

SPE/WPC/AAPG Petroleum Resource Classification

**UNSD/ESCWA/OPEC
Seminar on the UNFC**

**Presented by Dr. Jim Ross
Beirut, June 2004**

Ross Petroleum
June 2004

SPE/WPC/AAPG Petroleum Resource Classification System

- Society of Petroleum Engineers (SPE)
 - Oil and Gas Reserves Committee
- World Petroleum Congresses (WPC)
- American Association of Petroleum Geologists (AAPG)

Outline

- Brief history of petroleum resource classification systems
- SPE/WPC/AAPG petroleum resource classification system
- External petroleum reserve reporting by public companies
- Incorporation into UNFC
- Conclusions

Petroleum Resource Classification Systems

- Former Soviet Union system – 1920s
- SPE definition of proved reserves – 1965
- McKelvey Box – 1972
- SPE definitions for probable and possible reserves – 1987
- WPC resource system and definitions – 1987
- SPE/WPC reserve definitions – 1997
- SPE/WPC/AAPG resource definitions and classification system – 2000

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McKelvey Box Resource Classification System

	DISCOVERED	UNDISCOVERED
COMMERCIAL	RESERVES	
SUB-COMMERCIAL	RESOURCES	

McKelvey Box – incorrect use

	DISCOVERED	UNDISCOVERED
COMMERCIAL	Proved Reserves	PROSPECTIVE RESOURCES
SUB-COMMERCIAL	Probable Reserves	
	Possible Reserves	

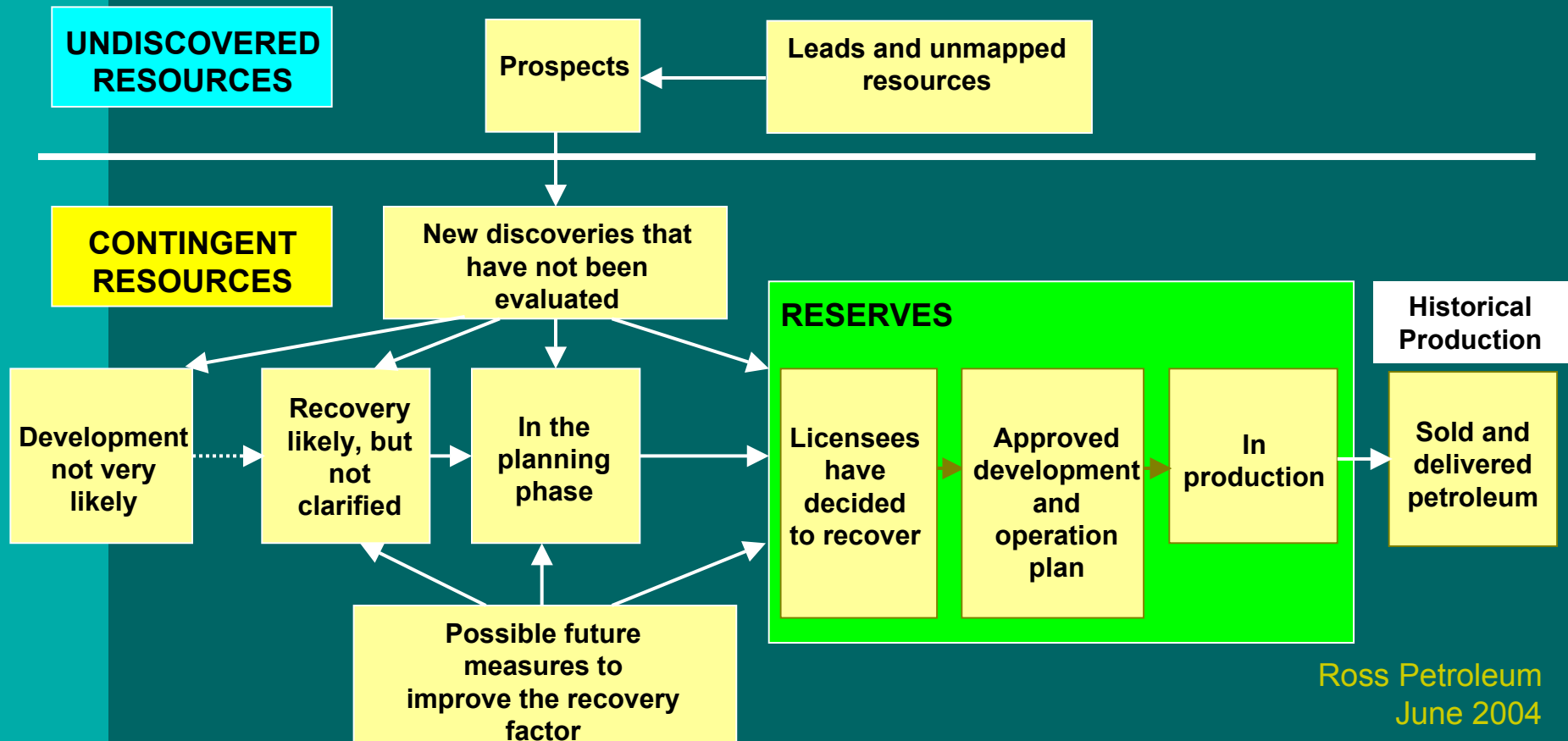
McKelvey Box SPE/WPC/AAPG Terminology

	DISCOVERED	UNDISCOVERED
COMMERCIAL	RESERVES	PROSPECTIVE RESOURCES
SUB-COMMERCIAL	CONTINGENT RESOURCES	


A Consistent Approach to the Assessment of all Assets

- PROJECT MATURITY
 - Will the *project* go ahead?
- UNCERTAINTY
 - What is the range of the estimated recoverable volumes if the *project* does go ahead?

Norwegian Petroleum Directorate Resource Classification System



SPE/WPC/AAPG Resource Classification System

DISCOVERED COMMERCIAL	Production		
	RESERVES		
	Proved	Proved + Probable	Proved + Probable + Possible
DISCOVERED SUB-COMMERCIAL	CONTINGENT RESOURCES		
	Low	Best	High
	Unrecoverable		
UNDISCOVERED	PROSPECTIVE RESOURCES		
	Low	Best	High
	Unrecoverable		
			

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SPE/WPC/AAPG Resource Classification System

DISCOVERED COMMERCIAL	Production			PROJECT STATUS			Lower Risk ↑ Project Maturity ↓ Higher Risk
	RESERVES			On Production			
	1P	2P	3P	Under Development			
DISCOVERED SUB-COMMERCIAL	CONTINGENT RESOURCES			Planned for Development			
	Low	Best	High	Development Pending			
	Unrecoverable			Development on Hold			
UNDISCOVERED	PROSPECTIVE RESOURCES			Development not Viable			
	Low	Best	High	Prospect			
	Unrecoverable			Lead			
			Play				
			← Range of Uncertainty →				

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External petroleum reserve reporting by public companies

- SPE/WPC/AAPG system is now widely accepted by industry, but ...
 - Most public oil and gas companies are listed on New York stock exchange
 - Must report Proved reserves in accordance with Securities and Exchange Commission (SEC) regulations

External petroleum reserve reporting by public companies

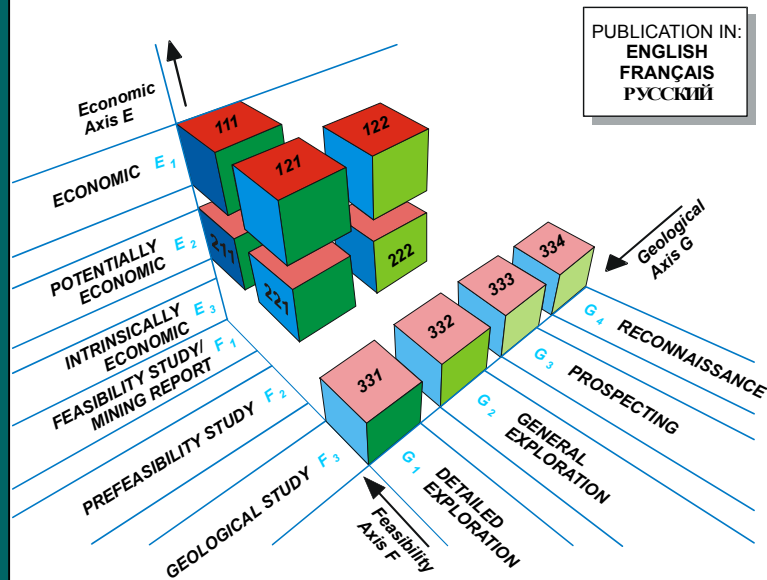
- SEC definition of proved reserves
 - Designed to be conservative and also to provide a consistent basis for comparison
 - Proved reserves only
 - Reasonable certainty of production
 - Existing economic and operating conditions
 - Limitations for proved undeveloped reserves
 - Limitations for secondary recovery methods

Outline

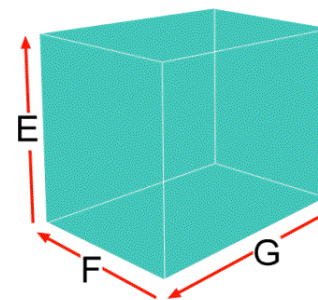
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United Nations Framework Classification (UNFC)

UNITED NATIONS INTERNATIONAL FRAMEWORK CLASSIFICATION FOR RESERVES/RESOURCES - Solid Fuels and Mineral Commodities -



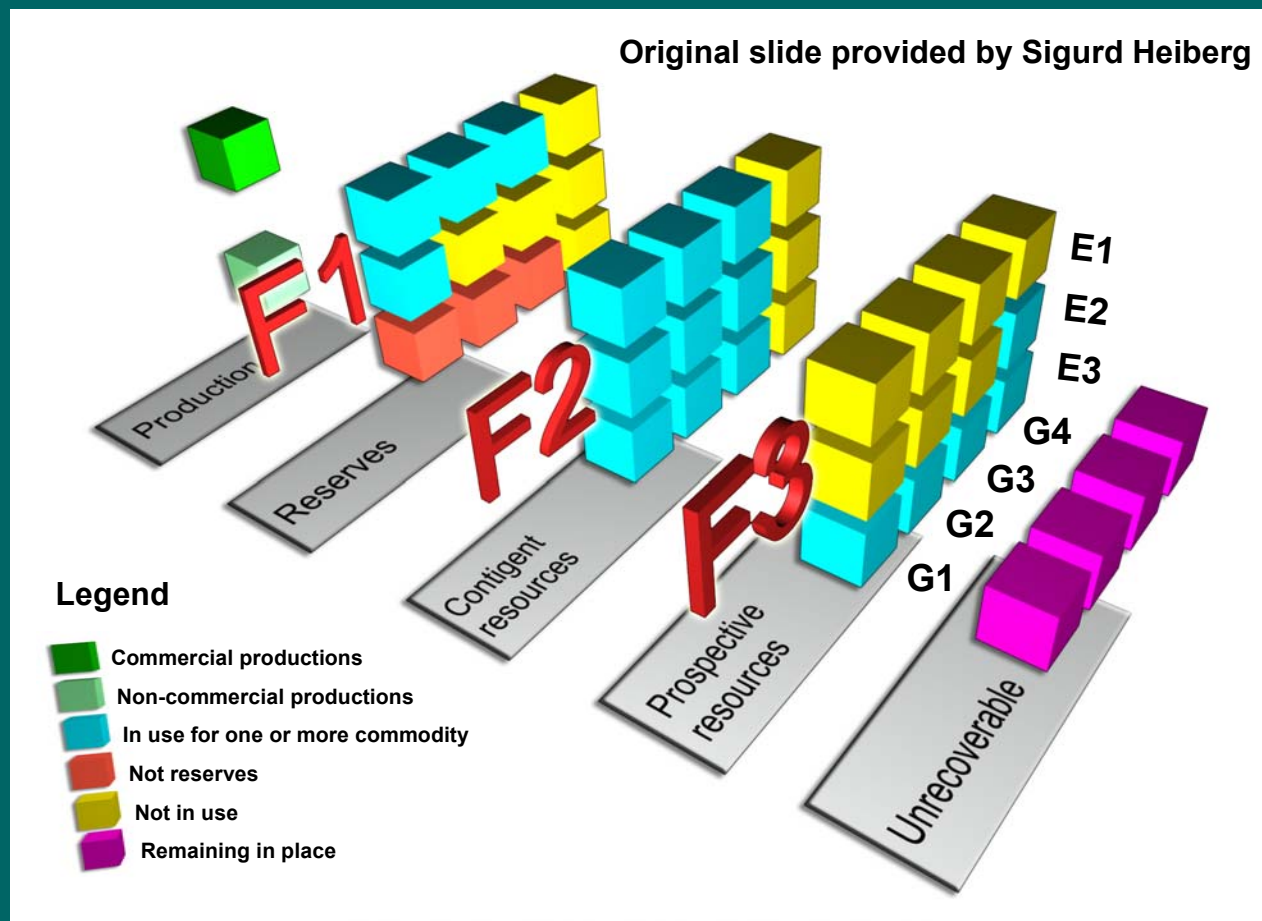
UNITED NATIONS



E: Economic axis
F: Feasibility axis
G: Geological axis

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UNFC – expanded along F-axis



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Conclusions

- SPE/WPC/AAPG have developed a system that is being adopted by many oil and gas companies and organisations around the world
- The UNFC offers an excellent opportunity to provide a direct and clear link with other systems
- Harmonization will provide the basis for internationally-consistent reporting of all energy and mineral resources

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