Gaffney Cline

Auditoria dos Recursos Contingentes de Certos Blocos na Bacia do Parnaíba, Brasil, em 31 de Dezembro de 2021

Preparado para

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26 de Janeiro de 2022

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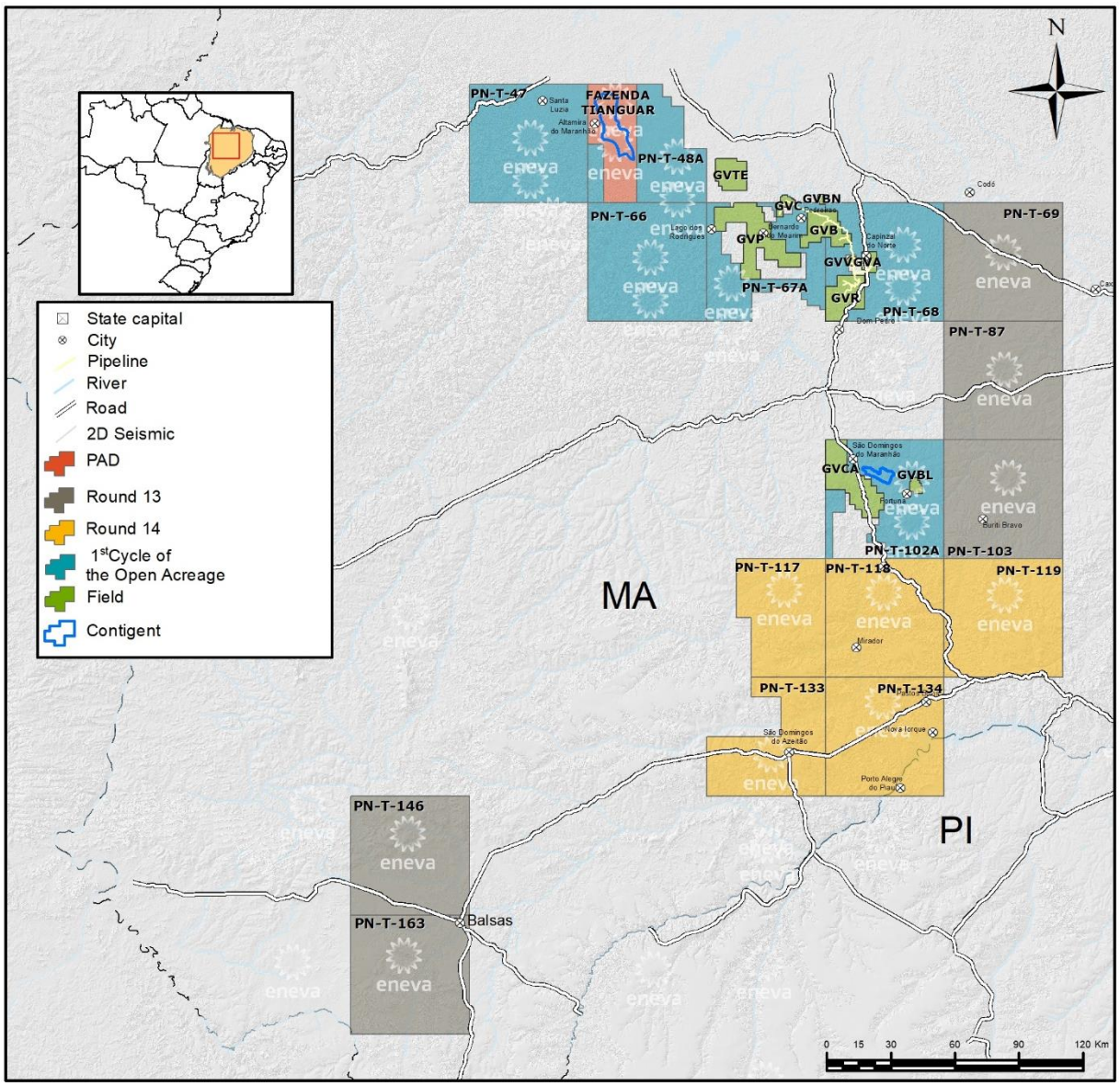
Este relatório de Recursos Contingentes foi elaborado pela Gaffney, Cline & Associates (GaffneyCline) e emitido em 26 de janeiro de 2022 a pedido de ENEVA S.A. (ENEVA ou "Cliente"). O presente relatório destina--se exclusivamente ao uso interno da ENEVA e não deve ser distribuído a terceiros sem o consentimento prévio por escrito da GaffneyCline.

Eneva S.A. é a empresa operadora e detém 100% de participação nos blocos exploratórios PN-T-102A e PN-T-48 localizados em terra na Bacia do Parnaíba, Brasil (Figura 1). Estes blocos exploratórios foram concedidos pela agência reguladora do petróleo no Brasil (Agência Nacional do Petróleo, ANP) para a Eneva nas Rodadas Permanentes de 2019 e 2020. As áreas com Recursos Contingentes estão nestes dois blocos (delineadas em azul na Figura 1) e são o objeto deste relatório.

Este relatório se refere única e exclusivamente ao objeto definido no escopo de trabalho da Proposta de Serviços e está condicionado às premissas aqui descritas. Este relatório deverá ser considerado em sua totalidade e somente deverá ser utilizado para os fins a que se destina.

Figura 1: Mapa de Localização das Áreas da ENEVA na Bacia do Parnaíba.



Fonte: Eneva

Nota: As áreas com Recursos Contingentes estão delineadas em azul e são o objeto deste relatório.

Para este estudo, GaffneyCline avaliou os resultados do poço exploratório de 2021 da ENEVA (1-ENV-26-MA) perfurado no PN-T-102A. Esta descoberta, previamente designada como o prospecto BL102A-A, é agora conhecida como São Domingos. Os Recursos Contingentes de São Domingos estão apresentados na Tabela 1.

Em 2021, a ENEVA perfurou o poço 3-ENV-20-MA inserido no PAD de Fazenda Tianguar. O poço 3-ENV-20-MA foi localizado aproximadamente equidistante (2,5 a 3 km) dos outros cinco

poços localizados na área do PAD de Fazenda Tianguar. O poço 3-ENV-20-MA recuperou óleo de 37 ºAPI dentro da Formação Pimenteiras em uma amostra colhida a cabo. Os Recursos Contingentes de Fazenda Tianguar na Formação Pimenteiras estão apresentados na Tabela 1 (gás) e na Tabela 2 (óleo).

Com base nas informações técnicas e outras informações disponibilizadas para a GaffneyCline sobre estes ativos, a GaffneyCline apresenta, por meio deste, o demonstrativo de Recursos Contingentes na Tabela 1 e na Tabela 2.

Tabela 1: Demonstrativo dos volumes de Recursos Contingentes de Gás Natural de certos blocos na Bacia do Parnaíba, Brasil em 31 de dezembro de 2021

Bloco/Área	Descoberta/Campo	Formação	GIIP (Bm^3, 100% WI)				Recursos Contingentes ENEVA (Bm^3, 100% WI)			
			Pmean	P90	P50	P10	Pmean	P90	P50	P10
PN-T-102A	São Domingos	Cabeças	3,99	1,05	3,04	7,99	2,79	0,72	2,12	5,61
PAD PN-T-48	Fazenda Tianguar (gás associado)	Pimenteiras	0,12	0,03	0,10	0,23	0,02	0,004	0,01	0,04

Tabela 2: Demonstrativo dos volumes de Recursos Contingentes de Óleo do PAD do PN-T-48 na Bacia do Parnaíba, Brasil em 31 de dezembro de 2021

Bloco/Área	Descoberta/Campo	Formação	OOIP (MMbbl, 100% WI)				Recursos Contingentes ENEVA (MMbbl, 100% WI)			
			Pmean	P90	P50	P10	Pmean	P90	P50	P10
PAD PN-T-48	Fazenda Tianguar	Pimenteiras	7,46	1,95	6,09	14,64	1,12	0,27	0,88	2,24

Notas:

1. Os Recursos Contingentes da ENEVA são 100% dos volumes estimados de serem tecnicamente recuperáveis dos ativos no caso de serem desenvolvidos
2. Os volumes aqui reportados são “não riscados” no sentido de que nenhum ajuste foi feito quanto ao risco dos ativos não serem desenvolvidos na forma prevista ou não possam seguir adiante (i.e., nenhum fator de “Chance de ser Desenvolvido” foi aplicado).
3. Não foi realizada nenhuma análise econômica e volumes tecnicamente recuperáveis relatados acima não foram submetidos a nenhuma consideração de teste de limite econômico (ELT).

Os volumes de gás natural foram contabilizados em bilhões (10^9) de metros cúbicos nas condições padrão de 1 Atmosfera e 15,6 °C. Os volumes de óleo estão reportados em milhões (10^6) de barris (MMbbl).

O artigo 47 da Legislação Nacional do Petróleo prevê que "...royalties deverão ser pagos mensalmente, em moeda nacional..." e, portanto, royalties (10%) são tratados mais como deduções de caixa do que como uma redução de volumes.

Esta auditoria foi feita com base nas estimativas de recursos e em outras informações fornecidas pela ENEVA à GaffneyCline até 15 de dezembro de 2021 e incluiu os testes, procedimentos e ajustes que foram considerados necessários. Todas as perguntas que surgiram durante o processo de auditoria foram resolvidas a contento da GaffneyCline.

Na preparação deste relatório, a GaffneyCline utilizou as definições de reservas e recursos do Petroleum Resources Management System (PRMS), aprovado pela 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, e a European Association of Geoscientists and Engineers em junho de 2018, versão 1.01 (ver Anexo I).

GaffneyCline conclui que as metodologias empregadas pela ENEVA para inferir as estimativas de reservas são adequadas e que a qualidade das informações utilizadas e a profundidade e o rigor do processo de estimativa dos recursos são adequados.

Base de Opinião

Este documento reflete o julgamento profissional informado da GaffneyCline com base em padrões aceitáveis de investigação profissional e, quando aplicável, em dados e informações providos pelo cliente, em escopo de comprometimento limitado, e pelo tempo permitido para que se conduza a avaliação.

Em linha com os padrões aceitáveis, este documento de forma nenhuma constitui ou garante ou prevê resultados, e não há nenhuma garantia implícita ou explícita de que os resultados de fato estarão em conformidade com os resultados aqui apresentados. A GaffneyCline não verificou de forma independente qualquer informação provida ou direcionada pelo cliente, e aceitou a acurácia e totalidade desses dados. A GaffneyCline não possui razões para acreditar que algum fato relevante foi ocultado, mas não garante que seus questionamentos tenham revelado todas as questões que uma avaliação mais extensiva poderia ter desvendado.

As opiniões expressas aqui estão sujeitas e totalmente qualificadas pelas incertezas geralmente aceitas associadas à interpretação dos dados de geociência e engenharia e não refletem a totalidade das circunstâncias, cenários e informações que poderiam potencialmente afetar as decisões feitas pelos leitores do relatório e/ou resultados de fato. As opiniões e afirmações contidas neste relatório são de boa fé e baseadas na crença de que essas opiniões e afirmações são representativas das circunstâncias físicas e econômicas prevalecentes.

Há muitas incertezas inerentes à estimativa de reservas e recursos, e nas projeções futuras da produção, despesas de desenvolvimento, despesas operacionais e fluxos de caixa. A avaliação de recursos e reservas de petróleo e gás tem de ser vista como um processo subjetivo de estimativa de acumulações em subsuperfície de petróleo e gás que não podem ser mensuradas de forma exata. As estimativas das reservas ou recursos de petróleo e gás elaboradas por terceiros talvez sejam muito diferentes das contidas neste relatório.

A exatidão da estimativa de qualquer recurso é função da qualidade dos dados disponíveis e da interpretação geológica e de engenharia. Os resultados da perfuração, teste e produção, posteriores à elaboração das estimativas podem justificar revisões, sendo que algumas ou todas podem ser significativas. Da mesma forma, as estimativas de recursos são, em geral, diferentes das quantidades de petróleo e gás recuperadas de fato, sendo que o prazo e o custo desses volumes recuperados podem ser diferentes do previsto.

A revisão e auditoria da GaffneyCline envolveu a revisão de fatos pertinentes, interpretações e premissas feitas pelo Cliente ou outros na elaboração das estimativas de reservas e recursos. A GaffneyCline conduziu os procedimentos necessários para permitir a emissão de opinião em relação à adequação das metodologias adotadas, adequação e qualidade dos dados utilizados, profundidade e acurácia do processo de estimativa das reservas e recursos, a classificação e categorização das reservas e recursos apropriados às definições relevantes utilizadas e a razoabilidade das estimativas.

Definição de Recursos Contingentes

Recursos Contingentes são aquelas quantidades de petróleo estimadas, em determinada data, a serem potencialmente recuperáveis de acumulações conhecidos, mas cujo(s) projeto(s) aplicado(s) ainda não é/são considerados maduro(s) o suficiente para o desenvolvimento comercial devido a uma ou mais contingências. Os Recursos Contingentes poderão incluir, por exemplo, projetos para os quais não exista, atualmente, mercados viáveis evidentes, ou cuja recuperação comercial depende de tecnologia em desenvolvimento, ou cuja avaliação da acumulação seja insuficiente para a realização de avaliação comercial. Ainda, os Recursos Contingentes são categorizados de acordo com o nível de certeza associado às estimativas e poderão ser sub-classificados com base na maturidade do projeto e/ou de acordo com sua situação econômica.

Deve-se considerar que os Recursos Contingentes aqui informados não devem ser considerados como ausentes de riscos em termos de incerteza econômica e de comercialidade. Não há garantia de que será comercialmente viável produzir qualquer parcela dos Recursos Contingentes. Uma vez descobertos, a probabilidade de que a acumulação seja desenvolvida comercialmente é denominada como “probabilidade de desenvolvimento” (de acordo com o PRMS).

A GaffneyCline não fez uma visita e inspeção ao local, pois não considerou relevante para o propósito deste relatório. Por isso, a GaffneyCline não está em posição de comentar as operações e instalações atuais, suas condições e adequação, e se estão de acordo com os regulamentos pertencentes a tais operações. Além disso, a GaffneyCline não está em posição de comentar qualquer aspecto de saúde, segurança ou meio ambiente destas operações.

Este relatório foi preparado com base no entendimento da GaffneyCline quanto aos efeitos da legislação do petróleo e outros regulamentos que atualmente se aplicam a estas propriedades. No entanto, a GaffneyCline não está em posição de certificar a titularidade e os direitos de propriedade, as condições destes direitos (incluindo obrigações ambientais e de abandono), ou qualquer necessidade de licenças e permissões (incluindo permissão de planejamento, relações de interesse financeiro, ou gravames de qualquer parte das propriedades avaliadas).

Qualificações

Ao realizar esse estudo, a GaffneyCline não tinha conhecimento de nenhum conflito de interesses existente. Como consultor independente, a GaffneyCline está fornecendo consultoria técnica, comercial e estratégica imparcial no âmbito do setor energético. A remuneração da GaffneyCline não foi, de forma alguma, contingente ao conteúdo deste relatório.

Na elaboração deste documento, a GaffneyCline manteve, e continua a manter, um relacionamento empresa-cliente independente com o Cliente. Além disso, a administração e os funcionários da GaffneyCline não têm participação em nenhum dos ativos avaliados ou relativos à análise realizada, como parte do presente relatório.

Os membros da equipe que elaborou este relatório têm qualificação profissional e educacional e a experiência e especialização necessárias para executar o trabalho.

Notificação

Este documento é confidencial e foi elaborado para uso exclusivo do Cliente ou das partes aqui indicadas e não poderá ser distribuído ou disponibilizado, no todo ou em parte, a nenhuma outra empresa ou pessoa sem o prévio conhecimento e consentimento por escrito da Gaffney, Cline & Associates (GaffneyCline). Nenhuma pessoa ou empresa além daquelas às quais se destina poderá se basear, direta ou indiretamente no conteúdo do presente relatório. A GaffneyCline atua somente na qualidade de consultor e, conforme permitido por lei, fica isenta de toda responsabilidade pelas ações ou perdas oriundas de qualquer confiança efetiva ou pretendida neste documento (ou em quaisquer outras declarações ou opiniões do GaffneyCline) pelo Cliente ou por qualquer outra pessoa ou entidade.

Atenciosamente.

Gaffney. Cline & Associates

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Anexos

Anexo I	Definições do PRMS
Anexo II	Glossário

Appendix I
PRMS Definitions

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**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 June 2018)

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.	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. 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. 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. 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.

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

Class/Sub-Class	Definition	Guidelines
On Production	The development project is currently producing or capable of producing and selling petroleum to market.	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. The project decision gate is the decision to initiate or continue economic production from the project.
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.	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. The project decision gate is the decision to start investing capital in the construction of production facilities and/or drilling development wells.
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.	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). 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.
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.	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. 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.

Class/Sub-Class	Definition	Guidelines
Development Pending	A discovered accumulation where project activities are ongoing to justify commercial development in the foreseeable future.	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. 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.
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.	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. 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.
Development Unclarified	A discovered accumulation where project activities are under evaluation and where justification as a commercial development is unknown based on available information.	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. 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.
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 production potential.	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. The project decision gate is the decision not to undertake further data acquisition or studies on the project for the foreseeable future.

Class/Sub-Class	Definition	Guidelines
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.	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. In all cases, production can be initiated or restored with relatively low expenditure compared to the cost of drilling a new well.
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.	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. 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. 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 in undeveloped locations may be classified as Proved provided that: 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. 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.
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.	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. 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. Probable estimates also include incremental recoveries associated with project recovery efficiencies beyond that assumed for Proved.

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.	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. 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. Possible estimates also include incremental quantities associated with project recovery efficiencies beyond that assumed for Probable.
Probable and Possible Reserves	See above for separate criteria for Probable Reserves and Possible Reserves.	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. 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. 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. 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.

Figure 1.1 RESOURCES CLASSIFICATION FRAMEWORK

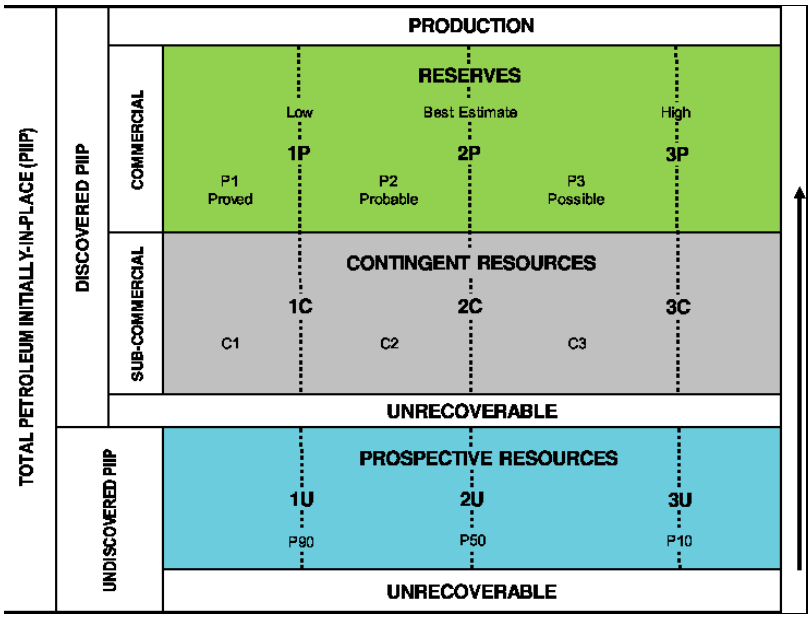
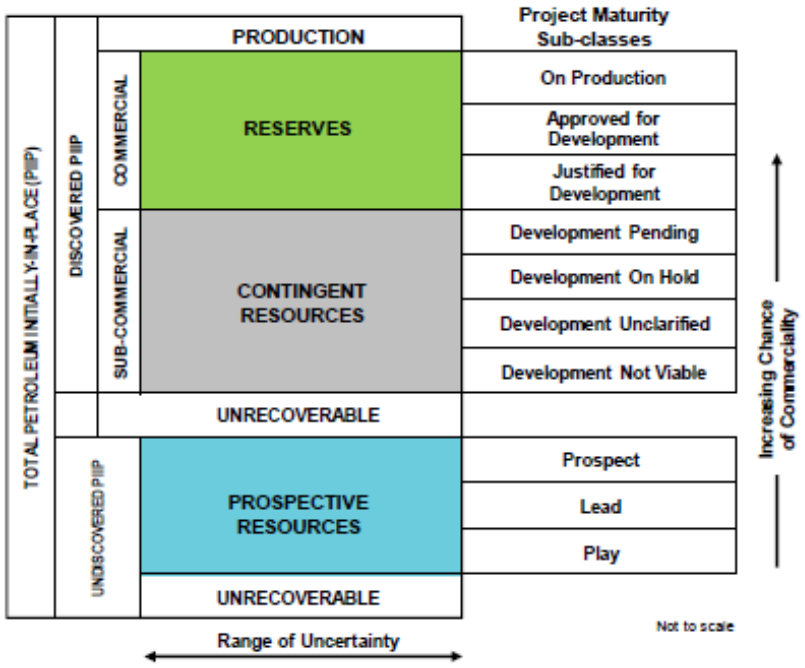


Figure 2.1—SUB-CLASSES BASED ON PROJECT MATURITY



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Appendix II
Glossary

%	Percentage
1H05	First Half (6 months) 05 (example)
2H06	Second Half (6 months) 06 (example)
^{o}API	Degrees API (American Petroleum Institute)
AAPG	American Association of Petroleum Geologists
B	Billion (10^{9})
Bbl	Barrels
/Bbl	per barrel
BBbl	Billion Barrels
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 @ 6000cf/Bbl
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
CO_2	Carbon Dioxide
CAPEX	Capital Expenditure
cm	centimetres
CNG	Compressed Natural Gas
Cp	Centipoise (a measure of viscosity)
Cum	Cumulated Production in Millions of barrels oil equivalent
Deg C	Degrees Celsius
Deg F	Degrees Fahrenheit

DST	Drill Stem Test
DWT	Dead-weight ton
DWT	Dead-weight ton
E&A	Exploration & Appraisal
E&P	Exploration and Production
EBIT	Earnings before Interest and Tax
EBITDA	Earnings before interest, tax, depreciation and amortisation
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
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
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_2S	Hydrogen Sulphide
IOR	Improved Oil Recovery
IPP	Independent Power Producer
IRR	Internal Rate of Return
J	Joule (Metric measurement of energy) I 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
m	Metres
M	Thousand
m^3	Cubic metres
MBbl	Thousand of Barrels
MTn	Thousand of Tones
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
MMBOE	Millions of barrels of oil equivalent
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
PD	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
Re.MMBOE	Reserves in Milions of barrels of oil equivalent
RF	Recovery Factor
RT	Rotary Table
R/P	Reserve to Production
R_w	Resistivity of water
SCAL	Special core analysis
cf or scf	Standard Cubic Feet
cfd 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
Tn	Tonnes
TD	Total Depth
Tne	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