Evaluating, Classifying and Disclosing Unconventional Resources*

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Abstract

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The results of evaluations of hydrocarbon resources are used for many purposes, from international energy studies, government resource management, field development, to financial activities. As a result of the increase in unconventional resource activity, the assets of many companies increasingly lie in categories other than reserves, such as contingent or prospective resources. The evaluation, classification and disclosure of these present challenges not encountered for conventional resources.

Common classification systems are described, including the United Nations Framework Classification (UNFC), the Petroleum Resource Management System (PRMS) and those used in Canada and the United States. Published evaluation and classification guidelines include those in PRMS, the Recommended Evaluation Practices (REPs) of the Society of Petroleum Evaluation Engineers, and the Canadian Oil and Gas Evaluation Handbook (COGEH), which is the standard for Canadian oil and gas securities disclosure. Most of the guidance to the evaluation and classification of unconventional resources is general rather than being specific.

One of the most important uses of the results of evaluations is communication to the securities market in order to raise funds for exploration and development activities. The oil and gas securities disclosure regimes in the two largest capital markets for oil and gas, the United States and Canada, is described and contrasted. One significant difference is that all classes of resources, not only reserves, are covered by the latter.

The Petroleum Department of the Alberta Securities Commission has carried out many reviews of oil and gas disclosure, including technical reviews of evaluations. The review process is described, and issues surrounding the evaluation and classification of unconventional resources are discussed. The location of many, if not most, unconventional resources is known and the emphasis lies on establishing productivity rather than on exploration. What is the appropriate classification during an often lengthy testing period between "discovery" and the establishment of productivity or during a period of technology development? What are the "contingencies" for a contingent resource? Because many unconventional reservoirs are poorly known and analogs are limited, how should analogs be used and how far is it reasonable to extrapolate or interpolate from existing data points?

EVALUATING, CLASSIFYING AND DISCLOSING UNCONVENTIONAL RESOURCES

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OUTLINE

- INTRODUCTION
- EVALUATION
- CLASSIFICATION
- ISSUES
- DISCLOSURE

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SOME TERMINOLOGY

- "RESOURCES"
  - Generally includes reserves, but...
  - Sometimes means "Resources other than Reserves"

- "UNCONVENTIONAL RESOURCES"
  - Useful colloquial term, not a definition
  - Traps not controlled primarily by buoyancy forces:
    - Coal bed methane
    - Bitumen
    - Shale gas
    - Oil shale
    - Tight/basin-centered gas (maybe)
   - Methane hydrates

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WHO NEEDS RESOURCE INFORMATION?

- Business Processes: mineral extraction operations

- Financial: Capital market, brokers, accounting etc.

- Government Resource Management:
  – Resource administration, e.g., of the Alberta ERCB

- Resource Studies Needs: e.g., Canadian NEB, IEA

- Different:
  – Timeframes
  – Levels of aggregation
  – Risk and uncertainty profiles

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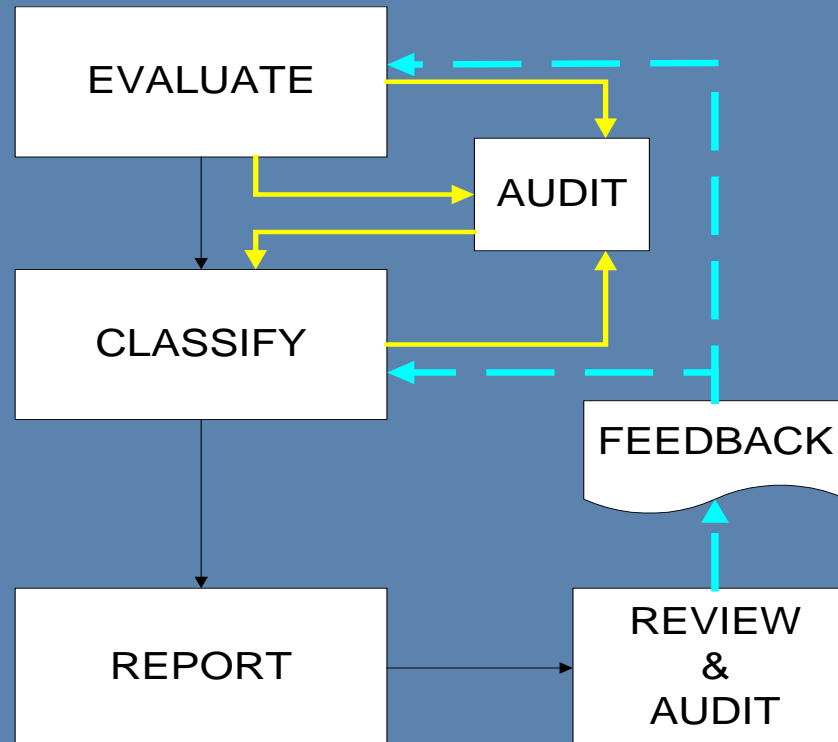
UNCONVENTIONAL RESOURCES: WHAT'S DIFFERENT?

- Increasing portion of corporate assets in:
  - Unconventional resources
  - Resources other than reserves

- Poorly defined physical boundaries

- We know much less about unconventional reservoirs
  - Much less history – fewer analogs

- Limited classification guidelines

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EVALUATION

- Primarily a technical exercise. May be partly controlled by requirements of classification criteria (e.g., constant vs. forecast product prices)

	GUIDELINES	ANALOGS
CONVENTIONAL	WELL DEVELOPED	MANY
UNCONVENTIONAL	LIMITED	FEW

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WHY CLASSIFY?

- To communicate volumes and values with their associated risks and uncertainties

- Definition:
  - The name of the Class
- Specification:
  - Criteria that must be met for a definition
- Guidelines:
  - Guidance as to how to meet the criteria
  - Balance between prescriptive rules and principles
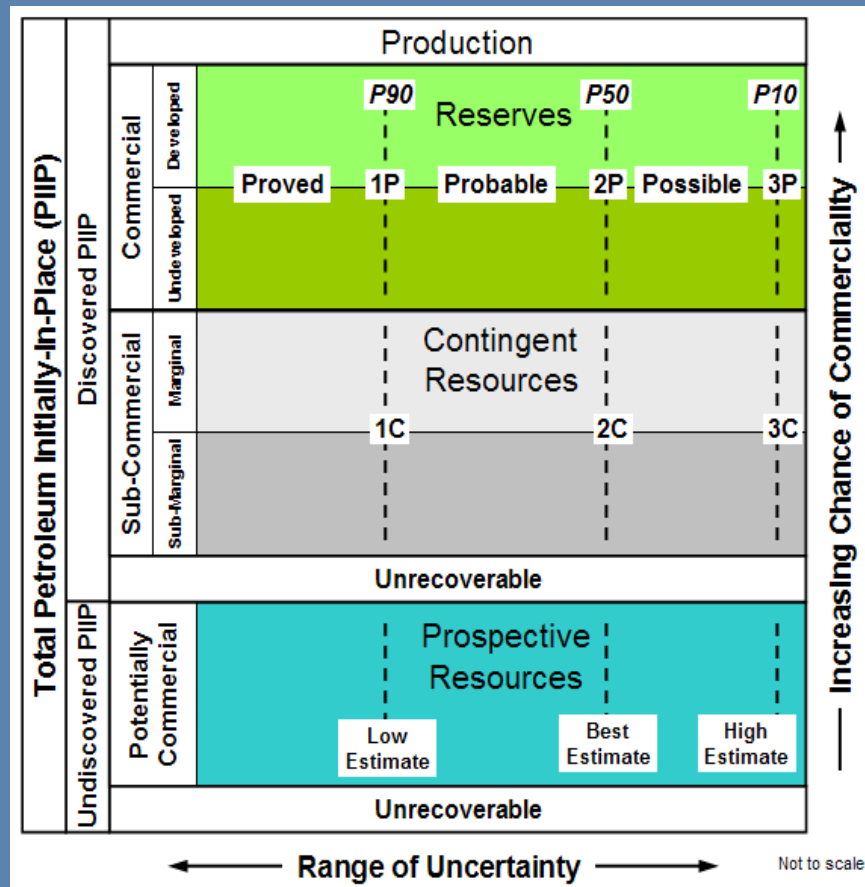- Examples

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CLASSIFICATION SYSTEMS

- Petroleum Resource Management System (PRMS)
- Canadian Oil and Gas Evaluation Handbook (COGEH)
- Alberta Energy Resources and Conservation Board
- US Securities Exchange Commission
- US Financial Accounting Standards Board
- United Nations Framework Classification (UNFC)
- International Accounting Standards Board?
- Russian System
- Etc.

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PRMS DEFINITIONS

CLASSIFICATION SYSTEMS

- CANADIAN OIL AND GAS EVALUATION HANDBOOK (COGEH) 2002
  - Good practice manual with extensive guidelines
  - Recognised standard for Canadian disclosure
  - Uses PRMS classification
- PETROLEUM RESOURCE MANAGEMENT SYSTEM (PRMS) 2007
  - Update of old SPE system
  - Limited guidelines
- SEC (2009)
  - Only for reserves

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SYSTEM COMPARISON

	PRMS	COGEH	SEC
Business Processes	Yes	Yes	No
Financial Needs	Limited	Yes	Yes
Govt. Resource Management	Limited	Limited	No
Resource Studies	No	No	No

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ISSUES

- Discovery criteria
  - Known Accumulation
  - The Time Gap problem
  - Analogs

- Homogeneity and Extrapolation

- Contingent Resources and Contingencies
  - "Potentially recoverable"
  - Technology under development
  - Contingencies

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KNOWN ACCUMULATION

- Is a "discovered petroleum" criterion in both COGEH and PRMS

- Is an accumulation that has:
  - been penetrated by a well
  - well which has demonstrated the existence of hydrocarbons by flow testing, or,
  - where log and/or core data exist and there is a good analogy to a nearby and geologically comparable known accumulation; this may suffice.

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THE TIME GAP

- There is often a time gap, sometimes of years, between:
  - Drilling to determine in-place volumes, and,
  - (Pilot) testing that determines flow capability

- Further drilling to design a recovery process

- How do we classify in the interim?

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ANALOGS FOR UNCONVENTIONAL HYDROCARBONS

- Very limited number:
  - Tend to be more "generously" used
  - Generally more discipline and rigour needed in their use

- Reservoir analogs: static physical properties of the reservoir and trap

- Process analogs: dynamic recovery process applicable to that particular reservoir

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THE HOMOGENEITY DELUSION AND IRRATIONAL EXTRAPOLATION

- Unconventional accumulations often assumed to be homogeneous over large areas, but:
  - Are no more homogeneous than conventional accumulations
  - Shales "understudied"

- Assumption of homogeneity leads to extreme extrapolation

- Extrapolation must consider:
  - Presence of formation
  - Hydrocarbon content
  - AND PRODUCTIVE CAPABILITY

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CONTINGENT RESOURCES

- *"… potentially recoverable from known accumulations using established* technology or technology under development, but which are not currently considered to be commercially recoverable due to one or more contingencies."

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"POTENTIALLY RECOVERABLE"

- Under what conditions?

- For securities disclosure, may be misleading if not under "reasonably foreseeable":
  - Technical conditions
    - Existing technology
    - Technology under development
  - Economic conditions

- In a typical investor's timeframe

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CONTINGENCIES

- **Drilling and testing are prerequisites not contingencies**

- Non-technical contingencies:
  - Economic, legal, environmental, political, and regulatory matters, or a lack of markets

- Technical contingencies:
  - Existing technology
  - Technology under development
  - New category, Experimental technology?

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TECHNOLOGY UNDER DEVELOPMENT

- " … technology that has been developed and verified by testing as feasible for future commercial applications to the subject reservoir."

- What do:
  - … developed …
 - … verified by testing…
  - … subject reservoir

Mean?

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NATIONAL INSTRUMENT 51-101

- Governing instrument for disclosure of oil and gas activities:
  - Acquisition, exploration, development, construction …
  - Refers to COGEH for evaluation standards

- All product types, inc. bitumen, CBM, shale gas, shale oil, hydrates

- Annual disclosure (three forms), news releases, presentations

The Alberta Securities Act
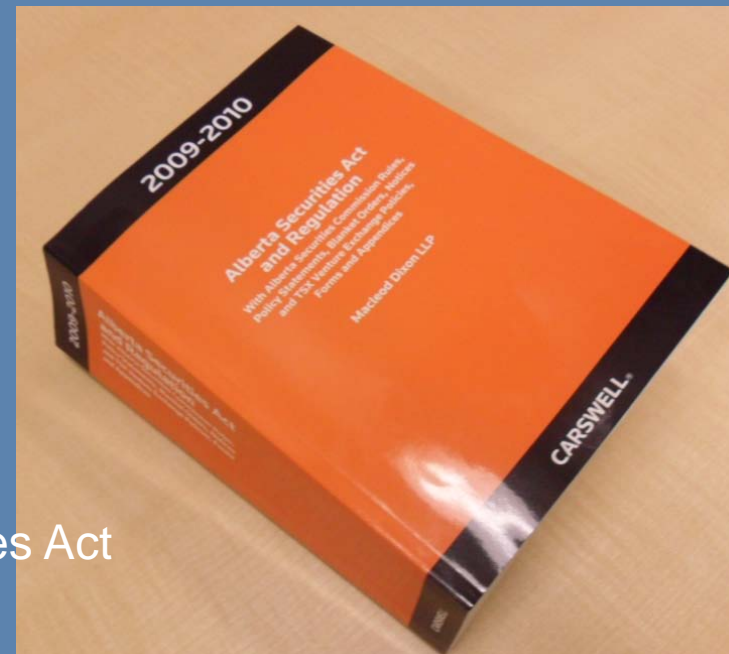
SECURITIES DISCLOSURE

- It is not just enough to just follow COGEH

- Information should not be misleading to an investor, including omission of facts

- Insider trading can get you into trouble!

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CONCLUSIONS: UNCONVENTIONAL RESOURCES

- Evaluation methods at various stages of maturity

- Classification criteria are still mainly for reserves
  - Criteria for resources need work
  - Contingent resources especially

- Tendency to "irrational exuberance"

- Disclosure requirements
  - Basics are there, some development needed

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