Regulatory Trends in Mineral Property Valuation — an International Perspective



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Who is Qualified?

Who is Competent?

Is Anybody Qualified AND Competent?

Note on Terminology

- Appraisal and Valuation tend to be used interchangeably
 - -Appraisal is the preferred formal term in the U.S.
 - Valuation is the preferred term internationally
- Appraiser = Valuator = Valuer
- Australasia = Australia, New Zealand,
 Papua New Guinea, some South Pacific
 Islands































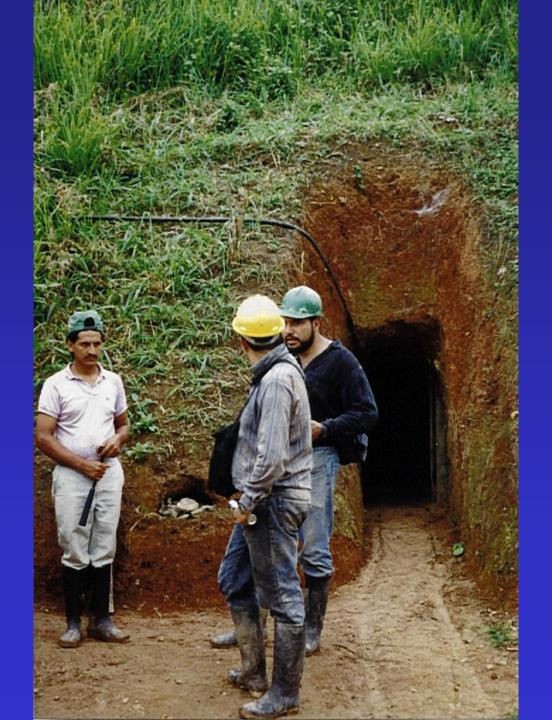












Mineral property appraisals are used for:

- Securities reporting
- Acquisitions and mergers
- Accounting
- Financing mine development
- Taxation
- Establishment of trusts
- Condemnations
- Owner's internal planning

International Regulatory Overview

- United States
 - SEC: securities reporting
 - USPAP: national appraisal standard
 - State Regulation and Licensing
 - Appraisers, geologists, engineers
 - UASFLA: acquisitions, condemnations, takings, etc.
- Australia: JORC Code & VALMIN Code
- Canada: National Instrument 43-101, second draft

International Standards and Regulations Impact the U.S. Minerals Industry

- Cross-border Operations
- International Competition
- Difficulty in raising funds internationally
- Many mining companies listed on international stock exchanges

Standards for Reporting of Exploration Information, Mineral Resources and Mineral Reserves

- 1. Australasia's JORC Code 1972
- 2. Council of Mining and Metallurgical Institutions 1997
- 3. United Nations Framework Classification– 1998
- 4. About 40 countries working on adopting

Basic Definitions

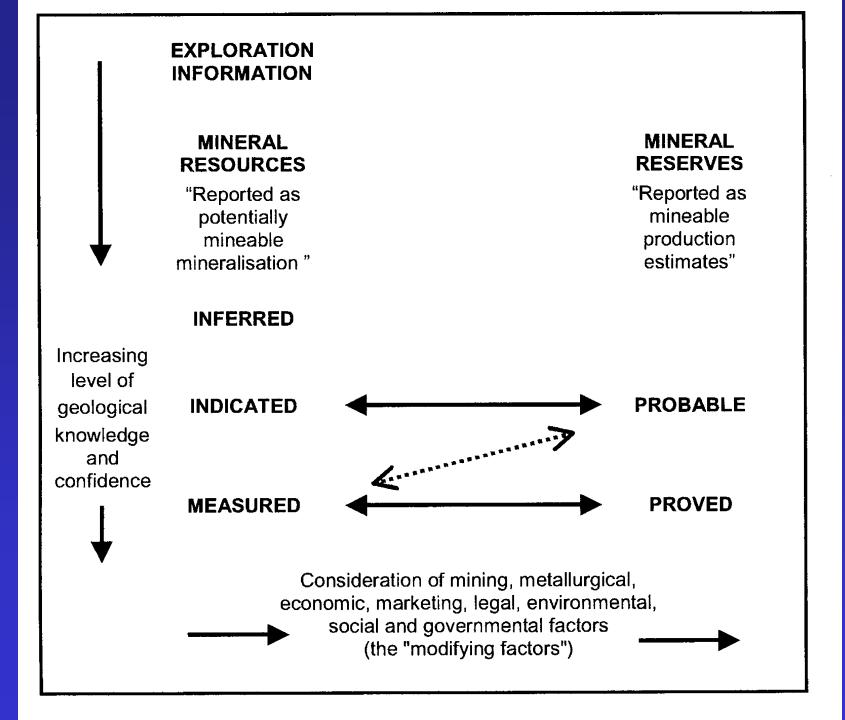
• "A 'Mineral Resource' is a concentration or occurrence of material of intrinsic economic interest in or on the Earth's crust (a Mineral Resources deposit) in such form and quantity that there are reasonable prospects for eventual economic extraction" (SME 1999)

Basic Definitions

• "A 'Mineral Reserve' is the economically mineable part of a Measured or Indicated Mineral Resource." (SME 1999)

Basic Definitions

• "A 'Competent Person' is a person who is a member of a professional society for earth scientists or mineral engineers, or has other appropriate qualifications. The Competent Person must have a minimum of five years experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which that person is undertaking." (SME 1999)



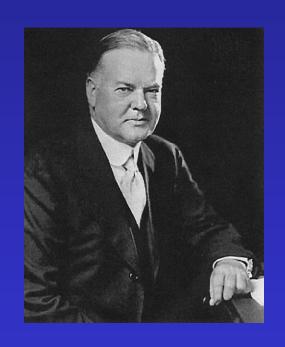
U.S. Securities & Exchange Commission (SEC)

Regulations fundamentally based on Herbert Hoover's 1909 book.

The SEC has regular contact with "the charlatans of mining" who misuse terms to "cover the flights of their imaginations."

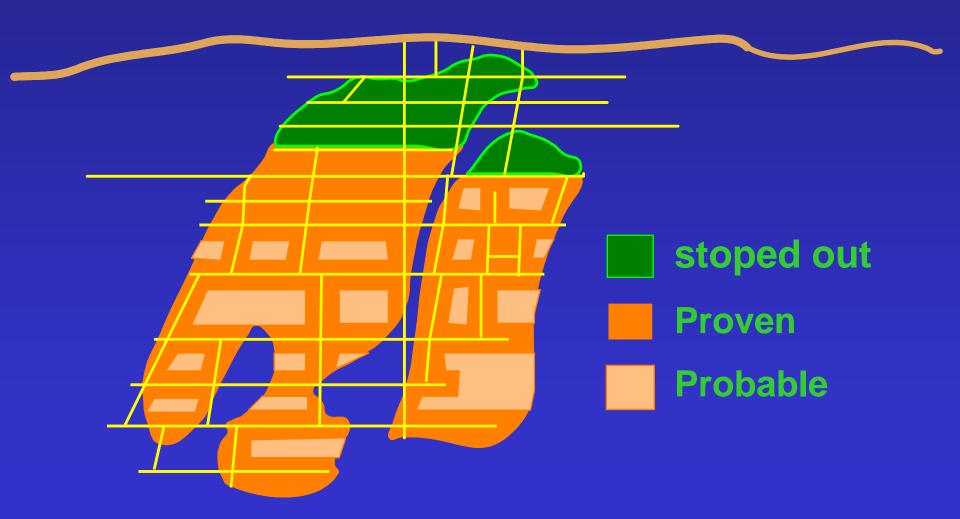
Herbert C. Hoover 31st U.S. President, 1929-33

- Mining Engineering Degree,
 Stanford University, 1895
- In 1909 published *Principles of Mining*, 199 pages
- Translated Agricola's 1556 mining book *De re Metallica*



Hoover's Definition of Ore

Principles of Mining 1909



SEC Mining Regulations

- Industry Guide 7
 - First in Form S-18, issued March 1981
 - -Transferred in 1992
 - Defines Proven and Probable Reserves
 - Restricts disclosure of quantitative estimates to reserves only
 - Restricts value estimates to reserves only

SEC Industry Guide 7 Implications

- Bars reporting of reserves and resources using SME and CMMI definitions
- Resource estimate and exploration information for the subject property is not provided to appraiser
- For sales analysis, can only get reserve estimate and released exploration drilling information

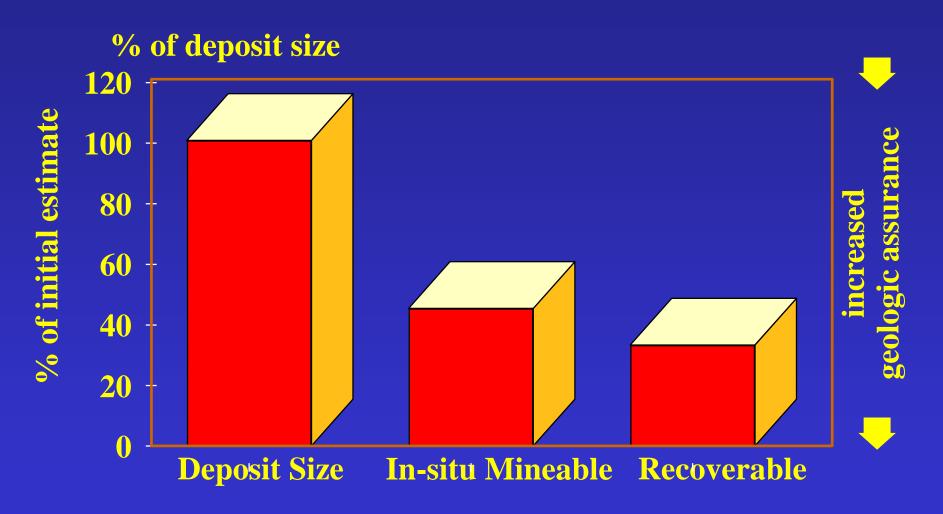
SEC Industry Guide 7 Result

- Incomplete data on the subject property
- Inadequate data on sales for the Sales Comparison Approach
- Incomplete data for the Income Approach
- Can't abide by AusIMM's VALMIN Code on US mineral property appraisals

Why these silly rules?

- SEC's focus is investor protection
- The U.S. Public does not understand the difference between *Mineral Resources* and *Mineral Reserves*

Estimates vs. Recovery



The Big Lie

tonnes x grade x price = value

material omissions:

- cost of extraction and recovery
- recoverable percentage available for sale

Appraisal Standards Board



THE APPRAISAL FOUNDATION
Authorized by Congress as the Source of Appraisal
Standards and Appraiser Qualifications

Uniform Standards of Professional Appraisal Practice

2 0 0 0 E D I T I O N

Effective: January 1, 2000 – December 31, 2000

The Savings & Loan Crisis and USPAP Uniform Standards of Professional Appraisal Practice

- Sales Comparison Approach
- Cost Approach
- Income Approach
- Highest and Best Use
- Reconcile the three approaches

USPAP requires full disclosure of the character of the property, valuation methods used, and other relevant information.

U.S. National Appraisal Standards and State Licensing History

- In late 1980s, US\$100+ billion in Federal bailout funds required for financial institutions
- Real estate and business appraisers partially blamed due to over valued appraisals
- US Congress authorized The Appraisal Foundation as "The Source of Appraiser Standards and Appraiser Qualifications"

US National Appraisal Standards and State Licensing History

- In 1986-87, first edition of the Uniform Standards of Professional Appraisal Practice (USPAP)
- USPAP revised annually
- Members of the major national appraisal institutes must abide by it

US National Appraisal Standards and State Licensing History

- In 1989, Financial Institutions Reform, Recovery and Enforcement Act (FIRREA)
- Required the states to set standards for appraisals and appraiser licensing.
- By 1995 all 50 states had complied
- All states adopted USPAP

Minerals Appraisals under Federal and State Law

- Minerals are part of the real estate
- Mineral rights are real property
- FIRREA provides some exemption of severable mineral rights (not minerals) from its jurisdiction
- A few states exempt mineral rights from appraiser board jurisdiction, but not if the land surface is included
- Some states mandate state licensing for all real estate appraisals

USPAP

- Minimum appraisal standard for
 - Federally chartered institutions (banks)
 - Federal agencies
 - Most State agencies
- All State licensed appraisers must abide by it
- All members of the major appraisal institutes must abide by it

USPAP

- Contains appraisal standards for conduct and report writing for:
 - Real property
 - Minerals estate Standards 1 & 2
 - Business and intangible assets
 - The mining operation Standards 9 & 10
 - Personal property
 - The mining equipment Standards 7 & 8
 - Real property consulting
 - Discussion of mineral property value Standards 4 & 5

USPAP

- Liked by appraisal report users
- Most minerals appraisers ignore it
- Real estate appraisers making great inroads into minerals appraisal

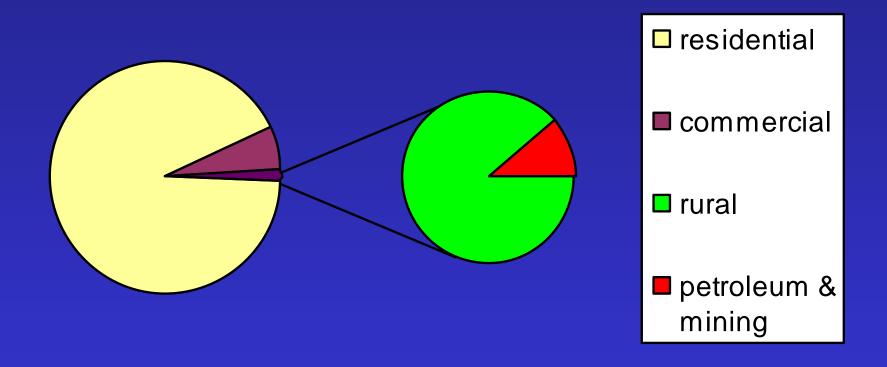
State Appraiser Board Certification

- Certified General Appraiser
 - required for non-residential real property appraisal, such as mines and quarries
 - 3,000 hours of documented USPAP appraisal experience, of which 1,500 non-residential
 - 180 hours of approved appraisal courses
 - Pass the certified general appraiser exam
 - Continuing education

State Appraiser Board Certification

- A few (<10) minerals appraisers were certified when State boards established
- None since to my knowledge
- Very difficult for a minerals appraiser to prove 3,000 hours of legal USPAP appraisal experience

Relative Numbers of Real Property Appraisers by Specialization



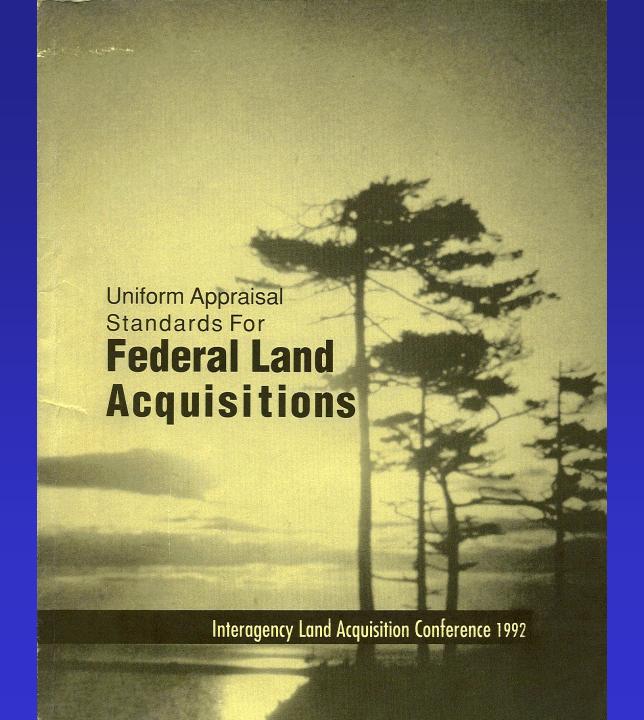
Based on appraisal society membership data

State Registration of Geologists and Engineers

- All states have engineer registration
 - Registered PE's exempted from geologist registration for most geological work
- 24 states have geologist registration
- 8 more have registration statutes being drafted
- 12 legally recognize or Certify geologists
- Registered Appraisers not exempted

State Registration of Geologists and Engineers

- Comity between states poor
 - for geologists based on ASBOG exam
- Temporary reciprocity between states very poor to non-existent
- No indication of movement to rationalize



Federal Land Acquisitions

- Uniform Appraisal Standards for Federal Land Acquisitions
- Based on court history of Federal acquisitions, condemnation, takings
- USPAP as base
- Strongly advises use of sales comparison approach
- Requires that avoid including business value (income above typical economic rent)

U.S. State and Federal Courts

- Courts love sales comparison approach
- They generally hate the net present value method -- the primary method of most minerals appraisers
- Leery of the cost approach

Ingredients of a Market Value Estimate

- For real property USPAP Standards 1 & 2
- Effective Date of Valuation
- Highest and Best Use
- Exposure Time to Market
- Three Approaches to Value
 - Sales Comparison Approach
 - Cost Approach
 - Income Approach

Ingredients of a Market Value Estimate

- Comparable Sales Approach
 - Principle of Substitution
- Cost Approach
 - Principle of Contribution to Value
- Income Approach
 - Principle of Anticipation

Income Approach Principle of Anticipation

- Net Present Value relied on heavily or exclusively by most minerals appraisers
- Method accepted by USPAP with lots of caution (Stmt 2, p 73)
 - Could be open to misuse and abuse

Income Approach Principle of Anticipation

- "Market-value DCF analyses should be supported by market-derived data, and the assumptions should be both market and property-specific." (USPAP Stmt 2, p 73)
 - i.e. commonly used discount rates, such as CAPM and WACC, should be supported or replaced from sales analysis
 - But, the necessary sales data is hard to find

Cost Approach Principle of Contribution to Value

- Most minerals appraisers consider not applicable
- Some use only for valuing plant and equipment
- We can't create an identical mineral deposit near a plant at any cost
- Without the deposit, the plant only has salvage value

Cost Approach Principle of Contribution to Value

- Reliance on replacement cost or expenditures not necessary
- In theory can estimate the contributory value of each component of the property
 - commonly done for rural real estate
 - calculate the contribution of each category of reserve and resources, exploration targets, surface and improvements
 - SEC prevents reporting of adequate data

- Rejected by most minerals appraisers, except for gold properties
- "There is far more comment on the limitations of the comparable sales method than its merits." (Grant, 1994)

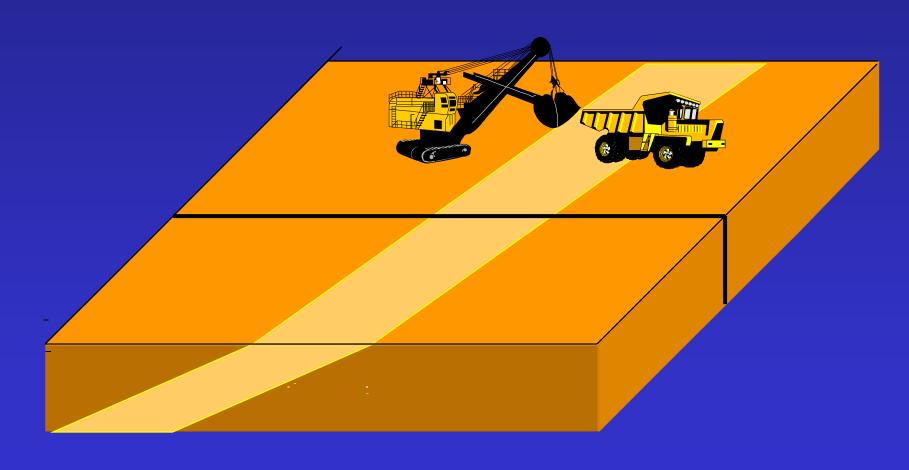
- Basic assumptions
 - 1. Reasonably comparable properties
 - -2. Ready market exists
 - -3. Sales were at fair-market value

- Typically a severe shortage of data
- Time consuming and expensive to obtain
- The sales are almost never *comparable sales*
 - e.g. 6 years old, different geology, another country
- Assumptions and adjustments introduce uncertainty
 - can be objected to as *speculation*

The Industrial Minerals Dilemma



Comparable Failure for an Industrial Mineral Property



- Use component analysis of sales
 - as used in rural real estate appraisal
- Employ ratio analysis
 - calculate \$/unit values for components
 - e.g. \$/ton, \$/acre
- Adjust the mix of components to the subject at the unit level

USPAP Report

- Reconcile the approaches used
- Report must
 - be accurate
 - not misleading
 - Provide full disclosure
- Sign certification taking full responsibility

Who is Qualified?

Who is Competent?

Australasian Standards

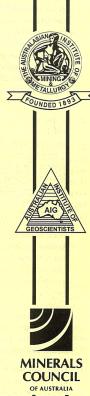
- The JORC Code
 - Reporting of estimates for reserves, resources and exploration information
- The VALMIN Code
 - Technical Assessment reports
 - Valuation reports

1999 Edition

Australasian Code for Reporting of Mineral Resources and Ore Reserves

(The JORC Code)

Prepared by the Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC)



1998 61



CODE AND GUIDELINES FOR TECHNICAL ASSESSMENT AND/OR VALUATION OF MINERAL AND PETROLEUM ASSETS AND MINERAL AND PETROLEUM SECURITIES FOR INDEPENDENT EXPERT REPORTS (THE VALMIN CODE)

The Fundamental Principles of this Document are

Transparency - Independence - Competence - Materiality

This Code applies to all relevant reports issued on or after 1 April 1998.

JORC and VALMIN Codes

- Focus is stock exchange reporting required
- Enforced by national societies (not states)
- Emphasizes:
 - Competency
 - Competent Person must have minimum 5 years of experience relevant to the style of mineralization and type of deposit
 - Full disclosure
 - If in doubt, include it

The Australasian JORC Code

- First introduced as a standard in 1972
 - Adopted into Securities regulations
- Basis of the international reporting standards (except U.S. SEC)
- Reserve and resource estimates used in VALMIN must be by JORC standards

The Australian VALMIN Code

- First edition by AusIMM in 1995
- High level of acceptance by financial institutions
 - Compliance essentially obligatory
- Held in high international regard
 - Other countries reviewing it for modification and adoption (including Canada)

The Australian VALMIN Code Fundamental Principles

- Transparency
 - Report must be easily understandable
- Independence
 - The client must certify in writing the independence of the valuator
- Competence
 - minerals industry technical qualifications, and minimum 10 years of relevant experience
- Materiality
 - When in doubt, include it

The Australian VALMIN Code

- Very detailed on what must be considered and included
 - e.g., itemizes what labeling must be on maps and geological sections
- Does not specify the valuation approaches
 - assumes inclusion of an income method
- Drives the value conclusion to a market value which includes the mining business involved in the property

Canadian Standards

- TSE/OSC Mining Standards Task Force report Setting New Standards issued 2/2/99
 - highlighted the need for enforceable reserveresource and valuation reporting standards
- Canadian Provincial Securities Administrators'
 National Instrument 43-101 now being finalized to replace National Policy 2-A
- Finalizing Reserve and Resource Standards based on CMMI Definitions

Proposed Canadian Mineral Valuation Standards

- Being drafted by a committee of The Canadian Institute of Mining, Metallurgy and Petroleum (CIM)
 - Requested based on Mining Standards Task
 Force report
- Expected to be heavily based on the Australian VALMIN Code
- First Draft expected December 2000

Canadian Draft NI 43-101 Regulation

- Qualified Person
 - 5 years of experience relevant to the deposit type
 - must be a member of a recognized (approved)
 professional association with a demonstrated,
 enforceable Code of Ethics
 - discipline mechanism through the associations
- Presently in Canada, such associations are only Provincial. A couple of international associations should qualify.

Competent Person Australia

- Competent Person: is a corporate member (Member or Fellow) of AusIMM with 5 years of experience relevant to the style of mineralization and type of deposit
- *Expert*: Same, with 10 years of relevant experience. Required for a VALMIN report

Qualified Person Canada

- Qualified Person: is (will be) a member of a "Recognized Professional Association"

 (RPA) and has 5 years of relevant experience.
 - RPA Code of Ethics recognizes financial fraud
 - RPA Code of Ethics enforced
 - RPA Public notification of ethical sanctions

- CMMI working on international standardization of Competent Person definition, and uniformity of ethics enforcement
- CMMI investigating establishing an international body composed of associations with Competent Person membership

- The American Institute of Minerals
 Appraisers (AIMA) is attempting to develop
 a minerals appraisal set of guidelines or
 standards compatible with USPAP
- AIMA is in continual dialogue with AusIMM and the CIM Valuation committee to aid development of somewhat compatible documents

- Australia, Canada, U.S., South Africa and U.K. may hold a conference to discuss ways to enhance minerals appraisal techniques and to discuss coordinating standards development
- Review of interface and compatibility of the International Valuation Standards
 Committee's 2000 standards with minerals appraisal

- We may have to live with the SEC's incompatible rules for a long time yet. Hopefully the latest international accounting standards will stimulate change
- The overlapping regulation of minerals appraisers at the state level will continue expanding to more states

- Securities industry regulators in the major mining countries have determined that minerals appraisal requires special regulation due to a history of false or misleading reporting in the industry
- The regulation of mineral appraisal and minerals appraisers is continuing to expand as a result of USPAP and state appraiser registration requirements, TSE/OSC decisions and increased adoption of U.S. state geologist registration.

- With overlap of the jurisdiction of U.S. state boards of geologists and appraisers, and next to non-existent temporary reciprocity for geologists, it has recently become almost impossible for minerals appraisers to work legally across state boundaries
 - The mineral deposit can't come to the appraiser
 - It's essentially impossible for a minerals appraiser to become fully qualified everywhere in the U.S.
 - Need national registration or automatic reciprocity,
 and resolution of jurisdiction of state boards

- International agreement on *resource* and *reserve* definitions provides uniformity to the foundation of minerals appraisal. The SEC has placed the U.S. out of sync with the rest of world by not adopting the agreement
- The SEC's obsolete prevention of resource quantity and value reporting is a major handicap in appraising mineral properties

- Few U.S. minerals appraisers abide by USPAP
 - it is difficult to understand how to apply
 Standards 1 and 2, designed for real estate appraisal, to mineral deposits
- USPAP, UASFLA and the courts indicate a preference for sales comparison as the primary approach. Minerals appraisers generally employ the income approach as their primary approach

- Australia has a uniform nationwide code designed specifically for valuation of mineral deposits and mineral securities, which is highly regarded internationally
- Competent minerals appraisers (valuers) can work freely across all Australian state boundaries in a country essentially the same size as the U.S. lower 48 states

- Canada is following closely in Australia's footsteps in developing uniform mineral valuator qualifications and mineral valuation reporting standards
- Reliance (initially) on membership in provincial level recognized professional associations may cause some problems

- I am qualified and demonstrated as considered competent to work throughout Australia and Canada under its proposed standards, as a minerals appraiser/valuator
- In recent years I may have become unqualified to work across most state boundaries in the U.S.
- Isn't this restriction of the freedom of Interstate Commerce???

Who is Qualified?

Who is Competent?

Is Anybody Qualified and Competent?