



SPE 109822

## Enterprise Risk Management in the Petroleum Industry Through Information Validation

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This paper was prepared for presentation at the 2007 SPE Annual Technical Conference and Exhibition held in Anaheim, California, U.S.A., 11–14 November 2007.

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### Abstract

Shareholders, board members, regulators and the general public are demanding reasonable assurance of value growth, governance and compliance through corporate level risk management at petroleum exploration and production companies. However, at the heart of this assurance is the reliability of information. Petroleum reserves estimating and reservoir engineering techniques provide assurance around the reliability of estimated hydrocarbon quantities. These same techniques can be combined with tools from the fields of operational risk management and strategic planning to support the emerging practice of Enterprise Risks Management (ERM) at oil and gas companies. This paper presents a framework for achieving reasonable assurance of the reliability of information to support ERM at oil and gas companies through use of a various tools and techniques.

Using examples from integrated multinational upstream companies, it is shown how qualitative and quantitative tools could be tied together into a systematic ERM process that complies with minimum standards for information integrity. Reference is made to the Resource Management System approved in 2007 by the SPE Board and its industry partners AAPG, WPC and SPEE and its guidance on principles of reserves estimating as an example of best practice in validating information. Sample data from the field of reserves estimating and resource estimation is presented to illustrate information validation approaches.

The value of reliable information to support

enterprise risk management is demonstrated by showing how various stakeholder groups are satisfied through reasonable assurance. In turn, this assurance leads to competitive advantage for oil and gas companies in terms of cost of capital, reduced regulatory scrutiny, and improved strategic focus.

Operational risk management tools and techniques have been used for many years in functional areas ranging from petroleum geology to major project and commodity price risk management. However, techniques from the broader fields of strategic planning, market research and quality management have not been integrated with methods from petroleum reserves and resource classification to manage enterprise level risks. This paper suggests that an information validation framework supported by tools and techniques from beyond the field of operational risk management can provide petroleum companies with sustained competitive advantage.

### Introduction

Today oil and gas industry executives and upper managers face significantly different expectations regarding corporate governance and accountability than in the pre-Sarbanes-Oxley period of the late 1990's. Most of us are well aware of the increased disclosure and executive attestation requirements in the Sarbanes-Oxley Act sections 404 and 302 regarding internal controls and reporting involving malfeasance and fraud.<sup>i</sup> In addition to these requirements however, there is also a growing intolerance by stakeholders of “innocent” mistakes growing out of negligence and incompetence. Furthermore, not only are the regulatory requirements more stringent than they were five years ago, but the performance and compliance expectations are coming from a wider group of stakeholders. These are not limited to stock analysts and regulators but extend to institutional investors, bond rating agencies and environmental non-governmental organizations among other “interested parties.” Finally, as a result of corporate scandals in the petroleum industry, we may be facing a crisis of confidence among stakeholders who