

# Panoro Energy

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ANNUAL STATEMENT OF RESERVES 2017

APRIL 2018

## DISCLAIMER

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The information provided in this report reflects reservoir assessments, which in general must be recognized as subjective processes of estimating hydrocarbon volumes that cannot be measured in an exact way.

It should also be recognized that results of recent and future drilling, testing, production and new technology applications may justify revisions that could be material.

Certain assumptions on the future beyond Panoro's control have been made. These include assumptions made regarding market variations affecting both product prices and investment levels. As a result, actual developments may deviate materially from what is stated in this report.

The estimates in this report are based on third party assessments prepared by Netherland Sewell and Associates Inc. in February 2018 for Dussafu and by AGR TRACS International Ltd. in April 2018 for Aje.

# ANNUAL STATEMENT OF RESERVES 2017

## INTRODUCTION

Panoro's classification of reserves and resources complies with the guidelines established by the Oslo Stock Exchange and are based on the definitions set by the Petroleum Resources Management System (PRMS-2007), sponsored by the Society of Petroleum Engineers/ World Petroleum Council/ American Association of Petroleum Geologists/ Society of Petroleum Evaluation Engineers (SPE/WPC/ AAPG/ SPEE) as issued in March 2007.

Reserves are the volume of hydrocarbons that are expected to be produced from known accumulations:

- On Production
- Approved for Development
- Justified for Development

Reserves are also classified according to the associated risks and probability that the reserves will be actually produced.

**1P** – Proved reserves represent volumes that will be recovered with 90% probability

**2P** – Proved + Probable represent volumes that will be recovered with 50% probability

**3P** – Proved + Probable + Possible volumes that will be recovered with 10% probability.

Contingent Resources are the volumes of hydrocarbons expected to be produced from known accumulations:

- In planning phase
- Where development is likely
- Where development is unlikely with present basic assumptions
- Under evaluation

Contingent Resources are reported as 1C, 2C, and 3C, reflecting similar probabilities as reserves.

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The estimates in this report are based on third party assessments prepared by Netherland, Sewell and Associates, Inc. (NSAI) in February 2018 for Dussafu and by AGR TRACS International (AGR TRACS) in April 2018 for Aje.

## PANORO ASSETS PORTFOLIO

As of year-end 2017, Panoro had two assets with reserves and contingent resources, OML 113 and the Dussafu Permit. A summary description of these assets with status as of year-end 2017 is included below. In addition we refer to the company's web-site for background information on the assets. Unless otherwise specified, all reserves figures quoted in this report are net to Panoro's interest.

### **Dussafu: offshore Gabon, operator BW Energy, Panoro 8.333%.**

Dussafu is a development and exploitation license covering an area containing several oil fields, the most recent discoveries being the Ruche and Tortue fields. In 2014 an Exclusive Exploitation Authorization (EEA) for an 850.5 km<sup>2</sup> area within the Dussafu PSC was awarded. A Field Development Plan for the EEA area was subsequently approved and a final decision to start developing the license was taken in 2017. The first field in the EEA area, Tortue, is expected to start oil production in 2018.

In February 2018 NSAI certified (3rd party) gross 1P Proved Reserves of 15.9 MMbbls in the Gamba and Dentale reservoirs of the Tortue field. Gross 2P Proved plus Probable Reserves at Tortue amounted to 23.5 MMbbls in the same reservoirs. Gross 3P Proved plus Probable plus Possible Reserves at Tortue amounted to 31.4 MMbbls.

In addition to these Reserves NSAI also certified gross 1C Contingent Resources of 3.7 MMbbls, gross 2C Contingent Resources of 11.6 MMbbls, and gross 3C Contingent Resources of 28.9 MMbbls in the Tortue field. The remaining Dussafu fields excluding Tortue have gross 2C Contingent Resources of approximately 17.3 MMbbls (taken from Panoro's 2016 ASR).

These evaluations yield 1P Proved Reserves net to Panoro of 1.07 MMbbls, 2P Proved plus Probable Reserves net to Panoro of 1.55 MMbbls and 3P Proved plus Probable plus Possible Reserves net to Panoro of 1.75 MMbbls. Additional potentially recoverable resources net to Panoro are approximately 0.22 MMbbls 1C, 0.7 MMbbls 2C and 1.73 MMbbls 3C. The remaining Dussafu fields excluding Tortue have net 2C Contingent Resources of approximately 0.8 MMbbls (taken from Panoro's 2016 ASR). These Reserves and Contingent Resources are Panoro's net volumes after deductions for royalties and other taxes, reflecting the production and cost sharing agreements that govern the asset.

**OML 113 Aje: offshore Nigeria, operator Yinka Folawiyo Petroleum (YFP), Panoro 12.1913%.**

The OML 113 license, close to the border with Benin, contains the Aje field which is predominantly a Turonian age gas discovery with significant condensate and an oil rim but also contains a separate Cenomanian age oil leg. The Cenomanian oil has been on production since 2016, and the Turonian oil rim since 2017.

Production during 2017 from the Aje field amounted to 0.9 MMbbls gross and 0.1 MMbbls net to Panoro.

A Field Development Plan (FDP) for Aje Gas was submitted to the Nigerian Government for consideration in 2017. The FDP comprises four or five production wells in the Turonian tied back to existing and new infrastructure.

In April 2018 AGR TRACS certified (3rd party) gross total 1P Proved Reserves of 78.2 MMBOE in the Aje field. Gross 2P Proved and Probable reserves for the field amounted to 127.1 MMBOE. Gross 3P Proved, Probable and Possible reserves for the field amounted to 215.0 MMBOE. Panoro's net entitlement 1P Proved Reserves was 12.1 MMBOE, net entitlement 2P Proved and Probable Reserves was 20.0 MMBOE and net entitlement 3P Proved, Probable and Possible Reserves was 30.9 MMBOE.

AGR TRACS further sub-categorized these reserves as Developed Producing (reserves from existing wells in the field) and Justified for Development.

In addition to these reserves AGR TRACS also certified gross 1C Contingent Resources of 4 MMBOE, 2C Contingent Resources of 9 MMBOE and 3C Contingent Resources of 17.5

MMBOE. Panoro's net entitlement 1C Contingent Resources is 0.49 MMBOE, net entitlement 2C Contingent Resources is 1.10 MMBOE and net entitlement 3C Contingent Resources is 2.13 MMBOE.

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## MANAGEMENT DISCUSSION AND ANALYSIS

Panoro uses the services of NSAI and AGR TRACS for 3rd party verifications of its reserves and resources.

All evaluations are based on standard industry practice and methodology for production decline analysis and reservoir modeling based on geological and geophysical analysis. The following discussions are a comparison of the volumes reported in previous reports, along with a discussion of the consequences for the year-end 2017 ASR:

**Dussafu:** In 2017, a Final Investment Decision to develop the Tortue field was taken in the Dussafu project. The Contingent Resources associated with Tortue are therefore now reported as Reserves Approved for Development. In addition a re-determination of the volumes at Tortue was undertaken by NSAI. The remaining fields in Dussafu (Ruche, Walt Whitman and Moubenga) are still classified as Contingent Resources. A decision to develop these fields will trigger a re-assignment of these resources as reserves and a possible re-determination of their volumes.

**Aje:** The first phase of the Aje Cenomanian oil development started in 2016 with production from two wells. The 2017 the Aje-5 well workover and side-track campaign resulted in a re-completion of the well in the Turonian oil rim. The previous estimates of reserves in Aje were revised by AGR TRACS in 2018. The revisions incorporate the 2014 seismic data, the results of the Aje side-track drilling, historical production data and the development plans outlined in the Aje gas FDP. The result is a reduction in net 2P reserves of 2.6 MMbbls and the addition of 19.6 MMBOE of reserves compared to the year-end 2016 ASR. These additional reserves are mainly associated with the Turonian gas development and are sub-classified as Reserves Justified for Development. Once a Final Investment Decision is taken on the Aje field gas development project these reserves may become Reserves Approved for Development.

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## ASSUMPTIONS

The commerciality and economic tests for the Aje reserves volumes were based on an oil and condensate price of

US\$60/Bbl, a LPG price of US\$39/Bbl, and a gas price of US\$4/MMBtu.

The commerciality and economic tests for the Dussafu reserves volumes were based on an average oil price over the field life of US\$59/Bbl.

#### **2017 – 2P DEVELOPMENT (MMBOE)**

<b>2P Reserves Development</b>	<b>(MMBOE)</b>
Balance (previous ASR – December 31, 2016)	3.1
Production 2017	(0.1)
New developments since previous ASR	21.2
Revisions of previous estimates	(2.6)
<b>Balance (revised ASR) as of December 31, 2017</b>	<b>21.6</b>

Panoro's total 1P reserves at end of 2017 amount to 13.2 MMBOE. Panoro's 2P reserves amount to 21.6 MMBOE and Panoro's 3P reserves amount to 32.7 MMBOE. This reflects the April 2018 reserve report for the Aje field, conducted by AGR TRACS and production since the field startup, and the February 2018 reserve report for the Dussafu field, conducted by NSAI.

Panoro's Contingent Resource base includes discoveries of varying degrees of maturity towards development decisions. By end of 2017, Panoro's assets contain a total 2C volume of approximately 2.6 MMBOE.

April 30, 2018

**John Hamilton**  
CEO

## RESERVES STATEMENT AS OF DECEMBER 31, 2017

As of 31 Dec, 2017	Interest	1P (Low Estimate)				2P (Base Estimate)				3P (High Estimate)			
		%	Liquids MMbbl	Gas Bcf	Total MMBOE	Net MMBOE	Liquids MMbbl	Gas Bcf	Total MMBOE	Net MMBOE	Liquids MMbbl	Gas Bcf	Total MMBOE
<b>On Production</b>													
Aje Field Oil	12.1913	1.66	-	1.66	0.20	2.02	-	2.02	0.25	2.31	-	2.31	0.28
<b>Total</b>		<b>1.66</b>	<b>-</b>	<b>1.66</b>	<b>0.20</b>	<b>2.02</b>	<b>-</b>	<b>2.02</b>	<b>0.25</b>	<b>2.31</b>	<b>-</b>	<b>2.31</b>	<b>0.28</b>
<b>Approved for Development</b>													
Tortue Field	8.333	15.90	-	15.90	1.07	23.50	-	23.50	1.55	31.40	-	31.40	1.75
<b>Total</b>		<b>15.90</b>	<b>-</b>	<b>15.90</b>	<b>1.07</b>	<b>23.50</b>	<b>-</b>	<b>23.50</b>	<b>1.55</b>	<b>31.40</b>	<b>-</b>	<b>31.40</b>	<b>1.75</b>
<b>Justified for Development</b>													
Aje Field Oil	12.1913	0.50	-	0.50	0.07	0.94	-	0.94	0.14	1.76	-	1.76	0.26
Aje Field Cond.	12.1913	9.78	-	9.78	1.49	16.16	-	16.16	2.53	26.61	-	26.61	3.93
Aje Field LPG	12.1913	19.33	-	19.33	3.01	31.51	-	31.51	4.99	53.77	-	53.77	7.71
Aje Field Gas	12.1913	-	282.00	46.92	7.32	-	459.00	76.50	12.12	-	783.00	130.55	18.72
<b>Total</b>		<b>29.61</b>	<b>282.00</b>	<b>76.53</b>	<b>11.89</b>	<b>48.61</b>	<b>459.00</b>	<b>125.11</b>	<b>19.78</b>	<b>82.14</b>	<b>783.00</b>	<b>212.69</b>	<b>30.62</b>
<b>Totals</b>													
<b>Total Reserves</b>		<b>47.17</b>	<b>282.00</b>	<b>94.09</b>	<b>13.16</b>	<b>74.13</b>	<b>459.00</b>	<b>150.63</b>	<b>21.58</b>	<b>115.85</b>	<b>783.00</b>	<b>246.40</b>	<b>32.65</b>

Reserves Development:

2P Reserves Development	(MMBOE)
Balance (previous ASR – December 31, 2016)	3.1
Production 2017	(0.1)
Acquisitions /disposals since previous ASR	0.0
Extensions and discoveries since previous ASR	0.0
New developments since previous ASR	21.2
Revisions of previous estimates	(2.6)
<b>Balance (revised ASR) as of December 31, 2017</b>	<b>21.6</b>

Contingent Resources summary:

Asset	2C MMBOE (as of YE2016)	2C MMBOE (as of this report)
Aje *	28.7	1.1
Dussafu **	6.8	1.5
<b>Totals</b>	<b>35.5</b>	<b>2.6</b>

\* The majority of Aje Contingent Resources have been re-classified as reserves in 2018.

\*\* Panoro's share of Dussafu has changed to 8.333% from 33.333% and the majority of Tortue Contingent Resources have been re-classified as reserves in 2018.

## COMPANY ADDRESSES

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