A stylized globe with a blue and white color scheme, showing continents and a grid of latitude and longitude lines. It is positioned on the left side of the slide.

Can you have Probable Reserves without having Proved Reserves?

(The Debate goes On!)

2010 Ryder Scott Reserves Conference
Delores Hinkle; Director, Corporate Reserves
Marathon Oil Company

Can You have Probable Reserves without having Proved Reserves?



Agenda

- Definitions and Clarifications
- Examples
- “Orphaned Volumes”

Can You have Probable Reserves without Proved Reserves?



SEC Definitions: 210.4-10(a)(22) and (18)

“Proved... reserves are those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible-from a given date forward, from known reservoirs, and under existing economic conditions, operation methods, and government regulations... regardless of whether deterministic or probabilistic methods are used for the estimation.”

“Probable reserves are those *additional* reserves that are less certain to be recovered than proved reserves but which, together with proved reserves, are as likely as not to be recovered.”

Definition requires probable reserves be additional to proved reserves

Can You have Probable Reserves without Proved Reserves?



SEC Definitions: 210.4-10 II(J)(5)

“Rather than defining an extensive glossary of terms in our rules and attempting to constantly update those definitions, we advise companies to look to definitions that are commonly accepted within the oil and gas industry to the extent such definitions are not in, or inconsistent with, our rules.”

For the purpose of this presentation, SPE-PRMS is considered “commonly accepted” definitions and referenced for additional clarity.

Can You have Probable Reserves without Proved Reserves?



SEC Compliance and Disclosure Interpretations: Oil and Gas Rules updated October 26, 2009

“Question 117.02: Can an issuer assign probable and possible reserves in an area in which it does not, or cannot, assign proved reserves?”

Answer: Yes. However, disclosure of unproved reserves without associated proved reserves should be done only in exceptional cases, such as for (1) development projects where engineering, geological, marketing, financing, and technical tasks have been completed, but final regulatory approval is lacking or (2) improved recovery projects, at or near primary depletion, that await production responses. Reserves should not be assigned without well penetrations of the subject reservoir (rock volumes) in the contiguous area that yields technical information sufficient to support the attributed reserve category. Volumes that are not economically producible are not reserves of any classification and should not be disclosed.”

Interpretations left some unanswered questions!



Examples

Can You have Probable Reserves without Proved Reserves?



Probable Area Determination

SEC Definitions: 210.4-10(a)(18)(ii)

“Probable reserves may be assigned to areas of a reservoir *adjacent to proved reserves* where data control or interpretations of available data are less certain, even if the interpreted reservoir continuity of structure or productivity does not meet the reasonable certainty criterion.”

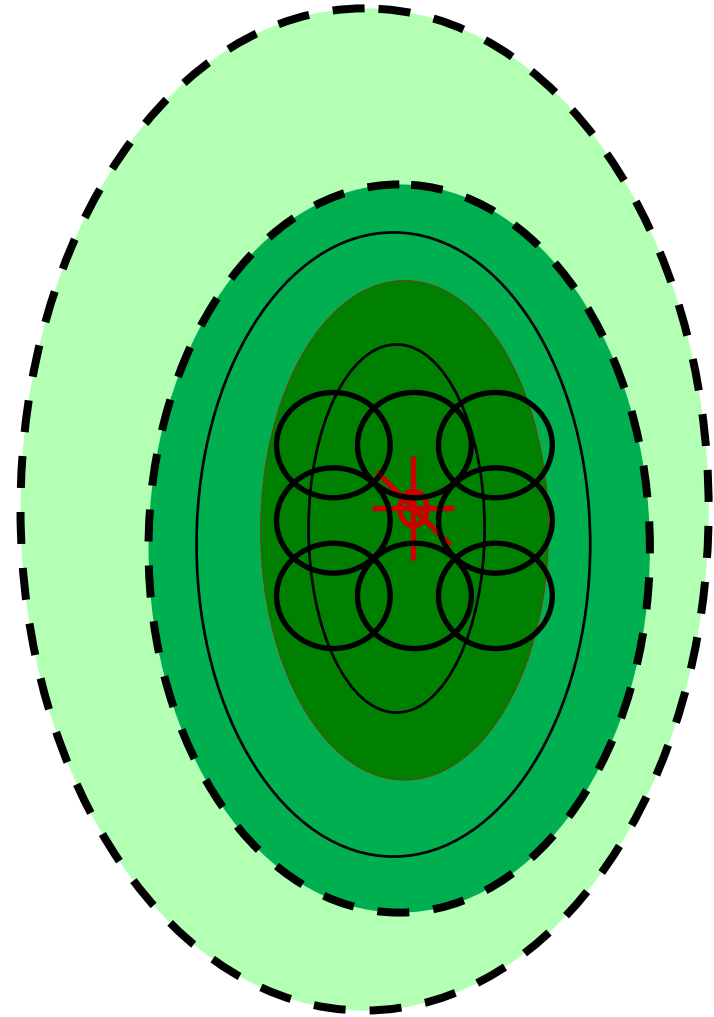
Definitions allow probable reserves to be assigned to areas adjacent to proved reserves

Can You have Probable Reserves without Proved Reserves?



Straight Forward Example

- Proved meets all SEC requirements
 - Penetrated
 - Reasonable certain of economic production within reasonable time
 - PUD's scheduled with-in 5 years
 - Uniform ownership
- Probable
 - Less certain than proved
 - As likely as not to be recovered
- Possible
 - Less certain than probable
 - Low probability of recovery



Proved

Probable

Possible

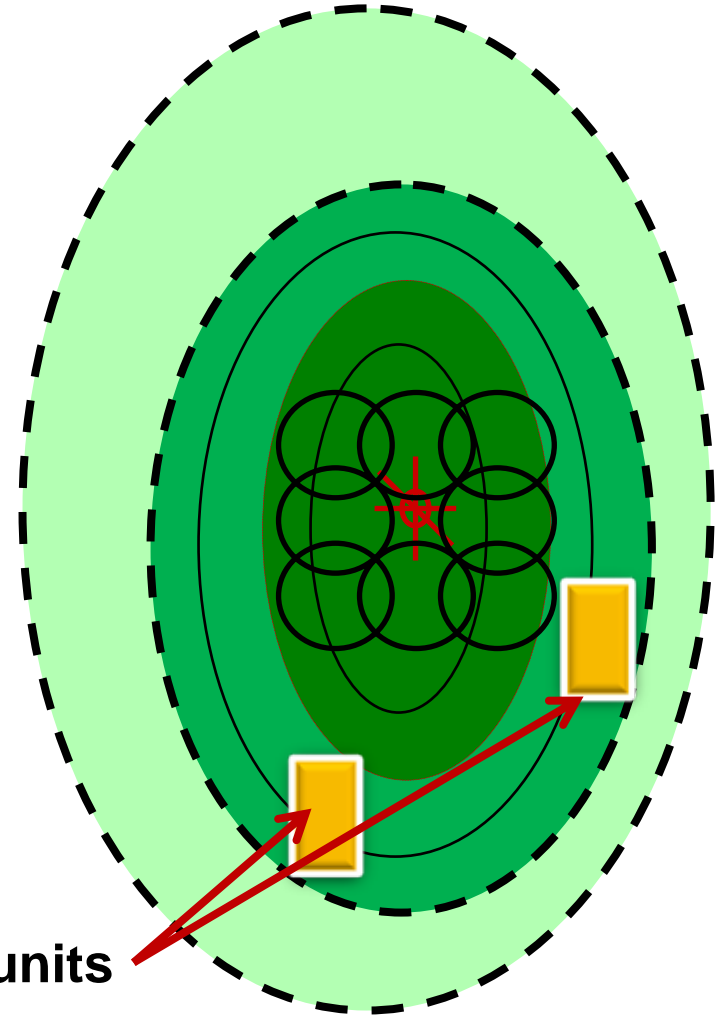
Can You have Probable Reserves without Proved Reserves?



What if you own acreage in Probable but not Proved area?

Rules don't require ownership in the proved area, but you must be able to support that the adjacent area is proved.

Your drilling units



Proved

Probable

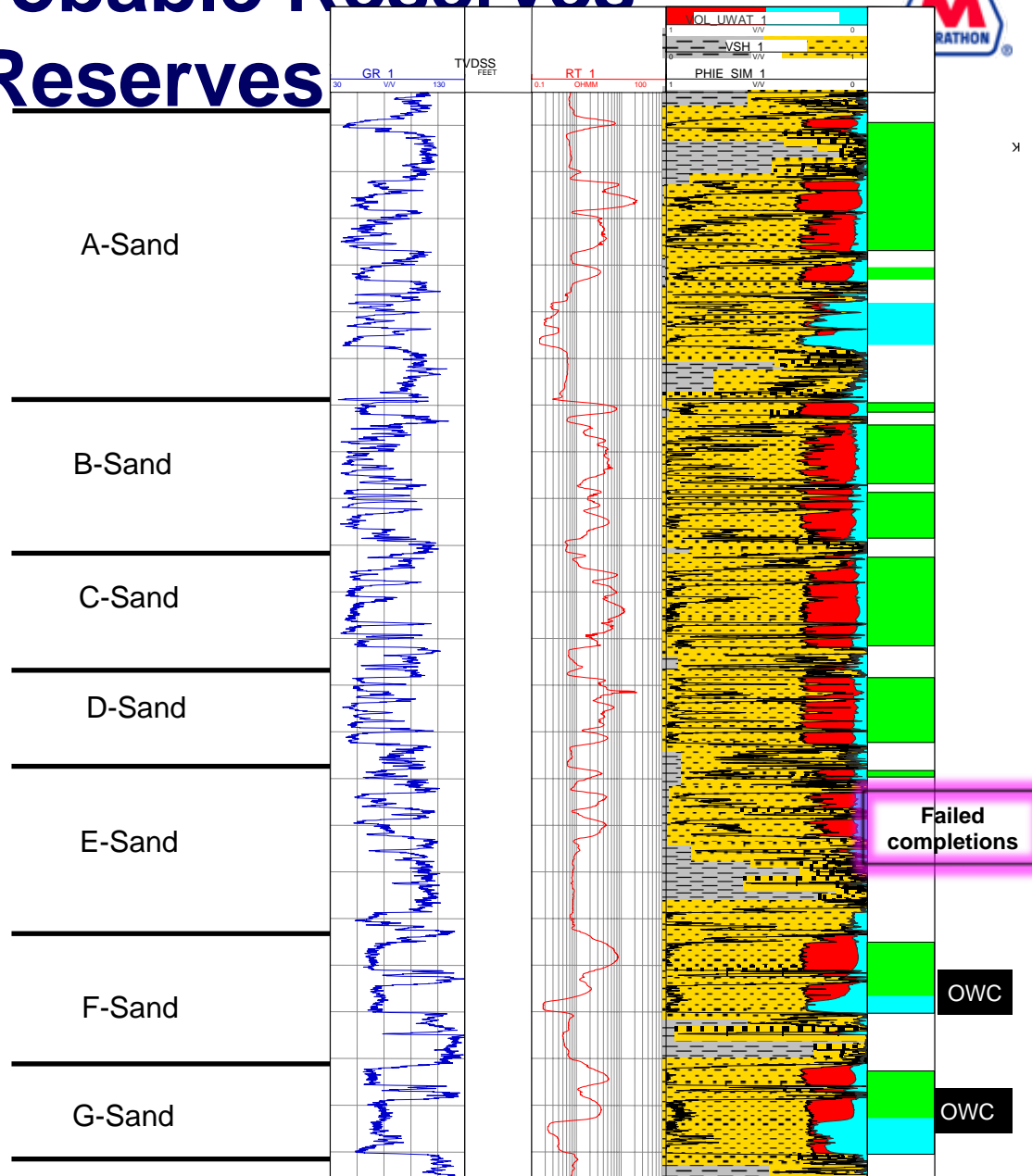
Possible

Can You have Probable Reserves without Proved Reserves



Can you have Probable Volumes within a Proved Area?

Volumes adjacent to Proved but are not "reasonably certain" of recovery can be categorized as Probable



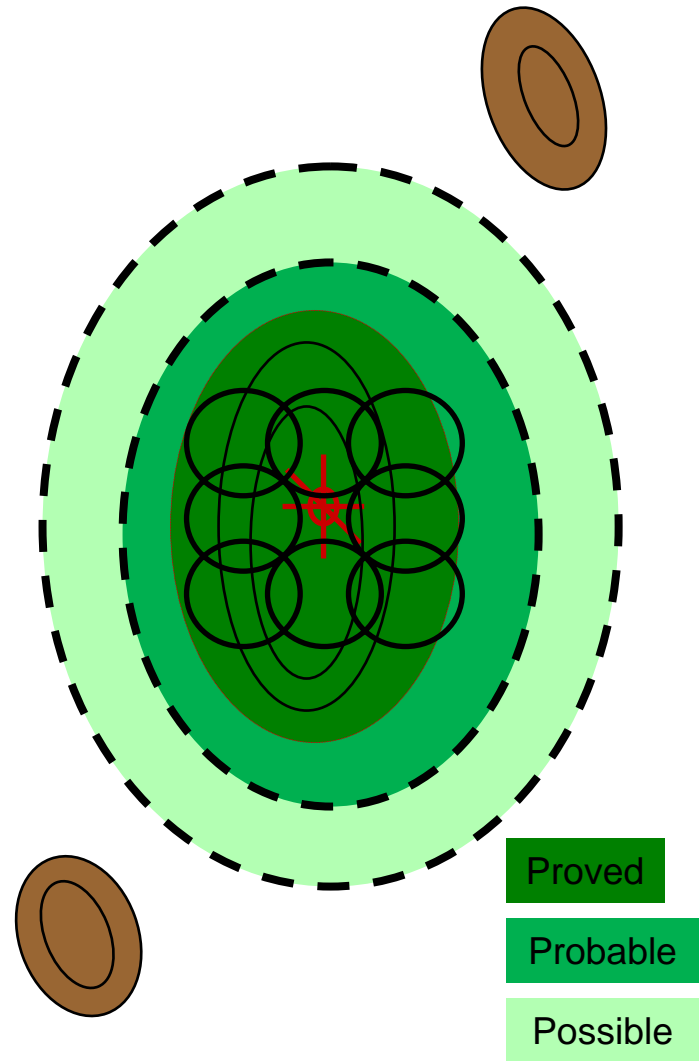
Can You have Probable Reserves without Proved Reserves?



What about nearby unpenetrated “look alike” features?

“Reserves should not be assigned to areas that are clearly separated from a known accumulation by a non-productive reservoir (i.e., absence of reservoir, structurally low reservoir, or negative test results).” (210.4-10 note to (a)(26))

“Reserves should not be assigned without well penetrations of the subject reservoir (rock volumes) in the contiguous area that yields technical information sufficient to support the attributed reserve category”. (SEC Compliance and Disclosure Interpretations: Oil and Gas Rules updated October 26, 2009 Question 117.02)



Unpenetrated features cannot be classified as Reserves

Can You have Probable Reserves without Proved Reserves?



Structural Position Requirements

SEC Definitions: 210.4-10(a)(18)(ii)

“Probable reserves may be assigned to areas that are structurally higher than the proved area if these areas are in communication with the proved reservoir.”

Definitions allows probable reserves in accumulations that are updip to proved volumes

Can You have Probable Reserves without Proved Reserves?



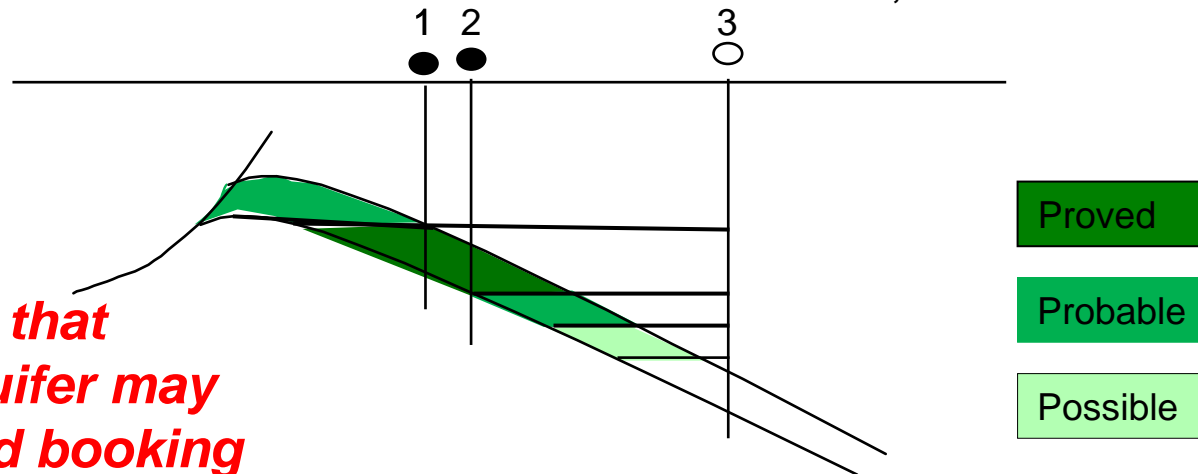
What about downdip volumes?

It may be acceptable to assign unproved reserves below the LKH if that volume of reserves meets the test for either probable or possible reserves. If there is no data below LKH, no reserves should be assigned.

(Compliance and Disclosure

Interpretations: Oil and Gas Rules,

October 26, 2009 Question 117.01)



Data from well that penetrated aquifer may allow unproved booking

Can You have Probable Reserves without Proved Reserves?



Development Assumptions

SEC Definitions: 210.4-10(a)(17)(iv)

“The proved plus probable and proved plus probable plus possible estimates must be based on reasonable alternative technical and commercial interpretations within the reservoir or subject project that are clearly documented, including comparisons to results in successful similar projects.

Definition requires probable volumes to be based on proven development technology and reasonable economic assumptions

Can You have Probable Reserves without Proved Reserves?



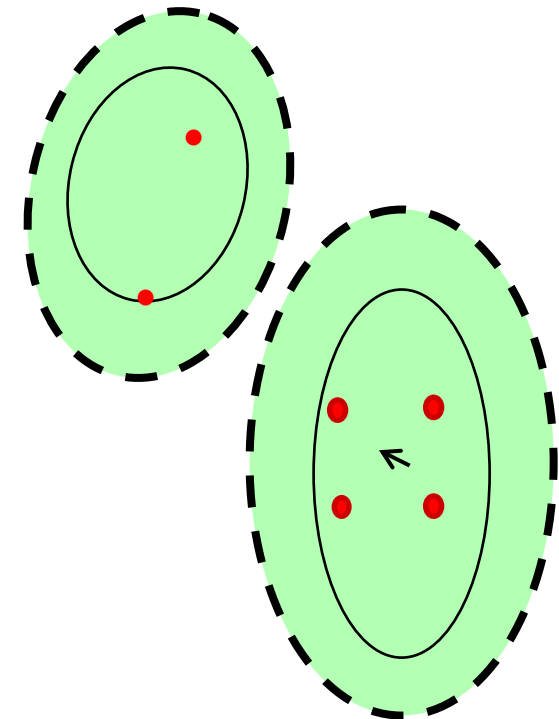
Proven development technology assumptions

Interpretations provide example of Proved technology used to support Probable volumes:

“improved recovery project, at or near primary depletion, that await production response.”

(Compliance and Disclosure Interpretations: Oil and Gas Rules, October 26, 2009 Question 117.02)

This is what the SEC refers to as an “exceptional case(s)” where Probable Reserves can be assigned without Proved Reserves.



Can You have Probable Reserves without Proved Reserves?



Reasonable economic assumptions

Interpretations provide guidance on economic assumptions for probable reserves:

Unproved reserves should be evaluated using the same price as used for the evaluation of proved reserves.

Compliance and Disclosure Interpretations: Oil and Gas Rules, October 26, 2009 (Question 122.01)

The interpretation states that it is inappropriate to assign probable reserves that might be justified by higher forecast prices.

Can You have Probable Reserves without Proved Reserves?



Recovery Factors

SEC Definitions: 210.4-10(a)(18)(iii)

“Probable reserves estimates also include potential incremental quantities associated with a greater percentage recovery of the hydrocarbons in place than assumed for proved reserves.”

Definitions allow upside to proved recovery factor to be booked as probable

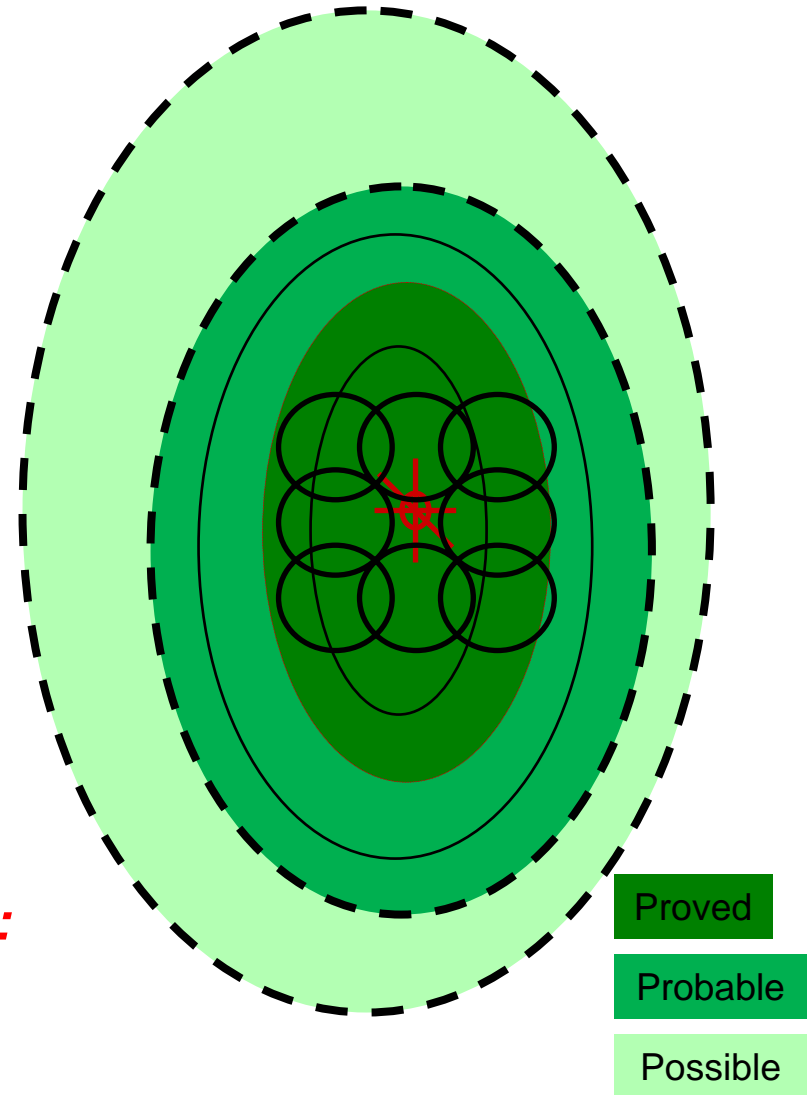
Can You have Probable Reserves without Proved Reserves?



Rules allow different recovery factors for different categories of reserves

Proved Area RF: 35%
Probable Area RF: 28%
(less certain than Proved)

Additional Probable Volume:
Proved Area Performance Upside:
10% of volume in Proved



A graphic of a globe with a grid of latitude and longitude lines. The landmasses are colored in a light blue shade, while the oceans are white. The globe is positioned on the left side of the slide, partially overlapping a larger, fainter globe in the background.

“Orphaned Volumes”

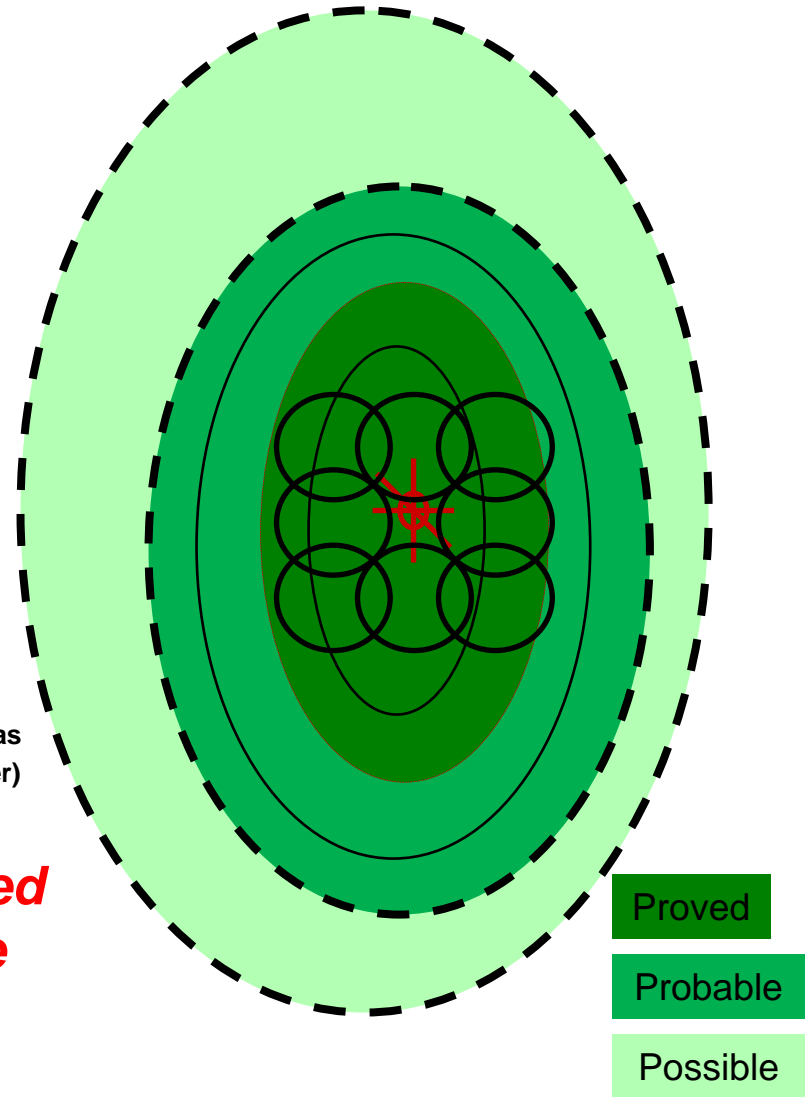
Can You have Probable Reserves without Proved Reserves?



What if Proved area is uneconomic, but Proved plus Probable are economic?

Volumes that are not economically producible are not reserves of any classification and should not be disclosed. (Compliance and Disclosure Interpretations: Oil and Gas Rules Question 117.02 answer)

Rules only allow Probable to be booked only if both Proved and Probable are economic.



Can You have Probable Reserves without Proved Reserves?



Where should PUD's expected to be developed beyond 5 years be assigned?

SEC Definitions: 210.4-10(a)(31)

- “Undeveloped oil and gas reserves are reserves *of any category* that are expected to be recovered from new wells on undrilled acreage...**
- (ii) Undrilled locations can be classified as having undeveloped reserves only if a development plan has been adopted indicating that they are scheduled to be drilled within five years, unless the specific circumstance justify a longer time.”**

Definition states that 5 year limit applies to Probable.

Can You have Probable Reserves without Proved Reserves?



What is the impact of “Orphan Volumes”?

- Possible misrepresentation of value
 - Investors/lenders frequently downgrade or ignore probable volumes
- Interpretation may not be consistent with some industry practice
 - Some 2009 SEC filers disclosed PUD’s beyond 5 years were categorized as Probable. Result is reserves that are “reasonably certain” are placed in a less certain category.

Industry lacks a meaningful way to represent PUD’s expected to be drilled more than 5 year from recognition in public disclosures.



Thank You