

# 2019 Reserves and Resources Statement

**25 February 2020** 

## **Highlights**

- Over 2019, Oil Search's total booked 2P (Proved and Probable) oil Reserves and 2C (Contingent) oil Resources nearly doubled, increasing from 253 million barrels (mmbbl) to 497 mmbbl. Total 2P gas Reserves and 2C contingent gas Resources at the end of 2019 were largely unchanged, at 6,737 billion cubic feet (bcf).
- The Company's Reserves and Resources at the end of 2019 reflected the following:
  - The booking of an additional 243.6 mmbbl of 2C oil Resources at the Pikka Unit in Alaska, following the successful Pikka Unit appraisal drilling programme, the integration of new reservoir maps arising from the merging and reprocessing of several 3D seismic sets into the reservoir model and the exercise of the Armstrong/GMT option, doubling Oil Search's interest in the Pikka Unit.
  - Increases in PNG LNG Project Reserves and Resources, following receipt of the draft recertification report from Netherland, Sewell & Associates, Inc. (NSAI) on PNG LNG Project fields resources.
  - The booking of an additional 37.1 bcf of 2C gas and 0.7 mmbbl of 2C condensate Resources at Muruk, based on the information gathered to date on the Muruk 2 appraisal well. Initial technical estimates of gross 1C gas Resources at Muruk increased 249% to 453 bcf, while gross 2C gas resources were 23% higher, at 843 bcf.
- Based on 2019 production of 27.9 mmboe, Oil Search has a 1P Reserves life of 15 years, a 2P Reserves life of 17 years and a 2P Reserves and 2C Resources life of 60 years.

Commenting on the 31 December 2019 Reserves and Resources Statement, Oil Search's Managing Director, Mr Peter Botten, said:

"Oil Search's total 2P Reserves plus 2C Resources increased by 17% during 2019, driven by a material upgrade to resources in Alaska as well as increased bookings at Muruk and the PNG LNG Project Associated Gas fields.

The information gathered through the inaugural 2018/19 Alaskan appraisal drilling programme, together with the incorporation of other data acquired over the year, resulted in a 46% lift in gross 2C oil Resources, to 728 million barrels, which has been certified by independent resource auditor, Ryder Scott. When combined with the doubling of our working interest in the Pikka Unit through the exercise of the Armstrong Energy/GMT option, Oil Search's 2C booked oil Resources in the Pikka Unit rose by 217%. The booked 2C Resources in Alaska



only relate to the current Pikka Unit development plan and do not include several other reservoirs within the Pikka Unit, field extensions outside the Unit and other discovered resources that may be developed. The Company will continue to assess these areas during 2020, with revised Resource estimates expected to be released later in the year.

Preliminary results from the exploration wells being drilled in Alaska in the 2019/20 season are also encouraging. The Mitquq exploration well, located east of the Pikka Unit in Alaska, has discovered oil in both the primary and secondary objectives. The well intersected 60 metres of net hydrocarbon pay in the Nanushuk reservoir and 16 metres of net hydrocarbon pay in the Alpine C reservoir, both materially thicker than pre-drill estimates. A side-track from the Mitquq well bore has penetrated the Nanushuk reservoir, which will be flow tested in the coming weeks. If successful, there is potential further Resource upside in Alaska. The Stirrup 1 well in the Horseshoe Block, south-west of the Pikka Unit, has encountered indications of oil in the target Nanushuk reservoir. Preparations are being made to flow test the well.

In PNG, based on the flow results, reservoir modelling and pressure responses gathered to date from the Muruk 2 well, Oil Search estimates that gross 1C and 2C gas Resources for the Muruk field are 453 and 843 bcf respectively (114 and 211 bcf on a net basis). Gross 1C contingent Resources are 249% higher than those estimated following the drilling of Muruk 1 in early 2017, with the data gathered increasing our confidence level in the Resource. Oil Search's current estimate of gross 2C gas Resources has increased by 23%. Further seismic will be acquired over Muruk in 2020 and additional core work is ongoing, which will enhance our knowledge of the structure and reduce uncertainties. Our Resource estimates for Muruk are currently being reassessed and will be updated once this additional data has been evaluated.

Following receipt of the draft recertification report of PNG LNG Project resources by independent auditor NSAI, 1P gas Reserves in the PNG LNG Project increased by 50.3 bcf and oil and condensate 1P Reserves rose by 4.5 mmbbl. This reflected increased certainty in the Project resource following three years of stable production since the last audit. 2P Reserves also increased, by 8.8 bcf of gas and 3.9 mmbbl of oil and condensate, reflecting upgrades in the Moran and Kutubu complex fields.

The Reserves and Resource base at the end of 2019 provides a very strong platform for the Company and underpins current production and the growth opportunities in PNG and Alaska."

PETER BOTTEN, AC, CBE

Managing Director 25 February 2020



## Oil and Gas Reserves

At 31 December 2019, the Company's 1P Reserves were 53.9 mmbbl of oil and condensate and 1,874.1 bcf of gas. 2P Reserves were 67.1 mmbbl of oil and condensate and 2,101.9 bcf of gas.

The key changes in 1P and 2P Reserves since 31 December 2018, which are summarised in Tables 1 and 2, are as follows:

- Reserves at 31 December 2019 have been adjusted for net production of 4.7 mmbbl of oil and condensate and 113.7 bcf of gas<sup>1</sup>.
- Oil and gas associated with the PNG LNG Project has increased, after receipt of the draft recertification results from NSAI in 2019. The increases in 1P Reserves reflect higher certainty after three years of stable production since the previous assessment.
- There have been no changes to the estimated ultimate recovery (EUR) for oil in the Kutubu, Agogo, and Moran fields. Reserves are based on the NSAI 2017 recertification and, in both the 1P and 2P categories, reflect the year-end 2018 position less 2019 production volumes.
- There have been minor reductions to the Gobe Main oil booking, while remaining SE Gobe oil and gas
  Reserves have been moved to Contingent Resources. This reflects revised Operator forecasts, which
  incorporate changes to production and economic assumptions since the last external audit in 2015.
- There were minor additions to the Hides GTE 1P Reserve booking, reflecting updates to the 2019 gas nomination calculations under the Hides Gas Sales Agreement.

Developed and undeveloped Reserves are shown in Table 3. Undeveloped gas and condensate Reserves are related to the PNG LNG Project, where the construction of additional infrastructure is required prior to the commencement of gas export, consistent with the approved development plan. This infrastructure is not currently required, as the developments on-line are providing sufficient gas volumes to meet the LNG facility's capacity.

Undeveloped oil Reserves are associated with oil fields supplying gas to the PNG LNG Project (Agogo and Moran). These fields require further investment to supply gas to PNG LNG, which is planned for 2024 under the existing PNG LNG agreements. As such, the portion of oil production associated with late life production is captured as undeveloped Reserves.

#### **Contingent Resources**

At the end of 2019, the Company's 2C Contingent Resources comprised 4,635.1 bcf of gas, up from 4,533.0 bcf at the end of 2018, and 430.0 mmbbl of oil and condensate, up from 185.5 mmbbl.

The key changes in 2C Contingent Resources since 31 December 2018, which are summarised in Tables 1 and 2, are as follows:

- The addition of 243.6 mmbbl of 2C oil Resource in Oil Search's Alaskan North Slope assets, which have been certified by independent auditor, Ryder Scott. This is attributable to:
  - The addition of 127.5 mmbbl following exercise of the option to acquire an additional 25.5% equity in the Pikka Unit.

<sup>&</sup>lt;sup>1</sup> Note that these production figures are based on Oil Search's net 16.67% share of PDL 1 Hides GTE production.



- The addition of 116.1 mmbbl resulting from further technical data obtained from the Pikka B,
   Pikka B ST1, Pikka C and Pikka C ST1 appraisal wells.
- The addition of 65.2 bcf gas and 0.2 mmbbl condensate in the PNG LNG Project, following receipt of the draft report on the recertification by independent auditor, NSAI.
- The addition of 37.1 bcf gas and 0.7 mmbbl condensate at Muruk, after initial interpretation of the results from successful appraisal drilling at Muruk 2.
- Minor movements in Contingent Resources at Gobe Main and SE Gobe, associated with production beyond economic life based on the updated forecasts for these fields.

#### **Reserves and Resources**

As highlighted in Table 4, at the end of 2019, Oil Search's total 2P oil and condensate Reserves and 2C Contingent Resources were 497.0 mmbbl, up from 253.5 mmbbl at the end of 2018. The Company's total 2P gas Reserves and 2C Contingent Resources were 6,737.0 bcf, largely unchanged from 6,742.2 bcf at the end of 2018.

## Pikka Unit, Alaska North Slope – increase in booked 2C oil Resources

During 2019, significant new Pikka Unit geologic and engineering data was gathered and analysed. This included drilling, completion, petrophysical and well test data from the Pikka B, Pikka B ST1, Pikka C and Pikka C ST1 wells, as well as information obtained from wells adjacent to the Pikka Unit through data trades. Several 3D seismic data sets, which provided clearer images of the reservoir distribution, were also merged, reprocessed and incorporated into new reservoir simulation models. The reprocessed seismic tied consistently to all wells across, and adjacent to, the Pikka Unit area. Additional rock and fluid sample testing and other engineering analyses were performed to better understand oil recovery mechanisms.

This data has been incorporated into Oil Search's reservoir models, to provide an updated estimate of the contingent Resources for the Pikka Unit Development. The results of Oil Search's internal studies were validated by independent consultant, Ryder Scott Petroleum Consultants, in December 2019. Ryder Scott has estimated net 2C oil Resources of 371.1 mmbbl (727.6 mmbbl on a gross basis).

Note that these Resources are based on the current Pikka Unit development plan only and do not include several other reservoirs within the Pikka Unit and field extensions outside the Unit that could be drilled from the existing planned well pads. They also exclude other discovered hydrocarbons that could potentially be tied into a larger Pikka development. Work has commenced on the evaluation of these additional resources, which will be the subject of a separate independent Resource assessment.

In June 2019, Oil Search exercised its option to acquire additional working interests from Armstrong and GMT, increasing the Company's interest in the Pikka Unit from 25.5% to 51%.

These Resources are considered contingent on future appraisal results, development studies and project commerciality.

#### PNG LNG – increase in booked 1P and 2P Reserves and 2C Resources

During 2019, NSAI was engaged by the PNG LNG Project Operator, ExxonMobil, to reassess Resources in the PNG LNG Project fields where significant development and production activity has occurred since their



last detailed field certification in 2016. Oil Search participated extensively in the recertification exercise and, in particular, assisted the certifier with the assessment of the Associated Gas fields.

For each field examined, NSAI assessed the original gas-in-place (OGIP) and estimated ultimate recoveries (EUR) to subsequently determine the portfolio OGIP and EUR estimates. Three additional years of PNG LNG field production performance, well deliverability and compositional modelling were also considered. An independent flow stream model was used to determine probabilistic production forecasts. Note that NSAI only undertook a technical assessment and did not conduct any review of project economics or Reserves.

In its draft report, received in December 2019, NSAI concluded that the 1C OGIP has increased for all the PNG LNG fields assessed, with additional production and pressure information reducing uncertainty. For most of the PNG LNG fields, 2C OGIP was largely unchanged from the 2016 assessment, except for the Associated Gas fields (Moran, Gobe and Kutubu complex), where new information has resulted in an increase in both 1C and 2C OGIP.

Oil Search has elected to use the estimates from NSAI's draft report of PNG LNG OGIP resources as the basis for the Company's 2019 Reserves and Resources Statement. Resource estimates, after historical production and allowance for fuel, flare and shrinkage, have been adjusted for economic limit using Oil Search's corporate assumptions.

This has resulted in increases to 1P oil and condensate Reserves of 4.5 mmbbl and a 50.3 bcf increase in 1P gas Reserves. 2P Reserves have also increased, by 3.9 mmbbl of oil and condensate and 8.8 bcf of gas, while 2C Resources have increased by 0.2 mmbbl and 65.2 bcf.

The contingent resources associated with PNG LNG are those beyond the economic limit, calculated using Oil Search 2019 corporate economic assumptions. These are considered to remain contingent on the confirmation of a commercially viable future development project and the negotiation of, and commitment to, future gas sales contracts.

## Muruk - increase in booked 1C and 2C Contingent Resources

Following the successful Muruk 2 appraisal well completed in early 2019, Oil Search's preliminary estimate of gross 1C gas Resources has increased by 249% to 453 bcf, reflecting an increased confidence in the production potential of the field, while gross 2C gas Resources have risen by 23% to 843 bcf. As a result, additional 2C contingent resources of 37.1 bcf of gas and 0.7 mmbbl of condensate have been booked in the Muruk field at Oil Search's net equity.

The Muruk 2 well demonstrated a significant increase in lateral connectivity, compared to the Resources booked after drilling Muruk 1. However, the reservoir at the Muruk 2 location was encountered deeper than expected, limiting the increase in the 2019 2C resource booking. A 2D seismic survey has commenced over Muruk and adjacent leads and prospects, with approximately 100 kilometres of data planned to be acquired. The results will supplement seismic data acquired in 2017 and enhance structural definition. This, combined with Muruk 2 core analysis, continued monitoring of the post well-test pressure build up and reservoir modelling, will allow the Company to further refine the assessment of Muruk volumes.

The Muruk Resource is considered to remain contingent on several factors, including the requirement for additional technical studies, a commercially viable development project and future gas sales contracts.



#### **Governance and 2020 Audit Plan**

The governance arrangements for the reporting of hydrocarbon Reserves and Resources are based on Oil Search's Resource Management and Audit Process (RMAP), which at the end of 2019, consists of the following:

- A Technical Reserves Committee (TRC), which assesses all proposed changes and additions to the Company's Reserves and Resources database, using advice and contributions from peer review and subject matter experts, where appropriate.
- The TRC reports to the Reserves Operating Committee (ROC), consisting of senior management from technical and commercial disciplines, for the sanction of changes proposed by the TRC.
- Final statements are subject to review and endorsement by the Audit and Financial Risk Committee prior to approval by the Board.

Oil Search's Reserves and Resources are still reported subject to PRMS 2007. During 2020 the Reserve and Resource bookings will be updated to reflect PRMS 2018. At the same time, RMAP will be updated to reflect Oil Search's new business structure, as well as any changes required to adhere to PRMS 2018 and/or any updates to ASX Chapter 5.

#### Oil Fields

Under the Company's Reserves Management and Audit Process, operated oil fields are subject to independent audit every three years, or alternative intervals under some circumstances (for example, where anticipated changes may or may not be material). The Kutubu and Moran fields were audited at year-end 2017 by independent auditor, NSAI. As such, an external audit in 2020 would normally be considered. However, this audit has been deferred until 2021 due to:

- The potential for changes to gas delivery requirements from the Associated Gas fields, which are being
  evaluated through 2020 and may impact ultimate oil recovery.
- Ensuring that recent wells drilled in Moran and Usano have sufficient production and pressure data history to ensure their impact is appropriately captured by an external auditor.
- Ensuring that the fields producing to the APF are fully returned to service after the 2018 earthquake.

The Gobe oil fields were audited in 2015, also by NSAI. In 2018, an external audit was deferred, due to the low oil Reserves associated with these fields. The requirement for external audit of the Gobe oil fields was assessed under the Company's Reserves Management and Audit Process in 2019 and the decision made to again defer audit of these fields in 2020. Note that the Gobe Main gas Resources were examined by NSAI as part of the PNG LNG re-certification during 2019.



#### **PNG LNG Project**

A recertification exercise was undertaken in 2019 on the PNG LNG Project Resources by NSAI, and a draft report was issued in December 2019. The requirements for further external audit will be assessed in 2020.

#### **PRL 15**

Two separate audits of the Resources at Elk-Antelope were undertaken by NSAI and GCA in 2016 as part of the First PAC Certification. These audits were updated by the same auditors in 2017 to include the results of Antelope 7 for Oil Search internal purposes. There is no requirement for further audit in 2020.

The Second PAC Certification will occur one year after delivery of the first commercial LNG cargo.

#### Muruk

An independent certification of the Muruk field may occur in 2020, subject to the results of in-depth modelling incorporating the results of the Muruk 1 and 2 wells.

#### Other gas fields

Following the successful Kimu 2 and Barikewa 3 appraisal wells and pending further internal technical work, independent certification of one or both fields may be undertaken if required to support progression of a viable development concept to commercialisation.

## Alaska - Pikka Unit

External audit of the Pikka Unit Resources was obtained in 2019. Further external assessment of other discovered resources, including the recent discovery of oil at the Mitquq 1 well, may be carried out in 2020.



TABLE 1: 2019 Oil and Condensate Reserves and Resources reconciliation with 2018

## **Proved Oil and Condensate Reserves (million barrels)**

Licence/Field	End 2018 Reserves	Production	Discoveries/ Extensions/ Revisions	Acquisitions/ Divestments	End 2019 Reserves	
PDL 2 - Kutubu	11.3	1.4	-	-	9.9	
PDL 2/5/6 - Moran Unit	6.1	0.1	-	-	6.0	
PDL 4 - Gobe Main	0.0	0.0	0.0	-	0.0	
PDL 3/4 - SE Gobe	0.0	0.0	0.0	-	-	
PDL 1 – Hides GTE	-	-	-	-	-	
PNG LNG Project	36.7	3.2	4.5	-	38.0	
Total	54.1	4.7	4.5	-	53.9	

## **Proved and Probable Oil and Condensate Reserves (million barrels)**

Licence/Field	End 2018 Reserves	Production	Discoveries/ Extensions/ Revisions	Acquisitions/ Divestments	End 2019 Reserves
PDL 2 - Kutubu	16.6	1.4	-	-	15.2
PDL 2/5/6 - Moran Unit	9.6	0.1	-	-	9.5
PDL 4 - Gobe Main	0.0	0.0	0.0	-	0.0
PDL 3/4 - SE Gobe	0.1	0.0	0.0	-	-
PDL 1 – Hides GTE	-	-	-	-	-
PNG LNG Project	41.6	3.2	3.9	-	42.3
Total	68.0	4.7	3.8	-	67.1

## **2C Contingent Oil and Condensate Resources (million barrels)**

Licence/Field	End 2018 2C Resources	Production	Discoveries/ Extensions/ Revisions	Acquisitions/ Divestments	End 2019 2C Resources
PNG LNG Project Fields oil and condensate	1.6	-	0.2	-	1.8
Other PNG oil and condensate	56.4	-	0.7	-	57.1
Alaska oil and condensate	127.5	-	116.1	127.5	371.1
Total	185.5	-	116.9	127.5	430.0



TABLE 2: 2019 Gas Reserves and Resources reconciliation with 2018

## **Proved Gas Reserves (billion standard cubic feet)**

Licence/Field	End 2018 Reserves	Production	Discoveries/ Extensions/ Revisions	Acquisitions/ Divestments	End 2019 Reserves
PDL 2 - Kutubu	-	-	-	-	-
PDL 2/5/6 - Moran Unit	-	-	-	-	-
PDL 4 - Gobe Main	-	-	-	-	-
PDL 3/4 - SE Gobe	1.1	1.5	0.3	-	-
PDL 1 – Hides GTE	2.6	0.9	0.0	-	1.7
PNG LNG Project	1,933.4	111.3	50.3	-	1,872.4
Total	1,937.1	113.7	50.7	-	1,874.1

## Proved and Probable Gas Reserves (billion standard cubic feet)

Licence/Field	End 2018 Reserves	Production	Discoveries/ Extensions/ Revisions	Acquisitions/ Divestments	End 2019 Reserves
PDL 2 - Kutubu	-	-	-	-	-
PDL 2/5/6 - Moran Unit	-	-	-	-	-
PDL 4 - Gobe Main	-	-	-	-	-
PDL 3/4 - SE Gobe	4.0	1.5	-2.5	-	-
PDL 1 – Hides GTE	3.1	0.9	-	-	2.2
PNG LNG Project	2,202.3	111.3	8.8	-	2,099.7
Total	2,209.3	113.7	6.3	-	2,101.9

## **2C Contingent Gas Resources (billion standard cubic feet)**

Licence/Field	End 2018 2C Resources	Production	Discoveries/ Extensions/ Revisions	Acquisitions/ Divestments	End 2019 2C Resources
PNG LNG Project Fields Gas	60.0	-	65.2	-	125.2
Other PNG Gas	4,473.0	-	36.9	-	4,509.8
Alaska Gas	-	-	-	-	-
Total	4,533.0	-	102.1	-	4,635.1



**TABLE 3: Developed and undeveloped Reserves** 

## **Developed Reserves**

(Net to Oil Search)

Licence / Field	Oil Search Interest	Developed Oil and Condensate <sup>3</sup>	Developed Gas <sup>4,5,6</sup>	Developed Oil and Condensate <sup>3</sup>	Developed Gas <sup>4,5,6</sup>
	%	mmbbl	bcf	mmbbl	bcf
Reserves		Prove	Proved (1P)		Probable (2P)
PDL 2 - Kutubu	60.0%	8.5	-	12.5	-
PDL 2/5/6 - Moran Unit	49.5%	4.7	-	7.3	-
PDL 4 - Gobe	10.0%	0.0	-	0.0	-
PDL 3/4 - SE Gobe	22.3%	-	-	-	-
PDL 1 – Hides GTE	16.7%	-	1.7	-	2.2
Oil fields and Hides GTE Reserv	ves	13.2	1.7	19.8	2.2
PNG LNG Project Reserves	29.0%	26.3	1,348.3	29.1	1,482.2
Sub-total developed Reserves		39.5	1,350.1	49.0	1,484.4

# **Undeveloped Reserves**

(Net to Oil Search)

Licence / Field	Oil Search Interest	Undeveloped Oil and Condensate <sup>3</sup>	Undeveloped Gas <sup>4,5,6</sup>	Undeveloped Oil and Condensate <sup>3</sup>	Undeveloped Gas <sup>4,5,6</sup>
	%	mmbbl	bcf	mmbbl	bcf
Reserves		Prove	ed (1P)	Proved & P	robable (2P)
PDL 2 - Kutubu	60.0%	1.4	-	2.7	-
PDL 2/5/6 - Moran Unit	49.5%	1.3	-	2.2	-
PDL 4 - Gobe	10.0%	-	-	-	-
PDL 3/4 - SE Gobe	22.3%	-	-	-	-
PDL 1 – Hides GTE	16.7%	-	-	-	-
Oil fields and Hides GTE Reserv	ves	2.7	-	4.9	-
PNG LNG Project Reserves	29.0%	11.7	524.1	13.2	617.5
Sub-total undeveloped Reserve	s	14.4	524.1	18.1	617.5
Total developed and undevelop	ed				
Reserves		53.9	1,874.1	67.1	2,101.9



**TABLE 4: Total Reserves and Resources summary** 

Reserves and Resources at 31 December 2019<sup>1,2</sup>

(Net to Oil Search)

Licence / Field	Oil Search Interest	Total Oil and Condensate <sup>3</sup>	Total Gas <sup>4</sup>	Total Oil and Condensate <sup>3</sup>	Total Gas⁴
	%	mmbbl	bcf	mmbbl	bcf
Reserves		Proved	(1P)	Proved & Pro	obable (2P)
PDL 2 - Kutubu	60.0%	9.9	-	15.2	-
PDL 2/5/6 - Moran Unit	49.5%	6.0	-	9.5	-
PDL 4 - Gobe	10.0%	0.0	-	0.0	-
PDL 3/4 - SE Gobe <sup>5</sup>	22.3%	-	-	-	-
PDL 1 – Hides GTE <sup>7</sup>	16.7%	-	1.7	-	2.2
Oil fields and Hides GTE Reserves		15.9	1.7	24.8	2.2
PNG LNG Project Reserves <sup>6</sup>	29.0%	38.0	1,872.4	42.3	2,099.7
Sub-total Reserves		53.9	1,874.1	67.1	2,101.9
Contingent Resources <sup>8</sup>		1C		20	;
PNG LNG Project Fields gas, oil and condensate		-	-	1.8	125.2
Other PNG gas, oil and condensate9		-	-	57.1	4,509.8
Alaska gas, oil and condensate <sup>10</sup>		-	-	371.1	-
Sub-total Resources		-	-	430.0	4,635.1
Total Reserves and Resources		53.9	1,874.1	497.0	6,737.0

#### NOTES

- (1) Numbers may not add due to rounding.
- (2) Kutubu and Moran oil fields proved Reserves (1P) and proved and probable (2P) Reserves are as certified by independent auditor Netherland, Sewell & Associates, Inc. (NSAI) in 2017. 1P and 2P PNG LNG Project Reserves are based on Contingent Resources as certified in the 2019 draft report received from independent auditor, NSAI. Gobe Main and SE Gobe 1P and 2P Reserves are based on Oil Search 2019 technical estimates. All Reserves estimations use Oil Search's corporate assumptions to calculate economic limit.
- (3) Crude oil, and separator and plant condensates.
- (4) For the PNG LNG Project, shrinkage has been applied to raw gas for the field condensate, plant liquids recovery, and fuel and flare.
- (5) Although technical volumes remain accessible, SE Gobe is not expected to be cashflow positive from 2020 using current Oil Search corporate economic assumptions. All SE Gobe Reserves have been moved to Contingent Resources, contingent on a change in economic or commercial assumptions.
- (6) PNG LNG Project Reserves comprise the Kutubu, Moran, Gobe Main, SE Hedinia, Hides, Angore and Juha fields. Minor volumes associated with proposed domestic gas sales have been included as part of PNG LNG reserves. In addition, third party wet gas sales to the project at the Gobe plant outlet (inclusive of plant condensate) have been included for SE Gobe in 1P and 2P Reserves at the post-sales agreement field interest of 22.34%. SE Gobe estimates for gas are based on Oil Search 2019 technical estimates.
- (7) Hides Reserves associated with the GTE Project under existing contract. Production volumes shown in this Reserves report are based on Oil Search's entitlement in PDL 1 (16.67%).
- (8) Contingent Resources are quantities of petroleum estimated to be potentially recoverable from known accumulations by application of development projects, but which are not currently considered to be commercially



- recoverable owing to one or more contingencies. There may be a chance that accumulations containing Contingent Resources will not achieve commercial maturity.
- (9) Other gas, oil and condensate Resources comprise the Company's other PNG fields including Elk-Antelope, SE Mananda, Juha North, P'nyang, Kimu, Uramu, Barikewa, lehi, Cobra, Mananda, Flinders, and Muruk and may also include Resources beyond the current economic limit of producing oil and gas fields. These gas Resources may include fuel, flare, and shrinkage depending on the choice of reference point.
- (10) Alaskan gas, oil, and condensate Resources comprise the Company's share in Alaskan assets, incorporating the Nanushuk and satellite reservoirs in the Pikka Unit, as certified by Ryder Scott.

This Reserves and Resources statement is based on, and fairly represents, information and supporting documentation that has been prepared by, or under the supervision of, one of the qualified petroleum reserves and resources evaluators listed in the table below. Drs J. Spilsbury-Schakel, a full-time employee of Oil Search Ltd and qualified petroleum reserves and resources evaluator, has consented to publish this information in the form and context in which it is presented in this statement.

Qualified Petroleum Reserves and Resources Evaluators						
Name	Employer	Professional Organisation				
J. Spilsbury-Schakel	Oil Search Ltd.	SPE, PESA, AAPG				
A. Judzewitsch	Oil Search Ltd.	SPE				
D. Blazak	Oil Search Ltd.	SPE				
J. Rowse	Oil Search Ltd.	SPE, PESA, PESGB				
M. Spiby	Oil Search Ltd.	SPE, PESA				
M. Ireland	Oil Search Ltd.	SPE, SPEE, PE				
S. Jonsson	Oil Search Ltd.	SPE				
S. Hyde	Oil Search Ltd.	SPE				
A. Spark	Oil Search Ltd.	SPE				

#### **ADDITIONAL NOTES**

- The evaluation date for these estimates is 31 December 2019.
- Oil Search's Reserves and Contingent Resource estimates are prepared in accordance with the 2007 Petroleum Resources Management System (PRMS), sponsored by the Society of Petroleum Engineers (SPE).
- The following reference points are assumed:
  - Oil volumes: include both oil and condensate recovered by lease processing. The reference point is at the outlet of the relevant process facility. Volumes are adjusted to stock-tank using field standard conditions.
  - Hides GTE: the custody transfer point at the wellhead
  - PNG LNG Project: the outlet to the LNG plant
  - SE Gobe gas: the outlet to the Gobe facility
  - Fuel, flare and shrinkage upstream of the reference points have been excluded.
- Reserves and Contingent Resources are aggregated by arithmetic summation by category and therefore Proved Reserves may
  be a conservative estimate due to the portfolio effects of arithmetic summation.
- Reserves and Contingent Resources have been estimated using both deterministic and probabilistic methods.



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