>#</sup>.

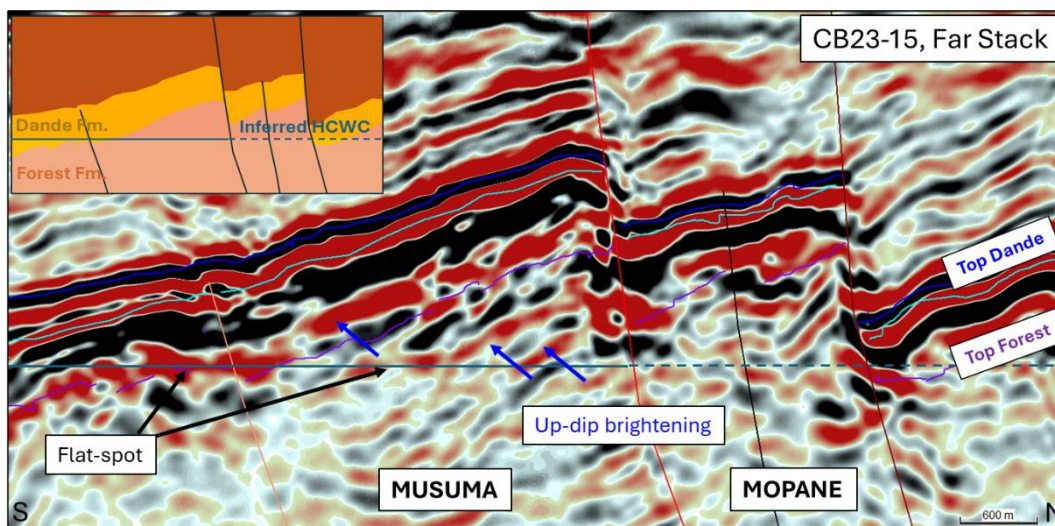


Figure 2: Seismic section through Musuma (see May 2024 Announcement for more details)

Good quality reservoir sands were encountered in the Dande Formation at Mukuyu-2 and sidewall core petrography has revealed residual hydrocarbon staining in a thin-section of a

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core (Figure 3) obtained from an interval where residual hydrocarbons were calculated from well logs.

The presence of hydrocarbons in the Angwa Formation at Mukuyu has de-risked the presence of mature source rocks in the basin. Furthermore, the residual hydrocarbons in the Dande Formation at Mukuyu-2 show there has been migration of hydrocarbons to this shallower stratigraphic level. Together, these observations are positive for charge for the Dande play in the wider basin.

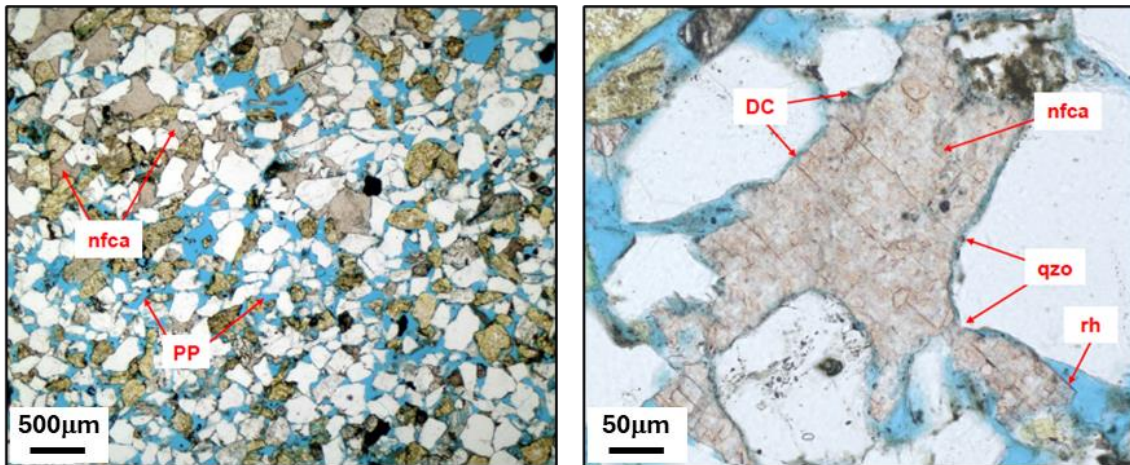


Figure 3: Photograph (plane polarised light) of a thin section from Dande Fm. sidewall core from Mukuyu-2 (755.20m) at two different scales. Blue colouration in the images indicates pore space in the rock. In the close-up image (right), a thin layer of residual hydrocarbons (labelled rh) is visible.

At Mukuyu-2, the Dande Formation is penetrated in a fault-bounded, narrow horst block. The residual hydrocarbon saturations encountered imply a failure of the trap at that location. Thin sands are observed in the overlying shale-dominated sequence and perhaps compromise the topseal or act as thief zones when juxtaposed across the structure-bounding faults. Trap considerations remain a key risk element for Musuma but the inferred amplitude support there, absent in the Dande Formation above Mukuyu, is a positive indication that the trap is working.

In the case of exploration success at Musuma, potential follow-up prospects in the Dande play – at Mopane and Mururo – also overlie Pebbly Arkose and Angwa prospects. The Angwa formation in these eastern basin prospects is significantly shallower (present day) than at Mukuyu. This vertical stacking allows for the testing of multiple prospects with simple, vertical exploration wells.

The Exalo 202 rig remains onsite at the Mukuyu-2 location and is available for a 2025 exploration drilling campaign.

**-Ends-**

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Approved for release by the Board

## Questions and enquiries

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### Notes

1. The estimated quantities of Prospective Resources stated above may potentially be recovered by the application of a future development project(s) relate to undiscovered accumulations. These estimates have both an associated risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially moveable hydrocarbons.
2. The recoverable hydrocarbon volume estimates prepared by the Company and stated in the tables above have been prepared in accordance with the definitions and guidelines set forth in the Petroleum Resources Management System, 2018, approved by the Society of Petroleum Engineers.
3. The prospective resource estimates have been estimated using probabilistic methods using best estimate ranges for all relevant parameters. More detail is provided in the section below.
4. Figures noted as gross or 100% refers to the total resource of which Invictus has an 80% entitlement aligned with the Company's share of the Cabora Bassa project and licences and excludes any future back-in-right to be implemented by the Mutapa Investment Fund (on behalf of the Republic of Zimbabwe).
5. The estimates for unrisks Prospective Resources have not been adjusted for either a chance of discovery or a chance of development.
6. The total prospective resource provided is a simple arithmetic sum of the respective mean prospective resources of the individual prospects.
7. The estimated chances of geologic success (finding a minimum volume of moveable hydrocarbons) for each prospect are summarised Table 2. Where direct hydrocarbon indicators (DHIs) - such as flatspots or depth conformable amplitude anomalies - are interpreted in the seismic data a 'DHI boost' has been applied to the overall chance of success. The strength of the boost is based on the interpreted quality of the DHI where multiple consistent features across different seismic lines and surveys provides for a higher boost. The overall chance of success without the DHI boost is also provided in the table for transparency.
8. The chance of development is estimated at greater than 50%. The chance of development is the chance that once discovered, an accumulation will be commercially developed.

## Seismic and Well Data Sources and Volume Estimation Parameterisation

The background seismic dataset included Invictus' CB21 and new CB23 2D seismic surveys as well as a reprocessed Mobil 2D (1990) 2D seismic dataset (Figure 4).

The new CB23 Survey infills the existing surveys' coverage to provide much better data coverage to define the eastern basin prospectivity.

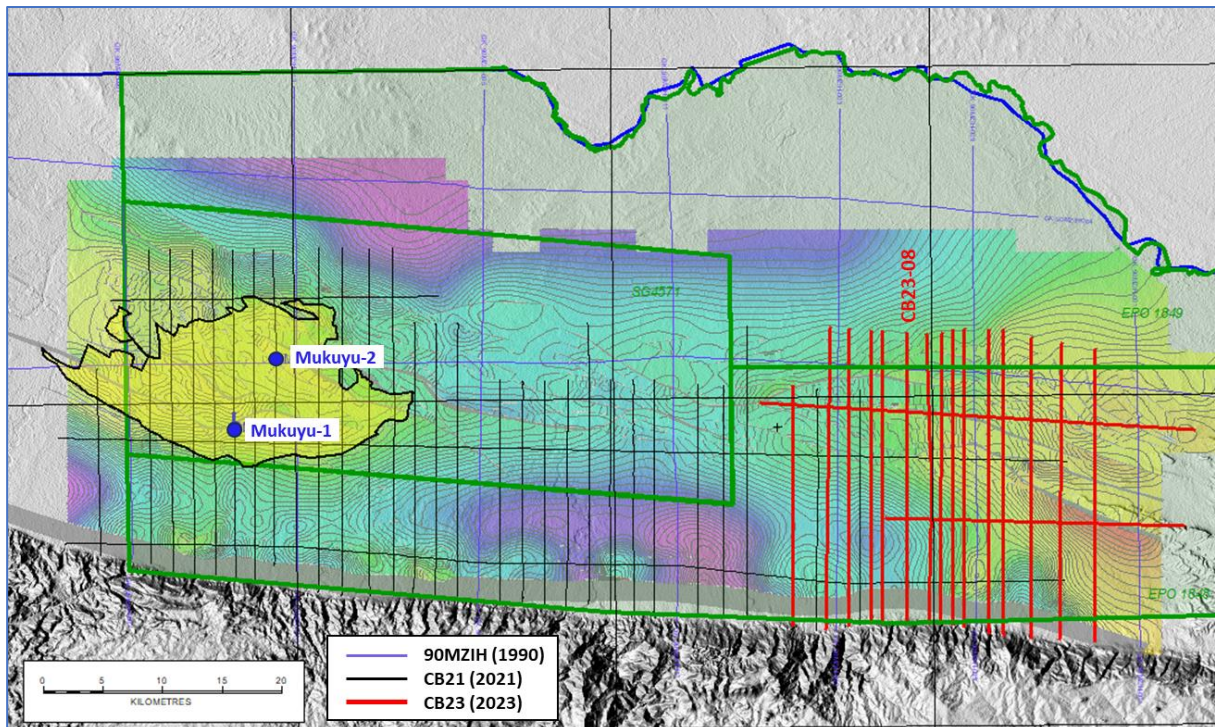


Figure 4: Invictus' seismic and well database in the Cabora Bassa basin. Prospects in the east of the basin are covered by Invictus' new CB23 2D seismic survey.

The seismic data was depth converted utilising Pre-Stack Depth Migration velocities which were extracted and smoothed to create average velocity maps for key horizons.

Data from Invictus' Mukuyu wells (Mukuyu-1/1ST1 and Mukuyu-2/2ST1), the first hydrocarbon wells in the basin, were used to inform key volumetric parameters and ranges.

Gross rock volumes (GRVs) were calculated for a range of column heights using the depth converted seismic horizons for key geological surfaces. For the volumetric simulation log normal GRV distributions were assumed. P90 GRVs were set according to high confidence, robust structural closures at the crest of the field. P10 GRVs were chosen to ensure the means of the distributions were slightly shallower than the lowest closing contour of the structure.

Net-to-gross ranges were chosen with consideration of the depositional environments of the respective units and benchmarked against the log data from the Mukuyu wells.

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Porosity input ranges were benchmarked against log data from the Mukuyu wells and varied by geologic play as a proxy for a depth dependence.

Hydrocarbon saturation ranges were treated consistently across the portfolio with values typical of gas-condensate accumulations.

Formation volume factors ranges are based on the fluids recovered at Mukuyu with consideration of the depth of individual prospects.

The hydrocarbon phase is assumed to be gas-condensate. A condensate-gas ratio (CGR) range consistent with that observed from the Mukuyu wells has been assumed to calculate condensate resources.

A consistent recovery factor range, based on typical gas-condensate fields, was applied across the portfolio for simplicity.

The volumetric input distributions were input into a probabilistic volumetric package to generate P90, P50, P10 and mean estimates of recoverable volumes via Monte Carlo simulation.

The wide variance between the P10 and P90 volume estimates for the prospects is consistent with the significant geological uncertainties that remain in the basin.

The primary geological risks to hydrocarbon discovery for the prospects presented in this announcement vary by prospect and are summarised in Table 2.

## Abbreviations

**MMbbl** – millions of barrels of oil or condensate

**scf** – standard cubic foot

**Bcf** – billion standard cubic feet

**Tcf** – trillion standard cubic feet

**PRMS** – Petroleum Resource Management System

**SPE** – Society of Petroleum Engineers

## Disclaimer

**\*Cautionary Statement for Prospective Resource Estimates** - With respect to the Prospective Resource estimates contained within this report, it should be noted that the estimated quantities of Petroleum that may potentially be recovered by the future application of a future development project may relate to undiscovered accumulations. These estimates have an associated both a risk of discovery and a risk of development. Further exploration and appraisal and evaluation may be required to determine the existence of a significant quantity of potentially moveable recoverable hydrocarbons.

**Hydrocarbon Resource Estimates** – The Prospective Resource estimates for Invictus' EPO 1848 and 1849 licence presented in this report are prepared as at 3 October 2022 for the Basin Margin Play prospects and 30 August



2024 for the Eastern Basin prospects respectively. The estimates have been prepared by the Company in accordance with the definitions and guidelines set forth in the Petroleum Resources Management System, 2018, approved by the Society of Petroleum Engineers and have been prepared using probabilistic methods. The Prospective Resource estimates are unrisks and have not been adjusted for both an associated chance of discovery and a chance of development.

**Basin Margin Play Resource Estimates** – The information in this document relating to the prospective resource associated with the previously reported Basin Margin Play prospects is set out in the ASX announcement titled “Cabora Bassa Basin Margin Area holds 1.2 billion barrel prospective oil resource” released to the ASX on 6 October 2022. The Company is not aware of any new information or data that materially affects the information included in that announcement and confirms that all material assumptions and technical parameters underpinning the estimates in that announcement continue to apply and have not materially changed.

**No New Information or Change in Assumptions** – Since the date of completion of this hydrocarbon resource study, the Company is not aware of any new information and that all material assumptions and technical parameters underpinning prospective resource estimate continue to apply and have not materially changed

**Competent Person Statement Information** – The information in this document relating to petroleum resources and exploration results is based on information compiled by Mr Scott Macmillan. Mr Macmillan is a Reservoir Engineer and has a Bachelor of Chemical Engineering and an MSc in Petroleum Engineering from Curtin University. He is a member of the Society of Petroleum Engineers (SPE) and has over 15 years experience in the industry in exploration, field development planning, reserves and resources assessment, reservoir simulation, commercial valuations and business development. Estimated resources are unrisks and it is not certain that these resources will be commercially viable to produce. .

**Forward looking statements** – This document may include forward looking statements. Forward looking statements include, are not necessarily limited to, statements concerning Invictus’ planned operation program and other statements that are not historic facts. When used in this document, the words such as “could”, “plan”, “estimate”, “expect”, “intend”, “may”, “potential”, “should” and similar expressions are forward looking statements. Although Invictus Energy Ltd believes its expectations reflected in these are reasonable, such statements involve risks and uncertainties, and no assurance can be given that actual results will be consistent with these forward-looking statements. The entity confirms that it is not aware of any new information or data that materially affects the information included in this announcement and that all material assumptions and technical parameters underpinning this announcement continue to apply and have not materially changed.

## 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 potentially be recovered by the application of a future development project relate to undiscovered accumulations. These estimates have both a risk of discovery and a risk of development. Further exploration appraisal and evaluation is required to determine the existence of a significant quantity of potentially recoverable hydrocarbons. Prospective Resource assessments in this release were estimated using probabilistic methods in accordance with SPE-PRMS standards..*

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