

Delek Drilling - Limited Partnership **(the "Partnership")**

January 21, 2020

Israel Securities Authority
22 Kanfei Nesharim St.
Jerusalem
Via Magna

Tel Aviv Stock Exchange Ltd.
2 Ahuzat Bayit St.
Tel Aviv
Via Magna

Dear Sir/Madam,

Re: Report on Deep Target Prospective Resources in the Leviathan Leases

Further to Section 7.4.10(e) of the Partnership's periodic report as of December 31, 2018, as released on March 24, 2019 (Ref. No.: 2019-01-023982) (the "**Periodic Report**") and Section 7.4.10(e) of the Partnership's periodic report as of December 31, 2017, as released on March 21, 2018 (Ref. No.: 2018-01-022209) regarding evaluation of the prospective resources in the area of the I/14 Leviathan South and I/15 Leviathan North leases (collectively: the "**Leviathan Leases**" and the "**Previous Resources Report**"), and further to Section 7.4.4 of the Periodic Report regarding performance of a project for reprocessing of seismic surveys, *inter alia* in connection with exploration drilling to the deep targets in the Leviathan Leases (the "**Data Reprocessing**"), the Partnership respectfully updates that during 2019, an analysis was performed of the Data Reprocessing, as a result of which a new 'isolated carbonate buildup' deep target was defined in the area of the Leviathan Leases. In addition to the definition of this target, the analysis of the Reprocessing revealed that it is necessary to reclassify and redefine the two deep targets, as were specified in the Previous Resources Report, as a single 'submarine clastic channel' target (collectively: the "**New Targets**").

Following completion of the Data Reprocessing and on the basis thereof, an updated prospective resources report was prepared for the Partnership with respect to the New Targets in the Leviathan Leases (the "**Resources Report**"). The Resources Report was prepared by Netherland, Sewell & Associates Inc. ("**NSAI**" or the "**Evaluator**"), an expert, qualified and independent reserves evaluator. The Resources Report was prepared according to the guidelines of the SPE-PRMS, and is attached hereto as Annex A. In addition, attached as Annex B is a presentation in connection with the provisions of this immediate report.

As of the date of this report, the Partnership is examining, *inter alia*, performance of another seismic survey in view of development of the technology in the field of seismic surveys, for the purpose of improving the existing data, in order to substantiate the making of a decision on exploration drilling to the New Targets. In addition, the Partnership is exploring the possibility of adding a strategic partner with relevant knowledge and experience in the specification, drilling and development of an exploration target (and specifically a carbonate buildup target), as shall be described below.

1. Quantity data

According to the Resources Report, as of December 31, 2019, the prospective resources in the area of the Leviathan Leases are as specified below:

Target	Probability	Total (100%) in the Petroleum Asset (Gross)		The Total Share of the Partnership (Gross) ¹	
		Gas (BCF)	Oil (MMBL)	Gas (BCF)	Oil (MMBL)
Carbonate buildup	Low Estimate	25.4	26.6	11.5	12.1
	Best Estimate	161.0	155.3	73.0	70.4
	High Estimate	826.8	766.6	374.9	347.6
Clastic channel	Low Estimate	45.2	47.3	20.5	21.5
	Best Estimate	229.2	223.9	103.9	101.5
	High Estimate	886.8	813.7	402.1	368.9

- (1) In the resources report, NSAI stated, *inter alia*, several assumptions and reservations, including that: (1) NSAI did not visit the oil field; (2) NSAI did not examine exposure deriving from environmental matters. However, it was stated that as of the date of the resources report, it was not aware of any potential liability regarding environmental matters which may materially affect the quantity of the resources estimated in the prospective resources report or the commerciality thereof. In addition, NSAI states that the resources report does not include an economic analysis of the reservoir, and that based on the development of similar reservoirs, and assuming that there will be a discovery in the petroleum asset, the prospective resources in the best estimate category have a reasonable chance of commercial recovery.
- (2) The resources report was prepared based on 3D seismic surveys that were performed in 2009 and 2010 by Petroleum Geo-Services and which were reprocessed during 2017-2019 by WesternGeco, as well as based on data that were collected in the ‘Leviathan 1’ well, and information from similar and/or adjacent oil and gas fields and wells (including the “Zohr” reservoir which was discovered in Egypt).
- (3) Below are the basic parameters used to calculate the various scenarios:

Parameter	Carbonate Buildup			Clastic Channel		
	Low Estimate	Best Estimate ²	High Estimate	Low Estimate	Best Estimate ²	High Estimate
Gross Rock Volume (Acre-feet) ³	370,734		16,051,915	660,818		17,297,896
Net-to-Gross Ratio (Decimal)	0.20	0.50	0.80	0.20	0.50	0.80

¹ Before payment of royalties.

² The parameters for which no ‘best estimate’ value is stated in the table, are not stated also in the resources evaluator’s report, since the resource estimate is based on statistical methods in which, for parameters whose breakdown is log-normal, uniform or normal, “best estimate” has no significance.

³ An acre-foot is a unit of volume which is equal to approx. 1,233.48 m³.

Parameter	Carbonate Buildup			Clastic Channel		
	Low Estimate	Best Estimate ²	High Estimate	Low Estimate	Best Estimate ²	High Estimate
Porosity (Decimal)	0.10	0.15	0.25	0.12	0.17	0.22
Oil Saturation (Decimal)	0.45	0.65	0.85	0.55	0.65	0.75
Average Producing Gas-Oil Ratio (SCF/STB)	200		2,200	200		2,200
Initial Oil Formation Volume Factor (RB/STB)	2.20		1.10	2.20		1.10
Oil Recovery Factor (Decimal)	0.15		0.45	0.15		0.45
Average Gross Thickness (feet)	257		818	143		773
Area (Acres)	1,443		19,619	4,628		22,380

- (4) The significant risks entailed by the process: The significant risks entailed by drilling to the deep targets in the Leviathan Leases are mainly technical operating and geological risks, including difficulties in reaching the target layers and in the drilling of the well, *inter alia* during the running of logs and in the performance of production tests, if any. Even if the technical-operating actions are completed without faults and the well is drilled to the planned depth, and hydrocarbons are discovered in the target layers, there are risks in the continuation of the process that is required to reach a discovery, *inter alia*, that the size of the reservoir and/or the characteristics thereof are not good enough to justify economic merit and development into a project for production of the resources, insofar as discovered, the amount of the development costs, the duration of the development, and other risks entailed by development of the discovery. It is noted that the estimate of the prospective resources and the probability of the presence of hydrocarbons, as shall be specified below, is not the only consideration in the making of a drilling decision in the area of the leases, and in addition thereto are other considerations such as the depth of the target, the location thereof relative to the gas field that is located at shallower depths, the likelihood of development thereof in the case of a discovery in accordance with the size and economic estimates, and so on and so forth. For a discussion on the risk factors entailed by exploration activity, see Section 7.31 of the Periodic Report.
- (5) An estimate of the probability of success of each one of the geological risk factors entailed by the exploration process in the said well, and an estimate of the probability of the presence of hydrocarbons (oil and/or natural gas) are as follows:

Parameter	Carbonate Buildup (%)	Clastic Channel (%)
Trap Integrity	40	45
Reservoir Quality	70	70
Source Evaluation	80	80
Timing / Migration	80	75
Probability of Geologic Success	18	19

It is emphasized that in the resources report, each target was evaluated separately, and there is no dependency between the targets.

- (6) Estimate of the probability of development for commercial production: As of the date of the resources report, the Partnership is unable to provide a statistical estimate of the probability of development of the targets for commercial production. However, it is possible to estimate that the potential markets for such resources are the domestic, the regional and the international market. Therefore, the Partnership is exploring various alternatives for commercialization of the hydrocarbons (insofar as shall be discovered and produced), including the possibility of export of the oil and/or the natural gas, if discovered, and sale thereof on the domestic, regional and international markets. In addition, it is noted that if relatively low quantities of natural gas and/or oil are discovered in the said targets or in any one of them, commercial development may require joint development of several discoveries, while utilizing regional infrastructures. For details regarding the domestic gas market, see Sections 6 and 7.14 of the Periodic Report, and for details regarding examination of the possibility of exporting the gas, see Section 7.14.2 of the Periodic Report.
- (7) The Partnership's reasoning regarding the basis for the basic parameters that were used in the calculation of the scenarios: The parameters that were used in the calculation of the various estimates are based mainly on the results of 3D seismic surveys, on data collected in wells in the area, and in particular in the ‘Leviathan 1’ well, and on general knowledge with respect to similar reservoirs and layers.
- (8) Agreement between the report data and data of previous reports pertaining to the petroleum asset

The differences between the present Resources Report and the Previous Resources Report mainly derive from the fact that in an analysis of the Data Reprocessing, which was performed during 2019, two new targets were defined (in lieu of the targets that were specified in the Previous Resources Report, deep-sea clastic fans on-lapping an elevated seamount ; (1) an ‘isolated carbonate buildup’ target; (2) a ‘submarine clastic channel’ target, which was defined in lieu of the two deep targets that appeared in the Previous Resources Report. The scope of the isolated carbonate buildup target prospective resources in the best estimate (P50-

2U) is approx. 155 million barrels of oil and approx. 161 BCF of natural gas, with chances of geological success of 18%. The scope of the clastic channel target prospective resources in the best estimate (P50-2U) is approx. 224 million barrels of oil and approx. 229 BCF of natural gas, with chances of geological success of 19% which is, as aforesaid, in lieu of the two deep targets, as were specified in the Previous Resources Report (Mid-Cretaceous and Lower Cretaceous), the provisions of which are presented herein by way of reference.

Caution – There is no certainty that any part of the potential resources stated will indeed be discovered; if discovered, there is no certainty that any part of the resources will be commercially recoverable; the prospective information is not an estimate regarding reserves and contingent resources which it will be possible to evaluate only after the exploration drilling, if at all.

Caution regarding forward-looking information – NSAI's estimates regarding the prospective resources in the deep targets is forward-looking information, within the meaning thereof in the Securities Law, 5728-1968. The said estimates are based, *inter alia*, on geological, geophysical and other information received from the wells and from the operator, and constitute professional estimates and assumptions of NSAI only, and in respect of which there is no certainty. The natural gas and oil quantities that shall actually be discovered (if any) and produced (if any) may be materially different to the said estimates and assumptions, *inter alia* as a result of operating and technical conditions and/or regulatory changes and/or supply and demand conditions in the market and/or the actual performance of the reservoir. The said estimates and assumptions may be updated insofar as additional information shall accumulate and/or as a result of a gamut of factors relating to projects for oil and natural gas exploration and production. Moreover, there is no certainty that upon completion of the examinations that the Partnership is carrying out as stated above, it shall be decided to perform another seismic survey and/or it shall be decided to drill a well and/or to add another strategic partner.

(9) Opinion of the Resources Evaluator

A prospective resources report for the Leviathan Leases prepared by NSAI as of December 31, 2019, and NSAI's consent to the inclusion thereof in this report, are attached hereto as **Annex A**.

(10) Management declaration

- (1) Date of the declaration: January 21, 2020;
- (2) Name of the corporation: Delek Drilling, Limited Partnership;
- (3) Name and position of the resource evaluation officer at the Partnership: Gabi Last, Chairman of the Board of the General Partner;

- (4) We confirm that the Resources Evaluator was provided with all of the data required for performance of its work;
- (5) We confirm that no information has come to our attention which indicates the existence of dependency between the Resources Evaluator and the Partnership;
- (6) We confirm that, to the best of our knowledge, the resources reported are the best and most current estimates in our possession;
- (7) We confirm that the data included in this report were prepared according to the professional terms listed in Chapter G of the Third Schedule to the Securities Regulations (Details of the Prospectus and Draft Prospectus – Structure and Form), 5729-1969 and within the meaning afforded thereto in Petroleum Resources Management System (2018), as published by the SPE, the AAPG, the WPC and the SPEE, as being at the time of release of the report;
- (8) We confirm that no change has been made to the identity of the resources evaluator who performed the last prospective resource disclosure released by the Partnership;
- (9) We agree to the inclusion of the foregoing declaration in this report.

Gabi Last, Chairman of the Board

2. Glossary

Hydrocarbons – Carbon and hydrogen compounds, including gas, oil and condensate.

Lease – Within the meaning thereof in the Petroleum Law, 5712-1952 (the “Petroleum Law”).

Petroleum exploration –

- (1) Exploration drilling;
- (2) Any other action for petroleum exploration, including geological, geophysical, geochemical and similar tests and experiments, as well as drillings to obtain geological information only.

Commercial quantities – Quantities of oil and/or gas that allow commercial recovery thereof.

Reservoir – A layer or layers of rock, characterized by relatively high porosity and permeability, enabling the storage and flow of liquids and gas. Sometimes also used to describe an oil and/or gas field.

Porosity – The ratio between the total pore volume in the rock and the total volume of the rock.

SPE-PRMS – (**Petroleum Resources Management System 2018**) – A petroleum resources and reserves evaluation reporting system, as published by the SPE, the AAPG, the WPC and the SPEE, and as amended from time to time.

Petroleum Asset – The direct or indirect holding of a preliminary permit, license or lease; in another country – the direct or indirect holding of a right of a similar nature that was granted by the competent body. A right to receive benefits deriving from the lease, either directly or indirectly, in a petroleum asset or in a right of a similar nature (as the case may be) shall also be deemed as a petroleum asset.

Petroleum - Any petroleum fluid, whether liquid or gaseous, including oil, natural gas, natural gasoline, condensates and related fluid hydrocarbons, as well as asphalt and other solid petroleum hydrocarbons when dissolved in and producible with fluid petroleum.

Exploration drilling – Drilling of exploration wells to find oil and/or gas, obtain preliminary information on the composition and quality of the reservoir rock and the size and boundaries of the reservoir.

Within the meaning of these terms in the SPE-PRMS.

BCF – Billion cubic feet, which are 0.001 TCF or approx. 0.0283 BCM.

BCM – Billion cubic meters.

MMCF – Million cubic feet, which are 0.001 BCF or approx. 0.00003 BCM.

MMBBL – Million barrels.

Set forth below are conversion coefficients for the units used in the above report:

BCM	BCF	MMCF
1	35.3107	35310.7
BCF	MMCF	BCM
1	1000	0.0283
MMCF	BCF	BCM
1	0.001	0.00003

The partners in the Leviathan Leases and their holding rates are as follows:

The Partnership	45.34%
Noble Energy Mediterranean Ltd.	39.66%
Ratio Oil Exploration (1992), Limited Partnership	15.00%

Sincerely,

**Delek Drilling Management (1993) Ltd.
General Partner of Delek Drilling - Limited Partnership**

By Yossi Abu, CEO
and Yossi Gvura, Deputy CEO

Annex A

Report on Prospective Resources in the Leviathan Leases Prepared by NSAI, as of December 31, 2019, and NSAI's Consent to its Inclusion in this Report is also Attached



**NETHERLAND, SEWELL
& ASSOCIATES, INC.**

WORLDWIDE PETROLEUM CONSULTANTS
ENGINEERING • GEOLOGY • GEOPHYSICS • PETROPHYSICS

EXECUTIVE COMMITTEE
ROBERT C. BARG • P. SCOTT FROST
JOHN G. HATTNER • MIKE K. NORTON
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CHAIRMAN & CEO
C.H. (SCOTT) REES III
PRESIDENT & COO
DANNY D. SIMMONS
EXECUTIVE VP
G. LANCE BINDER

January 21, 2020

Mr. Yossi Abu
Delek Drilling Limited Partnership
19 Abba Eban Boulevard
Herzlia 4612001
Israel

Dear Mr. Abu:

As independent consultants, Netherland, Sewell & Associates, Inc. hereby grant permission to Delek Drilling Limited Partnership (Delek Drilling) to use our report dated January 21, 2020, to be filed with the Israel Securities Authority and the Tel Aviv Stock Exchange. This report sets forth our estimates of the unrisked prospective resources, as of December 31, 2019, to the Delek Drilling working interest in two Leviathan Deep prospects located in Leases I/14 and I/15, offshore Israel.

Sincerely,

NETHERLAND, SEWELL & ASSOCIATES, INC.

By: 
Danny D. Simmons, P.E.
President and Chief Operating Officer

RBT:MDK

January 21, 2020

Delek Drilling Limited Partnership
 19 Abba Eban Boulevard
 Herzlia 4612001
 Israel

Ladies and Gentlemen:

In accordance with your request, we have estimated the unrisked prospective resources, as of December 31, 2019, to the Delek Drilling Limited Partnership (Delek Drilling) working interest in two Leviathan Deep prospects located in Leases I/14 and I/15, offshore Israel. It is our understanding that Delek Drilling owns a direct working interest in these properties. We completed our evaluation on or about the date of this letter. Prospective resources are those quantities of petroleum which are estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects. The prospective resources included in this report should not be construed as reserves or contingent resources; they represent exploration opportunities and quantify the development potential in the event a petroleum discovery is made. A geologic risk assessment was performed for these prospects, as discussed in subsequent paragraphs. This report does not include economic analysis for these prospects. Based on analogous field developments, it appears that, assuming a discovery is made, the unrisked best estimate prospective resources in this report have a reasonable chance of being economically viable. There is no certainty that any portion of the prospective resources will be discovered. If they are discovered, there is no certainty that it will be commercially viable to produce any portion of the prospective resources. The estimates in this report have been prepared in accordance with the definitions and guidelines set forth in the 2018 Petroleum Resources Management System (PRMS) approved by the Society of Petroleum Engineers (SPE) and in accordance with internationally recognized standards, as stipulated by the Israel Securities Authority (ISA). Definitions are presented immediately following this letter. This report has been prepared for Delek Drilling's use in filing with the ISA; in our opinion the assumptions, data, methods, and procedures used in the preparation of this report are appropriate for such purpose.

Totals of unrisked prospective resources beyond the prospect level are not reflective of volumes that can be expected to be recovered and are therefore not shown. Because of the geologic risk associated with each prospect, meaningful totals beyond this level can be defined only by summing risked prospective resources. Such risk is often significant.

We estimate the unrisked gross (100 percent) prospective resources for these prospects, as of December 31, 2019, to be:

Prospect	Unrisked Gross (100%) Prospective Resources					
	Low Estimate (1U)		Best Estimate (2U)		High Estimate (3U)	
	Oil (MMBBL)	Gas (BCF)	Oil (MMBBL)	Gas (BCF)	Oil (MMBBL)	Gas (BCF)
Mesozoic Carbonate	26.6	25.4	155.3	161.0	766.6	826.8
Lower Cretaceous Channel	47.3	45.2	223.9	229.2	813.7	886.8

We estimate the Delek Drilling unrisked working interest prospective resources for these prospects, as of December 31, 2019, to be:

Prospect	Unrisked Working Interest Prospective Resources					
	Low Estimate (1U)		Best Estimate (2U)		High Estimate (3U)	
	Oil (MMBBL)	Gas (BCF)	Oil (MMBBL)	Gas (BCF)	Oil (MMBBL)	Gas (BCF)
Mesozoic Carbonate	12.1	11.5	70.4	73.0	347.6	374.9
Lower Cretaceous Channel	21.5	20.5	101.5	103.9	368.9	402.1

The oil volumes shown include crude oil only. Oil volumes are expressed in millions of barrels (MMBBL); a barrel is equivalent to 42 United States gallons. Gas volumes are expressed in billions of cubic feet (BCF) at standard temperature and pressure bases.

The prospective resources shown in this report have been estimated using probabilistic methods and are dependent on a petroleum discovery being made. If a discovery is made and development is undertaken, the probability that the recoverable volumes will equal or exceed the unrisked estimated amounts is 90 percent for the low estimate, 50 percent for the best estimate, and 10 percent for the high estimate. Our estimates are based on the assumption that, if a discovery is made, the prospects would be oil filled; we have not included any sensitivity estimates that include the assumption that the prospects would be gas filled.

Unrisked prospective resources are estimated ranges of recoverable oil and gas volumes assuming their discovery and development and are based on estimated ranges of undiscovered in-place volumes. Geologic risking of prospective resources addresses the probability of success for the discovery of a significant quantity of potentially recoverable petroleum; this risk analysis is conducted independent of estimations of petroleum volumes and without regard to the chance of development. Principal geologic risk elements of the petroleum system include (1) trap and seal characteristics; (2) reservoir presence and quality; (3) source rock capacity, quality, and maturity; and (4) timing, migration, and preservation of petroleum in relation to trap and seal formation. Risk assessment is a highly subjective process dependent upon the experience and judgment of the evaluators and is subject to revision with further data acquisition or interpretation. The primary geologic risk for these prospects is trap integrity. The geologic risk elements and overall probability of geologic success for each prospect are shown in the following table:

Prospect	Geologic Risk Element (%)				Probability of Geologic Success (%)
	Trap Integrity	Reservoir Quality	Source Evaluation	Timing/ Migration	
Mesozoic Carbonate	40	70	80	80	18
Lower Cretaceous Channel	45	70	80	75	19

Each prospect was evaluated to determine ranges of in-place and recoverable petroleum and was risked as an independent entity without dependency between potential prospect drilling outcomes. If petroleum discoveries are made, smaller-volume prospects may not be commercial to independently develop, although they may become candidates for satellite developments and tie-backs to existing infrastructure at some future date. The development infrastructure and data obtained from early discoveries will alter both geologic risk and future economics of subsequent discoveries and developments.

These prospects are covered by a 3-D seismic data set. The 3-D seismic data were acquired in 2009 by Petroleum Geo-Services and reprocessed in 2019 by WesternGeco. All seismic interpretation was performed on the depth migrated data.

It should be understood that the prospective resources discussed and shown herein are those undiscovered, highly speculative resources estimated beyond reserves or contingent resources where geological and geophysical data suggest the potential for discovery of petroleum but where the level of proof is insufficient for classification as reserves or contingent resources. The unrisked prospective resources shown in this report are the range of volumes that could reasonably be expected to be recovered in the event of the discovery and development of these prospects.

For the purposes of this report, we did not perform any field inspection of the prospects. We have not investigated possible environmental liability related to the prospects; however, we are not currently aware of any possible environmental liability that would have any material effect on the resources quantities estimated in this report or the commerciality of such estimates.

For the purposes of this report, we used technical data including, but not limited to, well logs from offset wells, geologic maps, seismic data, and property ownership interests. We were provided with all the necessary data to prepare the resources estimate for the prospects, and we were not limited from access to any material we believe may be relevant. The resources in this report have been estimated using probabilistic methods; these estimates have been prepared in accordance with generally accepted petroleum engineering and evaluation principles set forth in the Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information promulgated by the SPE (SPE Standards). We used standard engineering and geoscience methods, or a combination of methods, including volumetric analysis and analogy, that we considered to be appropriate and necessary to classify, categorize, and estimate volumes in accordance with the 2018 PRMS definitions and guidelines. Certain parameters used in our volumetric analysis are summarized in Table I. As in all aspects of oil and gas evaluation, there are uncertainties inherent in the interpretation of engineering and geoscience data; therefore, our conclusions necessarily represent only informed professional judgment. The prospective information is not an assessment regarding the reserves and contingent resources, which can be assessed only after exploratory drilling, if at all.

Netherland, Sewell & Associates, Inc. (NSAI) was engaged on June 26, 2019, by Mr. Yossi Abu, Chief Executive Officer of Delek Drilling, to perform this assessment. The data used in our estimates were obtained from Delek Drilling, other interest owners, public data sources, and the nonconfidential files of NSAI and were accepted as accurate. Supporting work data are on file in our office. We have not examined the contractual rights to the prospects or independently confirmed the actual degree or type of interest owned. We are independent petroleum engineers, geologists, geophysicists, and petrophysicists; we do not own an interest in these prospects nor are we employed on a contingent basis. Furthermore, no limitations or restrictions were placed upon NSAI by officials of Delek Drilling.

QUALIFICATIONS

NSAI performs consulting petroleum engineering services under Texas Board of Professional Engineers Registration No. F-2699. We provide a complete range of geological, geophysical, petrophysical, and engineering services, and we have the technical expertise and ability to perform these services in any oil and gas producing area in the world. The staff are familiar with the recognized industry reserves and resources definitions, specifically those promulgated by the U.S. Securities and Exchange Commission, by the Alberta Securities Commission, and by the SPE, Society of Petroleum Evaluation Engineers, World Petroleum Council, and American Association of Petroleum Geologists. The technical persons primarily responsible for preparing the estimates presented herein

meet the requirements regarding qualifications, independence, objectivity, and confidentiality set forth in the SPE Standards.

This assessment has been led by Mr. Richard B. Talley, Jr. and Mr. Zachary R. Long. Mr. Talley is a Senior Vice President and Mr. Long is a Vice President in the firm's Houston office at 1301 McKinney Street, Suite 3200, Houston, Texas 77010, USA. Mr. Talley is a Licensed Professional Engineer (Texas Registration No. 102425). He has been practicing consulting petroleum engineering at NSAI since 2004 and has over 5 years of prior industry experience. Mr. Long is a Licensed Professional Geoscientist (Texas Registration No. 11792). He has been practicing consulting petroleum geoscience at NSAI since 2007 and has over 2 years of prior industry experience.

Sincerely,

NETHERLAND, SEWELL & ASSOCIATES, INC.
Texas Registered Engineering Firm F-2699

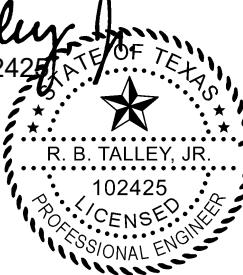
By: 

C.H. (Scott) Rees III, P.E.
Chairman and Chief Executive Officer

By: 
Richard B. Talley, Jr., P.E. 102425
Senior Vice President

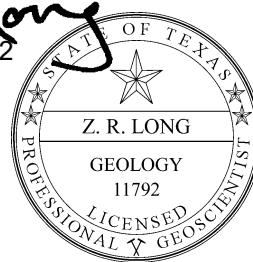
Date Signed: January 21, 2020

RBT:MDK



By: 
Zachary R. Long, P.G. 11792
Vice President

Date Signed: January 21, 2020



PETROLEUM RESERVES AND RESOURCES CLASSIFICATION AND DEFINITIONS

Excerpted from the Petroleum Resources Management System Approved by
the Society of Petroleum Engineers (SPE) Board of Directors, June 2018

This document contains information excerpted from definitions and guidelines prepared by the Oil and Gas Reserves Committee of the Society of Petroleum Engineers (SPE) and reviewed and jointly sponsored by the SPE, 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.

Preamble

Petroleum resources are the quantities of hydrocarbons naturally occurring on or within the Earth's crust. Resources assessments estimate quantities in known and yet-to-be-discovered accumulations. Resources evaluations are focused on those quantities that can potentially be recovered and marketed by commercial projects. A petroleum resources management system provides a consistent approach to estimating petroleum quantities, evaluating projects, and presenting results within a comprehensive classification framework.

This updated PRMS provides fundamental principles for the evaluation and classification of petroleum reserves and resources. If there is any conflict with prior SPE and PRMS guidance, approved training, or the Application Guidelines, the current PRMS shall prevail. It is understood that these definitions and guidelines allow flexibility for entities, governments, and regulatory agencies to tailor application for their particular needs; however, any modifications to the guidance contained herein must be clearly identified. The terms "shall" or "must" indicate that a provision herein is mandatory for PRMS compliance, while "should" indicates a recommended practice and "may" indicates that a course of action is permissible. The definitions and guidelines contained in this document must not be construed as modifying the interpretation or application of any existing regulatory reporting requirements.

1.0 Basic Principles and Definitions

1.0.0.1 A classification system of petroleum resources is a fundamental element that provides a common language for communicating both the confidence of a project's resources maturation status and the range of potential outcomes to the various entities. The PRMS provides transparency by requiring the assessment of various criteria that allow for the classification and categorization of a project's resources. The evaluation elements consider the risk of geologic discovery and the technical uncertainties together with a determination of the chance of achieving the commercial maturation status of a petroleum project.

1.0.0.2 The technical estimation of petroleum resources quantities involves the assessment of quantities and values that have an inherent degree of uncertainty. These quantities are associated with exploration, appraisal, and development projects at various stages of design and implementation. The commercial aspects considered will relate the project's maturity status (e.g., technical, economical, regulatory, and legal) to the chance of project implementation.

1.0.0.3 The use of a consistent classification system enhances comparisons between projects, groups of projects, and total company portfolios. The application of PRMS must consider both technical and commercial factors that impact the project's feasibility, its productive life, and its related cash flows.

1.1 Petroleum Resources Classification Framework

1.1.0.1 Petroleum is defined as a naturally occurring mixture consisting of hydrocarbons in the gaseous, liquid, or solid state. Petroleum may also contain non-hydrocarbons, common examples of which are carbon dioxide, nitrogen, hydrogen sulfide, and sulfur. In rare cases, non-hydrocarbon content can be greater than 50%.

1.1.0.2 The term resources as used herein is intended to encompass all quantities of petroleum naturally occurring within the Earth's crust, both discovered and undiscovered (whether recoverable or unrecoverable), plus those quantities already produced. Further, it includes all types of petroleum whether currently considered as conventional or unconventional resources.

1.1.0.3 Figure 1.1 graphically represents the PRMS resources classification system. The system classifies resources into discovered and undiscovered and defines the recoverable resources classes: Production, Reserves, Contingent Resources, and Prospective Resources, as well as Unrecoverable Petroleum.

1.1.0.4 The horizontal axis reflects the range of uncertainty of estimated quantities potentially recoverable from an accumulation by a project, while the vertical axis represents the chance of commerciality, P_c , which is the chance that a project will be committed for development and reach commercial producing status.

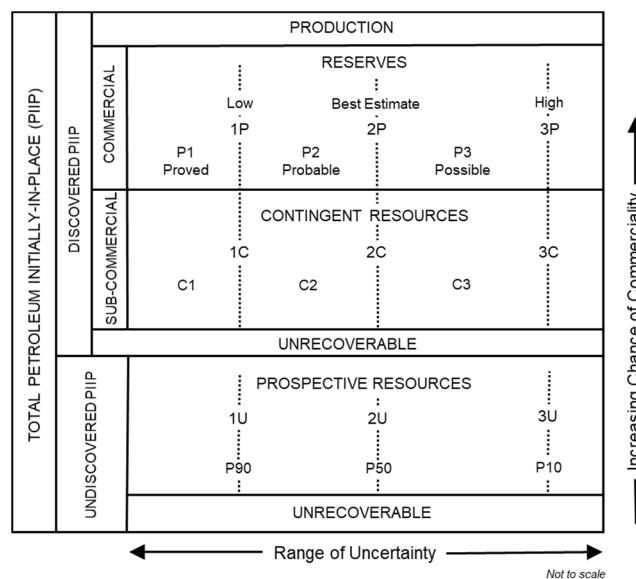


Figure 1.1—Resources classification framework

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1.1.0.5 The following definitions apply to the major subdivisions within the resources classification:

- A. **Total Petroleum Initially-In-Place (PIIP)** is all quantities of petroleum that are estimated to exist originally in naturally occurring accumulations, discovered and undiscovered, before production.
- B. **Discovered PIIP** is the quantity of petroleum that is estimated, as of a given date, to be contained in known accumulations before production.
- C. **Production** is the cumulative quantities of petroleum that have been recovered at a given date. While all recoverable resources are estimated, and production is measured in terms of the sales product specifications, raw production (sales plus non-sales) quantities are also measured and required to support engineering analyses based on reservoir voidage (see Section 3.2, Production Measurement).

1.1.0.6 Multiple development projects may be applied to each known or unknown accumulation, and each project will be forecast to recover an estimated portion of the initially-in-place quantities. The projects shall be subdivided into commercial, sub-commercial, and undiscovered, with the estimated recoverable quantities being classified as Reserves, Contingent Resources, or Prospective Resources respectively, as defined below.

- A. 1. **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 (as of the evaluation's effective date) based on the development project(s) applied.
 - 2. Reserves are recommended as sales quantities as metered at the reference point. Where the entity also recognizes quantities consumed in operations (CiO) (see Section 3.2.2), as Reserves these quantities must be recorded separately. Non-hydrocarbon quantities are recognized as Reserves only when sold together with hydrocarbons or CiO associated with petroleum production. If the non-hydrocarbon is separated before sales, it is excluded from Reserves.
 - 3. Reserves are further categorized in accordance with the range of uncertainty and should be sub-classified based on project maturity and/or characterized by development and production status.
- B. **Contingent Resources** are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from known accumulations, by the application of development project(s) not currently considered to be commercial owing to one or more contingencies. Contingent Resources have an associated chance of development. Contingent Resources may include, for example, projects for which there are currently no 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 range of uncertainty associated with the estimates and should be sub-classified based on project maturity and/or economic status.
- C. **Undiscovered PIIP** is that quantity of petroleum estimated, as of a given date, to be contained within accumulations yet to be discovered.
- D. **Prospective Resources** are those quantities of petroleum estimated, as of a given date, to be potentially recoverable from undiscovered accumulations by application of future development projects. Prospective Resources have both an associated chance of geologic discovery and a chance of development. Prospective Resources are further categorized in accordance with the range of uncertainty associated with recoverable estimates, assuming discovery and development, and may be sub-classified based on project maturity.
- E. **Unrecoverable Resources** are that portion of either discovered or undiscovered PIIP evaluated, as of a given date, to be unrecoverable by the currently defined project(s). A portion of these quantities may become recoverable in the future as commercial circumstances change, technology is developed, or additional data are acquired. The remaining portion may never be recovered because of physical/chemical constraints represented by subsurface interaction of fluids and reservoir rocks.

1.1.0.7 The sum of Reserves, Contingent Resources, and Prospective Resources may be referred to as "remaining recoverable resources." Importantly, these quantities should not be aggregated without due consideration of the technical and commercial risk involved with their classification. When such terms are used, each classification component of the summation must be provided.

1.1.0.8 Other terms used in resource assessments include the following:

- A. **Estimated Ultimate Recovery (EUR)** is not a resources category or class, but a term that can be applied to an accumulation or group of accumulations (discovered or undiscovered) to define those quantities of petroleum estimated, as of a given date, to be potentially recoverable plus those quantities already produced from the accumulation or group of accumulations. For clarity, EUR must reference the associated technical and commercial conditions for the resources; for example, proved EUR is Proved Reserves plus prior production.
- B. **Technically Recoverable Resources (TRR)** are those quantities of petroleum producible using currently available technology and industry practices, regardless of commercial considerations. TRR may be used for specific Projects or for groups of Projects, or, can be an undifferentiated estimate within an area (often basin-wide) of recovery potential.

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1.2 Project-Based Resources Evaluations

1.2.0.1 The resources evaluation process consists of identifying a recovery project or projects associated with one or more petroleum accumulations, estimating the quantities of PIIIP, estimating that portion of those in-place quantities that can be recovered by each project, and classifying the project(s) based on maturity status or chance of commerciality.

1.2.0.2 The concept of a project-based classification system is further clarified by examining the elements contributing to an evaluation of net recoverable resources (see Figure 1.2).

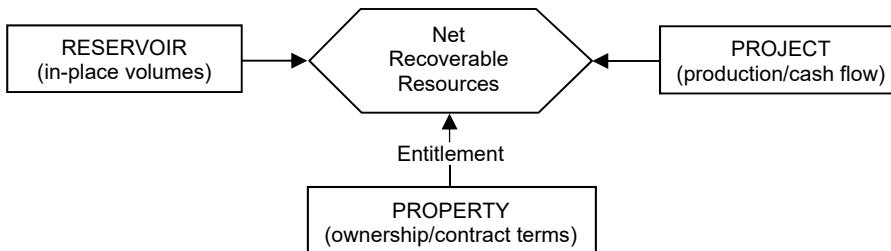


Figure 1.2—Resources evaluation

1.2.0.3 **The reservoir** (contains the petroleum accumulation): Key attributes include the types and quantities of PIIIP and the fluid and rock properties that affect petroleum recovery.

1.2.0.4 **The project:** A project may constitute the development of a well, a single reservoir, or a small field; an incremental development in a producing field; or the integrated development of a field or several fields together with the associated processing facilities (e.g., compression). Within a project, a specific reservoir's development generates a unique production and cash-flow schedule at each level of certainty. The integration of these schedules taken to the project's earliest truncation caused by technical, economic, or the contractual limit defines the estimated recoverable resources and associated future net cash flow projections for each project. The ratio of EUR to total PIIIP quantities defines the project's recovery efficiency. Each project should have an associated recoverable resources range (low, best, and high estimate).

1.2.0.5 **The property** (lease or license area): Each property may have unique associated contractual rights and obligations, including the fiscal terms. This information allows definition of each participating entity's share of produced quantities (entitlement) and share of investments, expenses, and revenues for each recovery project and the reservoir to which it is applied. One property may encompass many reservoirs, or one reservoir may span several different properties. A property may contain both discovered and undiscovered accumulations that may be spatially unrelated to a potential single field designation.

1.2.0.6 An entity's net recoverable resources are the entitlement share of future production legally accruing under the terms of the development and production contract or license.

1.2.0.7 In the context of this relationship, the project is the primary element considered in the resources classification, and the net recoverable resources are the quantities derived from each project. A project represents a defined activity or set of activities to develop the petroleum accumulation(s) and the decisions taken to mature the resources to reserves. In general, it is recommended that an individual project has assigned to it a specific maturity level sub-class (See Section 2.1.3.5, Project Maturity Sub-Classes) at which a decision is made whether or not to proceed (i.e., spend more money) and there should be an associated range of estimated recoverable quantities for the project (See Section 2.2.1, Range of Uncertainty). For completeness, a developed field is also considered to be a project.

1.2.0.8 An accumulation or potential accumulation of petroleum is often subject to several separate and distinct projects that are at different stages of exploration or development. Thus, an accumulation may have recoverable quantities in several resources classes simultaneously.

1.2.0.10 Not all technically feasible development projects will be commercial. The commercial viability of a development project within a field's development plan is dependent on a forecast of the conditions that will exist during the time period encompassed by the project (see Section 3.1, Assessment of Commerciality). Conditions include technical, economic (e.g., hurdle rates, commodity prices), operating and capital costs, marketing, sales route(s), and legal, environmental, social, and governmental factors forecast to exist and impact the project during the time period being evaluated. While economic factors can be summarized as forecast costs and product prices, the underlying influences include, but are not limited to, market conditions (e.g., inflation, market factors, and contingencies), exchange rates, transportation and processing infrastructure, fiscal terms, and taxes.

1.2.0.11 The resources being estimated are those quantities producible from a project as measured according to delivery specifications at the point of sale or custody transfer (see Section 3.2.1, Reference Point) and may permit forecasts of CiO quantities (see Section 3.2.2., Consumed in Operations). The cumulative production forecast from the effective date forward to cessation of production is the remaining recoverable resources quantity (see Section 3.1.1, Net Cash-Flow Evaluation).

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1.2.0.12 The supporting data, analytical processes, and assumptions describing the technical and commercial basis used in an evaluation must be documented in sufficient detail to allow, as needed, a qualified reserves evaluator or qualified reserves auditor to clearly understand each project's basis for the estimation, categorization, and classification of recoverable resources quantities and, if appropriate, associated commercial assessment.

2.0 Classification and Categorization Guidelines

2.1 Resources Classification

2.1.0.1 The PRMS classification establishes criteria for the classification of the total PIIP. A determination of a discovery differentiates between discovered and undiscovered PIIP. The application of a project further differentiates the recoverable from unrecoverable resources. The project is then evaluated to determine its maturity status to allow the classification distinction between commercial and sub-commercial projects. PRMS requires the project's recoverable resources quantities to be classified as either Reserves, Contingent Resources, or Prospective Resources.

2.1.1 Determination of Discovery Status

2.1.1.1 A discovered petroleum accumulation is determined to exist when one or more exploratory wells have established through testing, sampling, and/or logging the existence of a significant quantity of potentially recoverable hydrocarbons and thus have established a known accumulation. In the absence of a flow test or sampling, the discovery determination requires confidence in the presence of hydrocarbons and evidence of producibility, which may be supported by suitable producing analogs (see Section 4.1.1, Analogs). In this context, "significant" implies that there is evidence of a sufficient quantity of petroleum to justify estimating the in-place quantity demonstrated by the well(s) and for evaluating the potential for commercial recovery.

2.1.1.2 Where a discovery has identified potentially recoverable hydrocarbons, but it is not considered viable to apply a project with established technology or with technology under development, such quantities may be classified as Discovered Unrecoverable with no Contingent Resources. In future evaluations, as appropriate for petroleum resources management purposes, a portion of these unrecoverable quantities may become recoverable resources as either commercial circumstances change or technological developments occur.

2.1.2 Determination of Commerciality

2.1.2.1 Discovered recoverable quantities (Contingent Resources) may be considered commercially mature, and thus attain Reserves classification, if the entity claiming commerciality has demonstrated a firm intention to proceed with development. This means the entity has satisfied the internal decision criteria (typically rate of return at or above the weighted average cost-of-capital or the hurdle rate). Commerciality is achieved with the entity's commitment to the project and all of the following criteria:

- A. Evidence of a technically mature, feasible development plan.
- B. Evidence of financial appropriations either being in place or having a high likelihood of being secured to implement the project.
- C. Evidence to support a reasonable time-frame for development.
- D. A reasonable assessment that the development projects will have positive economics and meet defined investment and operating criteria. This assessment is performed on the estimated entitlement forecast quantities and associated cash flow on which the investment decision is made (see Section 3.1.1, Net Cash-Flow Evaluation).
- E. A reasonable expectation that there will be a market for forecast sales quantities of the production required to justify development. There should also be similar confidence that all produced streams (e.g., oil, gas, water, CO₂) can be sold, stored, re-injected, or otherwise appropriately disposed.
- F. Evidence that the necessary production and transportation facilities are available or can be made available.
- G. Evidence that legal, contractual, environmental, regulatory, and government approvals are in place or will be forthcoming, together with resolving any social and economic concerns.

2.1.2.2 The commerciality test for Reserves determination is applied to the best estimate (P50) forecast quantities, which upon qualifying all commercial and technical maturity criteria and constraints become the 2P Reserves. Stricter cases [e.g., low estimate (P90)] may be used for decision purposes or to investigate the range of commerciality (see Section 3.1.2, Economic Criteria). Typically, the low- and high-case project scenarios may be evaluated for sensitivities when considering project risk and upside opportunity.

2.1.2.3 To be included in the Reserves class, a project must be sufficiently defined to establish both its technical and commercial viability as noted in Section 2.1.2.1. There must be a reasonable expectation that all required internal and external approvals will be forthcoming and 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 justifiable; for example, development of economic projects that take longer than five years to be developed or are deferred to meet contractual or strategic objectives. In all cases, the justification for classification as Reserves should be clearly documented.

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2.1.2.4 While PRMS guidelines require financial appropriations evidence, they do not require that project financing be confirmed before classifying projects as Reserves. However, this may be another external reporting requirement. In many cases, financing is conditional upon the same criteria as above. In general, if there is not a reasonable expectation that financing or other forms of commitment (e.g., farm-outs) can be arranged so that the development will be initiated within a reasonable time-frame, then the project should be classified as Contingent Resources. If financing is reasonably expected to be in place at the time of the final investment decision (FID), the project's resources may be classified as Reserves.

2.2 Resources Categorization

2.2.0.1 The horizontal axis in the resources classification in Figure 1.1 defines the range of uncertainty in estimates of the quantities of recoverable, or potentially recoverable, petroleum associated with a project or group of projects. These estimates include the uncertainty components as follows:

- A. The total petroleum remaining within the accumulation (in-place resources).
- B. The technical uncertainty in the portion of the total petroleum that can be recovered by applying a defined development project or projects (i.e., the technology applied).
- C. Known variations in the commercial terms that may impact the quantities recovered and sold (e.g., market availability; contractual changes, such as production rate tiers or product quality specifications) are part of project's scope and are included in the horizontal axis, while the chance of satisfying the commercial terms is reflected in the classification (vertical axis).

2.2.0.2 The uncertainty in a project's recoverable quantities is reflected by the 1P, 2P, 3P, Proved (P1), Probable (P2), Possible (P3), 1C, 2C, 3C, C1, C2, and C3; or 1U, 2U, and 3U resources categories. The commercial chance of success is associated with resources classes or sub-classes and not with the resources categories reflecting the range of recoverable quantities.

2.2.1 Range of Uncertainty

2.2.1.1 Uncertainty is inherent in a project's resources estimation and is communicated in PRMS by reporting a range of category outcomes. The range of uncertainty of the recoverable and/or potentially recoverable quantities may be represented by either deterministic scenarios or by a probability distribution (see Section 4.2, Resources Assessment Methods).

2.2.1.2 When the range of uncertainty is represented by a probability distribution, a low, best, and high estimate shall be provided such that:

- A. There should be at least a 90% probability (P90) that the quantities actually recovered will equal or exceed the low estimate.
- B. There should be at least a 50% probability (P50) that the quantities actually recovered will equal or exceed the best estimate.
- C. There should be at least a 10% probability (P10) that the quantities actually recovered will equal or exceed the high estimate.

2.2.1.3 In some projects, the range of uncertainty may be limited, and the three scenarios may result in resources estimates that are not significantly different. In these situations, a single value estimate may be appropriate to describe the expected result.

2.2.1.4 When using the deterministic scenario method, typically there should also be low, best, and high estimates, where such estimates are based on qualitative assessments of relative uncertainty using consistent interpretation guidelines. Under the deterministic incremental method, quantities for each confidence segment are estimated discretely (see Section 2.2.2, Category Definitions and Guidelines).

2.2.1.5 Project resources are initially estimated using the above uncertainty range forecasts that incorporate the subsurface elements together with technical constraints related to wells and facilities. The technical forecasts then have additional commercial criteria applied (e.g., economics and license cutoffs are the most common) to estimate the entitlement quantities attributed and the resources classification status: Reserves, Contingent Resources, and Prospective Resources.

2.2.2 Category Definitions and Guidelines

2.2.2.1 Evaluators may assess recoverable quantities and categorize results by uncertainty using the deterministic incremental method, the deterministic scenario (cumulative) method, geostatistical methods, or probabilistic methods (see Section 4.2, Resources Assessment Methods). Also, combinations of these methods may be used.

2.2.2.2 Use of consistent terminology (Figures 1.1 and 2.1) promotes clarity in communication of evaluation results. For Reserves, the general cumulative terms low/best/high forecasts are used to estimate the resulting 1P/2P/3P quantities, respectively. The associated incremental quantities are termed Proved (P1), Probable (P2) and Possible (P3). Reserves are a subset of, and must be viewed within the context of, the complete resources classification system. While the categorization criteria are proposed specifically for Reserves, in most cases, the criteria can be equally applied to Contingent and Prospective Resources. Upon satisfying the commercial maturity criteria for discovery and/or development, the project quantities will then move to the appropriate resources sub-class. Table 3 provides criteria for the Reserves categories determination.

2.2.2.3 For Contingent Resources, the general cumulative terms low/best/high estimates are used to estimate the resulting 1C/2C/3C quantities, respectively. The terms C1, C2, and C3 are defined for incremental quantities of Contingent Resources.

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2.2.2.4 For Prospective Resources, the general cumulative terms low/best/high estimates also apply and are used to estimate the resulting 1U/2U/3U quantities. No specific terms are defined for incremental quantities within Prospective Resources.

2.2.2.5 Quantities in different classes and sub-classes cannot be aggregated without considering the varying degrees of technical uncertainty and commercial likelihood involved with the classification(s) and without considering the degree of dependency between them (see Section 4.2.1, Aggregating Resources Classes).

2.2.2.6 Without new technical information, there should be no change in the distribution of technically recoverable resources and the categorization boundaries when conditions are satisfied to reclassify a project from Contingent Resources to Reserves.

2.2.2.7 All evaluations require application of a consistent set of forecast conditions, including assumed future costs and prices, for both classification of projects and categorization of estimated quantities recovered by each project (see Section 3.1, Assessment of Commerciality).

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>
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>

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Class/Sub-Class	Definition	Guidelines
Justified for Development	<p>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>	<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	<p>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>	<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	<p>A discovered accumulation where project activities are ongoing to justify commercial development in the foreseeable future.</p>	<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>
Development on Hold	<p>A discovered accumulation where project activities are on hold and/or where justification as a commercial development may be subject to significant delay.</p>	<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 Unclarified	<p>A discovered accumulation where project activities are under evaluation and where justification as a commercial development is unknown based on available information.</p>	<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>

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Class/Sub-Class	Definition	Guidelines
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.
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.

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Status	Definition	Guidelines
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>

PETROLEUM RESERVES AND RESOURCES CLASSIFICATION AND DEFINITIONS

Excerpted from the Petroleum Resources Management System Approved by
the Society of Petroleum Engineers (SPE) Board of Directors, June 2018

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>

VOLUMETRIC INPUT SUMMARY
LEVIATHAN DEEP PROSPECTS, LEASES I/14 AND I/15, OFFSHORE ISRAEL
AS OF DECEMBER 31, 2019

Prospect	Gross Rock Volume (acre-feet)				Area (acres)				Average Gross Thickness ⁽¹⁾ (feet)				Net-to-Gross Ratio (decimal)				Porosity (decimal)			
	Lognormal Distribution		Lognormal Distribution		Lognormal Distribution		Triangular Distribution		Low Estimate		Best Estimate		High Estimate		Low Estimate		Triangular Distribution			
	Low Estimate	High Estimate	Low Estimate	High Estimate	Low Estimate	High Estimate	Low Estimate	High Estimate	Low Estimate	Best Estimate	High Estimate	Low Estimate	Best Estimate	High Estimate	Low Estimate	Best Estimate	High Estimate			
Mesozoic Carbonate	370,734	16,051,915	1,443	19,619	257	818	0.20	0.50	0.80	0.10	0.15	0.25								
Lower Cretaceous Channel	660,818	17,297,896	4,628	22,380	143	773	0.20	0.50	0.80	0.12	0.17	0.22								
	Oil Saturation (decimal) Triangular Distribution				Initial Oil Formation Volume Factor (RB/STB) ⁽²⁾ Uniform Distribution				Average Producing Gas-Oil Ratio (SCF/STB) ⁽³⁾ Uniform Distribution				Oil Recovery Factor (decimal) Normal Distribution							
Prospect	Low Estimate	Best Estimate	High Estimate		Low Estimate	High Estimate			Low Estimate	High Estimate			Low Estimate	High Estimate						
Mesozoic Carbonate	0.45	0.65	0.85		2.20	1.10			200	2,200			0.15	0.45						
Lower Cretaceous Channel	0.55	0.65	0.75		2.20	1.10			200	2,200			0.15	0.45						

Note: For the purposes of this report, we used technical data including, but not limited to, well logs from offset wells, geologic maps, seismic data, and property ownership interests.

⁽¹⁾ Average gross thickness is calculated by dividing the gross rock volume by the area.

⁽²⁾ The abbreviation RB/STB represents reservoir barrels per stock tank barrel.

⁽³⁾ The abbreviation SCF/STB represents standard cubic feet per stock tank barrel.