

“Modernization of Oil & Gas Reporting” Survival Guide*

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Abstract

The Modernization of Oil and Gas Reporting is the most significant change to oil and gas regulations since inception in the 70’s. The rationale for the change was to allow companies to provide more comprehensive information to their shareholders while maintaining the integrity of the reported reserves by instituting a principle-based system to replace the previous rules-based system. However, the underlying principles of the new regulations often elude estimators as they concentrate on the finer nuances of the regulations. This presentation will focus on five fundamental building blocks to understand the “principles” within the new regulations with a focus on building “Reasonable Certainty” into the documentation for proven reserves. Also reviewed are three guiding tenets to developing a quality reserves process in a principle-based system.

Modernization of Oil & Gas Reporting

Survival Guide

AAPG

Geologic Aspects of Estimating Petr. Resources & Reserves

September 11th, 2009

Modernization of Oil and Gas Reporting

Disclaimer

- The information and opinions stated are mine, and mine alone. They don't represent the opinions of Chevron, or the SPE. I am not an attorney, or CPA and reliance on this information is at your sole risk.

Modernization of Oil and Gas Reporting

Discussion Topics

- **Five Basic Principles to understanding the “Modernization of Oil and Gas Reporting”**
- **Three Guiding Tenets to a quality reserves process**

Five Basic Principles to understanding the “Modernization of Oil and Gas Reporting”



“Learning is not
compulsory....Neither
is survival”

W. Edwards Deming

Modernization of Oil and Gas Reporting

Five Fundamental Principles

1. “Reasonable Certainty” (Technically)

- Much more likely to have positive revisions than negative
- Probabilistic Estimates
 - ▶ 90% Certainty
 - ▶ No reasonable doubt (risk)

IF we do not use 90% we need a definition for “MUCH”

Risk - The chance of occurrence

Certainty - The range of outcomes

Modernization of Oil and Gas Reporting

Five Fundamental Principles

2. Old rules apply unless there is *Reasonable Certainty* based on **“Reliable Technology”**

“...provide reasonably certain results with consistency and repeatability in the formation being evaluated or in an analogous formation”

“Several commenters expressed concern that this proposed 90% threshold would be difficult to verify and support on an ongoing basis. **We agree that a bright line test would be difficult to apply** to a particular technology or mix of technologies to determine their reliability. **Therefore, we are not adopting the 90% threshold as part of the definition.**”

If 90% is not used, we need a definition for reliability

Modernization of Oil and Gas Reporting

Five Fundamental Principles

3. **“Reasonable Expectation”** (Commercial Risk)

- Develop in a **“Reasonable Time Frame”** (5 yr unless there is Justification)
- **No reasonable doubt** (Except commodity price, inflation, or country risk)

Modernization of Oil and Gas Reporting

Five Fundamental Principles

4. **Evidence** is the fundamental basis for “**Reasonable Certainty**”, “**Reasonable Expectation**”, and “**Reliable Technology**”

Assessments are based on **Best Available Data** (Evidence) and **All Evidence is not the same**

- ▶ Physical normal supersedes imaged or indirect or statistical
- ▶ Closer normally supersedes distant
- ▶ New data normally supersedes older data

TRACK RECORD COUNTS

Modernization of Oil and Gas Reporting

Five Fundamental Principles

5. Definition of reportable Oil and Gas Table V is based on: **The end product, not on the method of extraction process.**

Three part test:

1. It looks like oil or gas i.e., Flows and has some amount of hydrogen associated with the carbon.
2. It sells like oil or gas i.e., You Make Money from the extraction
3. The carbon is from a non-renewable source

Note: we don't care where the hydrogen comes from

Three Guiding Tenets to a quality reserves process



“Quality does not come from inspection; Inspection should be used to collect data for process control”

W. Edwards Deming

Three Tenants of Quality Reserves Process

1. There is no substitute for a good quality assurance process with outside perspective
 - ▶ People tend to not be self-aware
 - ▶ Greater expertise leads to greater self-awareness, but it is subject specific
 - ▶ Everyone has motivational bias; healthy tension caused by groups with different goals neutralizes bias in the process

Corollary: *A good look back system with continuous improvement is essential*

Motivation Basis Can Be Determined By Trained Evaluators

Example: We just found we're moving to a Principles Based System.... Can you pick out

1. The Reserves Manager Responsible for ensuring quality
2. The Book'em Dano (Certain of Everything) Manager with a bonus based on reserves



Three Tenants of Quality Reserves Process

2. What you see is **Not** always what you get in PUD's without a substantial performance base
 - ▶ Making allowances for unforeseen issues is necessary, but it's difficult at best
 - ▶ There is no such thing as Proven, only degrees of risk and uncertainty

Three Tenants of Quality Reserves Process

3. Probabilistic estimates are no substitute for quality Engineering and Earth Science judgment

Issues:

- ▶ Incorporate trends into the estimates
- ▶ Probabilistic estimates can be difficult to QC: A good check is to compare with a determinist realization
- ▶ Beware of the central limit theorem, it can artificially flatten a distribution if variables have dependency