

# **In Pursuit of Harmonisation: The AAPG's work with the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources\***

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## **Abstract**

Effective resource management in a globalizing economy requires consistent and understandable assessment of fossil energy and minerals resources. The resources must be described and categorized in a manner that considers the technical, social and economic impacts of the projects designed to recover them. Over the past century, classification systems evolved independently from one another for the various extractive commodities. To complicate matters further, various regions developed different classification systems for the same commodity. The AAPG is actively working with the UN to develop a harmonised classification framework as an aid to understanding and comparing resource estimations based on the Petroleum Resources Management System. The goal is to improve communication amongst all the stakeholders in resource estimation from business and government, to investors and financial regulators.



# In Pursuit of Harmonisation: the AAPG's work with the United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources

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# A few questions

- Why have a classification scheme?
- Doesn't everyone know what proved reserves are?
- So why not converge all the definitions?
- Ok, so what does harmonisation mean?
- Why the UN and AAPG?
- What does this mean for the PRMS?

The real value of classification

# Why are we at such pains to define Proved Reserves?

- Protection of the investing public
- Nature being the fickle jade she is, the valuation of a mine must sometimes err
- We and the public should know what is meant, or should be meant, by proved reserves

Presenter's Notes: I want to quote from Edward Hooper of the IMM's presidential address...

I come now to the subject of standardization and definition to which the council of this institution have devoted so much thought of late years. The decisions taken in this matter must tend increasingly to the advancement of our profession in the esteem of the public, who, after all, are not only our critics, but also our employers.

Why have we been at such pains to define proved reserves, to lay down general principles in regard to the allocation and grouping of expenditure upon mines and so on? Primarily, I believe, in order that the investing public may be protected.

Of course with regard to proved reserves, in spite of our endeavours to eliminate uncertainty as far as possible, nature being the fickle jade she is, and the personal equation being the variable element it is, the valuation of a field must sometimes err. Mining has more disagreeable surprises than any other industry I know, and no formula or definition can ensure us against them. But having said this, I feel it is all to the good that we should know and that the public should know, exactly what is meant, or should be meant, by proved reserves.

## Let me quote a few cases in point...

- A famous company misrepresents its reserves with collusion of the board of directors
- Application of revised rules significantly alters management's previous estimate
- Risk mitigation not in-place results in revision of field reserves
- Management found to be trading shares prior to release of revised reserves estimates

Edward Hooper  
Institution of Mining and Metallurgy  
London, 1911

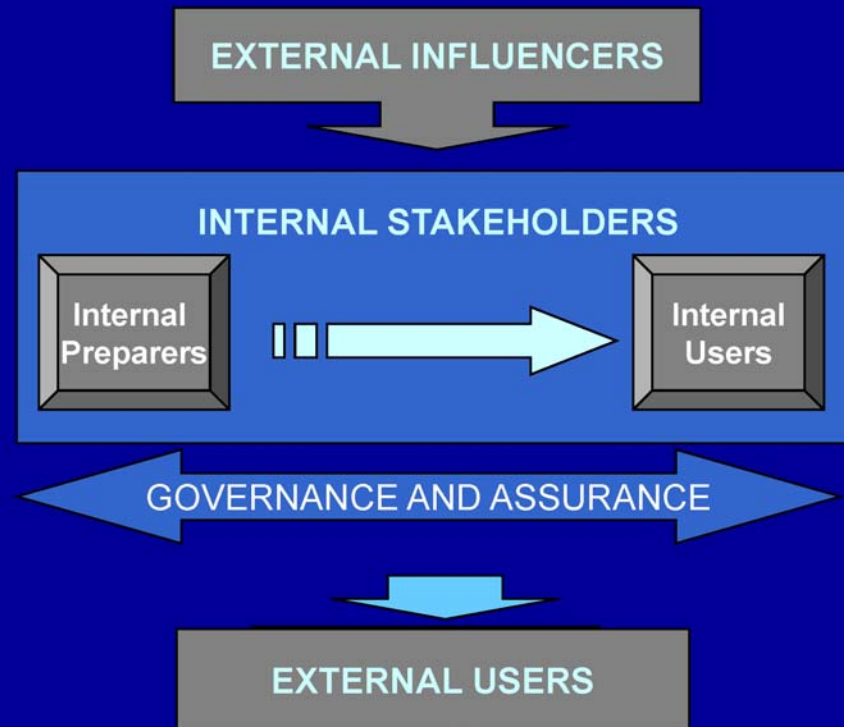
Presenter's Notes: He mentioned these not to point fingers, but to bring to light 3 points – valuations must follow consistent definitions, there must be independent valuations, there must be no delay in correcting and informing mistaken evaluations.

One important thing to note here is that while Edward Hooper's comments are so relevant, he made them in 1911.

In fact the needs of all stakeholders must be considered by a classification system.



# Stakeholder Needs



## Presenter's Notes:

1. The needs in international energy and mineral studies to formulate robust and long-sighted policies.
2. The needs of governments in managing their resources accordingly, allowing market prices to be transferred to the wellhead with as little loss as possible.
3. The industries' needs for information while deploying technology, management and finance to secure energy supplies and capture value efficiently
4. The financial community's need for information to allocate capital appropriately,

Each requirement is different and results a different classification system. And with every classification system comes a different set of definitions...

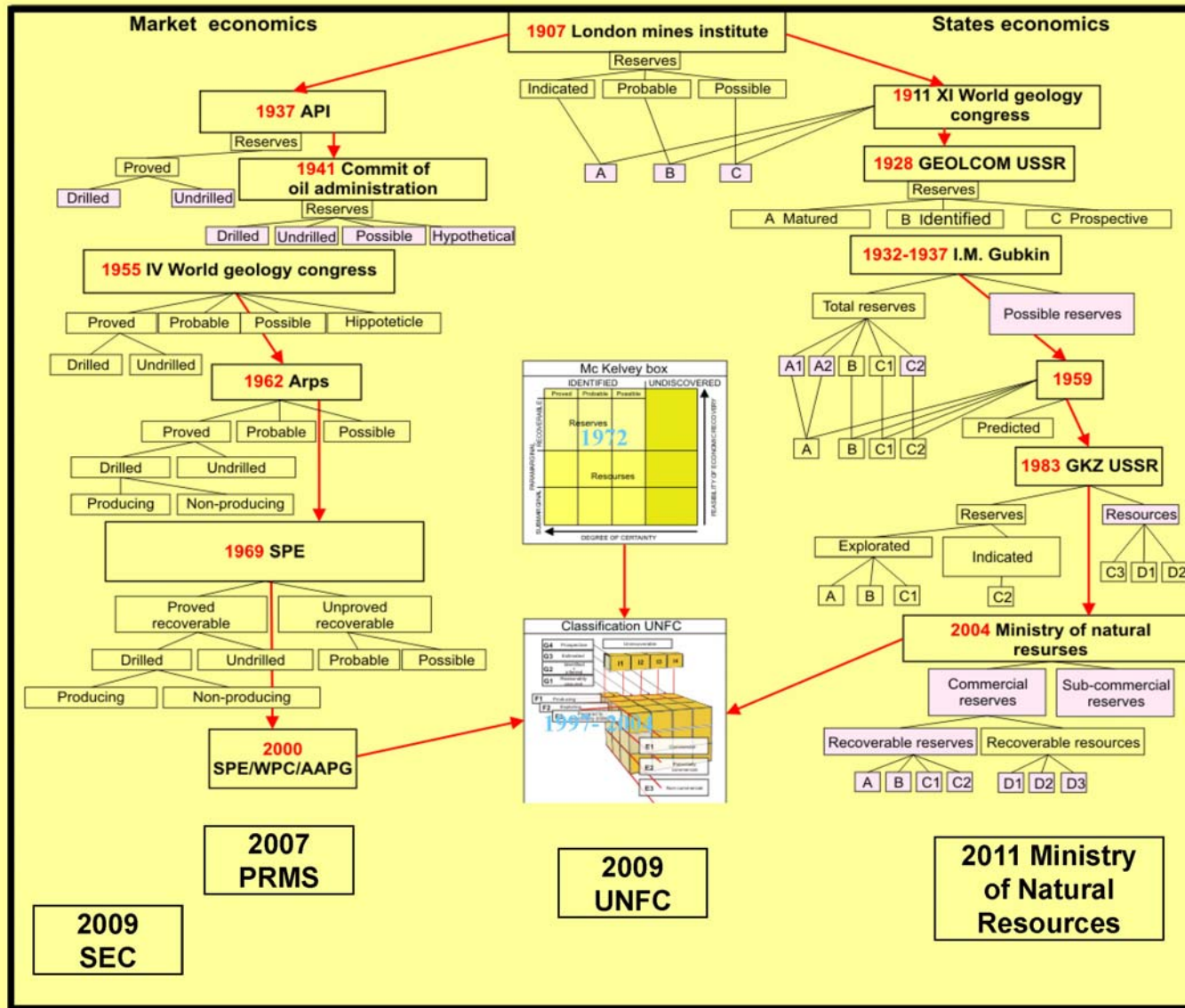
# Isn't a proved reserve proved?

- AAPG Petroleum Resources Management System
- US Security and Exchange Commission
- UK Statement of Recommended Practices
- Canadian Security Administrators
- Russian Ministry of Natural Resources
- China Petroleum Reserves Office
- Norwegian Petroleum Directorate
- United States Geological Survey

Presenter's Notes: When the SPE was preparing for the development of the PRMS, they looked at 7 different systems and saw that each led to a different estimate of proved reserves even though the classifications may have seemed very similar.

So proved reserves are only proved reserves for the classification scheme used for the estimate

Interestingly, most of the classification schemes have a common ancestor – in fact a phylogenetic chart of the development can be produced....



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Presenter's Notes: All major systems have a common root with some new genetic information with the mckelvey box.

Note the origin of linguistic issues in 1911

As the systems have a common root – shouldn't convergence or re-convergence be straight forward?

Need to be careful of the impacts of convergence to a single system.



# Dangers of Convergence

- What do we want to converge?
  - Definitions?
  - Specifications?
  - Guidelines?
- What are the ramifications of convergence?
  - Various stakeholders
  - Commerciality vs. economic producibility
  - Reliable technology
  - Uncertainty is the source of value

## Presenter's Notes:

Stakeholders preferred system will lose its distinctiveness

Usgs – need for flexibility in definition

Business developing its best case

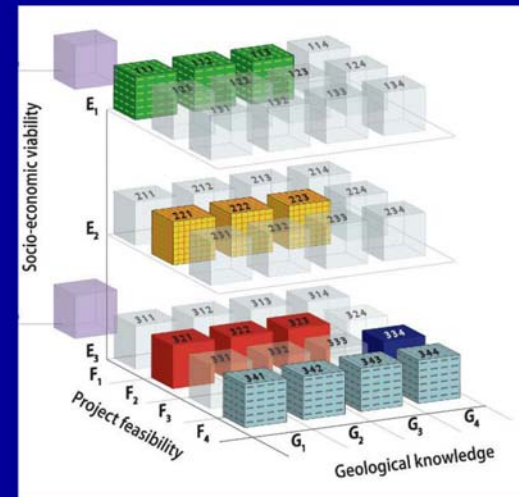
If not convergence, though, what?

Harmonisation is the key – a simple mechanism to understand the differences and translate system to system

The UNFC offers this....

# UNFC Harmonisation

- Generic, principles based system
- Integrated mapping across all systems
- Removes linguistic complexities
- Applicable to solid minerals and hydrocarbons
- Based on three criteria:
  - Economic and social viability
  - Feasibility of project
  - Geological knowledge



Presenter's Notes: The three category axis are common to all classification schemes and breaking them out to their individual components allows the flexibility to map any system into the UNFC

Explain how axis work

But why UN?

# Why the United Nations?

- Here to serve
- UN Commissions can service global projects
  - UNFC is global (ECOSOC Decision)
- Neutral platform
- Activities are conducted through an open and transparent process, with no formal limitations on participation
- Multi-stakeholder dialogue
  - SPE & CRIRSCO have formal agreements
  - AAPG, SPEE, IAEA and many others participate in the Expert Group

Presenter's Notes: Following founding of UN in 1945, the UN began looking at energy sustainability

1947 UN issues first coal classification

1992 Started work on UNFC – published in 1997

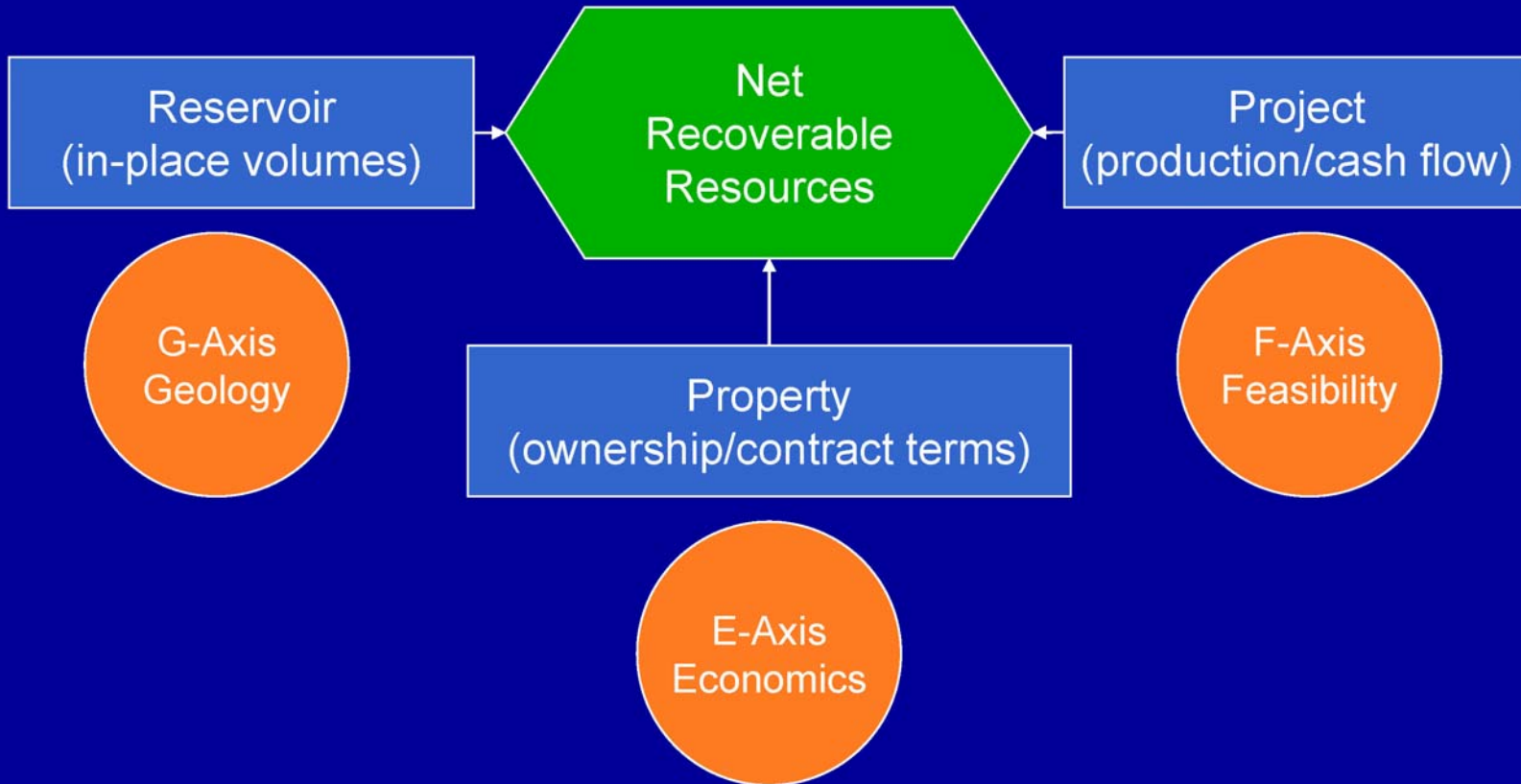
Extended to petroleum and uranium started in 2001 and published in 2004

CRIRSCO - Committee for Mineral Reserves International Reporting Standards

AAPG is actively involved in UN and needs to be as our stakeholders are different from SPE

But that said – PRMS is the foundation of the petroleum classification

# Project Based Resource Evaluation



Presenter's Notes: Evidence of this is in the project based approach.  
PRMS approach links well with the UNFC approach  
In some cases the axis are confused in the PRMS

# Comparison of PRMS & UNFC

PRMS			UNFC 2009		
Total Petroleum Initially in Place	Discovered	Commercial	Production	Known Deposit	Production
			Reserves		Commercial Projects
		Sub-Commercial	Contingent Resources		Potentially Commercial Projects
	Undiscovered	Unrecoverable	Potential Deposit		Non-Commercial Projects
		Prospective Resources			Additional Quantities in Place
		Unrecoverable			Exploration Projects
		Additional Quantities in Place			

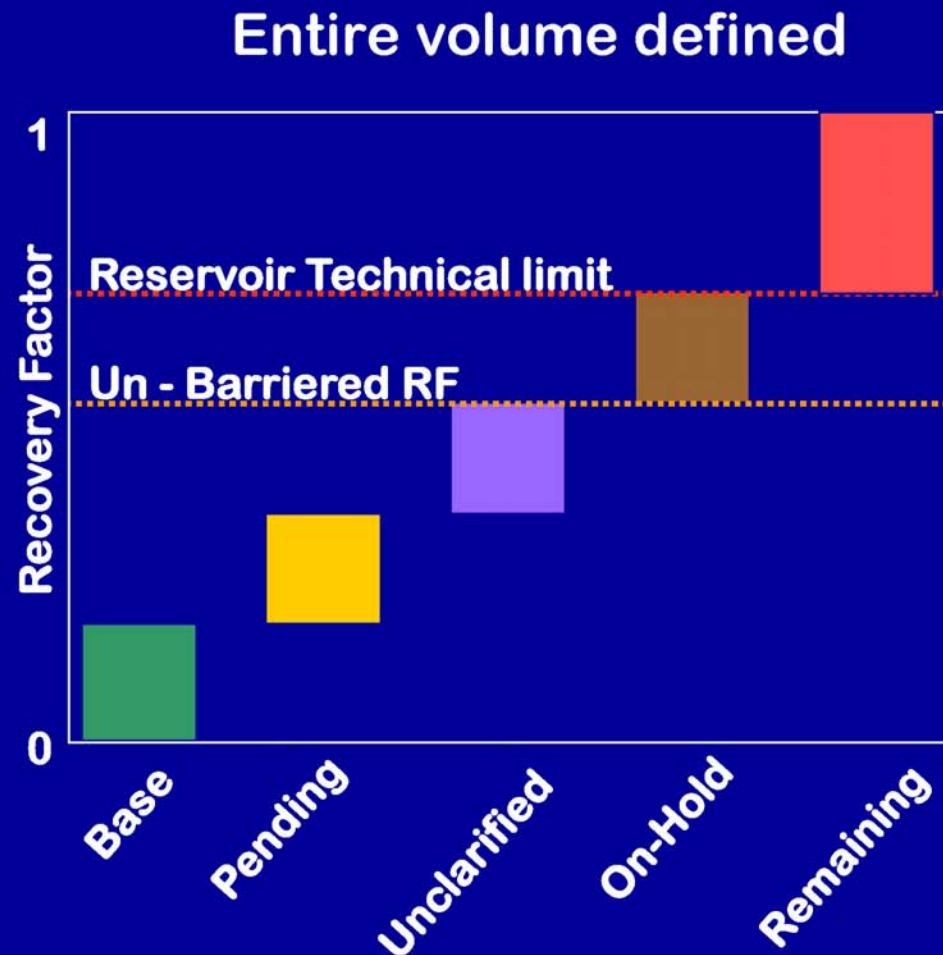
Presenter's Notes: In fact here is the high level mapping of the PRMS to the UNFC – clear simplicity and direct comparison. There is no risk to the PRMS – the UNFC in fact will be a way to encourage its use across the globe as new mappings to the UNFC will need to conform with the bridge.

Story about categorisation and progression – the three axis separated give even more value to this – some of this capability suspect to see migrate into the prms.



# Volume Progression

- Base
  - Currently in or defined for development
- Pending
  - Doable now (or almost)
- Unclarified
  - Potentially economic
  - Incremental technology
  - ~5 yr timescales
- On-Hold opportunities
  - Technical or commercial barrier
  - Not currently doable or uneconomic
  - Requires step change
- Remaining
  - No projects defined



Presenter's Notes: The real power of classification is helping to progress volumes – otherwise it is just stamp collecting!

# AAPG PRMS & UNFC 2009

- Sustainable development
- Internationally applicable & accepted
- Consistency in application
- Harmonized across commodities
- Competitive advantage

**The UNFC and PRMS with their focus on the criteria of economic viability, technical feasibility and geologic endowment are well placed to meet all of these needs.**