

RESULTS of MINERAL MAPPING & DISCUSSION

Key Discussions Part I: Proposed Changes

Comparison between
"UNFC (2004)- Applied to Solid Minerals"
and
Mapping Module of "CRIRSCO Template"

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Fourth Session of the Ad Hoc Group of Experts
on Harmonization of Fossil Energy & Mineral Resources Terminology

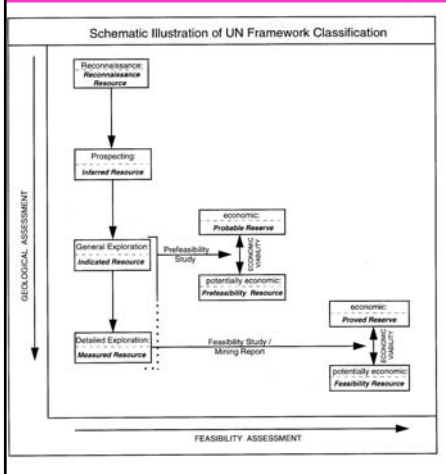
Geneva, 17-19 October 2007

RESULTS OF MINERAL MAPPING & DISCUSSION

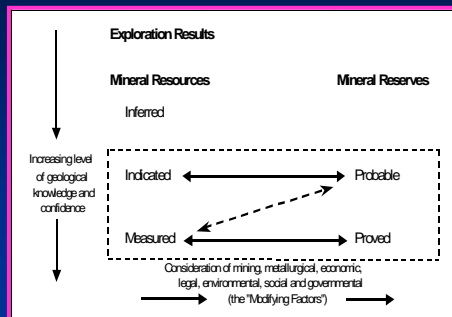
- Historical Perspective on the UNFC Applied to Solid Minerals
- Mapping of CRIRSCO Template into UNFC
- Key Discussions Part I: Proposed changes
 - Comparison between "UNFC (2004)- Applied to Solid Minerals" and Mapping Module of "CRIRSCO Template"
- Key Discussions Part II:
 - Joint Discussions on Mapping of Solid Minerals / Petroleum

Comparison Between UNFC(2004) for Solid Minerals / CRIRSCO Template

UNFC for Solid Mineral



CRIRSCO Template

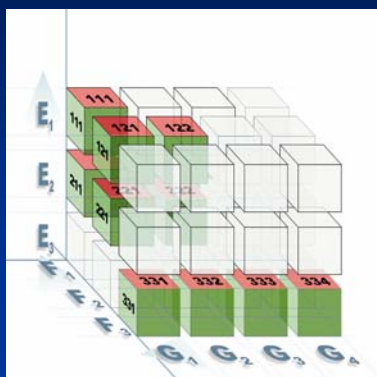


Degree of exploration knowledge (G-Axis)

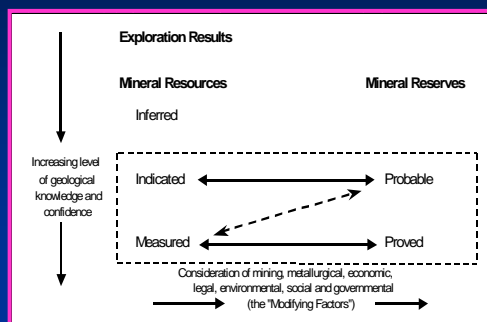
UNFC (2004)

- Reconnaissance
- Prospecting
- General exploration
- Detailed exploration

Comparison Between UNFC(2004) for Solid Minerals / CRIRSCO Template



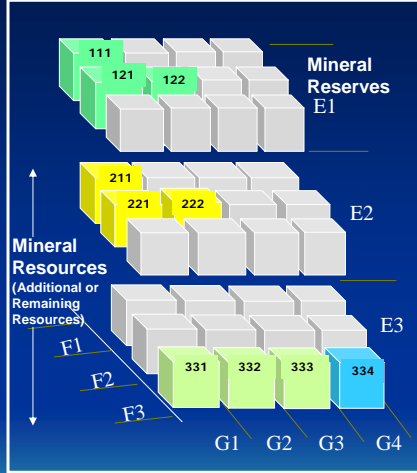
3 Dimensional



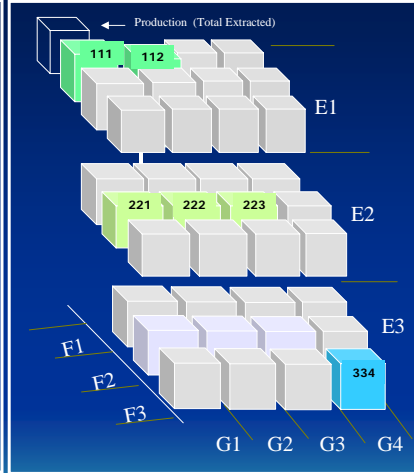
2 Dimensional

Comparison Between UNFC(2004) for Solid Minerals / Mapping Module of CRIRSCO Template

UNFC (2004) for Solid Minerals

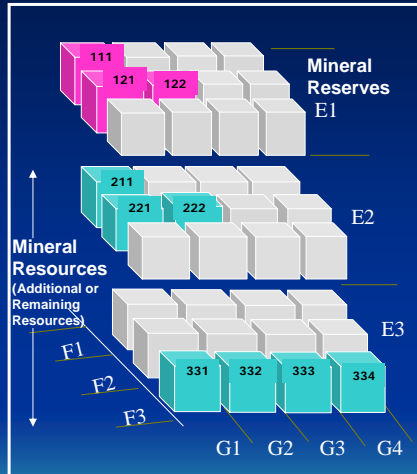


CRIRSCO Template with Proposed UNFC Codes



UNFC (2004) for Solid Mineral

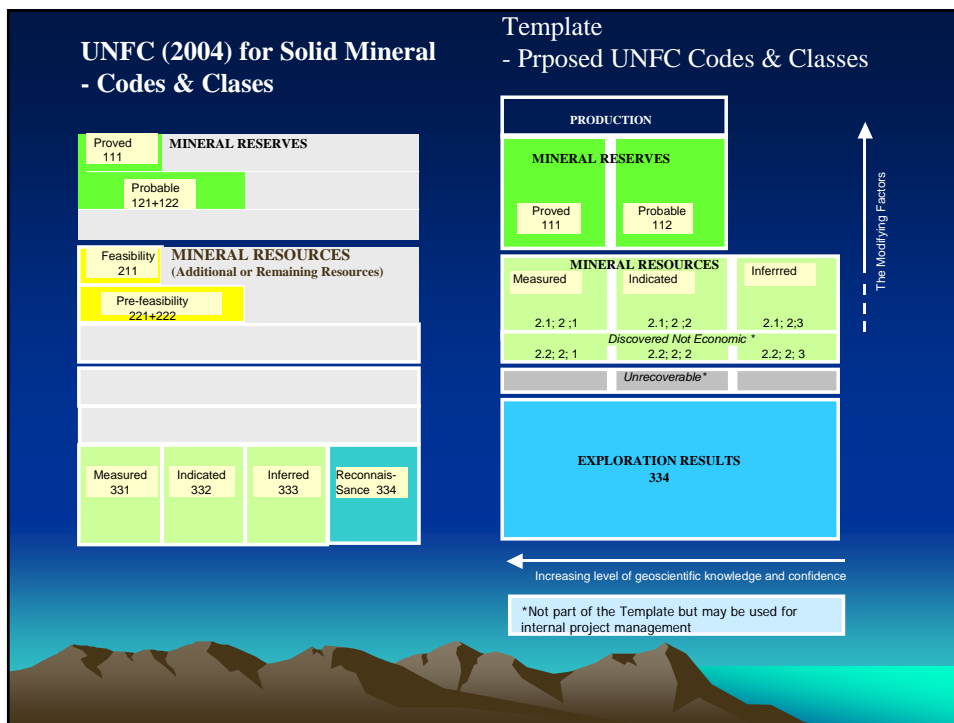
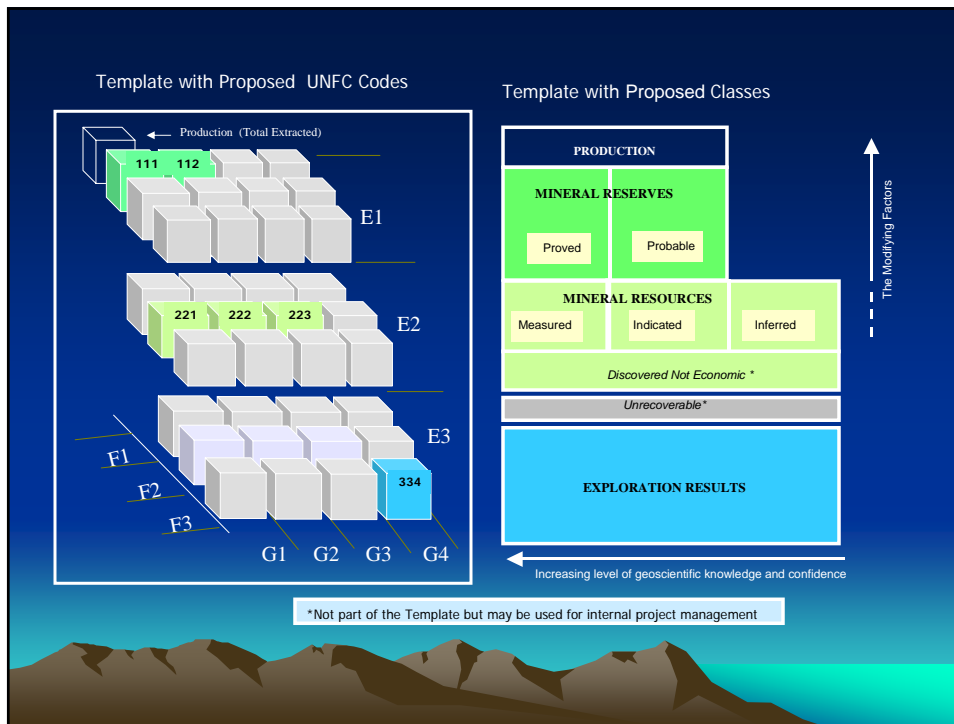
Codes



Classes

Proved	MINERAL RESERVES		
Probable			
Feasibility	MINERAL RESOURCES (Additional or Remaining Resources)		
Pre-feasibility			
Measured	Indicated	Inferred	Reconnaissance





Comparison Between UNFC(2004) for Solid Minerals / Mapping Module of CRIRSCO Template

	UNFC (2004) for Solid Mineral		Mapping Module	
	Fundamental Characteristics	Classes	Fundamental Characteristics	Classes
Total Mineral Resources	Discovered Mineable Economic	Mineral Reserves	Discovered Mineable	Mineral Reserves
	Discovered Potentially Economic	Mineral Resources (Additional or Remaining Resources)	Discovered Commercially not recoverable	Mineral Resources
	Discovered Mineability & Economy Undetermined		Undiscovered	Exploration Results

Comparison Between UNFC(2004) for Solid Minerals / Mapping Module of CRIRSCO Template

 **F3 CATEGORY IS PROPOSED TO MOVE TO F2 CATEGORY**

UNFC(2004) for Solid Mineral

Proposed F Categories at Mapping Module

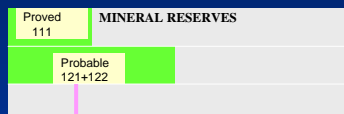
F1: Feasibility study
F2: Pre-feasibility study
F3: Geological study

F1: feasibility study or pre-feasibility study
F2: geological study,
F3: exploration results

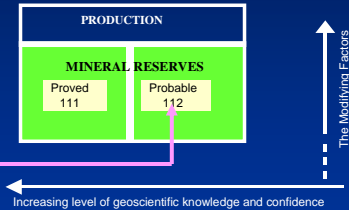
Category labels are proposed to remove to avoid confusion and also new generic principle short definitions have been considered to be compatible.

Comparison Between UNFC(2004) for Solid Minerals / Mapping Module of CRIRSCO Template- Mineral Reserve Classes

UNFC (2004) for Solid Mineral -Classes & Codes



Template -Proposed UNFC Classes & Codes

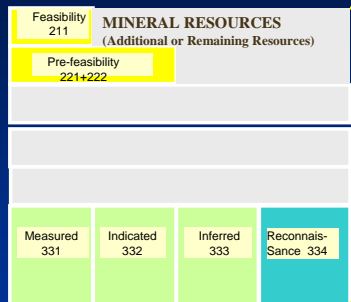


* At the mapping module;
 Change in F category → change in codification of Probable Mineral Reserve as [(121+122) → (112)]

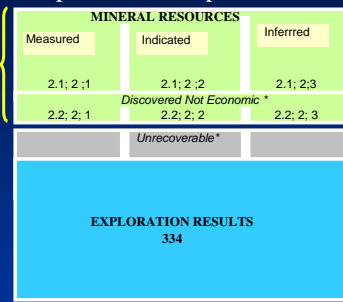
*An outside box for production has been added to provide material balance which system allows this

- Comparison of the Mineral Resources Classes

UNFC (2004) for Solid Mineral



Template with Proposed UNFC Codes



*Not part of the Template but may be used for internal project management



Since F3 CATEGORY IS PROPOSED TO MOVE TO F2 CATEGORY

*Same codifications represent different classes at the UNFC (2004) for solid mineral and Mapping System as:

221 + 222: Prefeasibility mineral resources at UNFC(2004).
 221 and 222 Measured and Indicated Mineral Resources respectively at Mapping Module

*Same classes have different codification as Measured, Indicated and inferred mineral resources

*Sub-categories have been used while classifying classes which UNFC allows.

KEY DISCUSSIONS-1

Mapping of all mineral systems to UNFC

- UNFC is an umbrella system
 - The UNFC is designed to allow the incorporation of currently existing terms and definitions into this framework and thus to make them comparable and compatible.
- Current document provides **only** mapping of CRIRSCO Template to UNFC for solid minerals.
 - *CRIRSCO Template has been developed externally and has own guidelines. No changes has been made to Classification or Guidelines through this mapping project.*



Next step is mapping of the other mineral systems.

Impact on Prior Applications of UNFC

- Applied in > 50 countries,
- > 20 case studies have been published by UNECE or presented at the meetings,
- Some countries accepted the UNFC as a national system

The most suitable solutions should be find for not to harm existing applications.

CONCLUSION

- UNFC is a living system
- Studies on the improvements of the system for worldwide application is being continued.
- Mapping exercise is an important tool to do this.
- Studies over mapping exercise is also being continued.
- UNFC is a flexible system which allows to add new classes. However, same codification should represent same classes for **consistency**.

KEY DISCUSSIONS PART II:

JOINT DISCUSSION SESSION

- Mapping of Solid Minerals (CRIRSCO Template) / Petroleum (PRMS)

JOINT DISCUSSION TOPICS

- Mapping of Petroleum/ Solid Minerals

- Economic/Commercial
- Project Technical Feasibility and/or Maturity Status
- Sub-codes
- Geologic assurance
- G-axis applied to In-situ quantities
- Coding of undiscovered resources
- Unrecoverable/Not viable & coding of unrecoverable
- Sales/non-sales production
- Expressing uncertainty
- Developed/undeveloped
- Any other method for harmonize mineral/ petroleum

