# **Proved Reserves SEC Definitions**

#### (U.S. Securities and Exchange Commission)

Securities and Excahnge Commission Regulation S-C Rule 4-10 paragraphh (a) defines prouved reserves as follows:

**Proved oil and gas reserves:** Proved oil and gas reserves are the estimated quantities of crude oil, natural gads, and natural gas liquids which geological and engineering data demontrate with reasobanle certainty to be recoverable in future years from known reservoir under existing economic and operating condictions. i.e. prices and costs as of the date the estimate is made. Prices include considerations of changes in existing prices provided only by contractual arrangements, but not on escalations based upond future conditions.

- *(i)* Reservoirs are considered poved if economic producibility is supported by either actual production or conclusive formation test. The area of a reservoir considered proved includes :
  - A) That portion delineated by drilling and defiend by gas-oil and(or oil-water contacts, if any; and
  - B) The immediately adjoining portions not yet drilled, but which can be reasonably judged as economilacly on the basis of available geological and engineering data. In the absence of information on fluid contact, the lowest known structural occurrence of hydrocarbons controls the lower proved limit of the reservoir.

(ii) Reserves which can be produced econimically through application of improved recovery techniques (such as fluid injection) are includded in the « proved" classification when sucessful testing by a pilot project, or the operation of an installed program in the reservoir, provides support for the engineering analysis on which the project or program was based.

**Proved developed oil and gas reserves:** Proved developed oil and gas reserves are reserves that can be expected to be recovered through existing wells with existing equiment and operating methods. Additional oil and gas expected to be obtained through the application of fluid injection or other recovery techniques for supplementing the natural forecsand mechanism of primary recivery should be includded as « proved developed reserves »v only after testing a pilot project or after the operation of an installed program has conformed through production response thet increases recovery will be achieved.

**Proved undeveloped reserves:** Proved undeveloped oil and gas reserves are reserves that are expected to be recovered from new wells on undrilled acreage, or from existing wells where a relatively major expenditure is required for recompletion. Reserves on undrilled acreage shall be limited to those drilling units offsetting productive units can be claimed only where it can be denonstrated with certainty that there is continuity of production from the existing productive formation. Under no circunstances should estimates for proved undevelope reserves be attibutable to any acrage for which an application of fluid injection or other improved recovery rechnique is contemplated, unless such techniques have been proved effective by actual tests innthe rea and in the same reervoir.

#### SEC Proved Reserves

#### Introduction

In the realm of energy economics and finance, the concept of "proved reserves" stands as a cornerstone for evaluating the value and potential of oil companies. The U.S. Securities and Exchange Commission (SEC) plays a pivotal role in defining and regulating these reserves, particularly for oil companies listed on the New York Stock Exchange (NYSE). These notes aim to delve into the intricacies of the SEC's definition of proved reserves and its scientific underpinnings, emphasizing the mandatory compliance by NYSE-listed oil companies.

The SEC's reserves definitions are grounded in exploration and engineering principles to ensure that the reported reserves are a reliable and consistent measure of a company's potential for future oil production. Proved reserves, as defined by the SEC, encompass quantities of oil that geological and engineering data demonstrate with "reasonable certainty" to be recoverable under existing economic and operational conditions. This definition serves not only as a benchmark for investors but also as a regulatory mechanism to uphold transparency and comparability across the industry. The lack of a precise definition of "reasonable certainty" complicates the process of estimating reserves and can lead to significant discrepancies in reported figures, potentially affecting investor confidence and market stability. The expression "reasonable certainty" cannot be considered a scientific statement since it cannot be falsified or tested. Karl Popper would say that it is a metaphysical statement. In fact, the expression "reasonable certainty" falls more into the realm of qualitative assessment rather than rigorous scientific definition.

For oil companies quoted on the NYSE, adherence to the SEC's reserves definition is not optional but a legal obligation. This compliance is supposed to ensures that investors can make informed decisions based on standardized and scientifically validated data. The SEC's framework mandates that companies employ robust methodologies, including probabilistic approaches and technological advances, to estimate their proved reserves. These methodologies must be backed by empirical data and subjected to regular audits to maintain accuracy and integrity.

However, when the audits are paid for by the oil companies themselves, significant conflicts of interest inevitably arise. The Enron crisis serves as a stark reminder of how such conflicts can lead to catastrophic financial failures. In that case, Arthur Andersen, Enron's accounting firm, was complicit in the fraud, compromising the independence and integrity of the auditing process. The independence and objectivity of these audits are crucial for maintaining the credibility of reported reserves, and the current system's vulnerabilities highlight the need for reform.

Despite the SEC's rigorous standards, the scientific basis of its proved reserves definition has been subject to debate. Critics argue that the criteria may not fully account for the complexities and uncertainties inherent in oil extraction and market dynamics. These debates underscore the ongoing challenges in balancing regulatory requirements with the evolving realities of the oil industry.

In fact, since the begining, most reserves experts were highly critical of the US reserves practice :

A) DeSorcy G. D et al., 1993 (Definitions And Guidelines For Classification of Oil And Gas Reserves, J. Can. Pet. Technol. 32-05) :

> "There are currently almost as many definitions for reserves as there are evaluators, oil and gas companies, securities commissions and government departments. Each one uses its own version of the definitions for its own purposes".

B) Khalimov E. M., 1993 - (Classification of oil reserves and resources in the Former Soviet Union. AAPG,. 77(9), 1636) :

"The resource base (of the former Soviet Union) appeared to be strongly exaggerated due to inclusion of reserves and resources that are neither reliable nor technologically nor economically viable".

C) Capen E. C., 1996 - (A consistent probabilistic approach. SPE Reservoir Engineering, 1. 1):

"An industry that prides itself on its use of science, technology and frontier risk assessment finds itself in the 1990s with a reserve definition more reminiscent of the 1890s (illegal addition of proved reserves)".

D) Caldwell R. H. & Heather D. I., 1996 (Why our reserves definitions don't work anymore. SPE. Reservoir Engineering, 1.1):

"Why our reserves definition don't work anymore".

E) Tobin J. C. (1996) - (Virtual reserves and other measures designed to confuse the investing public). SPE Reservoir Engineering 11.1) :

"Virtual reserves and other measures designed to confuse the investing public".

F) Ross J., 1998- (Non-standard reserves estimates lead to resource underestimation. Oil and Gas Journal, 2 March):

"The term "reserves" often is treated as if it were synonymous with "proved reserves". This practice completely ignores the fact that any prudent operator will have, at least internally, estimates of probable and possible reserves".

Understanding the SEC's definition of proved reserves is critical for stakeholders in the oil industry, from investors and analysts to policymakers and environmentalists. By insisting on a scientifically sound and legally compliant approach to reserves estimation, the SEC provides a vital resource.

### History of reserves definition

Oil and gas reserves represent the cumulative production of a field until it is completely

depleted. Production depends mainly on:

- (i) The volume in place (net-pay and closed area);
- (ii) The geology of the reservoir (porosity, permeability) ;
- (iii) The physics of the fluids (pressure, temperature, saturation, density and viscosity) ;
- (iv) The development scheme (wells producers and injectors), and
- (v) The economics (cost and price).

In other words:

The geological uncertainty adds to the economic uncertainties.

According to several expert geoscientists, such as J. Laherrère (Draft 27 Feb. 2004 for Energy Politics, 27 Feb. 2004), only a range can represent the inherent uncertainty in reserve estimates. This range is typically given as Minimum, Most Likely, and Maximum values.

However, bankers and shareholders do not favor uncertainty. To protect them, the SEC (Securities and Exchange Commission) issued rules in 1978 requiring companies to report only proved reserves, defined as having "reasonable certainty to exist." Karl Popper would argue that this is a metaphysical statement because it cannot be falsified.

The same definition of "reasonable certainty" is used by the Food and Drug Administration (FDA) regarding the "reasonable certainty of no harm" to consumers when approving new products. The challenge lies in the subjective nature of "reasonable certainty," as different individuals may interpret it to mean a probability ranging from 51% to 99%.

Let's look at a few definitions among others.

a) 1980, AAPG<sup>(1)</sup>, SPE<sup>(2)</sup> and API<sup>(3)</sup> use the SEC<sup>(4)</sup>:

"Proved Reserves refers to the estimated quantities of crude oil, natural gas, and natural gas liquids that geological and engineering data demonstrate with reasonable certainty to be recoverable in future years from known reservoirs under existing economic and operating conditions. "

(1) AAPG - American Association of Petroleum Geologists.
(2) SPE - Society of Petroleum Engineers.
(3) API - American Petroleum Institute).
(4) SEC - Securities and Exchange Commission: A U. S. federal agency responsible for enforcing federal securities laws and regulating the securities industry, including stock and options exchanges.

b) 1995, SPE/WPC <sup>(5)</sup> task force on reserve definition headed by Aníbal R. Martinez a a representative from Petróleos de Venezuela, S.A. (PDVSA), proposes a hybrid system whereby the Determinist terms are defined as follows:

Proved = "reasonable certainty", but also having a "high degree of confidence"; Probable = "more likely than not";

**Possible = "less likely than not" ;** 

and the Probabilistic terms are defined as follows:

(1P) = Proved = 80-85% probability ;

(2P) = Proved + Probable = 40-60% probability and,

(3P) = Proved + Probable + Possible = 15% probability »

<sup>(5)</sup> WPC - World Petroleum Council : An international organization that promotes the sustainable management and use of the world's petroleum resources.

c) 1996, SPE/WPC the determinist terms are defined as follows :

"Proved = "reasonable certainty", but also having a "high degree of confidence";

Probable = "more likely than not";

**Possible = "less likely than not" ;** 

and the Probabilistic terms are defined as follows :

(P) = Proved = 80% probability ;

(2P) = Proved + Probable = 50% probability, and

(3P) = Proved + Proba-ble + Possible = 10% probability."

#### d) 2003, Canada National Instrument 51-101<sup>(6)</sup> obliges to report:

**1P** = proved as **90 % and 2P** as **50%**, **3P** is optional.

<sup>(6)</sup> Canada National Instrument 51-101 (NI 51-101) is a comprehensive regulatory framework established by the Canadian Securities Administrators (CSA) to govern the disclosure of oil and gas activities by publicly traded companies in Canada.

## e) 2004, International Accounting Standards Board<sup>(7)</sup> (in UK) project to publish rules to be adopted by SEC, but date of completion likely after 2007.

<sup>(7)</sup> The International Accounting Standards Board (IASB) is an independent, private-sector body responsible for developing and promoting International Financial Reporting Standards (IFRS). Established in 2001, the IASB operates under the oversight of the IFRS Foundation, a not-for-profit organization focused on establishing a globally accepted set of accounting standards.

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To conclude, it is noteworthy that the Norwegian Petroleum Directorate (NPD) employs a particularly thorough and sound procedure, recognizing as many as twelve categories of reserves and resources. This comprehensive classification system includes categories that go beyond the three covered in the SPE/WPC classification, focusing on initial reserves and resources (J. Laherrère, 1978).

- 1) Reserves where production is ceased.
- 2) Reserves currently in production.
- 3) Reserves with an approved development plan.
- 4) Resources in a late planning phase (PDO approval within 2 years).
- 5) Resources in an early planning phase (PDO approval within 10 years).
- 6) Resources which may be developed in the long term.
- 7) Resources where development is not very likely.
- 8) Resources in new discoveries for which the evaluation is incomplete.
- 9) Resources from possible future measures to increase the recovery factor (measures which are not planned and may supersede current technology).
- 10) Resources in prospects.
- 11) Resources in leads.
- 12) Unmapped resources.

It should be noted that Norway designates no more than 69% of its discovered resources as reserves. According to the Norwegian Petroleum Directorate's classification, "resources" include both discovered and undiscovered quantities of oil and gas. These quantities have not yet been classified as reserves due to varying degrees of certainty and their development status.

## **Discrepancies in Reserve Definitions**

J. Laherrère has stated since 1997, particularly in his 2004 paper, the SPE/WPC 1997 text is the result of numerous compromises between opposing views. The conservative approach, favored by most industry seniors who did not understand probability at the time, clashed with the scientific approach based on subjective probabilities. This compromise has resulted in a definition that is far from perfect. Currently, no one wants to change it because reopening the issue would lead to extensive debates, essentially "opening a can of worms."

There are several contradictions in the SPE/WPC wording. In a deterministic approach, proved reserves, defined as those recoverable with reasonable certainty, are assumed to be estimated with a high degree of confidence. Deterministic probable reserves are defined as "more likely than not," equating to a 50% probability. Conversely, others use an incremental approach where probable reserves are what is added to proved reserves to reach a 50% confidence level.

This confusion is widely accepted, despite the use of the same terms for different concepts in both approaches. For example, the term P50 is often misunderstood, being used to represent probable reserves rather than the sum of proven plus probable reserves (2P). This confusion persists in many papers.

It is well known that there are two distinct groups of geoscientists estimating reserves, each operating in different scientific paradigms:

#### (i) The determinists, who provide a single value, and

(ii) The probabilists, who provide a range of values.

The first group focuses on certainty, while the second group accounts for uncertainty. This divergence in approaches is further complicated by the use of certain terms, such as P2 (probable reserves) versus 2P (proved reserves + probable reserves), which adds to the overall confusion.

**Deterministic approach:** 

Proved P1	reasonable certainty
Probable P2	more likely than not
Possible P3	less likely than probable

**Probabilistic approach:** 

(1P) = Proved	at least 90% probability	
(2P) = Proved + Probable	at least 50% probability	
(3P) = Proved + Probable + Possible	at least 10 % probability	
(according to Ron Harrell of the Ryder Scott Company,24 Oct. 2002)		

Many geoscientists and economists working in the oil industry prefer ambiguity, as it allows them to report figures that align with their interests and internal policies. Terms used in their reports, such as "oil," "reasonable certainty," "high degree," "low estimate," "best estimate," and "high estimate," often lack quantification and are considered metaphysical statements. These terms cannot be falsified, allowing users to interpret them as they see fit, which can lead to subjective and potentially misleading reporting.

Although the application of probability theory to reserve estimation is clearly desirable, there are certain pitfalls. Perhaps the most important is the recognition that it is statistically incorrect to sum other than the mean values. It means that:

a) "The sum of the proved reserves of individual fields will be less than the proved reserves of a country as a whole."

Explanation: When estimating reserves, summing the proved reserves of individual fields does not account for the statistical relationship between fields. If each field is evaluated independently with its own probability, the combined probability of reserves is not simply additive. Therefore, aggregating individual field reserves yields a total that is less than the reserves estimated for the entire country, which considers overall probability distributions.

**b)** "The sum of the proved reserves of different pools within a field will be less than the reserves of the field as a whole."

Explanation: This follows the same logic as point a). Different pools within a field are also evaluated independently, each with its own probability of reserve estimation. When summing these individual pools, the total does not

capture the collective probability distribution of the entire field, leading to a lower aggregate reserve estimate compared to the field as a whole.

**c)** "In multiplying the probability values for the parameters taken into account in assessing the reserves of a field, it is necessary to use only the mode (most likely) value."

Explanation: When calculating reserves using probabilistic parameters, the mode (most likely value) should be used rather than simply multiplying average probabilities. This is because the mode represents the most common outcome and provides a more realistic estimate when combining multiple probabilistic factors. Using the mode helps in avoiding the skewing effects that can arise from multiplying mean or average values, which may not accurately represent the likely scenario.

Notice that the Minerals Management Service (MMS), the former agency of the U.S. Department of the Interior responsible for managing the nation's natural gas, oil, and other mineral resources on the outer continental shelf, employs a different probabilistic approach. This approach is considered more scientific and accurate, as it uses the Mean rather than the Median values. The Mean, which is influenced by all data points, provides a comprehensive measure, while the Median, less affected by outliers and skewed data, offers a central value that is more robust to extreme values. By using the Mean, MMS aims to give a more accurate representation of resource quantities.

## **Proved Reserves (1997 SPE/WPC Definition)**

The SEC's definition aims to give investors and stakeholders a clear and consistent understanding of the reserves' potential economic value and the certainty of their recovery. This definition is crucial for financial reporting and regulatory compliance in the oil and gas industry, even though it leans more toward qualitative assessment rather than rigorous scientific assessment. This balance helps maintain transparency and comparability across companies, which is vital for investor confidence and market stability.

According to the 1997 SPE/WPC definition, "Proved reserves are those quantities of petroleum which, by analysis of geological 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."

## **Key Aspects of the SPE/WPC 1997 Definition**

#### **Massonable Certainty :**

This implies a high degree of confidence that the quantities will be recovered. "Reasonable certainty" suggests that the reserves are much more likely to be recovered than not. However, the term lacks precise quantification and can be some-

what suggestive and metaphysical. It does not provide a clear, measurable probability, leading to potential ambiguities in interpretation

✓ Commercially Recoverable : This means that the reserves are expected to generate revenue that exceeds the cost of extraction. This consideration includes the economic viability of the reserves under current market prices and costs. However, the expression "commercially recoverable" tence is clear but lacks depth and specificity. It does not mention that economic viability can be influenced by fluctuating market conditions, technological advancements, and regulatory changes. Additionally, it should highlight that economic assessments often include various financial metrics such as net-present-value (NPV) and internal-rate-of-return (IRR) to provide a more comprehensive evaluation of reserve profitability. The statement could also benefit from acknowledging the role of risk and uncertainty in these economic evaluations.

#### **From Known Reservoir-rock(s)**

The reserves must be located in reservoir-rock(s) that have been discovered and delineated through wells or other methods. However, these reservoir-rock(s) should either be currently producing hydrocarbons or, at least producing, in DSTs or have shown significant accumulation of hydrocarbons. This ensures that the reserves are not speculative but are based on tangible evidence of hydrocarbon presence and potential productivity.

#### **Defined Economic Conditions :**

The 1997 SPE/WPC definition's reliance on the economic conditions prevailing at the time of the estimate is limited in scope. By focusing solely on current prices and costs, it fails to account for potential future fluctuations in market conditions, which can significantly impact the economic viability of the reserves. This approach may lead to overly conservative or optimistic estimates, depending on the volatility of the market. Incorporating a range of potential future scenarios could provide a more robust and realistic assessment of the reserves' economic value.

#### **Operating Methods and Government Regulations :**

The requirement that reserves must be recoverable under current and planned operating methods and within the framework of existing government regulations is restrictive. This approach does not account for future technological advancements or changes in regulations that could enhance recovery processes or alter the feasibility of extracting the reserves. By not considering potential future developments, the definition may underestimate the true potential of the reserves. A more flexible approach that includes possible future changes in technology and regulations would provide a more accurate and forward-looking assessment.

## **Proved Reserves**

Proved Reserves are the estimated quantities of crude oil, natural gas, and natural gas liquids that geological and engineering data demonstrate with reasonable certainty to

be recoverable in future years from known reservoirs under existing economic and operating conditions. The key points of this definition include:

1) "Reasonable Certainty" : This means a high degree of confidence that the quantities will be recovered. This confidence is based on geological and engineering data, which should be of sufficient quality to support this assurance. In probability terms, "reasonable certainty" in the context of proved reserves generally implies a probability of at least P90 (90%). This means there is a 90% chance that the actual quantities recovered will equal or exceed the estimated proved reserves. This high level of confidence ensures that the estimates are conservative and reliable. This quantification helps standardize reserve reporting and provides stakeholders with a clear understanding of the confidence level associated with the reserve estimate.

2) *Known Reservoir-rock(s)* : The reserves must be located in reservoir-rock(s) that have been discovered and confirmed through drilling and other exploration activities. These rocks have been verified to contain hydrocarbons in quantities sufficient for extraction.

3) *Existing Economic and Operating Conditions* : The reserves must be recoverable under the current economic environment, including the prevailing prices of oil and gas, as well as existing operational practices and technologies. This implies that no major technological advances or significant changes in economic conditions are required for the extraction of these reserves.

## **Breakdown of Proved Reserves**

Proved reserves can typically be divided, categorized, or broken down into various subcategories based on factors such as location, type of hydrocarbon (oil, gas), development status (developed vs. undeveloped), and other relevant criteria. The purpose of this categorization is to provide a clear and comprehensive understanding of the composition and characteristics of the proved reserves.

#### A) Developed Proved Reserves :

Reserves expected to be recovered from existing wells and with existing equipment and operating methods. Developed reserves are further classified into:

- A.1) Producing : Reserves that are currently being extracted.
- A.2) Non-Producing : Reserves that have been drilled but are not yet producing, perhaps due to pending well completions or minor modifications.

As is well known, producing reserves are a function of the recovery factor, because only a percentage of the hydrocarbons in place is recoverable. The hydrocarbons occur in the pore spaces between the sedimentary particles of the reservoir rocks, which are coated by a film of water. This film of water may coalesce and block the pore throats between the spaces, preventing the movement of hydrocarbons. Regarding developed proved reserves, it must be noted:

(i) Hydrocarbons-in-Place Estimation :

The hydrocarbons-in-place are estimated at an early stage of exploration primarily from the interpretation of seismic data (2D and 3D). The uncertainty of these estimates does not improve over the life of the field unless additional seismic surveys and drilling are undertaken.

(ii) Recovery Factor Estimation :

The recovery factor, commonly quoted in round numbers, is used to estimate reserves only at the beginning of the project. Later estimates are derived from well performance data and simulation techniques.

(iii) Imprecision of Recovery Factors :

The fact that recovery factors are commonly quoted in round numbers (30%, 1/3, 40%, 50%, etc.) demonstrates the imprecision of the calculation method.

(iv) Range and Probability Reporting :

Just as reserves should be reported as a range, so should the even more uncertain values of hydrocarbon-in-place. Furthermore, the probability ranking of the reserves should be matched by an equivalent ranking of the oilin-place. Knowledge of both improves over the life of a field but not necessarily proportionately. For these reasons, an improvement in the apparent recovery factor typically reflects the progressive addition of probable reserves that were omitted from the initial estimate (J. Laherrère, 1998).

**B) Undeveloped Proved Reserves:** 

Reserves expected to be recovered from new wells on undrilled acreage or from existing wells where a relatively major expenditure is required for recompletion.

### Conclusions

Oil companies that are publicly traded on stock exchanges in the United States, including the New York Stock Exchange (NYSE), are obliged to follow the Securities and Exchange Commission (SEC) definition of reserves. This requirement ensures consistency, transparency, and comparability in the reporting of oil and gas reserves. The SEC's rules for reserves reporting are outlined in Regulation S-X, Rule 4-10, and additional guidance can be found in the SEC's Industry Guide 2 (for oil and gas companies). These regulations specify how reserves should be estimated, classified, and disclosed (see annex).

## Annex

SEC Regulation S-X, Rule 4-10 provides detailed requirements for the disclosure of oil and gas reserve information by publicly traded companies. Here is a summary of the key elements of Rule 4-10:

**Definitions and Classifications:** 

- 1. Proved Reserves:
  - Quantities of oil, natural gas, and natural gas liquids that, based on geological and engineering data, can be estimated with reasonable certainty to be economically producible.
  - The economic producibility must be supported by actual production or conclusive formation tests.
  - Must be from a known reservoir under existing economic conditions, operating methods, and government regulations.
- 2. Proved Developed Reserves:
  - Reserves expected to be recovered through existing wells with existing equipment and operating methods.
  - Includes producing and non-producing reserves where major expenditures are not required for production.
- **3.** Proved Undeveloped Reserves:
  - Reserves expected to be recovered from new wells on undrilled acreage or from existing wells where a significant expenditure is required.

#### **Reporting Requirements:**

- **1.** Disclosure of Reserves:
  - Companies must disclose their proved oil and gas reserves as of the end of their fiscal year.
  - The disclosure should include separate estimates for oil, natural gas, and natural gas liquids.
- 2. Standardized Measure of Discounted Future Net Cash Flows:
  - Companies must present a standardized measure of discounted future net cash flows relating to proved oil and gas reserve quantities.

- This measure should be calculated using a standardized set of assumptions regarding future production costs, development costs, and product prices.
- **3.** Supplementary Information:
  - Companies must provide additional supplementary information, including changes in proved reserves during the year, capitalized costs relating to oil and gas producing activities, and costs incurred for property acquisition, exploration, and development.
- 4. Technological Criteria:
  - The estimation of reserves must be based on reliable technology, which includes technologies that have been demonstrated to yield consistent and repeatable results.
- 5. Economic Conditions:
  - Economic producibility is determined using prices and costs as of the date of the estimate unless future prices are defined by contractual arrangements.
- 6. Auditing and Review:
  - <sup>o</sup> Companies are encouraged to have their reserve estimates audited or reviewed by independent petroleum engineers, though this is not a strict requirement.

**Purpose and Impact:** 

- Investor Protection: Ensures that investors receive accurate and reliable information about a company's oil and gas reserves.
- Standardization: Provides a standardized framework for reserve estimation and reporting, facilitating comparability across companies.
- Transparency: Enhances the transparency of reserve disclosures, helping investors make more informed decisions.

In essence, Rule 4-10 of SEC Regulation S-X establishes a comprehensive framework for the classification, estimation, and disclosure of oil and gas reserves, ensuring that publicly traded companies provide consistent and transparent information to their investors and stakeholders.