



Reserves and Contingent Resources Statement for Atlanta Field, Brazil as of December 31, 2022

Prepared for

Enauta Energia S.A.

January 17, 2023

January 17, 2023

Mr. Carlos Mastrangelo
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Dear Mr. Mastrangelo,

Reserves and Contingent Resources Statement for Atlanta Field, Brazil as of December 31, 2022

This Reserves and Contingent Resources statement has been prepared by Gaffney, Cline & Associates (GaffneyCline) and issued on January 17, 2023 at the request of Enauta Energia S.A. (Enauta or “the Client”), operator of and 100% interest participant in the Atlanta Field in the Santos basin, offshore Brazil. In addition to Enauta’s internal use, this report is intended for release in connection with Enauta’s public market-related filings. GaffneyCline will provide consent for release once proposed details are available.

On May 19, 2022, Enauta received from the ANP (Agência Nacional do Petróleo, Gás Natural e Biocombustíveis) approval for its revised development plan for the Atlanta field which provided an extension of the concession until June 30, 2044, with, inter alia, the following provisos related to the Atlanta field:

- That the FPSO of the Definitive Production System (SDP) starts operations by June 30, 2024.
 - The latest construction report (November 2022) indicates completion of the FPSO before June 30, 2024.
- That Enauta will drill and complete three wells by December 31, 2023.
 - Wells P06 (will be named 5H), P09 (7H) and P12 (6H) will be drilled by December 31, 2023. Well P06 is planned to be on stream in March 2023 into the current FPSO, and the other two wells in August 2024 into the new FPSO.
- That Enauta will drill and complete the last four wells (P02, P08, P10 and P11) by June 2027.
 - They are planned to be onstream by June 2027.

The four wells are a commitment to the ANP.

This report relates specifically and solely to the subject matter as defined in the scope of work in the Proposal for Services and is conditional upon the assumptions described herein. The report must be considered in its entirety and must only be used for the purpose for which it was intended.

GaffneyCline conducted an independent audit examination and estimation, as of December 31, 2022, of the crude oil reserves and contingent resources of the Atlanta field. On the basis of technical and other information made available to GaffneyCline concerning this property unit, GaffneyCline hereby provides the reserves statement in Table 1 and Contingent Resources statement in Table 2.

**Table 1: Statement of Crude Oil Reserves Volumes
Atlanta Field, Santos Basin, Brazil
as of December 31, 2022**

Category	Oil Gross (100%) Field Volumes			Oil Reserves Net (NRI) to Enauta's Interest		
	Developed (MMstb)	Undeveloped (MMstb)	Total (MMstb)	Developed (MMstb)	Undeveloped (MMstb)	Total (MMstb)
1P	12.8	80.5	93.3	12.8	80.4	93.2
2P	13.1	153.1	166.2	13.1	145.9	158.9
3P	14.2	172.5	186.8	14.2	167.0	181.2

Notes to Table 1:

1. Gross field Reserves volumes are 100% of the volumes estimated to be commercially recoverable from the ten wells (three existing plus seven new wells) under the intended development plan before the end of the extended concession on June 30, 2044.
2. Oil reserves are net to Enauta's 100% working interest. Brazilian Petroleum Law, Article 47 states, "... royalties are to be paid on a monthly basis, in national currency ..." and, therefore, royalties (7.8%) are treated as cash deductions rather than a reduction to volumes.
3. Oil reserves net to Enauta exclude oil consumed in operations (CiO) as fuel.
4. Totals may not exactly equal the sum of the individual entries because of rounding.

**Table 2: Statement of Crude Oil Contingent Resources Volumes
Atlanta Field, Santos Basin, Brazil
as of December 31, 2022**

Category	Oil Gross (100%) Field Volumes (MMstb)	Company Net (NRI) Contingent Resources (MMstb)
1C	0.0	0.0
2C	29.4	28.0
3C	30.1	29.8

Notes to Table 2:

1. Gross field Contingent Resources are 100% of the volumes estimated to be recoverable from the field under the intended development plan, assuming that a further concession extension is granted after the end of the extended concession from July 2044 through June 2054 (an additional 10 years) or until the production becomes uneconomic, assuming the same fiscal terms, and subject to the same economic limit assumptions as used for reserves.
2. Oil contingent resources in this table are net to Enauta's 100% working interest. Brazilian Petroleum Law, Article 47 states, "... royalties are to be paid on a monthly basis, in national currency ..." and, therefore, royalties (7.8%) are treated as cash deductions rather than a reduction to volumes.
3. Oil contingent resources net to Enauta exclude oil consumed in operations (CiO) as fuel.
4. The volumes reported here are "unrisked" in the sense that no adjustment has been made for the risk that a further concession extension may not be granted (i.e., no "Chance of Development" (Pd) factor has been applied).
5. Contingent Resources should not be aggregated with Reserves because of the different levels of risk involved.
6. Totals may not exactly equal the sum of the individual entries because of rounding.

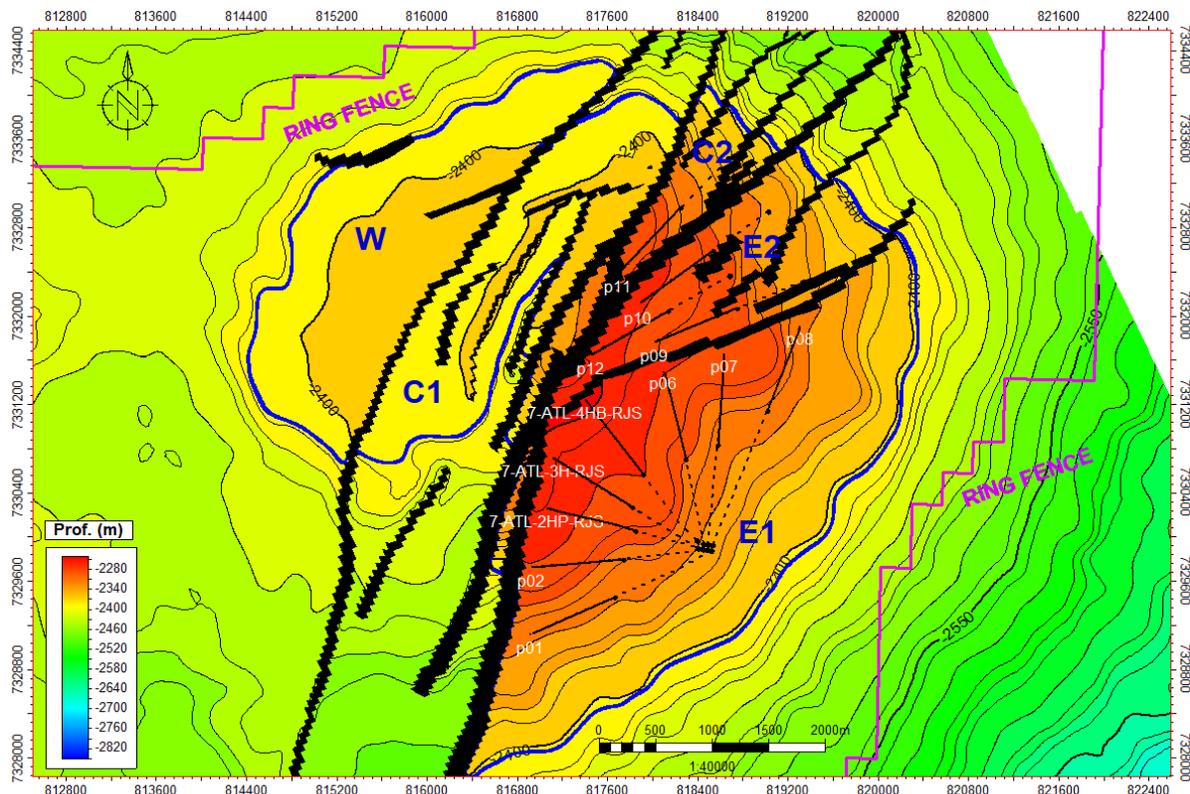
Crude oil estimated to be recovered during field separation is reported in millions of barrels (MMstb). Natural gas produced will be used in the field, and it has not been reported as reserves.

Field Description

The Atlanta field is located in the northern area of the Santos basin, 185 km offshore, southeast of Rio de Janeiro in approximately 1,550 m water depth

Seven new horizontal wells (P06, P12, P09, P10, P11, P02 and P08) are included in the reserves profiles and are part of the commitment to the ANP. [Note that the two other wells shown in Figure 1—P01 and P07—are not included in the current plan.] A larger FPSO (50,000 bopd capacity) is due for installation by June 2024 to replace the current smaller (30,000 bopd) FPSO. This 50,000 bopd limit has been applied to the 1P forecast production while for the 2P and 3P scenarios, short-term production rates up to 55,000 bopd (a designed 10% uplift on capacity) has been included.

Figure 1: Atlanta Field – Structure and Development Plan



Source: Enauta Energia S.A.

GaffneyCline has estimated Reserves up to the extended contract deadline of June 30, 2044, with the remainder of the economically producible production from the ten wells being classified as Contingent Resources (until 2061 assuming a potential further extension of the concession or until the economic limit, whichever comes first). These volumes are candidates to be promoted to the Reserves class if a further contract extension is granted.

However, as reserves and resources are evaluated periodically, changes in physical, economic or regulatory conditions could prevent the automatic promotion of Contingent Resources to Reserves when the contingency is fulfilled.

The FPSO will consume the produced gas during the plateau. In addition, a small amount of oil and diesel will be required as fuel. The quoted net reserves and contingent resources exclude the oil consumed, estimated to amount (in the best case) to 7.2 MMstb up to June 2044 and 1.4 MMstb from July 2044 until June 2054. The diesel cost has been included in the operating expenses.

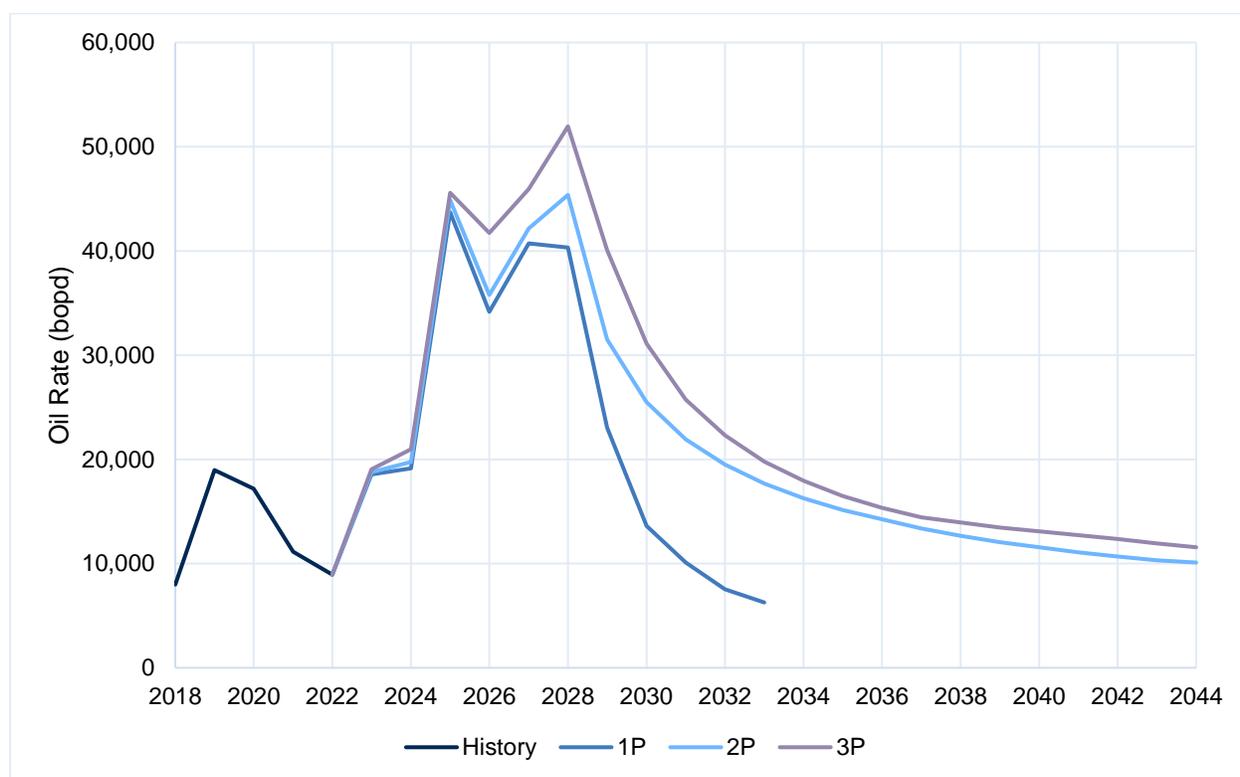
Reserves and Contingent Resources Assessment

As of December 2022, the Atlanta field was producing 13,000 bopd from wells 2HP and 4 HB only. Well 3H had been shut in in October 2021 due to ESP failure. The maximum rate during 2022 was 14,700 bopd in October 2022, lower than the 30,000 bopd FPSO capacity.

Enauta estimated future production through reservoir simulation. GaffneyCline has reviewed these low, best and high profiles and considers them to be reasonable.

The simulation cases include an allowance of 8% for downtime. The revised oil production profiles are shown in Figure 2.

Figure 2: Atlanta Field – Historical and Forecast Reserves Production



This audit examination was based on reserves estimates and other information provided by Enauta to GaffneyCline through January 4, 2023, and included such tests, procedures and adjustments as were considered necessary. All questions that arose during the audit process were resolved to GaffneyCline's satisfaction.

Economic Analysis

The economic tests for the December 31, 2022 reserves and contingent resources volumes were based on Brent forward oil prices as of December 2022, along with estimates for the Atlanta

quality and location discount/premium, which GaffneyCline considers reasonable. Net oil prices are quoted in the cashflow pages (Appendix I).

Future capital costs and operating expenses estimated by Enauta were derived from development program forecasts for the field. The main remaining capital costs include the upgrade of a purchased FPSO at US\$259 million and drilling and completing of the remaining seven firm horizontal wells plus costs related to submarine facilities, such as risers, umbilicals, service manifolds, skids for the seabed pumps and subsea installation. Total future capital is estimated to be US\$1,700 million.

Operating expenses are mainly fixed, devoted to FPSO operating costs, and its support from land, and seabed booster pump replacements. During the Early Production System stage with only three wells, the total fixed opex, including the FPSO rental and logistics, is about US\$125 million per year. For the definitive field production system Enauta estimated a total fixed opex of about US\$95 million per year.

At Enauta's request, capital, operating and abandonment costs have not been escalated for inflation. Present abandonment costs at contract end in the reserves case were estimated by Enauta at US\$205 million. GaffneyCline has found that projected capital investments and operating expenses are sufficient to economically produce the projected volumes.

Royalty is 7.8%. Taxes include Special Participation for deep-water fields and Research and Development of 1%. Cash flow statements were prepared before corporate income taxes.

It is GaffneyCline's opinion that the estimates of total remaining recoverable hydrocarbon liquid volumes, as of December 31, 2022, are, in the aggregate, reasonable and the reserves and resources classification and categorization are appropriate and consistent with the definition of reserves and resources in the Petroleum Resources Management System (PRMS), which was approved by the Society of Petroleum Engineers, the World Petroleum Council, the American Association of Petroleum Geologists, the Society of Petroleum Evaluation Engineers, the Society of Exploration Geophysicists, the Society of Petrophysicists and Well Log Analysts, and the European Association of Geoscientists and Engineers in June 2018, version 1.03 (see Appendix II).

Basis of Opinion

This document reflects GaffneyCline's informed professional judgment based on accepted standards of professional investigation and, as applicable, the data and information provided by the Client, the limited scope of engagement, and the time permitted to conduct the evaluation.

In line with those accepted standards, this document does not in any way constitute or make a guarantee or prediction of results, and no warranty is implied or expressed that actual outcome will conform to the outcomes presented herein. GaffneyCline has not independently verified any information provided by, or at the direction of, the Client, and has accepted the accuracy and completeness of this data. GaffneyCline has no reason to believe that any material facts have been withheld but does not warrant that its inquiries have revealed all of the matters that a more extensive examination might otherwise disclose.

The opinions expressed herein are subject to and fully qualified by the generally accepted uncertainties associated with the interpretation of geoscience and engineering data and do not reflect the totality of circumstances, scenarios and information that could potentially affect decisions made by the report's recipients and/or actual results. The opinions and statements contained in this report are made in good faith and in the belief that such opinions and statements are representative of prevailing physical and economic circumstances.

There are numerous uncertainties inherent in estimating reserves and resources, and in projecting future production, development expenditures, operating expenses and cash flows. Oil and gas resources assessments must be recognized as a subjective process of estimating subsurface accumulations of oil and gas that cannot be measured in an exact way. Estimates of oil and gas resources prepared by other parties may differ, perhaps materially, from those contained within this report.

The accuracy of any reserves or resources estimate is a function of the quality of the available data and of engineering and geological interpretation. Results of drilling, testing and production that post-date the preparation of the estimates may justify revisions, some or all of which may be material. Accordingly, reserves and resources estimates are often different from the quantities of oil and gas that are ultimately recovered, and the timing and cost of those volumes that are recovered may vary from that assumed.

GaffneyCline's review and audit involved reviewing pertinent facts, interpretations and assumptions made by the Client or others in preparing estimates of reserves and resources. GaffneyCline performed procedures necessary to enable it to render an opinion on the appropriateness of the methodologies employed, adequacy and quality of the data relied on, depth and thoroughness of the reserves and resources estimation process, classification and categorization of reserves and resources appropriate to the relevant definitions used, and reasonableness of the estimates.

Definition of Reserves and Contingent Resources

Reserves are those quantities of petroleum that are anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under

defined conditions. Reserves must further satisfy four criteria, based on the development project(s) applied: discovered, recoverable, commercial and remaining (as of the evaluation date).

Reserves are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by development and production status. All categories of reserves volumes quoted herein have been derived within the context of an economic limit test (ELT) assessment (pre-tax and exclusive of accumulated depreciation amounts) prior to any Net Present Value (NPV) analysis.

Contingent Resources are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations, but the applied project(s) are not yet considered mature enough for commercial development because of one or more contingencies. Contingent Resources may include, for example, projects for which there are currently no evident viable markets, or where commercial recovery is dependent on technology under development, or where evaluation of the accumulation is insufficient to clearly assess commerciality. Contingent Resources are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by their economic status.

GaffneyCline has not undertaken a site visit and inspection because it was not included in the scope of work. As such, GaffneyCline is not in a position to comment on the operations or facilities in place, their appropriateness and condition, or whether they are in compliance with the regulations pertaining to such operations. Further, GaffneyCline is not in a position to comment on any aspect of health, safety, or environment of such operation.

This report has been prepared based on GaffneyCline's understanding of the effects of petroleum legislation and other regulations that currently apply to these properties. However, GaffneyCline is not in a position to attest to property title or rights, conditions of these rights (including environmental and abandonment obligations), or any necessary licenses and consents (including planning permission, financial interest relationships, or encumbrances thereon for any part of the appraised properties).

GaffneyCline is not aware of any potential changes in regulations applicable to these fields that could affect the ability of the Client to produce the estimated reserves.

GaffneyCline is not aware of any carbon pricing impost or GHG emissions related regulations that are applicable to the evaluation of the assets that are the subject of this report. GaffneyCline has also not included the impact of any potential carbon pricing scheme or regulatory compliance costs for GHG emissions that may be implemented in the future.

Use of Net Present Values

It should be clearly understood that the NPVs contained herein do not represent a GaffneyCline opinion as to the market value of the subject property, nor any interest in it.

In assessing a likely market value, it would be necessary to take into account a number of additional factors including reserves risk (i.e., that Proved and/or Probable and/or Possible reserves may not be realized within the anticipated timeframe for their exploitation); perceptions

of economic and sovereign risk, including potential change in regulations; potential upside; other benefits, encumbrances or charges that may pertain to a particular interest; and, the competitive state of the market at the time. GaffneyCline has explicitly not taken such factors into account in deriving the NPVs presented herein.

Qualifications

In performing this study, GaffneyCline is not aware that any conflict of interest has existed. As an independent consultancy, GaffneyCline is providing impartial technical, commercial, and strategic advice within the energy sector. GaffneyCline's remuneration was not in any way contingent on the contents of this report.

In the preparation of this document, GaffneyCline has maintained, and continues to maintain, a strict independent consultant-client relationship with Enauta. Furthermore, the management and employees of GaffneyCline have no interest in any of the assets evaluated or related with the analysis performed, as part of this report.

Staff members who prepared this report hold appropriate professional and educational qualifications and have the necessary levels of experience and expertise to perform the work.

Notice

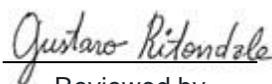
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Yours sincerely,

Gaffney, Cline & Associates



Project Manager
Rawdon Seager,
Technical Director



Reviewed by
Gustavo Ritondale,
Principal Advisor

Appendices

Appendix I	Atlanta Cash Flows
Appendix II	PRMS Reserves Definitions
Appendix III	Glossary

Appendix I Atlanta Cash Flows

**Enauta Net Interest Developed Reserves Cashflows
as of December 31, 2022
Atlanta Field**

1P Developed Reserves Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Aband. Cost / FPSO Term. Fee	Cashflow BIT		10% Disc Cashflow
	MMBbl	MMBbl	US\$/Bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative	MMUS\$
2023	6.8	6.8	82.52	559	44	0	0	138	56	0	322	322	307
2024	4.7	4.7	78.78	372	29	0	0	130	0	0	212	534	184
2025	1.3	1.3	76.94	97	8	0	0	43	0	0	46	580	36
2026										98	-98	483	-70
Total	12.8	12.8		1,027	80	0	0	311	56	98	483		457

2P Developed Reserves Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Aband. Cost / FPSO Term. Fee	Cashflow BIT		10% Disc Cashflow
	MMBbl	MMBbl	US\$/Bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative	MMUS\$
2023	6.9	6.9	82.52	565	44	0	0	138	56	0	328	328	312
2024	5.0	5.0	78.78	392	31	0	0	130	0	0	231	559	200
2025	1.3	1.3	76.94	97	8	0	0	43	0	0	46	605	36
2026										98	-98	507	-70
Total	13.1	13.1		1,054	82	0	0	311	56	98	507		479

3P Developed Reserves Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Aband. Cost / FPSO Term. Fee	Cashflow BIT		10% Disc Cashflow
	MMBbl	MMBbl	US\$/Bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative	MMUS\$
2023	7.0	7.0	82.52	574	45	0	0	138	56	0	335	335	319
2024	5.7	5.7	78.78	452	35	0	0	130	0	0	287	622	249
2025	1.6	1.6	76.94	120	9	0	0	43	0	0	67	689	53
2026										98	-98	592	-70
Total	14.2	14.2		1,146	89	0	0	311	56	98	592		551

Currency in million US Dollars

1. Cash flows are shown up to the Economic Limit or to the end of the concession on 30 June 2044, whichever comes first.
2. The NPVs reported here do not represent an opinion as to the market value of a property or any interest therein.
3. Costs are un-escalated.
4. Totals may not exactly equal the sum of the individual entries because of rounding.

GaffneyCline Engineer: RJHS Reviewed by: GR

**Enauta Net Interest Reserves Cashflows
as of December 31, 2022
Atlanta Field**

Total 1P Reserves Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Abandonment Cost	Cashflow BIT		10% Disc
	MMBbl	MMBbl	US\$/bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative	Cashflow
2023	6.8	6.8	82.52	558	44	0	0	138	551	0	-175	-175	-167
2024	7.0	7.0	78.78	548	43	0	0	162	232	0	112	-64	97
2025	15.9	15.9	76.94	1,220	95	25	0	97	169	0	834	770	657
2026	12.5	12.4	74.82	927	73	5	0	90	313	0	445	1,216	319
2027	14.5	14.4	73.25	1,055	83	15	6	92	244	0	616	1,831	401
2028	14.7	14.7	71.90	1,055	82	14	6	94	37	0	822	2,654	487
2029	8.4	8.4	71.33	601	47	0	13	94	24	0	424	3,077	228
2030	5.0	5.0	71.33	354	28	0	0	93	15	0	219	3,296	107
2031	3.7	3.7	69.33	255	20	0	0	93	15	0	128	3,424	57
2032	2.7	2.7	69.33	190	15	0	0	94	15	0	67	3,491	27
2033	2.3	2.3	69.33	158	12	0	0	120	15	0	11	3,502	4
2034										205	-205	3,286	-68
Total	93.3	93.2		6,923	541	59	25	1,168	1,628	205	3,297		2,148

Total 2P Reserves Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Abandonment Cost	Cashflow BIT		10% Disc
	MMBbl	MMBbl	US\$/bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative	Cashflow
2023	6.9	6.9	82.52	565	44	0	0	138	551	0	-168	-168	-160
2024	7.2	7.2	78.78	567	44	0	0	162	232	0	129	-39	112
2025	16.4	16.4	76.94	1,260	98	29	0	97	169	0	867	828	683
2026	13.1	13.0	74.82	972	76	9	6	90	313	0	477	1,305	342
2027	15.4	15.3	73.25	1,122	88	20	5	92	244	0	674	1,979	439
2028	16.6	16.5	71.90	1,189	93	25	5	94	37	0	934	2,913	553
2029	11.5	11.3	71.33	808	64	1	5	94	24	0	621	3,534	334
2030	9.3	9.1	71.33	646	52	0	3	93	15	0	483	4,017	236
2031	8.0	7.7	69.33	534	43	0	0	93	15	0	382	4,400	170
2032	7.1	6.8	69.33	469	39	0	0	94	15	0	322	4,722	130
2033	6.4	6.0	69.33	419	35	0	0	120	15	0	249	4,971	92
2034	5.9	5.5	69.33	381	32	0	0	120	15	0	214	5,185	72
2035	5.5	5.1	69.33	351	30	0	0	100	15	0	207	5,391	63
2036	5.2	4.7	69.33	326	28	0	0	93	15	0	191	5,583	53
2037	4.9	4.4	69.33	303	26	0	0	92	12	0	173	5,755	43
2038	4.6	4.1	69.33	284	25	0	0	91	8	0	160	5,915	36
2039	4.4	3.9	69.33	268	24	0	0	90	8	0	145	6,060	30
2040	4.2	3.7	69.33	254	23	0	0	90	3	0	138	6,197	26
2041	4.0	3.5	69.33	241	22	0	0	90	0	0	129	6,326	22
2042	3.9	3.3	69.33	230	21	0	0	90	0	0	119	6,445	19
2043	3.8	3.2	69.33	220	20	0	0	90	0	0	110	6,556	16
2044	1.8	1.5	69.33	107	10	0	0	73	0	0	24	6,580	3
2045										205	-205	6,375	-24
Total	166.2	158.9		11,517	937	84	24	2,187	1,704	205	6,375		3,289

Total 3P Reserves Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Abandonment Cost	Cashflow BIT		10% Disc
	MMBbl	MMBbl	US\$/bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative	Cashflow
2023	7.0	7.0	82.52	574	45	0	0	138	551	0	-161	-161	-153
2024	7.6	7.6	78.78	603	47	0	0	162	232	0	162	1	140
2025	16.6	16.6	76.94	1,280	100	31	0	97	169	0	883	884	696
2026	15.2	15.2	74.82	1,139	89	21	6	90	313	0	620	1,504	444
2027	16.8	16.7	73.25	1,227	96	28	5	92	244	0	763	2,266	497
2028	19.0	19.0	71.90	1,363	106	39	5	94	37	0	1,082	3,348	641
2029	14.6	14.6	71.33	1,039	81	16	5	94	24	0	819	4,168	441
2030	11.3	11.2	71.33	797	63	0	3	93	15	0	623	4,791	305
2031	9.4	9.2	69.33	634	51	0	2	93	15	0	474	5,264	211
2032	8.1	7.9	69.33	544	44	0	0	94	15	0	382	5,656	158
2033	7.2	6.9	69.33	476	39	0	0	120	15	0	302	5,959	111
2034	6.5	6.1	69.33	426	35	0	0	120	15	0	256	6,215	86
2035	6.0	5.6	69.33	387	33	0	0	100	15	0	240	6,455	73
2036	5.6	5.1	69.33	356	30	0	0	93	15	0	218	6,673	60
2037	5.3	4.8	69.33	331	28	0	0	92	12	0	199	6,872	50
2038	5.1	4.6	69.33	318	28	0	0	91	8	0	191	7,064	44
2039	4.9	4.4	69.33	305	27	0	0	90	8	0	180	7,244	37
2040	4.8	4.3	69.33	296	26	0	0	90	3	0	176	7,420	33
2041	4.6	4.2	69.33	290	25	0	0	90	0	0	175	7,595	30
2042	4.5	4.2	69.33	290	24	0	0	90	0	0	175	7,770	27
2043	4.4	4.1	69.33	286	24	0	0	90	0	0	173	7,943	25
2044	2.1	2.0	69.33	142	11	0	0	73	0	0	57	8,001	7
2045										205	-205	7,796	-24
Total	186.8	181.2		13,105	1,052	135	26	2,187	1,704	205	7,796		3,938

Currency in million US Dollars

1. Cash flows are shown up to the Economic Limit or to the end of the concession on 30 June 2044, whichever comes first.
2. The NPVs reported here do not represent an opinion as to the market value of a property or any interest therein.
3. Costs are un-escalated.
4. Totals may not exactly equal the sum of the individual entries because of rounding.

GaffneyCline Engineer: RJHS Reviewed by: GR

**Enauta Net Interest Reserves and Contingent Resources Cashflows
as of December 31, 2022
Atlanta Field**

Total 1P + 1C Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Abandonment Cost	Cashflow BIT		10% Disc Cashflow
	MMBbl	MMBbl	US\$/Bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative
2023	6.8	6.8	82.52	558	44	0	0	138	551	0	-175	-175	-167
2024	7.0	7.0	78.78	548	43	0	0	162	232	0	112	-64	97
2025	15.9	15.9	76.94	1,220	95	25	0	97	169	0	834	770	657
2026	12.5	12.5	74.82	933	73	5	0	90	313	0	451	1,221	323
2027	14.5	14.4	73.25	1,054	83	16	6	92	244	0	614	1,836	400
2028	14.7	14.6	71.90	1,051	82	14	6	94	37	0	817	2,653	484
2029	8.4	8.4	71.33	601	47	0	13	94	24	0	424	3,076	228
2030	5.0	5.0	71.33	354	28	0	0	93	15	0	219	3,295	107
2031	3.7	3.7	69.33	255	20	0	0	93	15	0	128	3,423	57
2032	2.7	2.7	69.33	190	15	0	0	94	15	0	67	3,490	27
2033	2.3	2.3	69.33	158	12	0	0	120	15	0	11	3,501	4
2034										205	-205	3,296	-68
Total	93.3	93.2		6,923	541	61	25	1,168	1,628	205	3,296		2,148

Total 2P + 2C Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Abandonment Cost	Cashflow BIT		10% Disc Cashflow
	MMBbl	MMBbl	US\$/Bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative
2023	6.9	6.9	82.52	565	44	0	0	138	551	0	-168	-168	-160
2024	7.2	7.2	78.78	567	44	0	0	162	232	0	129	-39	112
2025	16.4	16.4	76.94	1,260	98	30	0	97	169	0	866	827	682
2026	13.1	13.1	74.82	977	76	9	6	90	313	0	482	1,309	345
2027	15.4	15.3	73.25	1,122	88	21	5	92	244	0	673	1,982	438
2028	16.6	16.5	71.90	1,186	93	27	5	94	37	0	930	2,912	551
2029	11.5	11.5	71.33	818	64	1	5	94	24	0	631	3,543	339
2030	9.3	9.1	71.33	652	52	0	3	93	15	0	489	4,032	239
2031	8.0	7.8	69.33	537	43	0	0	93	15	0	386	4,418	172
2032	7.1	6.8	69.33	473	39	0	0	94	15	0	326	4,744	132
2033	6.4	6.1	69.33	422	35	0	0	120	15	0	252	4,996	93
2034	5.9	5.5	69.33	383	32	0	0	120	15	0	216	5,212	72
2035	5.5	5.1	69.33	353	30	0	0	100	15	0	209	5,421	63
2036	5.2	4.7	69.33	328	28	0	0	93	15	0	193	5,614	53
2037	4.9	4.4	69.33	304	26	0	0	92	12	0	174	5,788	44
2038	4.6	4.1	69.33	285	25	0	0	91	8	0	161	5,949	37
2039	4.4	3.9	69.33	269	24	0	0	90	8	0	146	6,095	30
2040	4.2	3.7	69.33	255	23	0	0	90	3	0	139	6,233	26
2041	4.0	3.5	69.33	242	22	0	0	90	0	0	130	6,363	22
2042	3.9	3.3	69.33	231	21	0	0	90	0	0	120	6,483	19
2043	3.8	3.2	69.33	221	20	0	0	90	0	0	111	6,594	16
2044	3.7	3.1	69.33	215	20	0	0	110	0	0	85	6,679	11
2045	3.7	3.1	69.33	212	20	0	0	90	0	0	102	6,781	12
2046	3.7	3.1	69.33	217	20	0	0	90	0	0	107	6,888	11
2047	3.7	3.3	69.33	227	20	0	0	90	0	0	117	7,005	11
2048	3.5	3.3	69.33	231	19	0	0	90	0	0	122	7,127	11
2049	3.0	3.0	69.33	210	16	0	0	90	0	0	104	7,230	8
2050	2.6	2.6	69.33	180	14	0	0	90	0	0	76	7,306	6
2051	2.3	2.3	69.33	160	13	0	0	90	0	0	58	7,364	4
2052	2.2	2.2	69.33	152	12	0	0	90	0	0	50	7,414	3
2053	2.0	2.0	69.33	140	11	0	0	90	0	0	39	7,453	2
2054	0.9	0.9	69.33	66	5	0	0	45	0	0	16	7,469	1
2055										205	-205	7,264	-9
Total	195.6	186.9		13,459	1,097	88	24	3,077	1,704	205	7,264		3,396

Currency in million US Dollars

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3. Costs are un-escalated.
4. Totals may not exactly equal the sum of the individual entries because of rounding.

GaffneyCline Engineer: RJHS Reviewed by: GR

**Enauta Net Interest Reserves and Contingent Resources Cashflows
as of December 31, 2022
Atlanta Field**

Total 3P + 3C Case

Year	Oil Production	Oil Sales	Oil Price	Gross Revenue	Royalty	Special Participation	R & D Tax	Operating Cost	Capital Expenditures	Abandonment Cost	Cashflow BIT		10% Disc
	MMBbl	MMBbl	US\$/Bbl	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	MMUS\$	Net	Cumulative	Cashflow
2023	7.0	7.0	82.52	574	45	0	0	138	551	0	-161	-161	-153
2024	7.6	7.6	78.78	603	47	0	0	162	232	0	162	1	140
2025	16.6	16.6	76.94	1,280	100	32	0	97	169	0	882	883	695
2026	15.2	15.2	74.82	1,140	89	22	6	90	313	0	619	1,503	444
2027	16.8	16.8	73.25	1,228	96	29	5	92	244	0	763	2,266	497
2028	19.0	18.9	71.90	1,362	106	40	5	94	37	0	1,079	3,345	639
2029	14.6	14.6	71.33	1,043	81	17	5	94	24	0	823	4,167	443
2030	11.3	11.3	71.33	806	63	0	3	93	15	0	631	4,799	309
2031	9.4	9.2	69.33	639	51	0	2	93	15	0	479	5,277	213
2032	8.1	7.9	69.33	548	44	0	0	94	15	0	396	5,673	160
2033	7.2	6.9	69.33	480	39	0	0	120	15	0	306	5,979	113
2034	6.5	6.2	69.33	429	35	0	0	120	15	0	259	6,238	87
2035	6.0	5.6	69.33	389	33	0	0	100	15	0	243	6,481	74
2036	5.6	5.2	69.33	358	30	0	0	93	15	0	220	6,702	61
2037	5.3	4.8	69.33	333	28	0	0	92	12	0	200	6,902	50
2038	5.1	4.6	69.33	319	28	0	0	91	8	0	192	7,094	44
2039	4.9	4.4	69.33	306	27	0	0	90	8	0	181	7,275	38
2040	4.8	4.3	69.33	296	26	0	0	90	3	0	177	7,451	33
2041	4.6	4.1	69.33	286	25	0	0	90	0	0	171	7,622	29
2042	4.5	4.0	69.33	281	24	0	0	90	0	0	166	7,789	26
2043	4.4	4.0	69.33	279	24	0	0	90	0	0	166	7,954	23
2044	4.2	4.0	69.33	277	23	0	0	110	0	0	144	8,099	19
2045	4.0	3.8	69.33	266	21	0	0	90	0	0	154	8,253	18
2046	3.6	3.6	69.33	249	19	0	0	90	0	0	140	8,393	15
2047	3.4	3.4	69.33	239	19	0	0	90	0	0	130	8,523	13
2048	3.2	3.2	69.33	224	17	0	0	90	0	0	116	8,640	10
2049	3.0	3.0	69.33	211	16	0	0	90	0	0	104	8,744	8
2050	2.7	2.7	69.33	187	15	0	0	90	0	0	82	8,827	6
2051	2.4	2.4	69.33	167	13	0	0	90	0	0	64	8,891	4
2052	2.3	2.2	69.33	154	13	0	0	90	0	0	52	8,943	3
2053	2.2	2.1	69.33	148	12	0	0	90	0	0	46	8,989	3
2054	1.1	1.1	69.33	73	6	0	0	45	0	0	22	9,011	1
2055										205	-205	8,806	-9
Total	216.9	211.1		15,174	1,215	140	26	3,077	1,704	205	8,806		4,054

Currency in million US Dollars

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GaffneyCline Engineer: RJHS Reviewed by: GR

Appendix II PRMS Reserves Definitions

**Society of Petroleum Engineers, World Petroleum Council,
American Association of Petroleum Geologists, Society of Petroleum Evaluation Engineers,
Society of Exploration Geophysicists, Society of Petrophysicists and Well Log Analysts,
and European Association of Geoscientists & Engineers**

Petroleum Resources Management System

Definitions and Guidelines (1)

Revised 2018 (v. 1.03)

Table 1—Recoverable Resources Classes and Sub-Classes

Class/Sub-Class	Definition	Guidelines
Reserves	Reserves are those quantities of petroleum anticipated to be commercially recoverable by application of development projects to known accumulations from a given date forward under defined conditions.	<p>Reserves must satisfy four criteria: discovered, recoverable, commercial, and remaining based on the development project(s) applied. Reserves are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by the development and production status.</p> <p>To be included in the Reserves class, a project must be sufficiently defined to establish its commercial viability (see Section 2.1.2, Determination of Commerciality). This includes the requirement that there is evidence of firm intention to proceed with development within a reasonable time-frame.</p> <p>A reasonable time-frame for the initiation of development depends on the specific circumstances and varies according to the scope of the project. While five years is recommended as a benchmark, a longer time-frame could be applied where, for example, development of an economic project is deferred at the option of the producer for, among other things, market-related reasons or to meet contractual or strategic objectives. In all cases, the justification for classification as Reserves should be clearly documented.</p> <p>To be included in the Reserves class, there must be a high confidence in the commercial maturity and economic producibility of the reservoir as supported by actual production or formation tests. In certain cases, Reserves may be assigned on the basis of well logs and/or core analysis that indicate that the subject reservoir is hydrocarbon-bearing and is analogous to reservoirs in the same area that are producing or have demonstrated the ability to produce on formation tests.</p>

¹ These Definitions and Guidelines are extracted from the full Petroleum Resources Management System (revised 2018 (v. 1.03)) document.

Class/Sub-Class	Definition	Guidelines
On Production	The development project is currently producing or capable of producing and selling petroleum to market.	<p>The key criterion is that the project is receiving income from sales, rather than that the approved development project is necessarily complete. Includes Developed Producing Reserves.</p> <p>The project decision gate is the decision to initiate or continue economic production from the project.</p>
Approved for Development	All necessary approvals have been obtained, capital funds have been committed, and implementation of the development project is ready to begin or is under way.	<p>At this point, it must be certain that the development project is going ahead. The project must not be subject to any contingencies, such as outstanding regulatory approvals or sales contracts. Forecast capital expenditures should be included in the reporting entity's current or following year's approved budget.</p> <p>The project decision gate is the decision to start investing capital in the construction of production facilities and/or drilling development wells.</p>
Justified for Development	Implementation of the development project is justified on the basis of reasonable forecast commercial conditions at the time of reporting, and there are reasonable expectations that all necessary approvals/contracts will be obtained.	<p>To move to this level of project maturity, and hence have Reserves associated with it, the development project must be commercially viable at the time of reporting (see Section 2.1.2, Determination of Commerciality) and the specific circumstances of the project. All participating entities have agreed and there is evidence of a committed project (firm intention to proceed with development within a reasonable time-frame)) There must be no known contingencies that could preclude the development from proceeding (see Reserves class).</p> <p>The project decision gate is the decision by the reporting entity and its partners, if any, that the project has reached a level of technical and commercial maturity sufficient to justify proceeding with development at that point in time.</p>
Contingent Resources	Those quantities of petroleum estimated, as of a given date, 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.	<p>Contingent Resources may include, for example, projects for which there are currently no viable markets, where commercial recovery is dependent on technology under development, where evaluation of the accumulation is insufficient to clearly assess commerciality, where the development plan is not yet approved, or where regulatory or social acceptance issues may exist.</p> <p>Contingent Resources are further categorized in accordance with the level of certainty associated with the estimates and may be sub-classified based on project maturity and/or characterized by the economic status.</p>
Development Pending	A discovered accumulation where project activities are ongoing to justify commercial development in the foreseeable future.	<p>The project is seen to have reasonable potential for eventual commercial development, to the extent that further data acquisition (e.g., drilling, seismic data) and/or evaluations are currently ongoing with a view to confirming that the project is commercially viable and providing the basis for selection of an appropriate development plan. The critical contingencies have been identified and are reasonably expected to be resolved within a reasonable time-frame. Note that disappointing appraisal/evaluation results could lead to a reclassification of the project to On Hold or Not Viable status.</p> <p>The project decision gate is the decision to undertake further data acquisition and/or studies designed to move the project to a level of technical and commercial maturity at which a decision can be made to proceed with development and production.</p>

Class/Sub-Class	Definition	Guidelines
Development on Hold	A discovered accumulation where project activities are on hold and/or where justification as a commercial development may be subject to significant delay.	<p>The project is seen to have potential for commercial development. Development may be subject to a significant time delay. Note that a change in circumstances, such that there is no longer a probable chance that a critical contingency can be removed in the foreseeable future, could lead to a reclassification of the project to Not Viable status.</p> <p>The project decision gate is the decision to either proceed with additional evaluation designed to clarify the potential for eventual commercial development or to temporarily suspend or delay further activities pending resolution of external contingencies.</p>
Development Unclassified	A discovered accumulation where project activities are under evaluation and where justification as a commercial development is unknown based on available information.	<p>The project is seen to have potential for eventual commercial development, but further appraisal/evaluation activities are ongoing to clarify the potential for eventual commercial development.</p> <p>This sub-class requires active appraisal or evaluation and should not be maintained without a plan for future evaluation. The sub-class should reflect the actions required to move a project toward commercial maturity and economic production.</p>
Development Not Viable	A discovered accumulation for which there are no current plans to develop or to acquire additional data at the time because of limited commercial potential.	<p>The project is not seen to have potential for eventual commercial development at the time of reporting, but the theoretically recoverable quantities are recorded so that the potential opportunity will be recognized in the event of a major change in technology or commercial conditions.</p> <p>The project decision gate is the decision not to undertake further data acquisition or studies on the project for the foreseeable future.</p>
Prospective Resources	Those quantities of petroleum that are estimated, as of a given date, to be potentially recoverable from undiscovered accumulations.	Potential accumulations are evaluated according to the chance of geologic discovery and, assuming a discovery, the estimated quantities that would be recoverable under defined development projects. It is recognized that the development programs will be of significantly less detail and depend more heavily on analog developments in the earlier phases of exploration.
Prospect	A project associated with a potential accumulation that is sufficiently well defined to represent a viable drilling target.	Project activities are focused on assessing the chance of geologic discovery and, assuming discovery, the range of potential recoverable quantities under a commercial development program.
Lead	A project associated with a potential accumulation that is currently poorly defined and requires more data acquisition and/or evaluation to be classified as a Prospect.	Project activities are focused on acquiring additional data and/or undertaking further evaluation designed to confirm whether or not the Lead can be matured into a Prospect. Such evaluation includes the assessment of the chance of geologic discovery and, assuming discovery, the range of potential recovery under feasible development scenarios.
Play	A project associated with a prospective trend of potential prospects, but that requires more data acquisition and/or evaluation to define specific Leads or Prospects.	Project activities are focused on acquiring additional data and/or undertaking further evaluation designed to define specific Leads or Prospects for more detailed analysis of their chance of geologic discovery and, assuming discovery, the range of potential recovery under hypothetical development scenarios.

Table 2—Reserves Status Definitions and Guidelines

Status	Definition	Guidelines
Developed Reserves	Expected quantities to be recovered from existing wells and facilities.	Reserves are considered developed only after the necessary equipment has been installed, or when the costs to do so are relatively minor compared to the cost of a well. Where required facilities become unavailable, it may be necessary to reclassify Developed Reserves as Undeveloped. Developed Reserves may be further sub-classified as Producing or Non-producing.
Developed Producing Reserves	Expected quantities to be recovered from completion intervals that are open and producing at the effective date of the estimate.	Improved recovery Reserves are considered producing only after the improved recovery project is in operation.
Developed Non-Producing Reserves	Shut-in and behind-pipe Reserves.	<p>Shut-in Reserves are expected to be recovered from (1) completion intervals that are open at the time of the estimate but which have not yet started producing, (2) wells which were shut-in for market conditions or pipeline connections, or (3) wells not capable of production for mechanical reasons. Behind-pipe Reserves are expected to be recovered from zones in existing wells that will require additional completion work or future re-completion before start of production with minor cost to access these reserves.</p> <p>In all cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.</p>
Undeveloped Reserves	Quantities expected to be recovered through future significant investments.	Undeveloped Reserves are to be produced (1) from new wells on undrilled acreage in known accumulations, (2) from deepening existing wells to a different (but known) reservoir, (3) from infill wells that will increase recovery, or (4) where a relatively large expenditure (e.g., when compared to the cost of drilling a new well) is required to (a) recomplete an existing well or (b) install production or transportation facilities for primary or improved recovery projects.

Table 3—Reserves Category Definitions and Guidelines

Category	Definition	Guidelines
Proved Reserves	Those quantities of petroleum that, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be commercially recoverable from a given date forward from known reservoirs and under defined economic conditions, operating methods, and government regulations.	<p>If deterministic methods are used, the term “reasonable certainty” is intended to express a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability (P90) that the quantities actually recovered will equal or exceed the estimate.</p> <p>The area of the reservoir considered as Proved includes (1) the area delineated by drilling and defined by fluid contacts, if any, and (2) adjacent undrilled portions of the reservoir that can reasonably be judged as continuous with it and commercially productive on the basis of available geoscience and engineering data.</p> <p>In the absence of data on fluid contacts, Proved quantities in a reservoir are limited by the LKH as seen in a well penetration unless otherwise indicated by definitive geoscience, engineering, or performance data. Such definitive information may include pressure gradient analysis and seismic indicators. Seismic data alone may not be sufficient to define fluid contacts for Proved reserves.</p> <p>Reserves in undeveloped locations may be classified as Proved provided that:</p> <ul style="list-style-type: none"> A. The locations are in undrilled areas of the reservoir that can be judged with reasonable certainty to be commercially mature and economically productive. B. Interpretations of available geoscience and engineering data indicate with reasonable certainty that the objective formation is laterally continuous with drilled Proved locations. <p>For Proved Reserves, the recovery efficiency applied to these reservoirs should be defined based on a range of possibilities supported by analogs and sound engineering judgment considering the characteristics of the Proved area and the applied development program.</p>
Probable Reserves	Those additional Reserves that analysis of geoscience and engineering data indicates are less likely to be recovered than Proved Reserves but more certain to be recovered than Possible Reserves.	<p>It is equally likely that actual remaining quantities recovered will be greater than or less than the sum of the estimated Proved plus Probable Reserves (2P). In this context, when probabilistic methods are used, there should be at least a 50% probability that the actual quantities recovered will equal or exceed the 2P estimate.</p> <p>Probable Reserves may be assigned to areas of a reservoir adjacent to Proved where data control or interpretations of available data are less certain. The interpreted reservoir continuity may not meet the reasonable certainty criteria.</p> <p>Probable estimates also include incremental recoveries associated with project recovery efficiencies beyond that assumed for Proved.</p>

Category	Definition	Guidelines
Possible Reserves	Those additional reserves that analysis of geoscience and engineering data indicates are less likely to be recoverable than Probable Reserves.	<p>The total quantities ultimately recovered from the project have a low probability to exceed the sum of Proved plus Probable plus Possible (3P), which is equivalent to the high-estimate scenario. When probabilistic methods are used, there should be at least a 10% probability (P10) that the actual quantities recovered will equal or exceed the 3P estimate.</p> <p>Possible Reserves may be assigned to areas of a reservoir adjacent to Probable where data control and interpretations of available data are progressively less certain. Frequently, this may be in areas where geoscience and engineering data are unable to clearly define the area and vertical reservoir limits of economic production from the reservoir by a defined, commercially mature project.</p> <p>Possible estimates also include incremental quantities associated with project recovery efficiencies beyond that assumed for Probable.</p>
Probable and Possible Reserves	See above for separate criteria for Probable Reserves and Possible Reserves.	<p>The 2P and 3P estimates may be based on reasonable alternative technical interpretations within the reservoir and/or subject project that are clearly documented, including comparisons to results in successful similar projects.</p> <p>In conventional accumulations, Probable and/or Possible Reserves may be assigned where geoscience and engineering data identify directly adjacent portions of a reservoir within the same accumulation that may be separated from Proved areas by minor faulting or other geological discontinuities and have not been penetrated by a wellbore but are interpreted to be in communication with the known (Proved) reservoir. Probable or Possible Reserves may be assigned to areas that are structurally higher than the Proved area. Possible (and in some cases, Probable) Reserves may be assigned to areas that are structurally lower than the adjacent Proved or 2P area.</p> <p>Caution should be exercised in assigning Reserves to adjacent reservoirs isolated by major, potentially sealing faults until this reservoir is penetrated and evaluated as commercially mature and economically productive. Justification for assigning Reserves in such cases should be clearly documented. Reserves should not be assigned to areas that are clearly separated from a known accumulation by non-productive reservoir (i.e., absence of reservoir, structurally low reservoir, or negative test results); such areas may contain Prospective Resources.</p> <p>In conventional accumulations, where drilling has defined a highest known oil elevation and there exists the potential for an associated gas cap, Proved Reserves of oil should only be assigned in the structurally higher portions of the reservoir if there is reasonable certainty that such portions are initially above bubble point pressure based on documented engineering analyses. Reservoir portions that do not meet this certainty may be assigned as Probable and Possible oil and/or gas based on reservoir fluid properties and pressure gradient interpretations.</p>

Figure 1.1—Resources classification framework

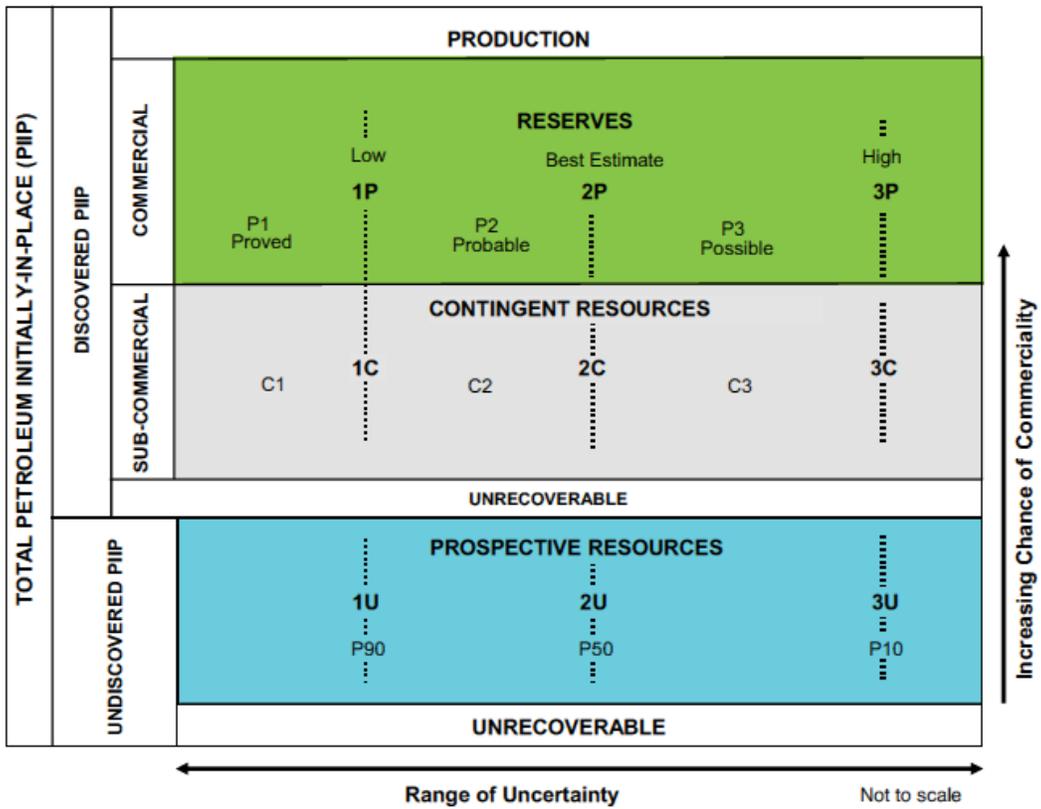
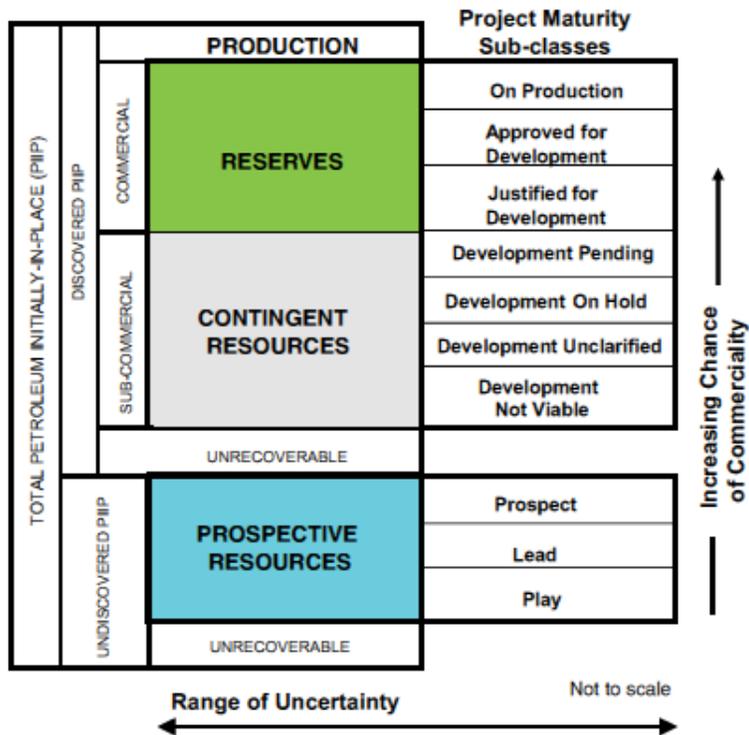


Figure 2.1—Sub-classes based on project maturity



Appendix III Glossary

Glossary – Standard Oil Industry Terms and Abbreviations

%	Percentage
1H05	First half (6 months) of 2005 (example)
2Q06	Second quarter (3 months) of 2006 (example)
2D	Two dimensional
3D	Three dimensional
4D	Four dimensional
1P	Proved Reserves
2P	Proved plus Probable Reserves
3P	Proved plus Probable plus Possible Reserves
ABEX	Abandonment Expenditure
ACQ	Annual Contract Quantity
°API	Degrees API (American Petroleum Institute)
AAPG	American Association of Petroleum Geologists
AVO	Amplitude versus Offset
A\$	Australian Dollars
B	Billion (10 ⁹)
Bbl	Barrels
/Bbl	per barrel
BBbl	Billion Barrels
BHA	Bottom Hole Assembly
BHC	Bottom Hole Compensated
Bscf or Bcf	Billion standard cubic feet
Bscfd or Bcfd	Billion standard cubic feet per day
Bm ³	Billion cubic metres
bcpd	Barrels of condensate per day
BHP	Bottom Hole Pressure
blpd	Barrels of liquid per day
bpd	Barrels per day
boe	Barrels of oil equivalent @ xxx mcf/Bbl
boepd	Barrels of oil equivalent per day @ xxx mcf/Bbl
BOP	Blow Out Preventer
bopd	Barrels oil per day
bwpd	Barrels of water per day
BS&W	Bottom sediment and water
BTU	British Thermal Units
bwpd	Barrels water per day
CBM	Coal Bed Methane

CO ₂	Carbon Dioxide
CAPEX	Capital Expenditure
CCGT	Combined Cycle Gas Turbine
cm	centimetres
CMM	Coal Mine Methane
CNG	Compressed Natural Gas
Cp	Centipoise (a measure of viscosity)
CSG	Coal Seam Gas
CT	Corporation Tax
D1BM	Design 1 Build Many
DCQ	Daily Contract Quantity
Deg C	Degrees Celsius
Deg F	Degrees Fahrenheit
DHI	Direct Hydrocarbon Indicator
DLIS	Digital Log Interchange Standard
DST	Drill Stem Test
DWT	Dead-weight ton
E&A	Exploration and Appraisal
E&P	Exploration and Production
EBIT	Earnings before Interest and Tax
EBITDA	Earnings before interest, tax, depreciation and amortization
ECS	Elemental Capture Spectroscopy
EI	Entitlement Interest
EIA	Environmental Impact Assessment
ELT	Economic Limit Test
EMV	Expected Monetary Value
EOR	Enhanced Oil Recovery
EUR	Estimated Ultimate Recovery
FDP	Field Development Plan
FEED	Front End Engineering and Design
FPSO	Floating Production Storage and Offloading
FSO	Floating Storage and Offloading
FWL	Free Water Level
ft	Foot/feet
Fx	Foreign Exchange Rate
g	gram
g/cc	grams per cubic centimetre
gal	gallon
gal/d	gallons per day
G&A	General and Administrative costs
GBP	Pounds Sterling

Glossary – Standard Oil Industry Terms and Abbreviations

GCoS	Geological Chance of Success
GDT	Gas Down to
GIIP	Gas Initially In Place
GJ	Gigajoules (one billion Joules)
GOC	Gas Oil Contact
GOR	Gas Oil Ratio
GRV	Gross Rock Volumes
GTL	Gas to Liquids
GWC	Gas water contact
HDT	Hydrocarbons Down to
HSE	Health, Safety and Environment
HSFO	High Sulphur Fuel Oil
HUT	Hydrocarbons up to
H ₂ S	Hydrogen Sulphide
IOR	Improved Oil Recovery
IPP	Independent Power Producer
IRR	Internal Rate of Return
J	Joule (Metric measurement of energy) kilojoule = 0.9478 BTU)
k	Permeability
KB	Kelly Bushing
KJ	Kilojoules (one Thousand Joules)
kl	Kilolitres
km	Kilometres
km ²	Square kilometres
kPa	Thousands of Pascals (measurement of pressure)
KW	Kilowatt
KWh	Kilowatt hour
LAS	Log ASCII Standard
LKG	Lowest Known Gas
LKH	Lowest Known Hydrocarbons
LKO	Lowest Known Oil
LNG	Liquefied Natural Gas
LoF	Life of Field
LPG	Liquefied Petroleum Gas
LTI	Lost Time Injury
LWD	Logging while drilling
m	Metres
M	Thousand
m ³	Cubic metres
Mcf or Mscf	Thousand standard cubic feet
MCM	Management Committee Meeting

MMcf or MMscf	Million standard cubic feet
m ³ /d	Cubic metres per day
mD	Measure of Permeability in millidarcies
MD	Measured Depth
MDT	Modular Dynamic Tester
Mean	Arithmetic average of a set of numbers
Median	Middle value in a set of values
MFT	Multi Formation Tester
mg/l	milligrams per litre
MJ	Megajoules (One Million Joules)
Mm ³	Thousand Cubic metres
Mm ³ /d	Thousand Cubic metres per day
MM	Million
MMm ³	Million Cubic metres
MMm ³ /d	Million Cubic metres per day
MMBbl	Millions of barrels
MMBTU	Millions of British Thermal Units
Mode	Value that exists most frequently in a set of values = most likely
Mscfd	Thousand standard cubic feet per day
MMscfd	Million standard cubic feet per day
MW	Megawatt
MWD	Measuring While Drilling
MWh	Megawatt hour
mya	Million years ago
NGL	Natural Gas Liquids
N ₂	Nitrogen
NTG	Net/Gross Ratio
NPV	Net Present Value
OBM	Oil Based Mud
OCM	Operating Committee Meeting
ODT	Oil-Down-To
OGIP	Original Gas in Place
OIIP	Oil Initially In Place
OOIP	Original Oil in Place
OPEX	Operating Expenditure
OWC	Oil Water Contact
p.a.	Per annum
Pa	Pascals (metric measurement of pressure)
P&A	Plugged and Abandoned

Glossary – Standard Oil Industry Terms and Abbreviations

PDP	Proved Developed Producing
Phie	effective porosity
PI	Productivity Index
PIIP	Petroleum Initially In Place
PJ	Petajoules (10 ¹⁵ Joules)
PSDM	Post Stack Depth Migration
psi	Pounds per square inch
psia	Pounds per square inch absolute
psig	Pounds per square inch gauge
PUD	Proved Undeveloped
PVT	Pressure, Volume and Temperature
P10	10% Probability
P50	50% Probability
P90	90% Probability
RF	Recovery factor
RFT	Repeat Formation Tester
RT	Rotary Table
R/P	Reserve to Production
R _w	Resistivity of water
SCAL	Special core analysis
cf or scf	Standard Cubic Feet
cf/d or scfd	Standard Cubic Feet per day
scf/ton	Standard cubic foot per ton
SL	Straight line (for depreciation)
s _o	Oil Saturation
SPM	Single Point Mooring
SPE	Society of Petroleum Engineers
SPEE	Society of Petroleum Evaluation Engineers
SPS	Subsea Production System
SS	Subsea
stb	Stock tank barrel
STOIIP	Stock tank oil initially in place
Swi	irreducible water saturation
s _w	Water Saturation
T	Tonnes
TD	Total Depth
Te	Tonnes equivalent
THP	Tubing Head Pressure
TJ	Terajoules (10 ¹² Joules)
Tscf or Tcf	Trillion standard cubic feet
TCM	Technical Committee Meeting
TOC	Total Organic Carbon

TOP	Take or Pay
Tpd	Tonnes per day
TVD	True Vertical Depth
TVDss	True Vertical Depth Subsea
UFR	Umbilical Flow Lines and Risers
USGS	United States Geological Survey
US\$	United States dollar
VLCC	Very Large Crude Carrier
Vsh	shale volume
VSP	Vertical Seismic Profiling
WC	Water Cut
WI	Working Interest
WPC	World Petroleum Council
WTI	West Texas Intermediate
wt%	Weight percent