

**RESERVES OVERSTATEMENTS:
HISTORY, ENFORCEMENT, IDENTIFICATION, AND IMPLICATIONS OF
NEW SEC DISCLOSURE REQUIREMENTS**

A Thesis

by

GRANT THEODORE OLSEN

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

May 2010

Major Subject: Petroleum Engineering

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ABSTRACT

Reserves Overstatements:
History, Enforcement, Identification, and Implications of
New SEC Disclosure Requirements. (May 2010)
Grant Theodore Olsen, B.S., Texas A&M University
Co-Chairs of Advisory Committee: Dr. W. John Lee
Dr. Thomas A. Blasingame

Despite the need for accurate oil and gas reserves estimates which honor disclosure requirements of the United States Securities and Exchange Commission (SEC), a number of exploration and production companies have allegedly overstated and subsequently written down their reserves during the last 20 years. Reserves write-downs are of great interest to numerous groups involved in the reserves estimation process and outcome, including estimators, managers, investors, creditors, and regulators. Considering the magnitude and nature of some alleged overstatement cases, it appears that some of these parties may benefit from a better understanding of reserves reporting, the relative risk of overstatements, the regulatory environment and enforcement procedures, and identifying questionable reserves data.

After discussing the context and importance of reserves and write-downs, there is a detailed examination of the SEC, including the agency's reserves reporting requirements, and their enforcement methods. A number of alleged overstatement and write-down "case studies" are presented, with details on the specific Federal Laws alleged to have been violated by corporations or individuals and then cited by the SEC and shareholder lawsuits. We also conclude that there may be greater write-down potential due to the updated SEC reserves reporting guidelines.

A comprehensive series of systematic questions have been compiled and quick-look graphical techniques have been developed that may be used to gain insight into—and potentially raise questions about—an operator's reserves data.

DEDICATION

To my wife, Vivian, my best friend who also happens to be a saint.

To my brother, Clark, my best man through and through.

To my sister, Anne-Elise, who has such great passion for life.

And to my father, Mark, Eau Claire's prodigal and perseverant son.

"Earn this. Earn it."
-Robert Rodat, *Saving Private Ryan*

"The arc of the moral universe is long, but it bends toward justice."
-Dr. Martin Luther King, Jr.

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Employers, both past (Devon Energy Corporation) and present (EnCana Corporation)—for their generous support while I pursued this graduate degree.

IHS Energy—for access to their extensive and well-organized reserves data.

DISCLAIMER

This document discusses write-downs and alleged overstatements of oil and gas reserves. Information used to write this report has been obtained from extensive research of the public record. Overstatements and violations of federal securities laws and actions by a company or its representatives are only alleged and, unless stated otherwise, any settlements discussed should be considered as made without admitting guilt.

Write-downs can readily happen with even the best of intentions in place. The authors—and the readers—are not judge and jury. Our main intent is to raise awareness about write-downs and overstatements and promote the responsible reporting of oil and gas reserves.

Although this document addresses certain legal and accounting matters, the authors are not engaged in rendering services in these fields. Please consult with the appropriate individuals if professional assistance is required in these fields.

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CHAPTER I

INTRODUCTION

1.1 Statement of the Problem

Oil and gas reserves estimates which honor disclosure requirements of the United States Securities and Exchange Commission (SEC) are critically important in the international oil and gas industry. It has been estimated that more than 70% of a typical E&P company's value is attributable to its oil and gas reserves (Dharan 2004a), and these quantities impact numerous measures of corporate financial health. However, reserves calculations are inherently subjective and subject to estimator biases. Estimators must reflect reserves which honor a "fairly-and fully-valued" representation of assets, without yielding to the pressure to overstate.

Nevertheless, a number of E&P companies have, in recent years, allegedly overstated and subsequently written down certain reserves volumes. Operators including Shell, El Paso, Stone Energy, and Repsol YPF, among others, have found themselves in the spotlight—and courtroom—for alleged overstatements of their oil and gas reserves. Reserves write-downs are of obvious interest to numerous groups involved in the reserves estimation process and outcome, including estimators, managers, investors, creditors, and regulators. In particular, investors must recognize that reserves overstatements represent a source of investment risk. Overstatements and write-downs have occurred for a variety of reasons, and have often been accompanied by significant adverse consequences. A stigma and discomfort surrounding overstatements exists within industry, as the topic has been labeled "the problem no one wants to talk about" (McLane 2001).

The SEC has roles, investigative processes, and enforcement procedures unlike any other organization involved with the oil and gas industry. However, the Commission's inner workings are not frequently discussed or well-understood by all of the groups these rules affect. The SEC's Modernization of Oil and Gas Reporting Requirements has made certain standards more flexible (e.g., elimination of the "one offset rule" and allowance of "reliable technologies"). Accordingly, engineers must now adjust to these new guidelines and deal with the possibility of disclosing previously unrecognized asset value without overstating reserves. The difficulty of this task, along with the technical "liberalization" and an enhanced "principles-based" emphasis in the rules, creates even greater potential for reserves overstatements than in the past.

Therefore, the magnitude and nature of recent alleged overstatement cases, relative unfamiliarity with the

This thesis follows the style of the *SPE Journal*.

SEC's inner-workings, and the Commission's new reporting requirements have created a need to critically examine reserves disclosures and reserves overstatements. Reserves reporting, the relative risk of overstatements, pertinent federal laws, the changing regulatory environment, SEC enforcement procedures, and identifying questionable reserves data are all topics of current interest.

1.2 Objectives

The objectives of this work are:

- To educate engineers and managers about reserves overstatements with respect to:
 - The causes and consequences of overstatements.
 - The role of the Securities and Exchange Commission and its enforcement process.
 - The federal laws allegedly violated in SEC enforcement actions and class action shareholder lawsuits.
 - The outcomes of cases in the public record, with the corporate and personal penalties to which operators and employees, respectively, have been subjected.
- To educate shareholders and securities analysts about reserves overstatements with respect to:
 - The potential risk and prevalence of overstatements.
 - The heightened risk of overstatements as a result of the SEC's 2009 Modernization of Oil and Gas Reporting Requirements.
- To compile, build upon, and present a comprehensive set of questions that may aid in better understanding an operator's reserves volumes.
- To develop quick-look graphical techniques that may be used to identify potentially questionable levels of reserves.
- To encourage responsible disclosure of oil and gas reserves.

1.3 Summary and Conclusions

After examining the importance of reserves information and the historically dynamic definition of "reserves," we offer details on the Security and Exchange Commission's recent Modernization of Oil and Gas Reporting Requirements. We also give an overview of the causes and consequences of overstatements, along with the different types of write-downs. Furthermore, we provide a detailed examination of the SEC, including the nature of their authority, enforcement process and trends, important documents that have governed reserves disclosures, and federal laws cited by the commission in overstatement cases.

On the basis of a comprehensive study on noteworthy alleged reserves overstatement cases and literature review, we conclude that reserves overstatements are not necessarily confined to a particular reserves category, asset type or location, or operator size. However, overstatements are most likely to occur within the Proved Undeveloped (PUD) category. Case studies illustrate that reserves write-downs can create nearly instantaneous value destruction for shareholders. The case studies also indicate that significant corporate and/or individual penalties may be associated with overstatements, along with the potential for class action lawsuits. Additionally, we present the federal laws commonly referenced in lawsuits alleging overstatements.

We present the hypothesis that the potential for reserves overstatements will increase under the new SEC guidelines with its more flexible technical requirements. We conclude that reserves overstatements have been—and will continue to be—very difficult to detect. However, we present a two-tiered, systematic approach which can be used to evaluate the credibility of an operator's reserves data. Tier one gives a series of topically organized questions which can be probed, while tier two establishes graphical relationships of reserves data and related metrics among industry peer groups (e.g., small-, mid-, or large-cap independents). The two components can be used independently or in concert.

We believe that responsible reporting of oil and gas reserves represents the best interests of investors and should be a cultural mandate for all E&P companies.

CHAPTER II

OIL AND GAS RESERVES

2.1 Context and Importance

By a recent SEC definition, oil and gas reserves “are estimated remaining quantities of oil and gas and related substances anticipated to be economically producible, as of a given date, by application of development projects to known accumulations.” (US SEC 2008c). As discussed in Section 2.2, reserves may be subdivided into proved, probable, and possible categories according to the degree of uncertainty associated with the volumes. In addition to being dependent on the manner in which the term is defined, reserves are also a function of numerous known and assumed technical factors including reservoir parameters, project costs, ownership, and commodity prices.

Reserves volumes and values of publicly traded oil and gas companies (e.g., on the New York Stock Exchange) are not directly reported on a company’s balance sheet, but are rather attached to financial statements. Barry (1993) considered it “odd” for reserves not to be reflected in the balance sheet. Furthermore, he observed that “The volume of reserves is a corporation’s Black Hole. It exerts a huge influence on everything else in its orbit, yet emits very little light.” Since reserves are not part of the balance sheet per se, they are not subjected to audits by financial or accounting firms. However, as discussed in Section 2.4, operators commonly elect to have their reserves audited by third-party engineering firms.

Reserves are of significant importance to a variety of stakeholders including operators, investors, regulators, and politicians. An E&P company’s financial health depends in large part on their stated oil and gas reserves. Financial measures such as finding and development costs, reserves replacement ratio, reserves life index and depreciation, depletion, and amortization are all impacted by a firm’s oil and gas reserves. Furthermore, reserves are a vital instrument toward gaining access to capital markets: Credit ratings are dependent on reserves volumes, and bankers will commonly lend funds based on reserves as collateral. In his prepared testimony before the US House Committee on Financial Services on 21 July 2004, Bala G. Dharan (2004a) stated that reported reserves of oil and gas represented more than USD 3 trillion worth of value, and that more than 70% of an energy company’s total market value is attributable to their volume of proved reserves. Additionally, much has been written regarding the significant international political power that can accompany large volumes of oil and gas reserves. In sum, many individuals and organizations have a great interest in the reporting of oil and gas reserves, and the quantities reported have important financial and geopolitical implications.

2.2 The Evolution of “Reserves”

Given the somewhat disparate users and uses involved with oil and gas reserves, along with continuous advances in engineering and geological technology, the term “reserves” has been a moving target. The American Petroleum Institute (API) created definitions in 1936 as part of their annual studies of US oil reserves, and the American Gas Association (AGA) joined these studies in 1946 (Harrell and Gardner 2005). The Society of Petroleum Engineers (SPE) first adopted definitions for proved reserves in 1964. In 1975, the Energy Policy Conservation Act was passed, which led to definitions for proved reserves from the SEC in 1978. SPE and the World Petroleum Congress published their “Petroleum Reserves Definitions” in 1997. That document had “seemingly subtle but often important divergences in interpretation” with the SEC definitions (Harrell and Gardner 2005). In 2007, the SPE/WPC/AAPG/SPEE released the Petroleum Resources Management System (SPE-PRMS), which sets forth an international standard for the definitions, codification, and evaluation of oil and gas reserves (SPE/WPC/AAPG/SPEE 2007). Although numerous organizations have weighed in on reserves definitions and operators are free to internally report reserves as they see fit, the SEC definitions are the legal standard by which operators must report their proved oil and gas reserves. Clear and comprehensive SEC definitions and reporting requirements for reserves are of critical importance, as they represent a common standard for companies to meet and be compared upon.

2.3 SEC Modernization of 2009

The 1978 SEC definitions came under ever-increasing fire over the next three decades. As Lee (2009) outlined, some of the key changes which occurred since the 1978 definitions include the following:

- Significant advances in the recovery and characterization of hydrocarbons
- Growth and improvement of both spot markets and transportation for oil and gas
- Establishment of economic production from nontraditional resources (e.g., bitumen from oil sands)

A chorus of opposition to the status quo crescendoed in 2004 with the release of a Cambridge Energy Research Associates (CERA) report sponsored by an industry consortium, and again at the June 2007 AAPG/SPE International Multidisciplinary Reserves Conference.

2.3.1 The Road to Modernization

In late 2007, the SEC retained W. John Lee as an Academic Engineering Fellow to study the need for updating the SEC requirements and assist the organization with proposing the necessary modifications (Lee 2009). In October 2007, the SEC issued a Concept Release (US SEC 2007a) which detailed the history of SEC regulations pertaining to oil and gas, potential shortcomings of the 1978 guidance, and a request for public comment on 15 questions and “any other issues” pertaining to the disclosure of oil and gas reserves. After further study and consideration of the approximately 81 comments received during the

60-day comment period (US SEC 2007b), the Commission issued Proposed Rules on 26 June 2008 (US SEC 2008a). Another 60-day comment period followed, during which approximately 71 comments were received (US SEC 2008b). On 29 December 2008, the Commission's Modernization efforts culminated with the release their Final Rules (US SEC 2008c). The rules are applicable to all related filings made with SEC after 31 December 2009. Further guidance was issued by the SEC on 26 October 2009 with their updated Q&A on oil and gas "Compliance and Disclosure Interpretations" (US SEC 2009).

2.3.2 Highlights of Modernization

As Lee (2009) observed, reserves definitions are now "broadly consistent" with those of SPE-PRMS. Although not formally mentioned in the revised definitions, the SPE-PRMS is discussed in the "Supplementary Information" section of the final rules (US SEC 2008c). The final rules revise the definition of proved reserves and, for the first time, establish definitions for the "unproved" categories of probable and possible reserves, along with the corresponding certainty levels for each category. The three categories, with their deterministic and probabilistic levels of certainty, are defined as follows (US SEC 2008c):

- *Proved Reserves*: Those quantities of oil and gas, which, by analysis of geoscience and engineering data, can be estimated with reasonable certainty to be economically producible—from a given date forward, from known reservoirs, and under existing economic conditions, operating methods, and government regulations—prior to the time at which contracts providing the right to operate expire, unless evidence indicates that renewal is reasonably certain, regardless of whether deterministic or probabilistic methods are used for the estimation. The project to extract the hydrocarbons must have commenced or the operator must be reasonably certain that it will commence the project within a reasonable time....If deterministic methods are used, reasonable certainty means a high degree of confidence that the quantities will be recovered. If probabilistic methods are used, there should be at least a 90% probability that the quantities actually recovered will equal or exceed the estimate. A high degree of confidence exists if the quantity is much more likely to be achieved than not, and, as changes due to increased availability of geoscience (geological, geophysical, and geochemical), engineering, and economic data are made to estimated ultimate recovery (EUR) with time, reasonably certain EUR is much more likely to increase or remain constant than to decrease.
- *Probable Reserves*: Those additional reserves that are less certain to be recovered than proved reserves but which, together with proved reserves, are as likely as not to be recovered....When deterministic methods are used, it is as likely as not that actual remaining quantities recovered will exceed the sum of estimated proved plus probable reserves. When probabilistic methods are used, there should be at least a 50% probability

that the actual quantities recovered will equal or exceed the proved plus probable reserves estimates.

- *Possible Reserves*: Those additional reserves that are less certain to be recovered than probable reserves....When deterministic methods are used, the total quantities ultimately recovered from a project have a low probability of exceeding proved plus probable plus possible reserves. When probabilistic methods are used, there should be at least a 10% probability that the total quantities ultimately recovered will equal or exceed the proved plus probable plus possible reserves estimates.

Proved, proved plus probable, and proved plus probable plus possible reserves quantities are commonly designated with the alphanumeric abbreviations “1P,” “2P,” and “3P,” respectively. These three categories are further divisible into Developed and Undeveloped subcategories based on the project stage of the reserves.

Some of the most noteworthy updates resulting from the Modernization (US SEC 2008c), along with the perceived benefits, are presented below:

- While proved reserves must still be reported, probable and possible reserves may be disclosed at the option of the reporting company. Since companies commonly make investment and strategic decisions based on 2P reserves, disclosure of these additional categories should provide more transparency and relevancy for investors.
- Reserves from nontraditional sources, such as gas hydrates, synthetic oil and gas mined from coal and oil shale, and bitumen mined from oil sands, are now reportable. A greater focus has been placed upon the “end product” rather than the source of the product, and this will allow a broader view of an operator’s reserves.
- Instead of requiring year-end pricing to calculate reserves, an average price will be used that weights equally the price on the first day of each of the 12 months of the year. This change has the potential to remove some of the effect of the volatility inherent in product prices and serve as a more representative measure of recent oil and gas prices.
- Reserves may also be reported, at the operator’s discretion, as a function of alternative price forecast(s). Such alternative pricing scenarios could give insight into the potential resiliency and/or upside of the operator’s reserves portfolio.
- “Reliable” technologies may be used to determine reserves volumes. The regulations do not specify which technologies may be used, thereby implicitly allowing for the advent of new and incorporable technologies.

- The regulations have defined “reasonable certainty” (see “proved reserves” definition, above), and Proved Undeveloped (PUD) locations greater than one offset away from a Proved Developed Producing (PDP) location, provided they meet the reasonable certainty criterion, may now be booked.

2.4 The Role of Third Party Firms

Third party engineering firms are commonly used throughout the oil and gas industry to audit reserves estimates made by operators, or to perform full reserves evaluations. As defined by the Modernization requirements of 2009 (US SEC 2008c), a reserves audit is “the process of reviewing certain of the pertinent facts interpreted and assumptions underlying a reserves estimate prepared by another party and the rendering of an opinion about the appropriateness of the methodologies employed, the adequacy and quality of the data relied upon, the depth and thoroughness of the reserves estimation process, the classification of reserves appropriate to the relevant definitions used, and the reasonableness of the estimated reserves quantities.”

The Modernization guidelines do not require reserves audits of E&P companies. Should an operator indicate that a third party conducted an audit, process review, or any valuation of their reserves, however, the operator must make a number of disclosures regarding the third-party report. The new regulations do not explicitly define the various types of third-party reports available to operators. Such reports have previously been detailed in the “Standards Pertaining to the Estimating and Auditing of Oil and Gas Reserves Information” (SPE 2007), which was updated and released by SPE in 2007 in conjunction with SPE-PRMS. As with SPE-PRMS, the Final Rule does not cite the “Standards” in its amended instructions, but does mention the document in the “Supplementary Information” section. As defined by the Standards, a process review addresses “the adequacy and effectiveness of an entity’s internal processes and controls relative to reserves estimation.” A process review does not entail opinions regarding the validity of the reserves volumes represented by the operator. Internal controls over financial reporting have previously been defined by the SEC as a system “that provides reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles” (US SEC 2007c).

The new regulations require “a brief summary of the third party’s conclusions with respect to the reserves estimates” (US SEC 2008c). The guidance offered by SPE’s 2007 Auditing Standards states that in rendering an opinion on the “reasonableness” of the estimated reserves, quantities and value “should reflect a quantity and/or value difference of not more than plus or minus 10%, or the subject reserves information does not meet minimum recommended audit standards” (SPE 2007). Certain companies may elect to contract a third-party firm for a full evaluation of their oil and gas reserves, wherein the third party independently calculates the reserves based on data provided by the operator.

CHAPTER III

OVERSTATEMENTS AND WRITE-DOWNS

3.1 From Proved to Unproved

A reserves write-down is a negative revision to oil and gas reserves estimates. A write-down should occur if and when it is discovered that reserves estimates are too high. According to Smith and Sheehan (1997), downward revisions of reserves are made “to reflect new information on existing well performance and/or changes in economic conditions (i.e., oil and gas prices, operating cost environment).” Write-downs are not necessarily a cause for concern among regulators or shareholders. For instance, reserves may be subject to a negative revision if product prices decrease over a given year. Such an occurrence represents a macroeconomic-level event which operators are simply subject to and likely have little control over. Additional technical data regarding reservoir performance may necessitate a reserves write-down. There are other potentially “unavoidable” or “uncontrollable” factors, both big and small, which may result in or contribute toward a reserves write-down. This study addresses reserves write-downs and focuses in particular on reserves overstatements, which represent largely *avoidable* reserves write-downs from the proved category to probable, possible, or sub-reserve “contingent resource” status. Overstatements can occur when there has been an intentional misapplication of or disregard for reserves booking guidelines.

3.2 A Mixed Record in Industry

Previous articles have commented that reserves volumes for the US have a reputation for being conservative (Reservations About Reserves 2004), and congressional testimony offered by experts has indicated that reserves values are “generally stable and are subject to very few downward adjustments overall” (Dharan 2004b). A 1997 research article from the Energy Information Administration (EIA) (Morehouse 1997) had encouraging findings regarding audits of US reserves estimates submitted to the EIA since 1977: “most of the proved reserves estimates submitted to EIA are more than 90 percent certain to be recovered in the future and, in many cases, are more than 95 percent certain to be recovered.” Proved reserves data requested by the EIA is “generally the same information” that operators must submit to the SEC (Wascak 2004.) However, the EIA data entails gross operated reserves, while the SEC requires net reserves (operated and nonoperated). At the individual field level, the EIA believes that the proved reserves estimate “almost always” falls within “professional competence,” and that at the aggregate level for the total volume of proved reserves presented in their annual reports, companies have a “99.999% probability” of recovering at least the physical volume that is estimated (Wascak 2004).

On the other hand, reserves overstatements have been acknowledged as “the problem no one wants to talk about” (McLane 2001). A previous study by Spear and Lee (1999) indicated a high degree of uncertainty for reserves estimates of 106 “leading oil and gas firms” during 1985–1994. Furthermore, between 2003

and 2008, E&P companies reported negative revisions of more than 9.3 billion net BOE (Hodgin 2009). As evidenced by the case studies in Chapter VI, numerous recent examples of specific operators entail significant volumes of proved reserves.

“Honest mistakes” in reserves estimation can and do happen. Furthermore, a handful of alleged overstatements should not cast doubt upon the reserves estimates of the entire petroleum industry. As Meyer and Zorn (2004) aptly stated in a 2004 Simmons & Company International report, “to broadly ascribe significant reserves risk to all E&P companies simply on the basis of the specific circumstances of a few is a dangerous game.” However, this same report also states that “incidences of non-compliance with SEC proved reserves guidelines are numerous, each with their own specific case history and set of root causes.” Certain instances of reserves write-downs from the recent past, as discussed in Chapter VI, the SEC and/or shareholder groups believed that the overstatements were not necessarily attributable to “honest mistakes.” A number of reserves write-downs have met or exceeded 20% of a company’s previously reported volumes. According to a former SEC Chief Accountant, “A 20% restatement of proved reserves is a humungous error....not an oversight. It’s an intentional misapplication of the SEC rules” (Macalister 2004).

So in light of the fact that alleged reserves overstatements and subsequent write-downs have occurred on a number of previous occasions, it is naive to assume that there will not be further instances in the future. We contend that reserves overstatements, however slight, will likely always represent a source of investment risk, and that past is indeed prologue with respect to reserves overstatements. The following anecdote was relayed by a SEC employee in 1964 (White 1964):

“A rather unusual filing... ascribed nearly 100 million bbl of oil and nearly 250 billion cu ft of gas to potential production from horizons “not yet discovered.” This statement was volunteered in addition to an estimated 8 million bbl of proved undeveloped reserves which were subsequently reduced to 3 million bbl. Even this was a forced overestimation to allow for the remotest of contingencies. There had been only a little over 1 million bbl of developed reserves involved. After nine years, none of the “potential” reserves has been discovered. Obviously this was not one of the better reports.”

Although this comment was made nearly 50 years ago and the case pre-dates modern day regulations, the conveyed attitude is very telling and its tone has, in essence, echoed through history.

3.3 Causes of Overstatements

McLane (2001) presented a number of reasons why reserves overbooking may occur. First, he states that poor estimating practices and ignorance may be responsible. Such practices of unsound technical work

represent unintentional “errors of omission.” These errors persist, despite ample availability of technical material covering reserves estimation including comprehensive texts on the subject (e.g., Cronquist 2001) and papers which specifically address “recurring mistakes and errors” in reserves estimation (Harrell *et al.* 2004 and Hodgkin and Harrell 2006). When estimating year-end reserves for SEC reporting purposes, an insufficient understanding or improper application of SEC definitions would constitute a poor estimating practice and ignorance. A lack of adequate internal controls within a company would also be characteristic of shortcomings in this area.

Secondly, according to McLane, misguided incentives and competition for investors may be additional causes of reserves overbooking. Specifically, regarding misguided incentives, staff bonuses may set the tone for staff behaviors. If an engineer’s compensation is dependent on achieving an aggressive level of reserves volumes, it may be difficult for the engineer to maintain objectivity during the estimation process. McLane discusses the significant pressure on managers to meet the high expectations of the equities market. As quoted by Michael Oxley, then-Chairman of the US House of Representatives Committee on Financial Services, during a Congressional Hearing on Oil and Gas Reserves in 2004 (Oxley 2004), McLane states there is pressure “to push the envelope of credibility in efforts to buoy investor confidence and thus increase stock value.”

Third, McLane lists a number of human biases which may contribute to reserves overbooking. He describes biases affecting judgment under uncertainty and also biases affecting risk decisions. Some of the biases affecting judgment under uncertainty include overconfidence, availability, and anchoring. To be sure, any reserves estimate should be construed as requiring “judgment under uncertainty.” Biases affecting risk decision are focused on the perception of risk with respect to investment decisions.

Last, according to McLane, reserves overstatements may reflect a lack of professionalism. He cites a number of behaviors, some of which are listed and consolidated below, that signify and encourage professionalism:

- Being fair and objective
- Accepting accountability for estimates and improving these estimates
- Disregarding the pressure to intentionally overbook reserves

3.4 Consequences of Overstatements and Write-Downs

McLane (2001) observed that many companies that have used “aggressive” reserves booking no longer exist because the temporal benefits of the practice disappear when the reserves have to be removed from the books. While the prospect of a company going out of business as a result of reserves overbooking may sound severe, our analysis of public records from numerous cases indicates that other penalties may be just as harsh. Much of this document is in fact dedicated to the specific consequences arising from alleged

cases of reserves overstatements and write-downs. The following chapters illustrate the significant potential liability for both individuals and corporations. As evidenced by the share price responses to admissions of substantial write-downs, overly aggressive booking practices can shake marketplace confidence. Reserves overbooking may lead to sudden and drastic value destruction for shareholders. Shareholder groups, in turn, have occasionally sought redress through class action civil lawsuits.

In addition to the “external” costs described above, an operating company may feel other consequences. For instance, McLane (2001) believes that “overbooking creates stress and tension within an organization.” Most engineers and geoscientists, if pressured by management to “push the envelope” of technical credibility, would likely harbor or express these sentiments. It is possible—and in some cases documented—that employees or managers have left or even, more specifically, been asked to leave an organization due to reserves overbooking. Investigation of noteworthy cases even shows that management teams have been largely reshaped as a result of allegedly overbooking.

3.5 Accounting Systems and The Ceiling Test

According to SEC rules, oil and gas companies may utilize either the Full Cost (FC) or Successful Efforts (SE) method of accounting. Under each system, lease acquisitions, development wells, and successful exploratory wells are “capitalized” and amortized off over a number of accounting periods (Johnston and Bush 1998). These capitalized costs must be amortized based on the unit of production method according to SEC financial reporting standards for DD&A calculations (Smith and Roemer 2009). The primary difference between the two systems, however, is the manner in which unsuccessful exploratory drilling costs are treated. These costs are capitalized according to the FC method and expensed, or written off within the one accounting period in which they are incurred, according to the SE method (Johnston 1992). The cumulative unamortized costs represent the *book value* of the operator’s oil and gas reserves.

Under the FC method, the SEC requires a *ceiling test*. For this test, the book value for producing properties, less deferred income taxes, is compared to the net present value, calculated at a constant price forecast and discounted at 10%, of the company’s SEC reserves (Devon Energy Corporation/Fair Disclosure 2009). The NPV10 “ceiling” of the reserves is termed by Accounting Standards Update Topic 932 (Extractive Activities—Oil and Gas) as the *standardized measure of discounted future net cash flows relating to proved oil and gas reserve quantities*, commonly abbreviated as “SMOG” (FASB 2010a). If the net book value exceeds the SMOG, the assets are subject to an *impairment charge*. A noncash ceiling write-down occurs in which any excess is charged as an expense. Impairments also occur with the SE method, although it is usually less of an issue since unsuccessful exploration costs are expensed (Johnston 1992).

Any charge associated with a ceiling test is “a purely financial statement event that has no impact on oil and gas reserves in the ground” (Devon Energy Corporation/Fair Disclosure 2009). It is worth noting that, despite misconceptions to the contrary, no reserves are written off as a result of a ceiling test, and this financial write-down should not indicate a reserves overstatement.

CHAPTER IV

ENFORCEMENT AND THE REGULATORY ENVIRONMENT

4.1 The Securities and Exchange Commission (SEC)

Before discussing the regulation of oil and gas reserves disclosures, it is first necessary to discuss general information regarding the Securities and Exchange Commission, such as the origin and nature of their authority, their mission, the enforcement process in general, and recent enforcement trends. The following sections provide these details.

4.1.1 Federal Laws Governing the SEC and Other US Regulatory Agencies

The four general types of Federal law in the United States are constitutional, statutory, administrative, and case (McKinney 2006). Under powers authorized by the Constitution, Congress passes statutory laws that are officially codified within the 50 Titles of the United States Code (USC, US Code 2008). In case law, courts apply their interpretation of the Constitution and have assumed the power of judicial review over statutory and administrative law (McKinney 2006). Title 15 contains statutory laws related to commerce and trade.

Gifis (1996) cites two primary statutes in 15 USC which govern securities law and are collectively referred to as *The Securities Acts*:

- *The Securities Act of 1933* (15 USC §§77a et seq.)—concerns initial offering of securities and full disclosure thereof for investors.
- *The Securities Exchange Act of 1934* (15 USC §§78a et seq.)—regulates post-distribution, ongoing sale and purchase of securities and disclosure of information related to securities trading. Also authorizes regulation of securities exchanges and establishment of the Securities and Exchange Commission.

In 1946, Congress passed the Administrative Procedures Act (APA), which gave uniform guidelines to both the rule-making process and adjudicative hearings of federal administrative agencies (Gifis 1996). Under the rule-making process, then, agencies such as the SEC are “quasi-legislative” bodies with broad authority to interpret the laws of Congress and promulgate more specific laws (Ginsberg et al. 1999). These administrative laws are presented in the Code of Federal Regulations (CFR). Furthermore, the SEC is also a “quasi-judicial” agency (Gifis 1996) that holds adjudicative hearings and applies “rules and precedents to specific cases to settle disputes with regulated parties” (Ginsberg *et al* 1999).

4.1.2 Marketplace Role

According to the SEC's website, their mission "is to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation," and "first and foremost, the SEC is a law enforcement agency" (US SEC 2010). The agency does not make claims regarding the preferrability of one investment over another, but rather aims to promote clear and full corporate disclosure to the investing public. The Commission currently employs approximately 3,500 individuals across 11 regional offices and is headed by five presidentially-appointed commissioners, one of whom serves as the chairman (US SEC 2010). The Commission is divided into 5 divisions as follows (US SEC 2010):

- *Division of Corporate Finance*—Reviews documents which are required of corporations and provides interpretive guidance to companies.
- *Division of Markets and Trading*—Responsible for oversight of securities market participants, including securities firms and credit rating agencies.
- *Division of Investment Management*—Regulates mutual funds, analysts, and investment advisors.
- *Division of Enforcement*—Recommends investigations, civil actions, or sanctions, and prosecutes cases for the Commission.
- *Division of Risk, Strategy, and Financial Innovation*—Founded in September 2009 and accountable for identifying developing risks and trends.

4.1.3 General Enforcement Process

An investigation by the SEC may arise for a number of reasons: a routine review of SEC filings, tips from the public or news stories, referrals from other SEC investigations or government agencies (Larsen *et al* 2008). Schaumann (2002) and Larsen *et al.* (2008) outlined the typical stages of an investigation. The investigation begins with an *informal inquiry*. At this point, the Commission does not have subpoena power and witnesses cooperate voluntarily. On the basis of the informal inquiry, the staff may request authority to conduct a *formal investigation*. If granted, the staff may then subpoena witnesses to testify.

The target of the investigation does not have the right to know that an investigation is being conducted, nor to make a statement. Typically, however, the target is issued a *Wells Notice*, which provides notification of the staff's intent. The target then has the option to respond via a *Wells Submission*, which may ultimately be used as evidence. After considering the Wells submission, the staff makes a recommendation to the Commission. If a violation is believed to have occurred, the 5-member Commission may elect to pursue any or all of these three options:

- *File an action in federal court*—Seeks an *injunction* (either *temporary* or *permanent*) or civil penalties, and may bar the subject from serving as an officer or director of a SEC-regulated company.
- *Begin an administrative proceeding*—Held before an administrative law judge (employed by the SEC), who has the discretion to impose an array of sanctions, "ranging from the relatively innocuous

to the severe” (Schaumann 2002). Such administratively-issued sanctions may include a *cease-and-desist order*, which is similar to an injunction.

- *Request that the Department of Justice (DOJ) bring a criminal action*—A DOJ investigation may be conducted in parallel to that of the SEC and may or may not be due to a referral from the SEC.

4.1.4 Enforcement Trends

The most significant securities regulation laws since the 1933 and 1934 Acts has been the Sarbanes-Oxley Act (SOX) of 2002. Passed in the aftermath of Enron’s historic collapse in 2001, SOX is an anti-fraud measure comprised of numerous laws which address financial reporting by public companies. The Act requires that executives take individual responsibility for the accuracy and completeness of financial statements, necessitates companies to certify internal controls, and mandates a triennial SEC review of each company’s financial statements (Dharan 2004a). SOX does not explicitly mention or discuss oil and gas reserves reporting (Ryder Scott 2003).

The SEC has recently come under criticism and scrutiny as a result of enforcement failures related to the massive Ponzi scheme charges against Bernard Madoff. The government alleged that investors suffered net losses of USD 13 billion and charged Madoff with 11 criminal counts in “the biggest financial swindle in history” (Frank and Efrati 2009). (Madoff pleaded guilty to all counts and was sentenced to 150 years in prison.) However, the agency let the Madoff fraud continue undetected for almost two decades. The SEC inspector general encouraged “employee-by-employee” action in the wake of the scandal, and the new chairman has overhauled enforcement efforts (Gordon 2009). A recent SEC settlements study by Larsen and Buckberg 2009 states “clearly the securities regulatory environment is evolving rapidly” and cites reforms to be brought before Congress that would expand SEC enforcement powers.

The following figures reveal a number of interesting observations regarding SEC enforcement trends. **Fig. 1**, from the SEC’s 2009 Performance and Accountability Report (US SEC 2009b), shows that the number of investigations opened by Commission has increased steadily since 2007.

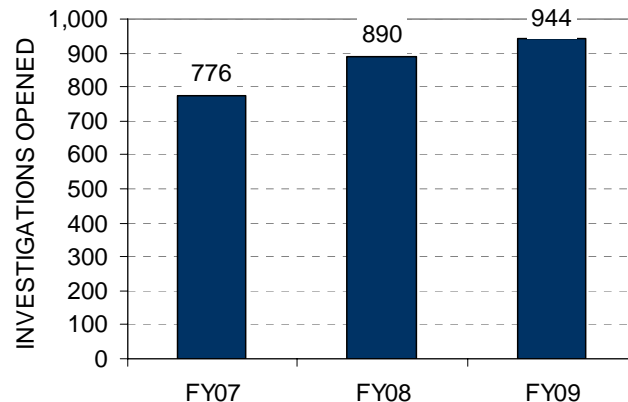


Fig. 1—Investigations opened by the SEC in 2009 are up 20% from 2007 (adapted from US SEC 2009b).

Fig. 2 displays that while enforcement cases brought by the SEC are distributed among a number of different areas, there is an historical concentration in the area of financial disclosure cases (US SEC 2009b). (Statements pertaining to reserves constitute an example of “financial disclosure.”)

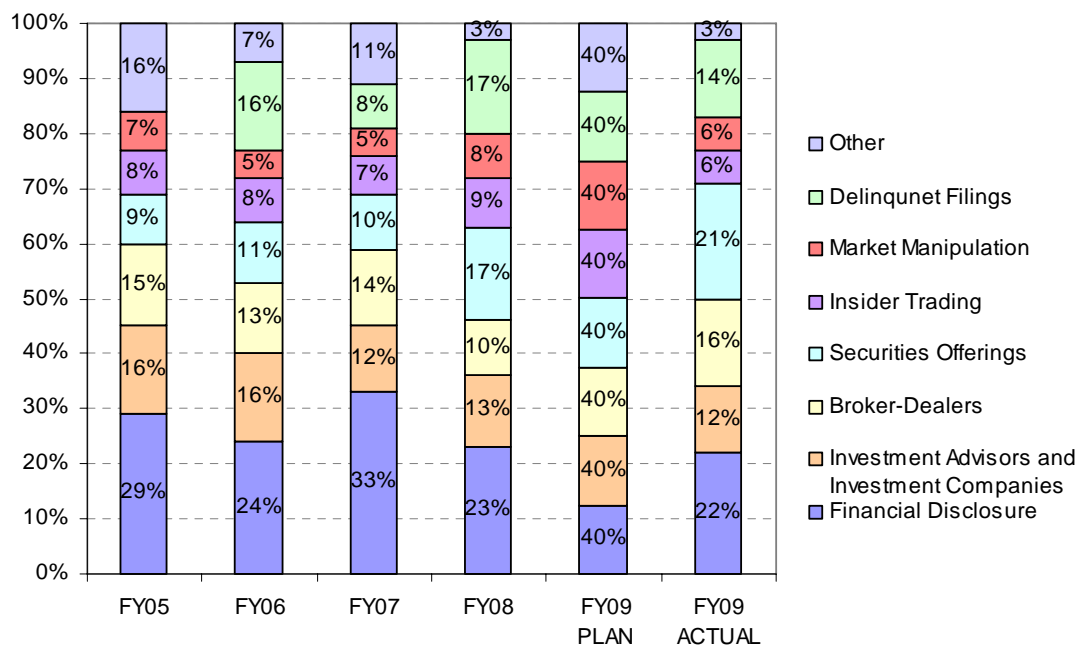


Fig. 2—Financial disclosure cases are the most common type brought by the SEC (adapted from US SEC 2009b).

Fig. 3, which should be of particular importance to reserves evaluators and executives who vouch for the legitimacy of publicly-disclosed financial information, provides an indication of the frequency of individual and/or corporate SEC settlements for “misstatement cases” (Larsen *et al* 2009). The data show post-SOX SEC settlements have included an ‘individual’ component more often than not.

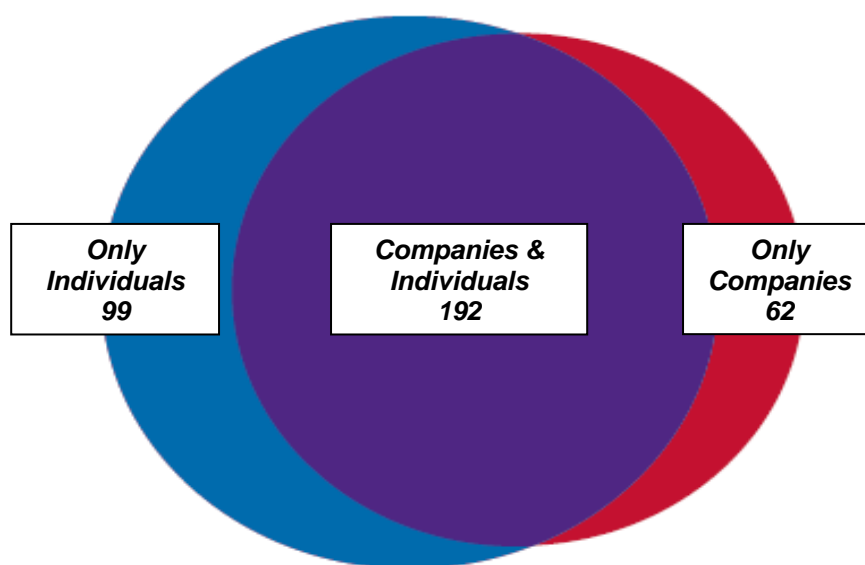


Fig. 3—SEC settlements for post-SOX misstatement cases most commonly include settlement with individuals (adapted from Larsen et al. 2009).

In summary, the authority and investigation count of the SEC are increasing, financial disclosure cases are the most common type brought by the SEC, and settlements are frequently made between the SEC and individuals.

4.2 Reserves Under the SEC Microscope

Having addressed general information pertaining to the SEC and its enforcement activities, we now turn to the Commission’s purview of oil and gas reserves.

4.2.1 Regulation, Documents, and Guidance Related to Reserves Disclosures

Although we have discussed the historical context of reserves definitions and the recent Modernization of Oil and Gas Reporting, we must also introduce and more fully examine key laws and other historical documents pertaining to reserves disclosures. The full number of original documents, amending documents, and details are quite voluminous. Selected highlights are presented here.

The Energy Policy and Conservation Act of 1975 required the SEC to “take such steps as may be necessary to assure the development and observance of accounting practices to be followed in the preparation of accounts by persons engaged, in whole or in part, in the production of crude oil or natural gas in the United States” (42 US Code 77 2008). “Rule 4-10” established definitions for “proved reserves” and other terms of interest used in the oil and gas industry. In 1978, Accounting Series Release Number 253 and Statement of Financial Accounting Standards 19, Financial Accounting and Reporting by Oil and Gas Reporting Companies, were released by the SEC and FASB, respectively. FASB published SFAS 69, Disclosures about Oil and Gas Producing Activities—an Amendment of FASB Statements 19, 25, 33, and 39, in 1982 (FASB 1982). Other noteworthy documents include Industry Guide 2, SEC Staff Accounting Bulletin Topic 12 (1997), SEC Clarification of Oil and Gas Reserve Definitions and Requirements (2001), and SEC Exemption to Production Testing in Deep Water Gulf of Mexico (2004) (Etherington 2009).

Under powers granted by the 1934 Exchange Act, the SEC has the authority to establish financial reporting and accounting standards. Since 1973, the SEC has designated the Federal Accounting Standards Board (FASB) as being responsible for establishing such standards (FASB 2010b). Through June 2009, FASB communicated accounting standards to all industries by issuing a number of “Pronouncements,” including Statements of Financial Accounting Standards (SFAS), Interpretations, Staff Positions, and Technical Bulletins (such as those mentioned above). As of July 2009, FASB has streamlined their communications with the Accounting Standards Codification (ASC), and any (previous) accounting literature outside of the Codification is non-authoritative (FASB 2009). Oil and gas accounting guidelines were set forth in “Extractive Activities—Oil and Gas (Topic 932).” In January 2010, FASB revised the topic to be aligned with the SEC’s Modernization of the Oil and Gas Reporting Requirements (FASB 2010a). **Table 1**, below, shows a year-end reserves disclosure table which operators may now use as per Topic 932.

TABLE 1— YEAR-END RESERVES REPORTING FORMAT SUGGESTED BY TOPIC 932.

	Total		Total—by Product		Continent A		Continent B—Country A		Other Countries in Continent B		Other Continents / Countries		
	All Products	Oil	Synthetic Oil		Oil	Synthetic Oil		Oil	Synthetic Oil		Oil	Synthetic Oil	
			Oil	Synthetic Oil		Oil	Synthetic Oil		Oil	Synthetic Oil			
Proved developed and undeveloped reserves (consolidated entities only):													
Beginning of year		X	X		X	X		X	X		X	X	
Revisions of previous estimates		X	X		X	X		X	X		X	X	
Improved recovery		X	X		X	X		X	X		X	X	
Purchases of minerals in place		X	X		X	X		X	X		X	X	
Extensions and discoveries		X	X		X	X		X	X		X	X	
Production	(X)	(X)	(X)		(X)	(X)		(X)	(X)		(X)	(X)	
Sales of minerals in place	(X)	(X)	(X)		(X)	(X)		(X)	(X)		(X)	(X)	
End of year	X ^(b)	X	X		X	X		X	X		X	X	
Entity's share of proved developed and undeveloped reserves of investees accounted for by the equity method													
Beginning of year		X	X		XX	X		X	X		X	X	
Revisions of previous estimates		X	X		XX	X		X	X		X	X	
Improved recovery		X	X		XX	X		X	X		X	X	
Purchases of minerals in place		X	X		XX	X		X	X		X	X	
Extensions and discoveries		X	X		XX	X		X	X		X	X	
Production	(X)	(X)	(X)		(X)	(X)		(X)	(X)		(X)	(X)	
Sales of minerals in place	(X)	(X)	(X)		(X)	(X)		(X)	(X)		(X)	(X)	
End of year	X	X	X		X	X		X	X		X	X	
Total consolidated and equity interests in reserves—end of year													
	X	X	X		X	X		X	X		X	X	
Proved developed reserves (consolidated entities only):													
Beginning of year	X	X	X		X	X		X	X		X	X	
End of year	X	X	X		X	X		X	X		X	X	
Proved undeveloped reserves (consolidated entities only):													
Beginning of year	X	X	X		X	X		X	X		X	X	
End of year	X	X	X		X	X		X	X		X	X	
Oil and gas subject to long-term supply, purchase, or similar agreements with governments or authorities in which the entity participates in the operation of the properties where the oil or gas is located or otherwise serves as the producer of those reserves (consolidated entities only):													
Total under contract (quantity subject to agreement)—end of year	X	X	X		X	X		X	X		X	X	
Received during the year	X	X	X		X	X		X	X		X	X	

(a) Oil and synthetic oil reserves stated in barrels.

(b) Includes reserves of X barrels attributable to a consolidated subsidiary in which there is an X percent noncontrolling interest.

Oil and gas reserves volumes for US-based companies are disclosed annually to the SEC and investors in conjunction with a *Form 10-K*. (Foreign issuers file a comparable document entitled *Form 20-F*.) Most companies are also required to file a quarterly report known as *Form 10-Q*. Certain intra-quarter material events call for a Form 8-K to make the important information public to shareholders. If there are certain intra-quarter material events, a *Form 8-K* (“current report”) is filed to make public the important information to shareholders. Form 8-K filings are relatively common and may be necessitated by a variety of different events, but the information disclosed may have the potential to significantly alter a corporation’s share price. The expectation or specifics of a reserves write-down may be communicated via Form 8-K.

4.2.2 Potential “Triggers” for Reserves Inquiries

While Section 4.1.3 mentioned briefly some potential causes for an SEC investigation, the following is a more comprehensive list compiled from multiple sources (Hodgin 2009, Roesle 2007 and Schaumann 2002) that gives insight into items which may serve—independently or in concert—as the impetus for a reserves inquiry or investigation:

- History of negative reserves revisions
- Partner activity, press release, or revision
- History of SEC infractions (e.g., in other, “non-reserves” areas)
- Potentially questionable press release issued by operator
- Annual reports that don’t conform to press releases
- Negative publicity
- Mandatory triennial SOX review
- Self-reported problems
- Unusual stock volume or movement
- Whistleblowers
- Response to an SEC comment letter

The SEC currently employs two reservoir engineers who are responsible for monitoring compliance to the Commission’s standards for reserves disclosures (Meyer and Zorn 2004). These engineers work within the SEC’s Division of Corporate Finance. Given the sheer number of reporting companies and diversity of assets in the E&P universe, this is undoubtedly a daunting task.

4.2.3 Comment Letters

The SEC regularly issues *comment letters* in response to issuer filings. Any number of topics may be addressed in a comment letter, such as financial and accounting details, controls and procedures, executive compensation, legal proceedings, and reserves volumes. The comment letter requests a response to the

questions raised by Commission. Certain comment letters and response letters pertaining to disclosures made after 1 August 2004 are made public through EDGAR, the Electronic Data Gathering, Analysis, and Retrieval system (US SEC 2005). (Other forms, including a company's 10-K, must be filed via EDGAR and are in turn also publicly available through the system.) However, if a company requests confidentiality, they may submit a redacted version—without the confidential information—to be made available publicly in addition to their unfiltered response to the Commission (SEC 2004a).

Reserves volumes are commonly questioned in comment letters to oil and gas companies. A search for reserves-related comments on EDGAR clearly illustrates that the SEC is indeed actively examining the reserves data provided by issuers. Questions posed by the Commission can be general (e.g., a request for a company's detailed reserves report) to very specific (e.g., requests about particular assets or wells). Company responses can yield further questions and requests for clarification. Two examples of reserves-related inquiries from SEC Comment Letters are presented below. These are only two brief examples of many which pertain to reserves volumes.

In a Comment Letter to American Oil & Gas regarding filings from 2005-2006, the Commission required further commentary on reserves revisions (Feiten 2007):

We note significant oil reserve revisions in 2004 and significant gas reserve revisions in 2005. Please provide us with the reasons for these revisions.

Regarding Cabot Oil & Gas Corporation's 2006 Form 10-K, the Commission wrote a comment letter and sought additional details regarding Canadian PDP reserves (Schroeder 2008):

Please provide us with a graph over time of production through the latest month the data is available for each your wells in Canada. Include on each graph your forecast of future production and reserves as of December 31, 2006.

4.2.4 Types of Write-Downs

Comment letters may result in a reserves write-down. Roesle (2007) identified two different types of negative revisions: a *de-booking* and a *restatement*. A de-booking “typically results from [an] SEC request to remove certain reserves from the next annual filing” and is “rather common.” A restatement “is a much more serious result, particularly under SOX, as it requires the issuer to retroactively ‘correct’ past reserves disclosures and recalculate earnings.” In the event of a reserves restatement, the US Department of Justice will likely open an investigation into the matter. The Justice department can issue both civil and criminal charges (Labaton and Gerth 2004). Additionally, corporate penalties may be triggered under SOX (Hodgin 2009).

4.3 Other Securities Regulators

Although the regulatory agency of most interest here is the SEC, a number of other securities regulators warrant mentioning, including the Financial Services Authority (FSA) in the United Kingdom, the Canadian Securities Administration (CSA) and Alberta Securities Commission (ASC) in Canada, and the Comision Nacional del Mercado de Valores (CNMV), in Spain. Although this is not a comprehensive list, these particular organizations have played a noteworthy role in certain aspects of reserves disclosures or alleged overstatement cases.

The FSA and SEC coordinated an enforcement action against Shell in 2004 to address the company's significant reserves write-down (see Section 6.1). Hadley et al. (2010) state that the FSA is not an "enforcement-led regulator," and their financial penalties issued against corporations are traditionally a fraction of those required by the SEC. The 2004 Shell case certainly illustrates this, as the penalties levied by the SEC and FSA were USD 120 million and GBP 17 million (or USD 28 million), respectively. At the time their Shell penalty was levied, it was the highest ever sought by the Authority (Hadley et al. 2010).

Unlike the United States, Canada does not have an organization responsible for securities oversight at the national level. The 10 provinces and 3 territories are instead individually accountable for administering securities laws. However, each province or territory serves as a member of the Canadian Securities Administration (CSA), which is charged with "developing a harmonized approach to securities regulation across the country." (CSA 2009a). With approximately 380 companies in Alberta which are required to report oil and gas reserves, the Alberta Securities Commission (ASC) serves as the leading Canadian authority for providing disclosure guidance to E&P companies (ASC 2008). National Instrument 51-101, Standards of Disclosure For Oil and Gas Activities, sets forth reporting requirements and mandates that reserves estimates must be calculated, classified, and audited according to the Canadian Oil and Gas Evaluation Handbook (COGE Handbook or COGEH). COGEH was developed by the Calgary Chapter of the Society of Petroleum Evaluation Engineers and the Canadian Institute of Mining, Metallurgy & Petroleum (ASC 2007). In December 2009, the CSA published proposed amendments to NI 51-101 and requested stakeholder comments by May 2010 (CSA 2009b). According to the managing partner of the global oil and gas group for Deloitte Services LP, "Canada has the most enlightened market in terms of disclosing information to investors" (Snow 2006).

In Spain, The Comision Nacional del Mercado de Valores (CNMV) is responsible for securities regulation. During 2006, according to a class action lawsuit, the CNMV commenced a reserves overstatement investigation of Repsol YPF (Reynolds v. Repsol YPF 2006). The Repsol YPF case is discussed further in Section 6.4

4.4 Corporate and Individual Liability

The SEC’s Division of Corporate Finance has issued reminders about individual liability that have been directed specifically to those involved with the reserves estimation process (US SEC 2001):

The SEC staff reminds professionals engaged in the practice of reserve estimating and evaluation that the Securities Act of 1933 subjects to potential civil liability every expert who, with his or her consent, has been named as having prepared or certified any part of the registration statement, or as having prepared or certified any report or valuation used in connection with the registration statement. These experts include accountants, attorneys, engineers or appraisers.

Schaumann (2002) provides details on the legal liability associated with securities disclosures. Information which is said to rely on subjective analysis and judgment is referred to as “soft” information. Because of the potential of soft information to mislead investors, the SEC established safe harbor rules in 1979 for forward-looking statements containing soft information. These statements are to be made “in good faith” and the company has a duty to provide updates as new information becomes available. Further legislation brought an additional safe harbor act, the 1995 Private Securities Litigation Reform Act. Under this act, protection is afforded according to two alternative means: a plaintiff cannot “prove that the forward looking statement was made with actual knowledge that it was false or materially incomplete”; and adequate cautionary statements made by the defendant.

According to Larsen et al. (2008), 88% of individual settlements made with the SEC include a disgorgement payment. The SEC may also seek an injunction, which is “awarded for the purpose of requiring a party to refrain from doing or continuing to do a particular act or activity... The injunction is a preventative measure which guards against future injuries rather than affording a remedy for past injuries” (Gifis 1996). Certain parties in the El Paso reserves overstatement case, for instance, were enjoined in the 2008 SEC complaint.

4.5 Laws Cited by the SEC for Reserves Overstatement

In court documents filed during July 2008 in the United States District Court for the Southern District of Texas, the SEC alleged numerous violations of securities laws by El Paso Corporation, its subsidiaries, and certain employees (SEC v. El Paso 2008). The complaint alleges that the defendants knew or “were reckless in not knowing” of certain violations. Section 6.2 provides additional details on this alleged reserves overstatement case. It should be noted that the defendants did not admit to or deny the Commission’s allegations in settling the charges against them (US SEC 2008). The laws are presented here to illustrate laws that have been cited—and may be cited in the future—for reserves overstatement cases. Full text of these laws is presented in Appendix A. **Table 2** below presents a summary. As

discussed in Section 6.1, the SEC alleged securities law violations against the Royal Dutch Shell Group and cited some of the very same securities laws.

TABLE 2—VIOLATIONS ALLEGED IN THE SEC’S RESERVES OVERSTATEMENT CASE AGAINST EL PASO.

<i>Claim</i>	<i>Violation</i>
1st	Section 17(a) of the Securities Act
2nd	Section 17(a)(2) of the Securities Act
3rd	Section 10(b) of the Exchange Act and Rule 10b-5 Thereunder
4th	Section 13(a) of the Exchange Act and Rules 12b-20,13a-1 and 13a-13
5th	Sections 13(b)(2)(A) and 13b(2)(B) of the Exchange Act
6th	Section 13(b)(5) of the Exchange Act
7th	Exchange Act Rules 13b2-1 and 13b2-2
8th	Section 15(d) of the Exchange Act and Rules 12b-20,15d-1 and 15d-13 Thereunder
9th	Aiding and Abetting EP and CGP's Violations of 4th Claim
10th	Aiding and Abetting EP, EPPH and CGP's Violations of 5th Claim
11th	Aiding and Abetting EPPH's Violations of 8th Claim
<i>Claim</i>	<i>Summary</i>
1st	Use of interstate commerce for purpose of fraud or deceit
2nd	Use of interstate commerce for purpose of fraud or deceit to obtain money or property
3rd	Use of any manipulative or deceptive device employed in connection with sale of any security
4th	Accurate annual and quarterly reporting
5th	Keep accurate records, devise and maintain a system of internal accounting controls
6th	Circumventing/Failing to implement internal accounting controls, or knowingly falsifying records.
7th	Falsified records and materially false or misleading statements
8th	Accurate annual/quarterly reporting, including information to make statements not misleading
9th	Adiding and abetting company's violation
10th	Adiding and abetting company's violation
11th	Adiding and abetting company's violation
<i>Claim</i>	<i>Defendant</i>
1st	EPPH, CGP, 3 VPs of EPPH
2nd	EP, President and SVP of EPPH
3rd	EPPH, CGP, 3 VPs of EPPH
4th	EP and CGP
5th	EP, EPPH, and CGP
6th	3 VPs of EPPH
7th	President, SVP and 3 VPs of EPPH
8th	EPPH
9th	President, SVP and 3 VPs of EPPH
10th	President, SVP and 3 VPs of EPPH
11th	President, SVP and 3 VPs of EPPH

CHAPTER V

SHAREHOLDER LAWSUITS

5.1 Class Action Trends

In light of the fact that reserves overstatements have been a principal or contributing factor in a number of class action lawsuits, it is necessary to make a few brief comments regarding their unique nature. A class action is defined as “a lawsuit brought by a representative member(s) of a large group of persons on behalf of all the members of the group” (Gifis 1996). McArthur (1996) has written extensively on class action lawsuits in the petroleum industry and commented that “the oilfield is no stranger to class actions.” He claims that class actions have been used in drilling fund and partnership fraud cases, stock cases, and royalty cases. The “archetypal” class action involving securities entails stock price inflation by means of a misrepresentation or omission.

Recent documentation from the National Economic Research Associates (NERA), presented in **Fig. 4**, shows that class action lawsuits are relatively common in the energy industry when compared to filings in other industries (Plancich and Starykh 2009).

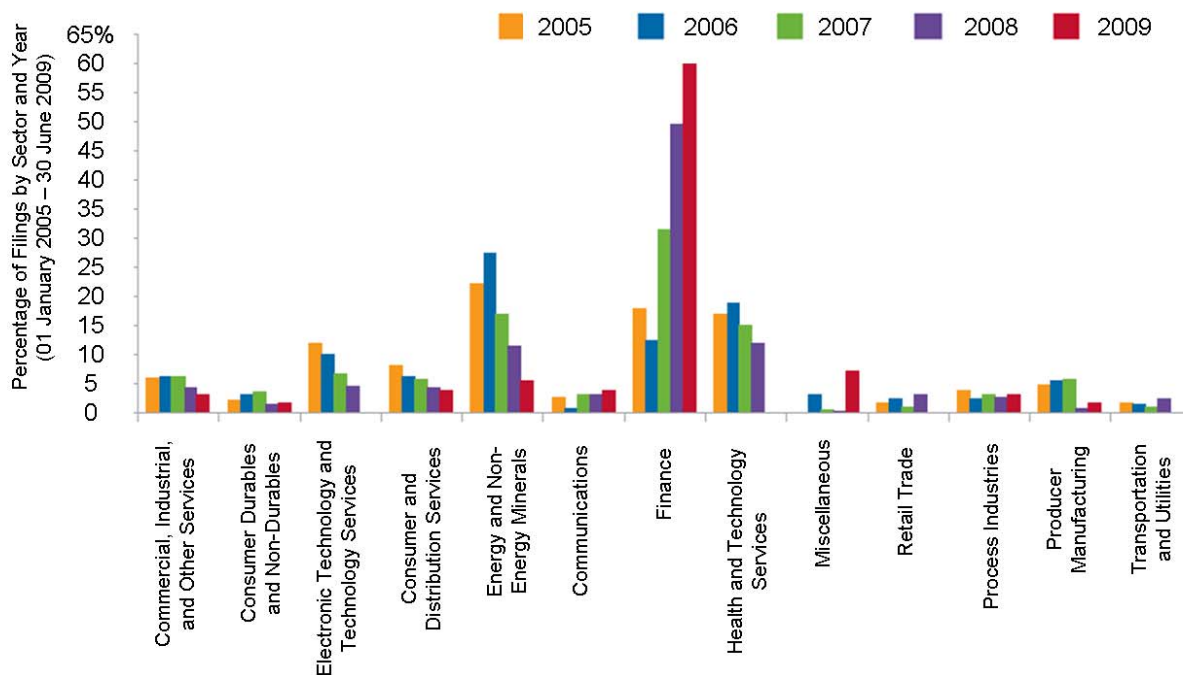


Fig. 4—Preponderance of energy-related class action lawsuits is decreasing but historically high compared to those filed in other sectors (Plancich and Starykh 2009).

Furthermore, the same NERA research indicates that for class action settlement values in 2008, the median was USD 8.0 million and the average USD 43 million. Settlement values have, on average increased significantly since the passage of Sarbanes-Oxley. Investor losses are said to be the most influential factor in determining settlement amounts. Another interesting finding, again courtesy of NERA (Plancich and Starykh 2009), is presented in **Fig.5**, which shows investors commonly arrive at settlements that are a mere fraction of their losses. Additionally, the data indicate a nonlinear relationship between losses and settlements. Investors who suffer higher losses will likely settle for a disproportionately lower amount relative to those suffering lower losses.

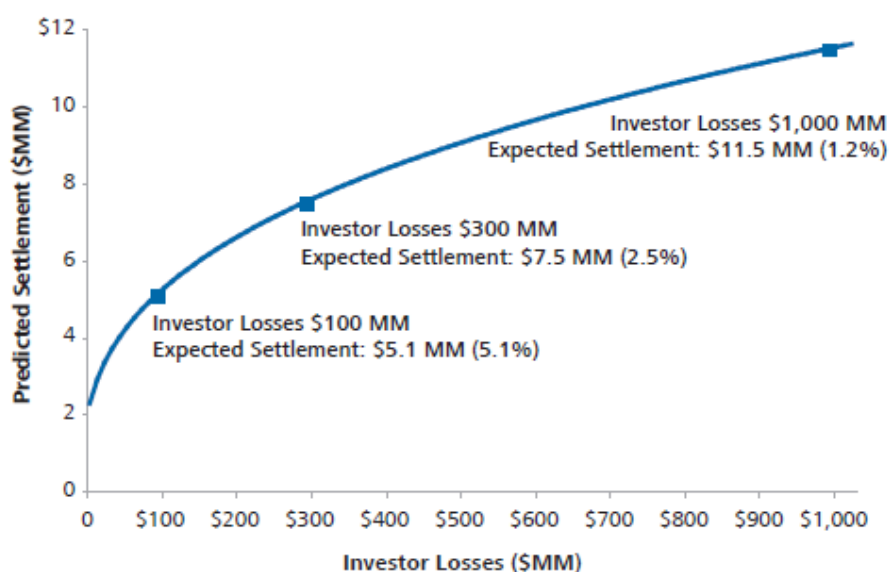


Fig. 5—Class action settlements increase non-linearly with investor losses (from Plancich and Starykh 2009).

5.2 Laws Cited by Shareholders for Reserves Overstatements

Three laws are commonly cited in class action lawsuits related to reserves overstatements. Chapter VI gives information on some cases in which these laws were cited in shareholder lawsuits and alleged to have been violated. The full text of these laws is presented in Appendix B. **Table 3** presents a brief summary of these laws. Note that Section 10(b) of the Exchange Act and Rule 10b-5 thereunder were also cited in the SEC's securities fraud cases against El Paso and Shell, and are commonly combined as a single count in the class actions discussed in Chapter VI.

**TABLE 3—ALLEGED VIOLATIONS COMMONLY CITED IN RESERVES
OVERSTATEMENT SHAREHOLDER CLASS ACTION LAWSUITS.**

Alleged Violation	Summary
Section 10(b) of the Exchange Act	Use of any manipulative or deceptive device employed in connection with sale of any security
Rule 10b-5 Under the Exchange Act	Use of manipulative or deceptive devices; untrue or misleading statements
Section 20a of the Exchange Act	Liabilities of controlling persons and persons who aid and abet violations

CHAPTER VI

CASE STUDIES

6.1 Royal Dutch Shell Group (Shell)

Shell's international recognition and the magnitude of its 2004 reserves write-down make it likely the best-known alleged reserves overstatement case. The company announced a 3.9 billion BOE reduction in proved reserves on a 9 January 2004 conference call (Shell/Fair Disclosure 2004a). The group chairman, Sir Phillip Watts, was not on the conference call in which the reserves write-downs (or "recategorizations") were communicated to analysts, and received criticism as a result (Davis 2004). The E&P CEO, Walter van de Vijver, was also absent from this call. Company representatives acknowledged that reserves audits were completed internally, with the aid of a contract reservoir engineer, and the write-down was associated with a review prompted by "part of our normal stewardship of the assets." Furthermore, representatives stated "there is no material effect on financial statements for any year up to and including 2003," and that "most of the reserves will be rebooked in the proved category over time" (Shell/Fair Disclosure 2004a). The value of Shell Transport's American Depository Receipts dropped 6.9% on 9 January 2004 as a result of the announcement (Pennsylvania Employees Retirement System v. Royal Dutch / Shell Transport 2005).

On 5 February 2004, Fourth Quarter 2003 results and additional write-down details were presented in a conference call (Shell/Fair Disclosure 2004b). As part of this call, Watts apologized for his absence on the previous month's conference call, it was disclosed that the group was "on credit watch," that class action shareholder lawsuits had been filed, and that it would be necessary to revise previously filed financial statements. Regarding the recategorizations, Watts stated "As soon as that came to my attention, it was a matter of all hands on deck, and I remember writing down the words 'get the facts and do the right thing...'" Later in the call, an analyst asked the Shell team if it would be appropriate for Mr. Watts to resign.

At the time of the overstatement, the company had a "Byzantine dual holding structure," in which Royal Dutch Petroleum Company was based in The Hague, and Shell Transport and Trading Company was headquartered in London. Some observers believed this structure led to lax oversight (Mouawad. 2009). These parent companies owned shares in holding companies ("the group") which engaged in operational activities (US SEC 2004c). Early reports, including one from Meyer and Zorn (2004), stated the write-down was due in large part to the fact that projects booked as proved undeveloped between 1996 and 2002 in areas such as Australia and Nigeria had not, in fact, "progressed to their expected technical and commercial maturity." Reportedly, Shell and its partners had yet to receive government approval for a

natural gas development, known as Gorgan, in Australia. (ChevronTexaco, a partner in this project, did not include Gorgan estimates as part of their proved reserves.) Additionally, securities analyst Fadel Gheit commented that companies with operations in Nigeria were likely under pressure from that nation's government to inflate reserves. Since production quotas are assigned to OPEC member countries on the basis of proved reserves, "it is in an OPEC country's best interest to put pressure on operators to motivate them to book more reserves" (Kopytoff 2004).

Ultimately, the alleged overstatement would prove to be 4.47 billion BOE, or about 23% of the company's total. A joint investigation was conducted by the SEC and FSA, and Shell settled claims with the regulators for USD 120 million and GBP 17 million (or USD 28 million), respectively, without admitting to or denying the findings of the Commission. In their August 2004 Complaint, the SEC alleged four claims as follows against Royal Dutch Petroleum Company and the "Shell" Transport and Trading Company, P.L.C. (US SEC 2004c):

- First Claim: Violations of Section 10(b) of the Exchange Act and Rule 10b-5
- Second Claim: Violations of Section 13(a) of the Exchange Act and Rules 12b-20 and 13a-1
- Third Claim: Violations of Sections 13(b)(2)(A) and 13b(2)(B) of the Exchange Act
- Fourth Claim: Violations of Rule 13b2-1 promulgated under the Exchange Act

Full text for these securities laws may be obtained from Appendix A, which details similar claims made by the SEC against El Paso Corporation, its subsidiaries and employees. The SEC alleged that Shell's overstatement stemmed from:

- "its desire to create and maintain the appearance of a strong RRR Reserve Replacement Ratio"
- "the failure of its internal reserves estimation and reporting guidelines to conform to applicable regulations"
- "the lack of effective internal controls over the reserves estimation and reporting processes"

The SEC complaint stated that Shell had internal "excessively permissive" guidelines that did not adhere to those of securities regulators. Furthermore, Shell did not maintain adequate internal controls and did not ensure that its employees were well trained regarding SEC disclosure requirements. The complaint also alleges that Shell did not ensure timely compliance with Rule 4-10 by lowering proved reserves estimates despite internal events and relevant signals dating back to January 2002.

Furthermore, the SEC complaint shed light on the areas which constituted the majority of the recategorization:

- Australia—Shell carried reserves on the Gorgan project dating back to 1997, despite the lack of a market, development plan, and firm commitment to invest in the project.

- Nigeria—Reserves did not acknowledge license expiration and estimates were not made according to “existing conditions” as per Rule 4-10.
- Oman—Petroleum Development of Oman (PDO), partly owned by Shell, lacked a development plan on which to base reserves volumes; certain volumes were “not supported by any identified projects.”

After settling with the Shell Group, an SEC official vowed “As our investigation continues, we intend to focus on, among other things, the people responsible for Shell’s failures” (US SEC 2004b). Furthermore, it was reported in March 2004 that the US Justice Department opened an investigation into whether Shell executives violated any laws (Labaton and Gerth 2004). In June 2005, the Justice Department investigation was closed and no action was taken against Shell. Then, in August 2006, it was announced that the SEC would not pursue charges against Watts (Robertson 2006).

A number of lawsuits in the United States followed the recategorization announcement. The reference class action complaint alleges a number of shocking details (Pennsylvania Employees Retirement System v. Royal Dutch/Shell Transport 2005). In October 2002, van de Vijver wrote to Watts that “I must admit that I become sick and tired about arguing about the hard facts and also cannot perform miracles given where we are today... If I was interpreting the disclosure requirements literally (Sarbanes [sic]-Oxley Act etc) we would have a real problem.” Mr. van de Vijver wrote Watts in November 2003 that he was “becoming sick and tired about lying about the extent of our reserves issues and the downward revisions that need to be done because of far too aggressive/optimistic bookings.” In December 2003, a “script” was prepared which discussed the need to disclose noncompliant reserves volumes. Mr. van de Vijver replied that “this is absolute dynamite, not at all what I expected and needs to be destroyed.” The class action lawsuit named and aligned claims against certain defendant groups: “Shell Group Defendants” Royal Dutch, Shell Transport, Watts, van de Vijver, and former CFO Judith Boynton; “Individual Defendants” Watts, van de Vijver, and Boynton; and financial auditors PwC UK and KPMG International. The first two counts, against the Shell Group Defendants and financial auditors, respectively, alleged violations of Section 10(b) of the Exchange Act and Rule 10b-5 Promulgated Thereunder. The third count was against the individual defendants for Violations of Section 20(a) of the Exchange Act.

The Group Chairman, CFO, and E&P CEO left the company shortly after the reserves revelations (CNN/Money 2004). Certain analysts had believed that Shell would need to merge with another company by the end of 2004 as a result of the scandal (Mouawad 2009), although this did not come to pass.

Reserves booking procedures of other major integrated oil companies, such as ChevronTexaco and ExxonMobil, were questioned by the SEC in the wake of the Shell overstatement (Kopytoff 2004). Analyst JJ Traynor of Deutsche Bank commented, “We remain convinced that reserves bookings are a sector-wide issue, albeit amplified at Shell” (BBC News 2004).

In September 2008, a settlement with US investors was approved in which Shell paid more than USD 80 million to shareholders (Egoy 2008). In 2009, an Amsterdam court declared binding a USD 352.6 million settlement with non-US shareholders (Donovan 2009).

6.2 El Paso Corporation

El Paso's reserves data attracted much attention after the publication of a November 2002 Houston Business Journal article (Perin 2002). In this article, a veteran reservoir engineer with the Houston-based company stated that after El Paso acquired Coastal Corporation, engineers at the company were asked to "clean up the books" and remove reserves volumes that did not meet SEC criteria. However, the engineer reported that "management interfered with engineering decisions" and issued an order to return the reserves to the proved category. The company, according to the engineer, was in some cases attributing reserves to projects that would not be developed for 10 years. A second engineer claimed that El Paso had recently been questioned by the SEC regarding proved undeveloped locations greater than one offset location away from proved developed locations.

On 17 February 2004, the company disclosed a write-down of 1.8 Tcf, or approximately 40% of their previously reported proved reserves. The organization's new CEO announced that in October 2003, after performing a number of field reviews, he believed that it was necessary to have a "fresh set of independent eyes" recalculate reserves volumes for the end of the year (El Paso/Fair Disclosure 2004a). The majority of the negative revision involved proved undeveloped locations that no longer met key technical and commercial hurdles (Meyer and Zorn 2004). The company later restated earnings for a number of prior years, resulting in a USD 1.7 billion decrease in stockholders' equity (US SEC 2008d).

Alleged details emerged from a SEC complaint that was filed more than four years later against El Paso Corporation, two of its subsidiaries, and five former employees of El Paso Exploration & Production Company (EPEP) (SEC v. El Paso 2008). The complaint stated that the EPEP President, Rodney Erskine, and Senior Vice President, Randy Bartley, "aggressively sought to maximize oil and gas reserves... The three Divisional vice presidents, in response to the pressure to maximize reserves, overstated reserves totals" in the following ways:

- Recording proved reserves to unproved reservoirs
- Assigning reserves despite a lack of sufficient engineering and geological data
- Failing to reduce reserves volumes based on performance

Furthermore, the company failed to maintain adequate internal controls. Financial statements dating back to 1999 were restated. The SEC's 11 claims are outlined in Table 2 and Appendix A. Details on the degree to which certain assets were affected can be gleaned from the SEC complaint and preliminary data

announced in the February 2004 conference call (and audited by Ryder Scott Petroleum Company). Selected highlights are presented below:

- South Texas—The largest revision, in which Vicksburg sands for PDP and PUD reserves were adjusted to account for smaller drainage areas in low-permeability sands and well interference owing to larger drainage areas in high-permeability sands. Reserves data for PUDs were not immediately adjusted to account for post-drill EURs, which indicated the company would recover only 67% (subsequently lowered to 39%) of pre-drill estimates for particular locations. 25% of the South Texas write-down was due to the company using an outdated study on a single field to justify a 7% minimum decline rate when a 12- to 13% minimum decline rate was more accurate.
- Rocky Mountains /Coalbed Methane—Due in part to Raton Basin locations found to be draining only 80 acres (as opposed to historical bookings at 160 acres). Also, to create viable locations, did not use current economic, operating, and cost conditions in accordance with Rule 4-10. Booked 150 PUD locations on the basis of three test locations and two producing wells.
- Gulf of Mexico—Mechanical failures, performance and revised geologic interpretation. (Not cited in SEC complaint.)
- Brazil—Lack of gas sales agreement for Camamu Basin. (Not cited in SEC complaint.)

Perhaps in no small part due to the alleged reserves overstatement, by the end of June 2004, EPEP had “a new leadership team not only at the top, but at least two levels down” and seven new members on the El Paso Corporation’s Board of directors (El Paso/Fair Disclosure 2004b). The five EPEP executives named in the SEC complaint settled with the Commission for either USD 75,000 (EPEP president) and USD 40,000 (EPEP senior VP and three divisional VPs) (Plourd 2008). Despite settling for USD 235,000 with the five employees (who did not admit guilt), the SEC did not fine the company (Gold 2008). Both El Paso and each of the executives did, however, agree to injunctions against future violations of the securities laws at issue. (US SEC 2008d).

Beginning in 2002, approximately one and one-half years before the reserves write-down, a number of class action lawsuits were filed against El Paso (and related parties) for various securities law violations (Wyatt v. El Paso Corporation 2006). The reserves write-down resulted in additional lawsuits, which were ultimately consolidated with the existing complaints (Wyatt v. El Paso Corporation 2004). The five counts included significantly violations of Section 10(b) of the Exchange Act and Rule 10b-5 promulgated thereunder against El Paso, the individual defendants, and financial auditor PwC; and violation of Section 20(a) of the Exchange Act against the individual defendants. The suit claims that El Paso’s share price dropped approximately 18% in response to the reserves announcement in February 2004. El Paso agreed to pay USD 273 million to settle the case (Wyatt v. El Paso Corporation 2006).

6.3 Stone Energy Corporation

Stone Energy Corporation, based in Lafayette, Louisiana and with assets concentrated in the Gulf of Mexico, Rocky Mountains, and Williston Basin, announced on 6 October 2005 that the company had recently retained services of a third-party firm to perform a reserves review of all its fields (Stone Energy Corporation 2005a). The company stated that it would need to revise previous estimates by 171 Bcfe, or approximately 20% of their reported total at year-end 2004. A press release issued on 8 November 2005 announced that certain financial statements dating back to 2001 would need to be restated (Stone Energy Corporation 2005b). Another press release, issued just two days later, announced that the company had received notice that the reserves revision would be the subject of an informal investigation by the SEC (Stone Energy Corporation 2005c). In December, Stone detailed the preliminary findings of an independent review on the reserves revision (Stone Energy Corporation 2005d). The negative revision resulted from a number of factors, including:

- Lack of “adequate internal guidance or training on the SEC standard for estimating proved reserves.”
- “Some former members of Stone management failed to fully grasp the conservatism of the SEC’s ‘reasonable certainty’ standard of booking reserves.”
- “There was an optimistic and aggressive ‘tone from the top’ with the respect to estimating reserves. Some on the Stone technical staff felt pressure to interpret the geological and engineering data in an aggressive manner...”

Subsequently, Stone’s former CEO, D. Peter Canty, left the company’s board of directors. Furthermore, management was advised by the board of directors to request resignations of two other individuals involved with the write-down (Snow 2006). No fewer than 16 law firms announced class action lawsuits in the months following the negative reserves revision. A consolidated class action complaint was filed in June 2006 in US District Court for the Western District of Louisiana (El Paso Fireman and Policeman’s Pension Fund v. Stone Energy Corporation 2006). Along with Stone, it also named Canty, Canty’s successor as CEO, and the former and subsequent CFOs as defendants. Count One alleged “Violations of Section 10(b) of the Exchange Act and Rule 10b-5 Promulgated Thereunder Against All Defendants,” while Count Two claimed “Violations of Section 20(a) of the Exchange Act Against Defendants Canty, Welch, Prince, and Beer.” The complaint stated that the company overstated its reserves for four and one-half years despite using the services of a third-party firm, and that Mr. Canty:

- “Re-drew geological maps of oil and gas reservoirs to manufacture false reserves numbers.”
- “Violated SEC requirements for booking proved reserves.”
- “Intimidated and verbally abused Stone employees for calculating proved reserves that were lower than Canty wanted.”

According to the complaint, Stone's senior VP for exploitation and its reservoir engineering manager aided Mr. Canty in orchestrating the overstatement. Also, it states that "Company insiders with knowledge of the fraud were selling their personal holdings of Stone common stock at prices they knew were artificially inflated by the proved reserves overstatement," and that shares dropped 30% as a series of announcements revealing the truth about Stone's reserves were made between 6 October 2005 and 10 March 2006.

Stone received notice from the SEC in April 2007 that it would not pursue an enforcement action in connection with the alleged reserves overstatement (Stone Energy Corporation 2007). Class action claims against two of the individual defendants were dismissed in August 2007 (Stone Energy Corporation 2008). In January 2010, a class action settlement was preliminarily approved for USD 10.5 million (Stone Energy Corporation Securities Litigation 2010).

6.4 Repsol YPF

Repsol YPF, based in Madrid, Spain, announced in January 2006 that reserves volumes for year-end 2005 would be reduced by 1.25 MMBOE, or approximately 25% of the volume reported at year-end 2004 (Repsol YPF 2006). Most revisions were in Bolivia (659 MBOE) and Argentina (509 MBOE). When disclosing the revision, the company cited "Changes in legal and contractual framework (New Hydrocarbon Law in Bolivia)" and "Field performance and new data yielding a deeper understanding of the affected reservoirs" as the two main reasons for the write-down. Projected economics deteriorated for certain Bolivian opportunities as a result of the new hydrocarbon law, and estimates in various Argentinian fields were reduced. After the announcement, Spain's securities regulator, the Comision Nacional del Mercado de Valores (CNMV), opened an investigation into the overstatement.

A consolidated class action complaint filed with the United States District Court for the Southern District of New York alleged securities law violations against the company, its CEO, and former CFO (Reynolds v. Repsol YPF 2006). All defendants were cited for the first count, which alleged violations of Section 10(b) of the Exchange Act and Rule 10b-5 Promulgated Thereunder. The individual defendants, as per the second count, were alleged to have violated Section 20(a) of the Exchange Act.

According to the lawsuit, an internal investigation by the company found:

- "The process for determining reserves... was flawed from 1999 to 2004."
- "A lack of proper understanding of and training on the requirements of the SEC for booking proved reserves."

- “An unwillingness to accept personal responsibility for reporting internally adverse facts regarding reserves.”
- “Undue optimism regarding the technical performance of the fields and (for Bolivia) commercialization.”
- “Systemic flaws in the Company’s internal control structures.”

The consolidated class action alleged per-share price decreases of 7% (USD 2.12) and 4.79% (USD 1.34) on the day of and day following the revision announcement, respectively. A settlement of USD 8 million was reached with shareholders in 2007.

6.5 Other Cases

The four cases described in detail above are examples of other substantial reserves write-downs in the oil and gas industry. **Table 4** briefly presents other cases in which reserves were at issue. This is by no means an exhaustive list or fully detailed account of each case.

6.6 Analysis of Cases

In total, we have identified 20 cases of reserves write-downs; there are undoubtedly more. These cases show that alleged reserves overstatements and write-downs occur in nearly every corner of the oil and gas industry. Overstatements are not limited to a particular company size, stock exchange, asset geography, product type, or reserve category. A write-down may not necessarily result in a lawsuit, but civil actions have been a component of the larger, more recent cases.

TABLE 4 – ADDITIONAL INSTANCES OF RESERVES WRITE-DOWNS.

Operator	Overview
Forest Oil	Proved reduction of 74 MMBOE in 2004. Alaska / Cook Inlet Redoubt Shoal Field lowered 85% (Meyer and Zorn 2004).
Nexen	67 MMBOE (8% overall) write-down in 2004, mostly attributable to economic limit and revised recovery factor in Western Canada fields (Meyer and Zorn 2004).
Husky Oil	Wrote down 275 BCF (13% overall) in 2004 from elimination of shallow Northern Alberta PUDs and lack of Indonesian PSC extension (Meyer and Zorn 2004).
Vintage Petroleum	Lowered Canadian reserves by approximately 67% due to poor performance (Meyer and Zorn 2004).
Western Gas Resources	Reduced Powder River reserves by 123 BCF due to low Wyodak coal content (Meyer and Zorn 2004).
Echo Energy Canada	Proved reserves decreased 86% during 2008, owing to steeper declines and reduced number of PUDs (Echo Energy 2009).
Norsk Hydro	Ormen Lange proved reserves lowered 30% (all PUDs), company-wide decrease of 6.6% (Norsk Hydro 2004).
Calpine / Rosetta Resources	SEC inquiry regarding 25 BCF Calpine write-down in 2005; Rosetta acquired Calpine and had 30 BCF additional write- down (Arbel 2005; Rosetta Resources 2008).
Pemex	Data released in 1997 suggested 30% overstatements dating back to 1970s. Reclassified 9.1 billion BOE Chicontepec-area PUDs in 2002 to align with SEC requirements, 28% of total. (Krauss 1997; All Business News 2002).
Cairn Energy	Scotland-based company reduced Sangu (Bangladesh) gross reserves by 213 BCF (Carr 2007).
Seven Seas Petroleum	Lowered Colombian proved reserves 31.3 million BOE, due to "lower oil production, lower production pressures, and recent rapid gas encroachment... in Guaduas oilfield in Magdalena Basin" (Upstream 2002).
Parallel Petroleum	Company "shaved off" 20 PUDs (horizontal offsets) based on SEC guidance in precedent-setting case (Parallel Petroleum / Fair Disclosure 2008; Ryder Scott 2007).
Enserch/EEX	Announced 30-45% write-down (500-700 Bcf) in 1997. Shares fell 17%. Lawsuits alleged "defendants made materially false and misleading statements, and failed to disclose material facts, regarding the value and volume of EEX's proved reserves from its East Texas operations." (Smith and Sheehan 1997; Stanford Law School Securities Class Action Clearinghouse 2010).
Encore Acquisition	Year-end 2008 reserves decreased in part due to 31 million barrel write-down associated with High Pressure Air Injection project at Cedar Creek anticline (Encore Acquisition Company / Fair Disclosure 2009).
Mariner Energy	Former Enron company was a "honey pot," in which reserves were adjusted upward to maintain high asset values when gas prices fell (Weaver 2004).
Triton Energy	"One of the first cases involving the fraudulent accounting of oil and gas reserves successfully brought to conclusion," according to plaintiff's law firm. USD 49.5 million settlement from 1998 lawsuit alleges, among other things, that Triton "misrepresented the nature, quality, classification, and quantity of its Southeast Asia oil and gas reserves." (Smajlaj v. Brocade Communication Systems 2005; Lee v. Titon Energy 2002).

Arguably, the most important factor regarding some alleged reserves overstatement cases is that they were entirely avoidable. Through more education on SEC regulations, stronger internal controls, and/or a greater emphasis on ethics, many of these overstatements would not have occurred. The write-down or recategorization of certain volumes rapidly destroyed significant shareholder value as few events can. Allegedly, overstatements have, in certain cases, erased as much as 30% of share prices. Although not discussed at length here, legal expenses and attorney's fees can be significant in class action litigation and are further costs ultimately borne by shareholders. In light of this value destruction, shareholders with a sizable position in an E&P company are concentrating their risk for reserves overstatement. This, like many other factors, represents compelling grounds for portfolio diversification.

Third party engineering firms and consultants have been employed by a number of companies which announced significant write-downs and were then subject to litigation. It is particularly unfortunate that overstatements have occurred in these cases despite the use of third parties whose role should be to prevent just such an occurrence. Certain of these firms are still active today. It is therefore critical for companies to take great care when selecting reserves auditors or evaluators, and for investors to be cognizant of the reputation and record of the third-party firm. Since third-party engineering firms are typically privately held, information about the firm may be initially difficult to obtain. Important information, such as how long the firm has been operating and how frequently they are selected to audit operating companies, is readily available for those willing to do the necessary research.

It is also interesting to note the "stark contrast" in the SEC's treatment of Shell and El Paso (Gold 2008). While these cases are admittedly unique, negative revisions in excess of 20% for both companies were announced in the first quarter of 2004. The Commission opted to levy a corporate fine and no individual penalties for the Shell case, while El Paso and its executives received the opposite treatment in both regards. Details are not publicly available regarding the rationale for this discrepancy.

As previously mentioned, the cases illustrate that overstatements may occur in any reserves category. In the case of Proved Developed Producing (PDP) reserves, the example in **Fig. 6** shows that subtle differences in assigning decline parameters can have a large impact (Huddleston 2007).

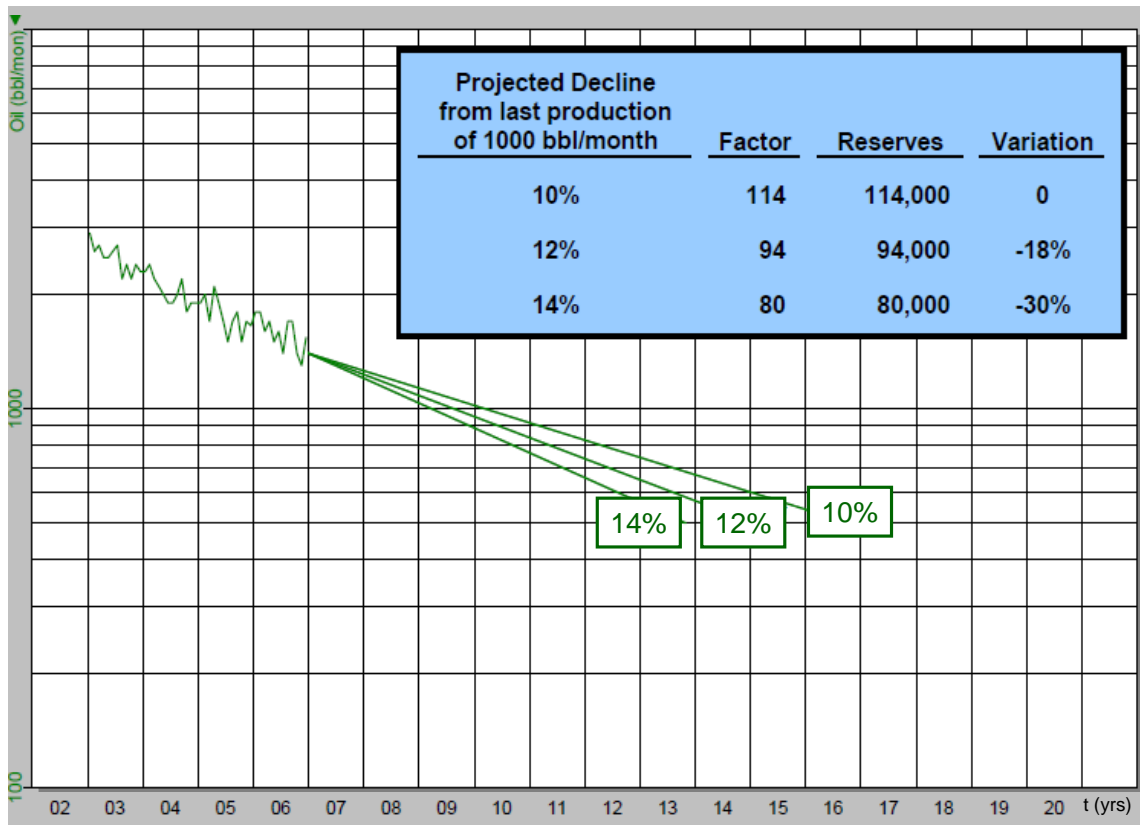


Fig. 6—Decline curve parameters have large impact on Proved Developed Producing reserves (adapted from Huddleston 2007).

Although overstatements can occur with PDP wells, the cases more commonly cite overstatements and write-downs of Proved Undeveloped (PUD) reserves. Although both PDP and PUD reserves are “proved,” PUD reserves are, practically speaking, the more uncertain of the two. PDP evaluations are ultimately “factored in” to making investment decisions regarding development drilling. Such decisions can result in the cancellation of drilling programs and the write-down of PUDs. Furthermore, PDP wells may drain acreage on which PUD locations had been envisioned and booked.

CHAPTER VII

IMPLICATIONS OF MODERNIZATION

Reserves disclosures will never be the same as a result of the SEC's Modernization of Oil and Gas Reporting Requirements. Year-end 2009 reserves, the first to be calculated under the new requirements, will be announced shortly. It will be very interesting to see what effect the implementation has for this year, and in those following. Will volumes dramatically increase? Will adoption of the standards be gradual or sudden?

We believe the new booking guidelines are more flexible relative to the previous standards. For example, operators may now book PUD locations that are greater than one well spacing away from a producing well. Additionally, the requirements make allowance for using "reliable" technologies. The new regulations are, in effect, more "principles-based" than those previously employed by the Commission. While much regulation involves more demanding or restrictive standards, we do not believe that is the case with the Modernization.

More disclosure is required as a result of this enhanced flexibility. For instance, reliable technology must be disclosed in general ways. Additionally, information is required regarding the concentrated geopolitical political risk facing an operator. Subpart 229.1200 (Items 1201 through 1208) of Regulation S-K is new under the Modernization and focuses entirely on reserves-related disclosures. PUD locations are limited to a 5-year development timeframe. Certain operators may have PUD locations that will need to be de-booked at the end of 2009.

However, the new regulations do not address certain issues or solve problems that were alleged to have been key factors in certain overstatement cases we have highlighted, such as a disregard for the rules, weak internal controls or human biases. No matter the definitions, the "principles" of the industry and its members will ultimately determine how "level" the playing field is. Companies may ignore the rules, just as they have allegedly done in the past. They may do so in particular with the new flexibilities afforded under the PUD booking and reliable technology guidelines mentioned above. Furthermore, the reliable technology principle may inadvertently lead to the incorporation of technologies (into reserves calculations) before those technologies are genuinely understood by certain engineers. Probable and possible reserves represent additional areas of disclosure that may be reported too aggressively and without using proper evaluation procedures.

For these reasons, we believe that reserves write-down risk may increase under the new regulations. According to Darbonne (2009), Geoff Roberts of the Oil & Gas Asset Clearinghouse believes that “the [Modernization] regime opens the company-reporting process to serious potential for misuse or abuse by aggressive public companies.” It is, of course, impossible at this time to gather any empirical evidence for such logic-based claims.

A number of other parties have also shared predictions on the impact of the new regulations. When discussing the new regulations during their third-quarter 2008 conference call, Chesapeake CEO Aubrey McClendon opined “under those rules today, our preliminary work would indicate that our reserves would be in the 20 Tcf range rather than the 12 Tcf range.” Another Chesapeake executive acknowledged that this was “kind of speculating” (Chesapeake Energy Corporation/Fair Disclosure 2008). Analysts at Tudor Pickering Holt believe the changes will have a more muted effect industry-wide, however: “Any investors thinking that booked reserves are about to skyrocket are going to be disappointed. We’re guessing that new guidelines result in slightly higher reserves (PUDs, technology), but we’d be shocked if this was more than 10% in aggregate for the publicly traded E&P universe” (Tudor Pickering Holt 2008).

Year-end reserves volumes for 2009 will, of course, be subject to oil and gas price adjustments (Perucki 2010). Operators leveraged toward oil will benefit from evaluating reserves on a USD 57.65/bbl price as compared to USD 41/bbl at year-end 2008. Those with greater gas reserves, however, must use a price of USD 3.86/Mcf, which compares less favorably with the year-end 2008 price of USD 5.71/Mcf. These price adjustments must be factored in when analyzing reserves movements and quantifying the impact of the new reserves guidelines.

Regardless of the requirements in place, estimating reserves will likely always be an inexact and subjective science. Authors have acknowledged that “The mere physical attributes of the asset class—miles below the surface, significant natural variability within the oil and gas reservoir—make conventional engineering precision an impossible standard to achieve... The lack of precise definitional and engineering standards can naturally lead to a range of interpretive outcomes, both conservative and aggressive” (Meyer and Zorn 2004).

CHAPTER VIII

IDENTIFICATION OF POTENTIAL OVERSTATEMENTS

8.1 A Difficult Task

Since reserves overstatements present a source of investment risk, how can investors protect themselves against such a possibility? From the outside looking in, it is difficult—and potentially impossible—to know for certain if an operator has overstated reserves. As Matthew Simmons stated in his testimony before the US House of Representatives Committee on Financial Services in July 2004, “Today there is so little data that is disclosed that such analysis is either difficult or impossible” (Simmons 2004).

As evidence of the difficulty associated with identifying overstatements and predicting write-downs, one need only consider that the risk of an overstatement or write-down was not identified by the securities analysts covering the companies cited in Chapter VI. A noteworthy example is a September 2003 Deutsche Bank report on Royal Dutch/Shell (Traynor and Cook 2003). The report cites “Possible surprises in the next 12 months”:

New management in the downstream (Paul Skinner has retired, Rob Routs has taken charge) has inherited a global portfolio and targets to deliver long-run 15% ROCE. Investment opportunities are emerging in India, China and the CEE regions. If the group intends to play for domestic Russian oil, then domestic refining capacity could also be needed. On the one hand, we expect continued restructuring in the existing portfolio (US, EU, Australia now, Japan next?), but on the other, new moves into non-OECD refining & marketing themes, probably funded by asset sales from within the division.

Of course, the biggest surprises for Shell over the next 12 months were in fact the reserves overstatement revelations and the departure of several key executives as a result. Although the report was detailed and insightful, it did not make allowance for an overstatement and negative reserves revision.

Despite the limited data and difficulties of identification, an investor (or analyst) can take a number of steps to investigate the credibility of an E&P company’s reported reserves. First, the investor can pose a series of systematic and thematically oriented questions to the company. Second, they may elect to employ the peer group graphical techniques we have developed to identify potentially questionable reserves data.

8.2 Systematic Approach

When confronted with the challenge of investigating the legitimacy of an operator’s reserves data, it may be difficult to obtain the necessary data. A company representative, third party evaluator, investor, and

securities analyst may each be able to obtain different levels of information. Annual reports provide helpful information, as do databases such as those marketed by IHS Energy. Investor Relations departments may also be contacted if necessary. Regardless, we believe it is best to employ a systematic approach when studying an E&P company's reserves. Toward this end, we have developed a list of thematically oriented questions which, if answered, can provide details regarding reserves practices and volumes. Roesle (2007) has presented a number of questions to consider. Our list incorporates and expands upon certain of Roesle's questions, and we believe the list most directly addresses pertinent questions in an organized manner. Many of these questions may—and often should—in turn lead to follow-up inquiries. The questions may be used together with the graphical techniques discussed in Section 8.3 to obtain improved results. The subject headings and questions are as follows:

Management/Company

- Does the company or any officers have a history of SEC infractions (e.g., at a past company)?
- Is management under any pressure to “prove up” a recently made acquisition?
- How frequently and in what context are reserves discussed in SEC comment letters?
- Does management deliver on other promises?
- Is there an internal reserves team/group? What, exactly, is their role?
- Is there a reserves committee on the board of directors?
- Has the company made many reserves revisions in recent years?
- Are reserves revisions consistently negative?

Third-Party Engineers

- Is a third party involved?
- What are their qualifications?
- How long have they been working with the operator?
- Does the third party have “basin expertise” for the operator's assets?
- Is there any potential for a conflict of interest?
- How much of the portfolio does the third party look at?
- Does the third party perform an audit or full evaluation?
- Has the third party previously been involved in an overstatement case?

Field/Project Level

- What is the field spacing and how far are offset PUDs booked?
- Has project funding been sanctioned by operator and partners?
- Is all necessary permitting in place?

- Does the company have basin expertise?
- Are development (timing) assumptions legitimate?
- If an analog is used, is it appropriate?
- Is the acreage concentrated or dispersed? High or low quality?
- Are the assets “long-life” or do they exhibit higher decline rates?
- Are reported development costs reasonable?

Well Level

- When decline curves are used to estimate reserves, is the Arps’ decline exponent, b , appropriate—and correct?
- Has a minimum decline, based on available evidence (including analogous wells) been imposed?
- Is Lease Operating Expense (LOE) reasonable/correct?
- Is a reasonable abandonment rate/economic limit imposed?
- Has recent/new well performance honored past trends?
- Is there a deterioration of results that needs to be reflected in PUDs?
- Is the well in appropriate mechanical condition to access Proved Developed Non-Producing (PDNP) reserves that are “behind pipe?”
- Is sufficient production data available to forecast accurately?
- Have new offsetting wells potentially captured reserves from older PDP wells?

Reservoir Engineering

- Are simulation models valid?
- What techniques are used to estimate oil and gas reserves?
- What recovery factor is used and what is the basis for this?
- Is reservoir pressure maintained through any form of injection?
- Is everything modeled at current economic and operating conditions?
- Are reservoir fluid characteristics modeled correctly?
- At what temperature and pressure bases are the reserves calculated at?
- Are gas or oil volumes correctly converted to an equivalent basis?

International Considerations

- Might there be any pressure applied by a host country to increase reserves?
- Are there any potential “reserves” definitional issues with the host country?
- Are reserves booked in accordance with terms of contact?

Prices

- Has the SEC's average-pricing method been used for both oil and gas?
- Is the price forecast held flat, without any escalation?
- What differentials are applied to the oil and gas prices?

Ownership/Taxes

- Are interest reversions modeled correctly?
- Are corporate, ad valorem, and severance taxes modeled correctly?
- Is operator taking a "tax holiday" that it is not entitled to?

Data Integrity

- Is the data missing or more difficult to obtain than it should be?
- Are financial reports incomplete, and might this carry over to reserves?
- Does the company receive recent and sufficient "non-operated" production data?

8.3 Graphical Techniques

Although reserves disclosures do not provide complete transparency, we believe that the data companies are required to report should be used to the fullest extent possible. Toward this end, we have developed a number of "quick-look" graphical techniques that may be employed to identify potentially questionable reserves data and gain insight into potential overstatements. To earn the "quick-look" designation, the investor or analyst must have readily available reserves data for numerous oil and gas companies (possibly available through a third party such as IHS Energy). Simply put, we recommend graphing various reserves-related data from a set of peer group companies and identifying "outlier" data points. If an operator has a greater number of outliers across these various graphs, then the investor or analyst is likely justified in having questions regarding the operator's reserves data. Peer groups could include, for example, integrated/majors, large independents, mid-sized or small independents, or companies concentrated in a particular basin or product type.

These graphical relationships are relatively straightforward and intuitive, but to our knowledge, some have not been previously presented, and all have yet to be presented in concert. One caveat with using these techniques is that there may be a very reasonable explanation for data which appears, at first glance, questionable. The relationships may cast a degree of doubt, but they cannot prove an overstatement. Therefore, these graphs should be combined with an understanding of the operator's asset base, cost structure, and history. The graphs below have been constructed (with data through 2008) for the 60 companies that comprise IHS Energy's "Small US E&Ps." In each of the graphs, any area which

contains—or would contain—questionable data is highlighted and discussed. Selecting these cutoffs will vary based on the data set and discretion of the investigator. Some plots below may not contain 60 data points due to the unavailability of certain data. Additionally, the axes on certain figures have been curtailed to omit particularly extreme data points. There are a variety of ways to present these data (such as scatter plots or histograms).

Fig. 7 shows the percentage change in “year over year” (Y/Y) proved reserves as a function of the percentage change in Y/Y capital employed. Generally, the correlation between the changes in capital spending and changes in reserves levels is positive. The companies who invest more tend to grow their proved reserves, while those who spend less are subject to lower levels of reserves increases at year-end. An area for potential concern would be if an operator spends proportionally less Y/Y yet still discloses an increase in reserves; as the data indicate, a couple of operators are reporting such results. This concern would be particularly acute when product prices have decreased since the last reporting period, as this would also work against an increase in proved reserves.

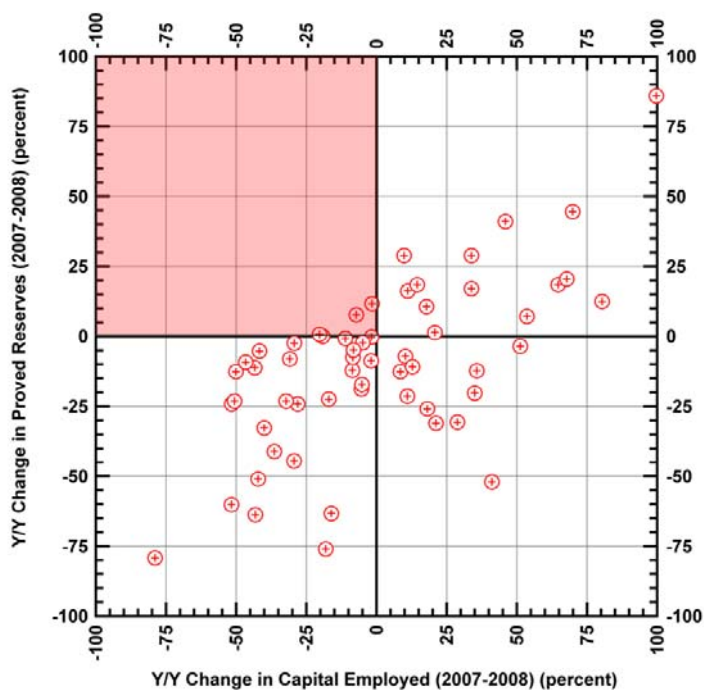


Fig. 7—Potential concern arises if operator proved reserves increase despite a decrease in spending.

Fig. 8 plots the reserves increases owing to “extensions and discoveries” as a function of the number of successful development and exploration wells that a company drills. Generally speaking, a company that drills a low number of successful wells should also have a lower amount of extensions and discoveries, and vice versa. As the data show, one operator has reported approximately 25 MMBOE of extensions and discoveries, despite drilling less than five successful exploration and development wells. This represents the second largest gain in volume owing to Extensions & Discoveries for the peer group, with a relatively low number of wells drilled. An outlying data point may be explainable if the operator in question had a significant discovery or was focused on exploiting high quality acreage. Admittedly, each well does not have equal reserves potential.

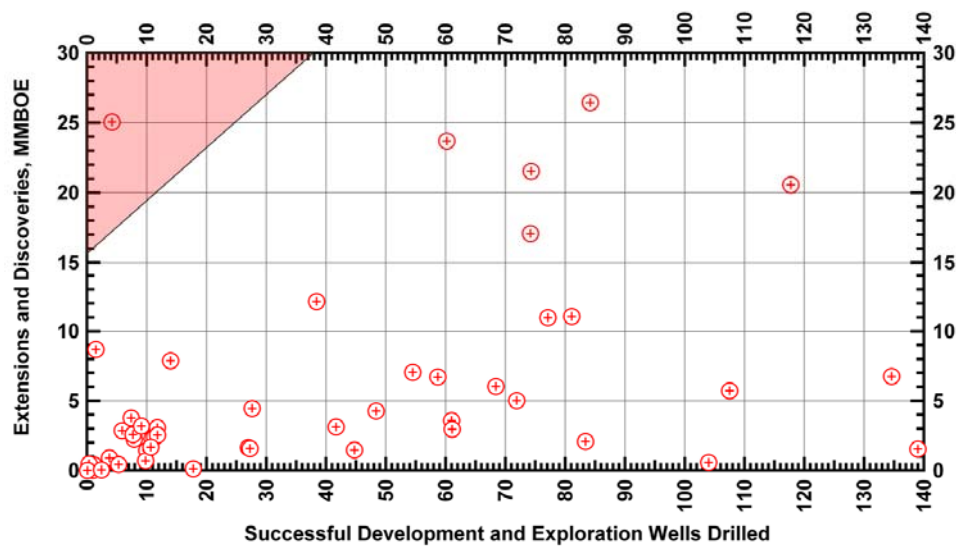


Fig. 8— High volume of Extensions & Discoveries from low well count
is an area of potential concern

Fig. 9 relates the percentage of the operator’s reserves that are natural gas compared to the percentage of the operator’s production of that same product. Intuitively, a company that predominately produces natural gas should also disclose a majority of its reserves as being attributable to natural gas. Alternatively, for a company leveraged toward oil production, its reserves should, under normal circumstances, be more heavily weighted in oil. The figure shows that a handful of operators disproportionately produce and report reserves of a particular product type. Interestingly, one company reports more than 80% of its production from natural gas, but less than 10% of their reserves from this product. This data point certainly “raises an eyebrow.” As with many of these graphed data in Chapter VIII, though, there may be a unique explanation for certain discrepancies.

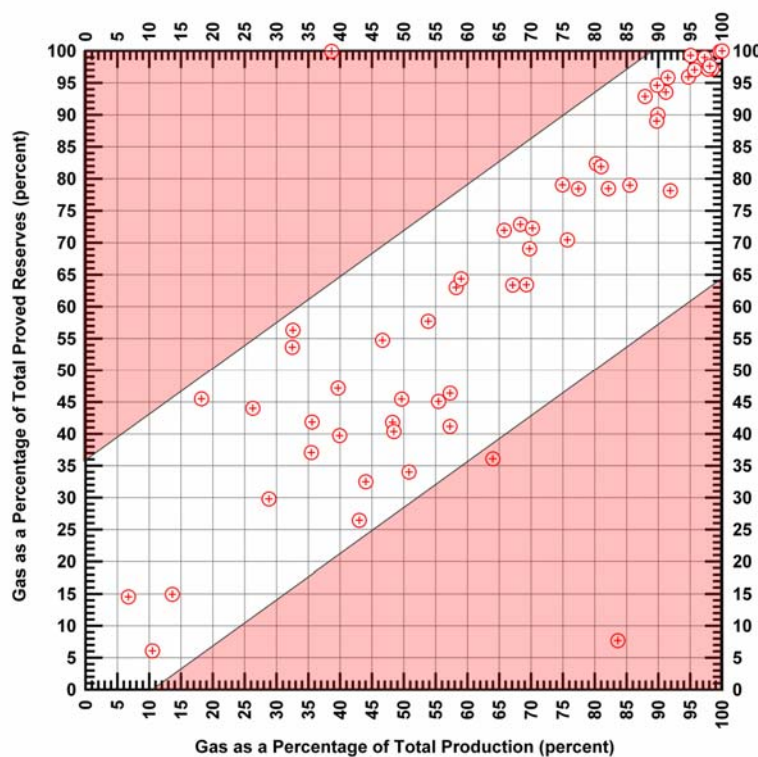


Fig. 9—Potential concern arises if product type constitutes a disproportionate amount of reserves compared to the relative production of the product type.

Fig. 10 gives the total volume of proved reserves acquired for the small companies during 2008 and the price at which these reserves were acquired. We believe it is appropriate to show the acquisition cost as a function of the proved reserves acquired, since the volume acquired also gives important information when examined with the price per unit. Large volumes acquired at a very low price can seem “too good to be true.” As the graph indicates, a trio of companies reported acquisition costs of less than USD 1.00/bbl. These reserves may be burdened with atypically heavy abandonment costs, which could have served to drive down the acquisition cost, but we wonder if other reasons might conspire to make these assets “low grade.” The USD 1.00/bbl price seems rather low, especially when examined relative to other acquisition costs provided by the peer group. Details regarding the newly acquired reserves may be presented in the management discussion and analysis that accompanies an operator’s year-end financial statements. The larger the acquisition, the more data is likely to be available on the transaction.

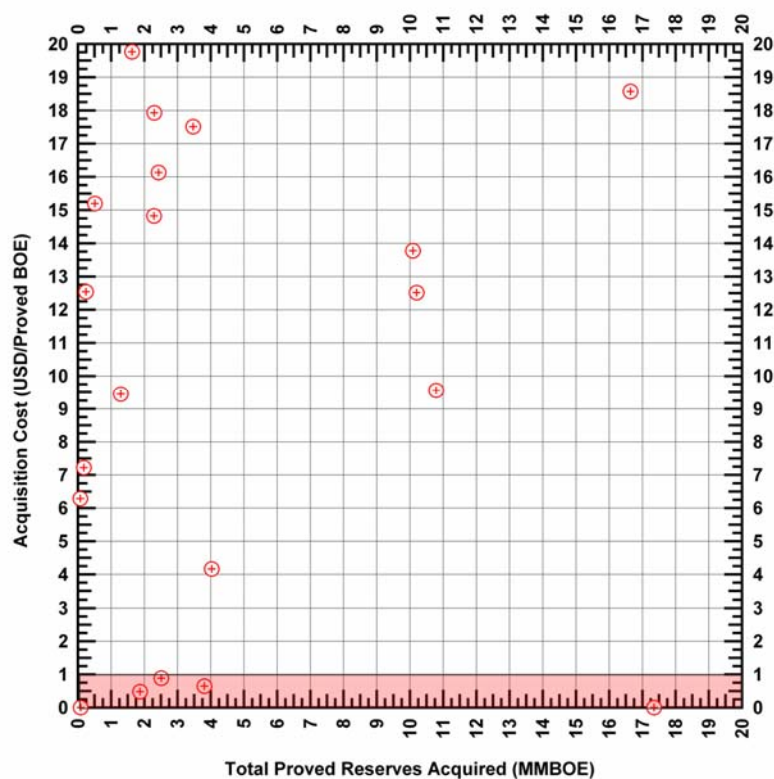


Fig. 10—Very low acquisition cost per proved barrel of reserves could represent an area of potential concern.

Fig. 11 illustrates the average reserves per well along with the total count of producible wells for E&P companies. A large number of wells with a substantial volume of reserves-per-well is a potential area for concern. Here, two operators report more than 300 MBOE net per well. These two companies are claiming that their average performance is substantially superior to that of their peers. Each of these operators has disclosed relatively few wells overall. This is still probably worth considering, and the investor or securities analyst may quickly gauge the credence of the data by identifying the area(s) in which the company operates. If the company's wells are predominately located in prolific reservoirs (such as deepwater Gulf of Mexico) or access more reservoir potential through horizontal technology, the reserves-per-well may very well represent a bona fide step-change in improvement compared to peer companies.

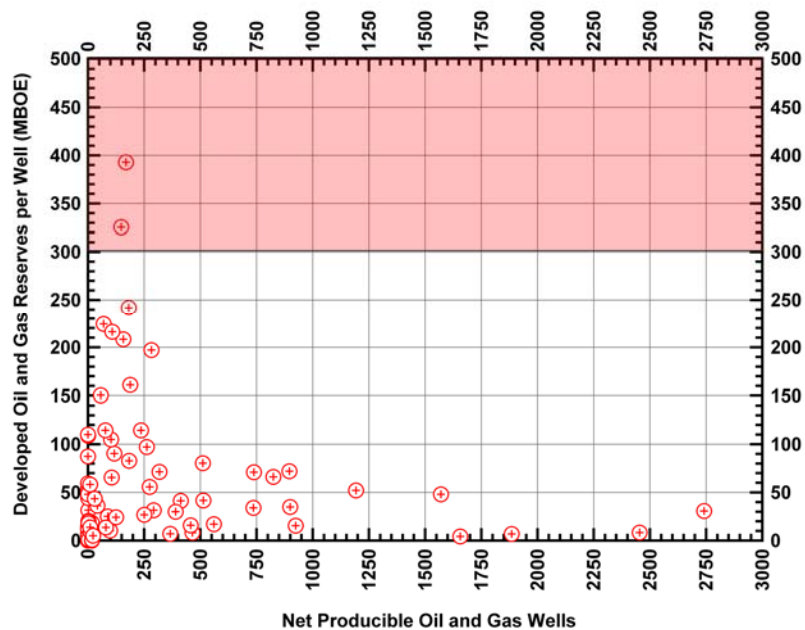


Fig. 11—Large volumes of reserves per well may raise questions.

Fig. 12 shows the peer group’s proved developed reserves as a function of its developed net acreage. Here, we expect a somewhat direct relationship between the two parameters: the more developed net acreage an operator has, the higher their total proved developed reserves are likely to be. Since not all acreage holds equal reserves potential, however, there may be anomalous data points. Certain operators have disclosed, for year-end 2008, reserves volumes that are significantly higher than we would expect given the peer group trend. An interested party may desire to investigate the area(s) of concentration for the operator, and if the operator has historically developed high potential acreage. An alternative presentation of this data would be to calculate a metric for “proved developed reserves per net developed acre” and present this data in a histogram.

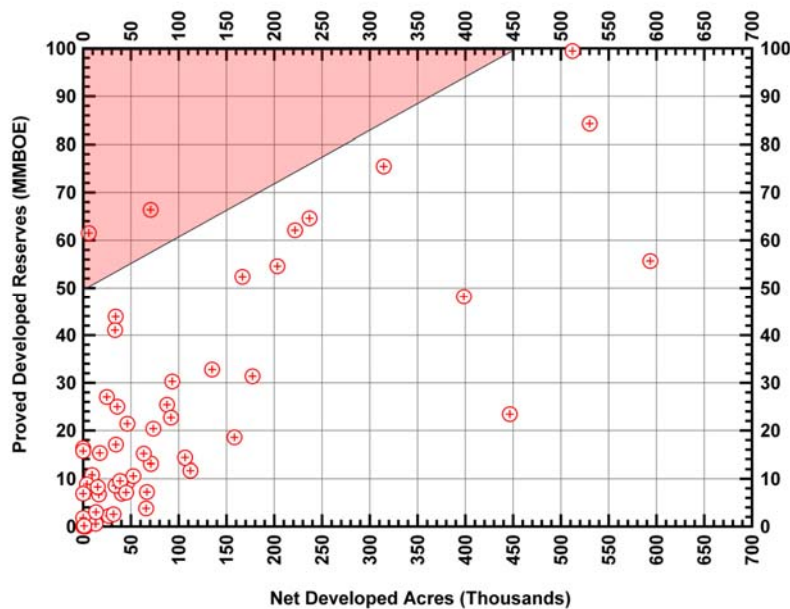


Fig. 12—High amount of proved developed reserves over relatively small developed acreage position could be a potential area of concern.

Fig. 13 gives a ranking for the companies for the 3-year average oil and gas revision rate. The data show that the average small US E&P company reported an 8.1% decrease in proved reserves over this period. However, there were a number of outliers. Certain companies reported large revision rates, both negative (nearly 40%) and positive (nearly 70%). So for the companies that reported the large negative revisions, it is reasonable to try and understand why the previous revisions occurred and also wonder if future revisions might follow. And for the companies reporting such strong results with positive average revisions over the last 3 years, it is worth investigating if such increases seem justified. Might these bullish revisions be unreasonably high? What has driven this success?

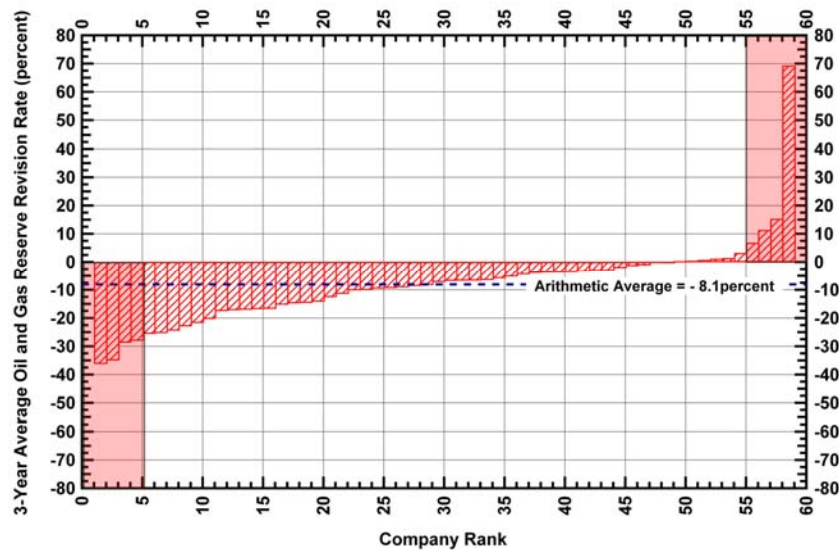


Fig. 13—Potential concern arises if an operator’s Reserve Revision Rate over a three- (or five-) year period is very low or very high relative to the peer group average.

Fig. 14 presents the operator's Developed Reserves/Production ("R/P") ratios for their Net Producing Wells. R/P is a commonly quoted metric in the oil and gas industry, and is also referred to as Reserves Life Index (RLI). The value may also be calculated when including undeveloped reserves. Here, R/P (years) is calculated by dividing the operator's year-end developed reserves (bbls) by full-year production (bbls/year). The higher a company's R/P, the longer they can produce—at current levels—before exhausting their reserves. The graph shows that one operator is reporting more than 500 Net Producing Wells with an average R/P of more than 30 years. This seems rather large given that the vast majority of peer group R/Ps is less than half of what this operator reports. The data also show an operator with nearly 2,000 Net Producing Wells with a stout R/P of more than 25 years. This is a relatively high value for such a sizable portfolio. One wonders if these operators are applying appropriate decline curve analysis. Are the operators imposing a minimum decline? Is there an analog within or nearby the field to support such long-life reserves?

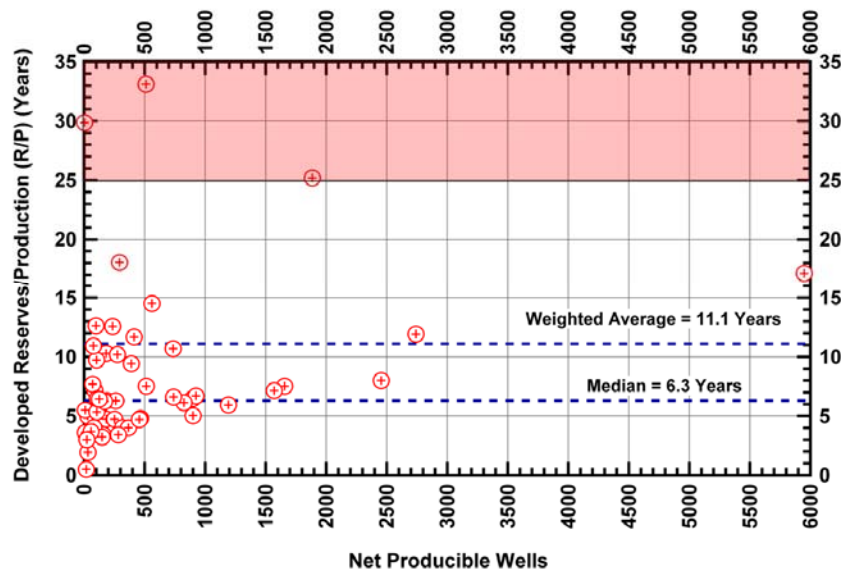


Fig. 14—High R/P ratio for proved developed reserves indicates potential area of concern.

Finding and development (F&D) cost is another oft-quoted measure related to a company’s ability to access and produce reserves. It quantifies the capital expended by a company to add reserves on a per-unit basis (USD/bbl). Lower values indicate an operator is more efficient (from a capital perspective, at least) at finding new reserves. **Fig. 15** shows a company ranking of F&D performance. The low and high outliers may both signify areas of concern. Regarding the lowest F&D values, are these companies truly “best in class?” And, as to the highest F&D values, might these companies feel pressure to overstate reserves (to drive down F&D) in order to become even marginally competitive with other peer group companies? There will always be top- and bottom-tier performers in reserves metrics; signaling strong or weak performance does not indicate an overstatement. If the cause for such performance can be clearly rationalized, this can minimize overstatement risk and allay investor concerns regarding the matter.

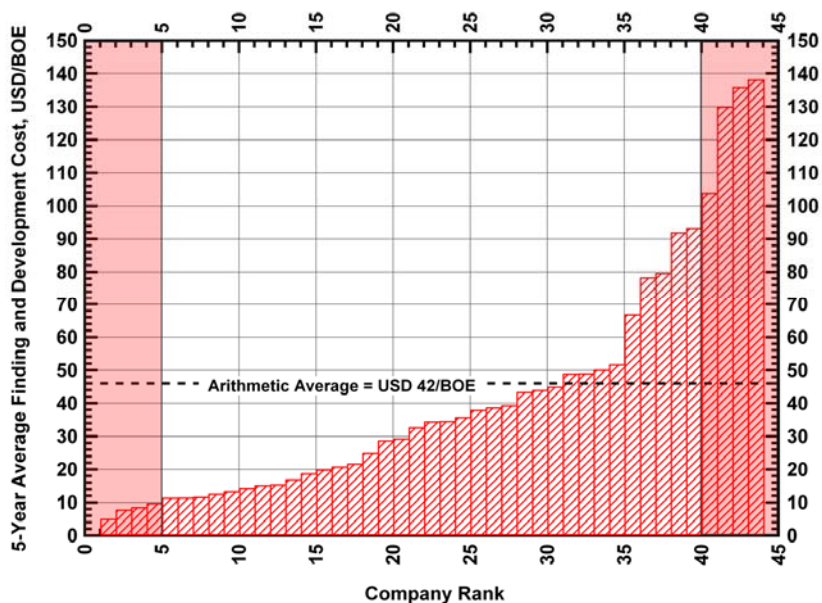


Fig. 15—Per-unit Finding & Development costs that are very low or very high could raise questions.

Fig. 16 highlights the percentage of the companies' proved reserves that are accounted for by PUD locations. As we have stated in previous chapters, PUDs represent a greater source of investment risk than PDP wells. Shockingly, one operator reports that nearly 100% of its proved reserves volumes are attributable to PUDs. There is hopefully a compelling reason for such a disclosure. Although not as severe, the operators reporting more than 70% PUDs also appear to be taking a rather bold stand. Investors in these companies should be cognizant of this practice and ensure that they are comfortable with the data.

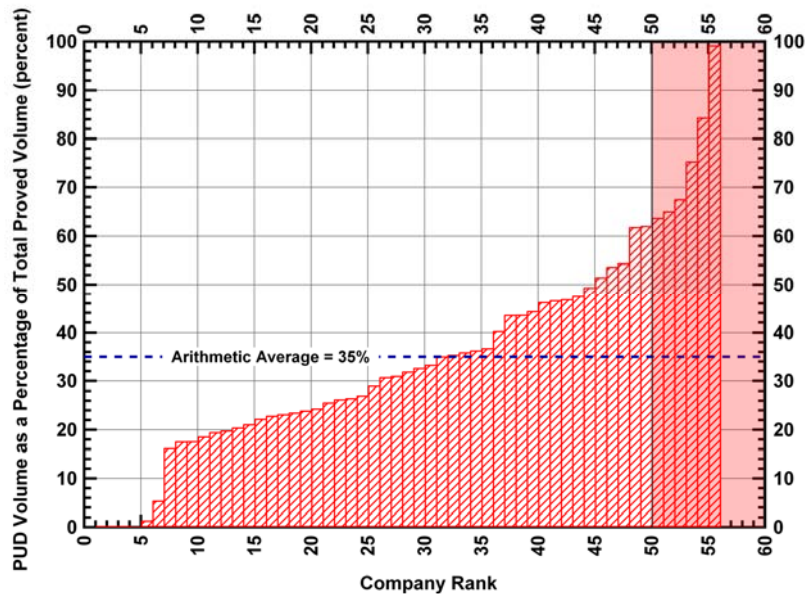


Fig. 16—Disproportionately large amount of Proved Undeveloped reserves as a percentage of an operator's total proved volumes is a potential area of concern.

Fig. 17 compares the operating companies' 5-year F&D performance to the "implied future development cost." The implied future development cost is calculated by dividing the reported future development capital by the volume of PUD reserves. The per-unit implied future development cost may be lower than the historical (say, 5-year) F&D average. However, it is important to check, on an absolute basis, the implied development cost and also determine how much of an improvement is suggested by the data. In Fig. 17, certain operators have implied future development costs of less than USD 5/bbl. Furthermore, data points within the shaded region indicate that some companies are projecting development costs that are less than 20% of their 5-year F&D average. The data suggest certain companies will embark upon transitions from poor to strong development performance. Although these historical (x-axis) and projected (y-axis) data do represent different measures, both values are indicative of capital efficiency with respect to accessing reserves. Therefore, the reliability of substantial improvements that are projected on an absolute or peer group basis should be examined.

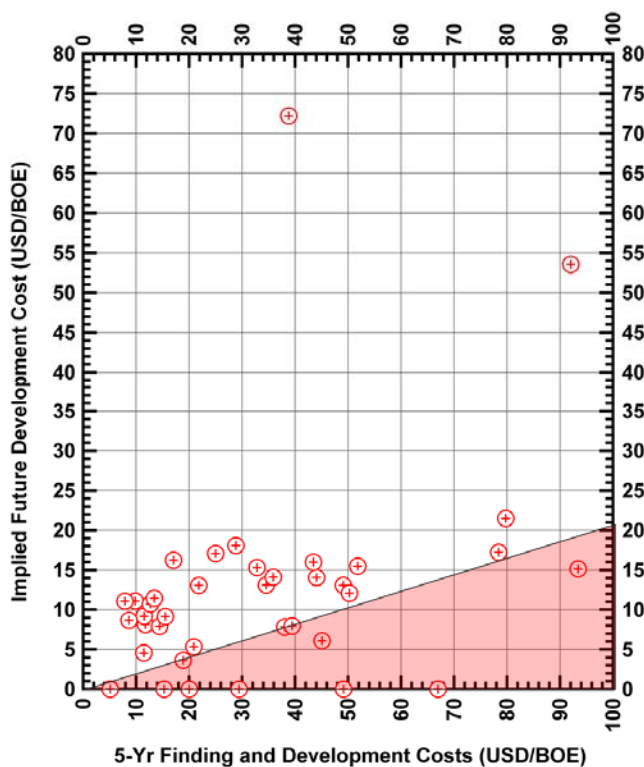


Fig. 17—Low future development cost implied by data represents a potential area of concern if substantially low versus historical F&D.

In **Fig. 18**, we have calculated the implied PUD inventory Life (R/P for PUD reserves) and presented these data along with each operator's total unproved reserves. PUD inventory life is calculated from implied future development costs, total PUD reserves, and 2008 development costs incurred. In essence, the inventory life gives the total number of years it will take for the operator to drill all PUD locations, assuming the same (2008) funding level in subsequent years. The graph shows that two companies have a PUD inventory in excess of 6 years. These points are higher than those reported by all other peer group companies. As mentioned in Chapter VII, PUD locations are limited to a 5-year development timeframe under the SEC's updated reserves booking rules. Should an E&P company increase development spending in subsequent years (i.e., above 2008 levels), however, this will accelerated PUD development and shorten the time required to drill the location inventory.

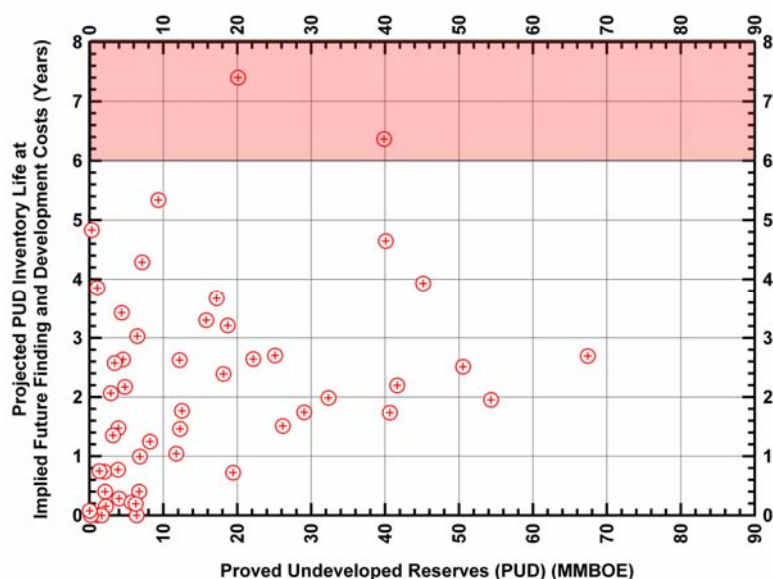


Fig. 18—Potential concern arises if the calculated time it will take an operator to develop PUD inventory, assuming past year's development capital for subsequent years, exceeds 5 years.

CHAPTER IX

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS FOR FUTURE WORK

9.1 Summary

The primary purposes of this work are to educate various parties about reserves overstatements and write-downs based on an in-depth investigation of the SEC and documented cases, and to develop quick-look, peer group graphical techniques to identify potentially questionable reserves data. We have presented information on reserves disclosures for companies which are publicly traded in the United States, along with information on the authority and enforcement procedures and trends of the United States Securities and Exchange Commission.

Documented cases show that alleged reserves overstatements have occurred on numerous occasions in the oil and gas industry and the subsequent reserves write-downs have created instantaneous value destruction for shareholders. Federal laws cited in reserves overstatement claims made by both shareholders and the SEC have been detailed in this document. Reserves overstatement implications arising from the SEC's new reserves reporting requirements have been discussed.

We have developed a systematic and organized series of questions which can be posed or investigated to determine the legitimacy of reserves data. Furthermore, we detailed quick-look graphical techniques which can be used to examine reserves data among peer group E&P companies. We believe responsible reporting of oil and gas reserves is in the best interest of all parties.

9.2 Conclusions

The following conclusions are derived from this work:

- Reserves overstatements have allegedly occurred on a number of occasions, and for a variety of reasons, in the oil and gas industry.
- Reserves overstatements or write-downs are not confined to a particular reserves category, asset type/geography, or operator size.
- There is potential for significant corporate and/or employee penalties for cases of reserves overstatements, along with the possibility of class action shareholder lawsuits.
- There may be a greater risk for reserves write-downs as a result of the 2009 Modernization of Oil and Gas Reporting Requirements.

- It is very difficult (for an outside party) to definitively know if an operator has overstated reserves.
- Quick-look graphical techniques among peer group companies can provide insight into potentially questionable oil and gas reserves data.
- Accurate reserves reporting should be an ethical and corporate mandate, as doing otherwise can destroy the credibility of management teams and produce significant civil penalties for both corporations and employees.

9.3 Recommendations for Future Work

Much work remains to be done in the area of reserves disclosures and overstatements. Educating reserves estimators regarding SEC guidelines and appropriate estimation techniques should be an ongoing priority. Furthermore, investors and other end users of reserves data should be continuously educated about the limits of reserves data and the issues associated with reserves disclosures. There are undoubtedly still teams, divisions, and companies in which management exerts pressure to be unduly optimistic regarding reserves. By continuing an honest and open dialogue regarding reserves disclosures, industry members can help to ensure that responsible reserves reporting is an ethical and ubiquitous mandate for operators. And with the advent of new reserves disclosure guidance from the SEC and a rapidly changing regulatory landscape, this is a critical time to discuss many of the topics addressed in this document.

In addition to further educating all stakeholder groups, other, and perhaps more tangible, future work products may be developed. First, the graphical techniques developed here to identify potential reserves overstatements can be expanded upon and tested. We have presented a number of graphical arrangements, but certainly more data are publicly available to scrutinize and there are additional relationships to examine. Although a certain impenetrability is associated with disclosed reserves values, investigators are limited only by their imaginations when dissecting the data that are available. In addition to developing new techniques—graphical and otherwise—the techniques developed here can be tested on alleged overstatement cases discussed in Chapter VI. Would any of the graphical techniques have cast a degree of pre-emptive doubt upon the operator's data? This would give empirical support to the techniques developed herein. Also, instead of examining these graphical relationships in isolation, perhaps multi-variable analysis could be utilized. For example, how do an operator's reported reserves compare to a predicted value based on certain attributes such as their net wells, net developed acreage, and future development costs?

Much work remains to do in terms of analyzing soon-to-be reported 2009 year-end reserves data. These data, of course, should be determined according to the updated SEC regulations. Will volumes increase significantly? Will the increases be legitimate for certain operators? How many companies will voluntarily

report probable and possible reserves, or opt to calculate reserves according to alternative price forecasts? Although such investigations may be detailed and time consuming, they will earn researchers a deeper understanding of ever-essential reserves data and may yield significant findings.

Last, additional projects may be considered in the areas of quantifying investor risk due to reserves overstatements, and of investigating tax implications and the involvement of the Internal Revenue Service on reserves overstatement cases.

GLOSSARY

1P	Proved Reserves
2P	Probable Reserves
3P	Possible Reserves
AAPG	American Association of Petroleum Geologists
AGA	American Gas Association
APA	Administrative Procedures Act
API	American Petroleum Institute
ASC	Accounting Standards Codification
ASC	Alberta Securities Commission
BBC	British Broadcasting Corporation
Bcf	Billion cubic feet
Bcfe	Billion cubic feet equivalent
bbl	barrels
BOE	Barrels of Oil Equivalent
CEE	Central and Eastern Europe
CEO	Chief Executive Officer
CERA	Cambridge Energy Research Associates
CFO	Chief Financial Officer
CFR	Code of Financial Regulations
CGP	El Paso CGP Company LLC
CNMV	Comision Nacional del Mercado de Valores
CNN	Cable News Network
COGEH	Canadian Oil and Gas Evaluation Handbook
CSA	Canadian Securities Administration
cu ft	cubic feet
DD&A	Depreciation, Depletion and Amortization
DOJ	Department of Justice
E&P	Exploration and Production
EDGAR	Electronic Data Gathering, Analysis, and Retrieval
EEX	Enserch Exploration
EIA	Energy Information Administration
EP	El Paso Corporation
EPEP	El Paso Exploration and Production
EPPH	El Paso Exploration and Production Company

EU	European Union
EUR	Estimated Ultimate Recovery
F&D	Finding and Development Cost
FASB	Federal Accounting Standards Board
FC	Full Cost
FSA	Financial Services Authority
FY	Fiscal Year
IHS	Information Handling Services
KPMG	Klynveld Peat Marwick Goerdeler
LLC	Limited Liability Company
LOE	Lease Operating Expense
LP	Limited Partnership
MBOE	Thousand Barrels of Oil Equivalent
MMBOE	Million Barrels of Oil Equivalent
NERA	National Economic Research Associates
NI	National Instrument
NPV10	Net Present Value discounted at 10%
OECD	Organization for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
PDNP	Proved Developed Non-Producing
PDO	Petroleum Development of Oman
PDP	Proved Developed Producing
PLC	Public Limited Company
PSC	Production Sharing Contract
PUD	Proved Undeveloped
PwC	Pricewaterhouse Coopers
Q&A	Question and Answer
R/P	Reserves over Production ratio
RLI	Reserves Life Index
ROCE	Return On Capital Employed
RRR	Reserves Replacement Ratio
SE	Successful Efforts
SEC	Securities and Exchange Commission
SFAS	Statement of Financial Accounting Standards

SMOG	Standardized Measure of discounted future net cash flows relating to proved Oil and Gas reserve quantities
SOX	Sarbanes-Oxley
SPE	Society of Petroleum Engineers
SPE-PRMS	Society of Petroleum Engineers Petroleum Resource Management System
SPEE	Society of Petroleum Evaluation Engineers
SVP	Senior Vice President
Tcf	Trillion cubic feet
Tcfe	Trillion cubic feet equivalent
UK	United Kingdom
US	United States
USC	United States Code
USD	United States dollars
VP	Vice President
WPC	World Petroleum Congress
Y/Y	Year over Year
YPF	Yacimientos Petroliferos Fiscales

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APPENDIX A

LAWS CITED BY THE SEC FOR RESERVES OVERSTATEMENT

Below are the securities laws alleged to have been violated as part of the El Paso Corporation reserves overstatement case. Numerous sections and regulations are alleged to have been violated according to the 11 claims of the July 2008 complaint. The full text of these securities laws is presented below. The description of the laws within the SEC complaint against El Paso Corporation may be abbreviated and differ somewhat, as that document is geared to the particular circumstances of the case. The US Code and Code of Federal Regulations are available from a number of different sources. Text below has been obtained from The Cornell University Law School Legal Information Institute (2010).

First Claim: Violation of Section 17(a) of the Securities Act

Securities Act Section 17: Fraudulent Interstate Transactions

Part (a): Use of Interstate Commerce for purpose of fraud or deceit

It shall be unlawful for any person in the offer or sale of any securities or any security-based swap agreement (as defined in section 206B of the Gramm-Leach-Bliley Act) by the use of any means or instruments of transportation or communication in interstate commerce or by use of the mails, directly or indirectly—

1. to employ any device, scheme, or artifice to defraud, or
2. to obtain money or property by means of any untrue statement of a material fact or any omission to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading*; or
3. to engage in any transaction, practice, or course of business which operates or would operate as a fraud or deceit upon the purchaser.

*Note: In citing 17(a)(2) in the First Claim, the El Paso complaint states only that the defendants made “untrue statements...” without the prefix “to obtain money or property...” The Second Claim states that untrue statements were made “to obtain money or property.” (See below.)

Second Claim: Violation of Section 17(a)(2) of the Securities Act

Securities Act Section 17: Fraudulent Interstate Transactions

Part (a): Use of Interstate Commerce for purpose of fraud or deceit

It shall be unlawful for any person in the offer or sale of any securities or any security-based swap agreement (as defined in section 206B of the Gramm-Leach-Bliley Act) by the use of any means or instruments of transportation or communication in interstate commerce or by use of the mails, directly or indirectly—

2. to obtain money or property by means of any untrue statement of a material fact or any omission to state a material fact necessary in order to make the statements made, in light of the circumstances under which they were made, not misleading.

Third Claim: Violation of Section 10(b) of the Exchange Act and Rule 10b-5 Thereunder

Exchange Act Section 10: Manipulative and Deceptive Devices

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce or of the mails, or of any facility of any national securities exchange--

Part (b): To use or employ, in connection with the purchase or sale of any security registered on a national securities exchange or any security not so registered, or any securities-based swap agreement (as defined in section 206B of the Gramm-Leach-Bliley Act), any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors.

Rule 10b-5: Employment of Manipulative and Deceptive Devices

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or of any facility of any national securities exchange,

- a. To employ any device, scheme, or artifice to defraud,
- b. To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or
- c. To engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.

Fourth Claim: Violations of Section 13(a) of the Exchange Act and Rules 12b-20,13a-1 and 13a-13

Exchange Act Section 13: Periodical and Other Reports

Part (a): Reports by issuer of security; contents

Every issuer of a security registered pursuant to section 78l shall file with the Commission, in accordance with such rules and regulations as the Commission may prescribe as necessary or appropriate for the proper protection of investors and to insure fair dealing in the security—

- a. such information and documents (and such copies thereof) as the Commission shall require to keep reasonably current the information and documents required to be included in or filed with an application or registration statement filed pursuant to section 78l, except that the Commission may not require the filing of any material contract wholly executed before July 1, 1962.

- b. such annual reports (and such copies thereof), certified if required by the rules and regulations of the Commission by independent public accountants, and such quarterly reports (and such copies thereof), as the Commission may prescribe.

Every issuer of a security registered on a national securities exchange shall also file a duplicate original of such information, documents, and reports with the exchange.

Rule 12b-20: Additional Information

In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made not misleading.

Rule 13a-1: Requirements of Annual Reports

Every issuer having securities registered pursuant to section 12 of the Act (15 USC 78 /) shall file an annual report on the appropriate form authorized or prescribed therefor [sic] for each fiscal year after the last full fiscal year for which financial statements were filed in its registration statement. Annual reports shall be filed within the period specified in the appropriate form.

Rule 13a-13: Quarterly Reports on Form 10-Q (§249.308a of this chapter)

- a. Except as provided in paragraphs (b) and (c) of this section, every issuer that has securities registered pursuant to section 12 of the Act and is required to file annual reports pursuant to section 13 of the Act, and has filed or intends to file such reports on Form 10-K (§249.310 of this chapter), shall file a quarterly report on Form 10-Q (§249.308a of this chapter) within the period specified in General Instruction A.1. to that form for each of the first three quarters of each fiscal year of the issuer, commencing with the first fiscal quarter following the most recent fiscal year for which full financial statements were included in the registration statement, or, if the registration statement included financial statements for an interim period subsequent to the most recent fiscal year end meeting the requirements of Article 10 of Regulation S-X and Rule 8-03 of Regulation S-X for smaller reporting companies, for the first fiscal quarter subsequent to the quarter reported upon in the registration statement. The first quarterly report of the issuer shall be filed either within 45 days after the effective date of the registration statement or on or before the date on which such report would have been required to be filed if the issuer has been required to file reports on Form 10-Q as of its last fiscal quarter, whichever is later.
- b. The provisions of this rule shall not apply to the following issuers:
 - 1. Investment companies required to file reports pursuant to §270.30b1-1;
 - 2. Foreign private issuers required to file reports pursuant to §270.13a-16 and;

3. Asset-backed issuers required to file reports pursuant to §270.13a-17.
- c. Part I of the quarterly reports on Form 10-Q need not be filed by:
 1. Mutual life insurance companies; or
 2. Mining companies not in the production stage but engaged primarily in the exploration for the development of mineral deposits other than oil, gas or coal, if all of the following conditions are met:
 - i. The registrant has not been in production during the current fiscal year or the two years immediately prior thereto; except that being in production for an aggregate period of not more than eight months over the three-year period shall not be a violation of this condition.
 - ii. Receipts from the sale of mineral products or from the operations of mineral producing properties by the registrant and its subsidiaries combined have not exceeded \$500,000 in any of the most recent six years and have not aggregated more than \$1,500,000 in the most recent six fiscal years.
- d. Notwithstanding the foregoing provisions of this section, the financial information required by Part I of Form 10-Q shall not be deemed to be "filed" for the purpose of section 18 of the Act or otherwise subject to the liabilities of that section of the Act, but shall be subject to all other provisions of the Act.

Fifth Claim: Violations of Sections 13(b)(2)(A) and 13b(2)(B) of the Exchange Act

Exchange Act Section 13: Periodical and Other Reports

Part (b): Form of report; books, records, and internal accounting; directives

2. Every issuer which has a class of securities registered pursuant to section 78l and every issuer which is required to file reports pursuant to section 78o (d) of this title shall—
 - A. make and keep books, records, and accounts, which, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the issuer;
 - B. devise and maintain a system of internal accounting controls sufficient to provide reasonable assurances that—
 - i. transactions are executed in accordance with management's general or specific authorization;
 - ii. transactions are recorded as necessary (I) to permit preparation of financial statements in conformity with generally accepted accounting principles or any other criteria applicable to such statements, and (II) to maintain accountability for assets;

- iii. access to assets is permitted only in accordance with management's general or specific authorization; and
- iv. the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

Sixth Claim: Violations of Section 13(b)(5) of the Exchange Act

Exchange Act Section 13: Periodical and Other Reports

Part (b): Form of report; books, records, and internal accounting; directives

- 5. No person shall knowingly circumvent or knowingly fail to implement a system of internal accounting controls or knowingly falsify any book, record, or account described in paragraph (2).

Seventh Claim: Violations of Exchange Act Rules 13b2-1 and 13b2-2

Rule 13b2-1: Falsification of Accounting Records

No person shall directly or indirectly, falsify or cause to be falsified, any book, record or account subject to section 13(b)(2)(A) of the Securities Exchange Act.

Rule 13b2-2: Representations and Conduct in Connection with the Preparation of Required Reports and Documents

- a. No director or officer of an issuer shall, directly or indirectly:
 - 1. Make or cause to be made a materially false or misleading statement to an accountant in connection with; or
 - 2. Omit to state, or cause another person to omit to state, any material fact necessary in order to make statements made, in light of the circumstances under which such statements were made, not misleading, to an accountant in connection with:
 - i. Any audit, review or examination of the financial statements of the issuer required to be made pursuant to this subpart; or
 - ii. The preparation or filing of any document or report required to be filed with the Commission pursuant to this subpart or otherwise.
- b.
 - 1. No officer or director of an issuer, or any other person acting under the direction thereof, shall directly or indirectly take any action to coerce, manipulate, mislead, or fraudulently influence any independent public or certified public accountant engaged in the performance of an audit or review of the financial statements of that issuer that are required to be filed with the Commission pursuant to this subpart or otherwise if that

person knew or should have known that such action, if successful, could result in rendering the issuer's financial statements materially misleading.

2. For purposes of paragraphs (b)(1) and (c)(2) of this section, actions that, "if successful, could result in rendering the issuer's financial statements materially misleading" include, but are not limited to, actions taken at any time with respect to the professional engagement period to coerce, manipulate, mislead, or fraudulently influence an auditor:
 - i. To issue or reissue a report on an issuer's financial statements that is not warranted in the circumstances (due to material violations of generally accepted accounting principles, generally accepted auditing standards, or other professional or regulatory standards);
 - ii. Not to perform audit, review or other procedures required by generally accepted auditing standards or other professional standards;
 - iii. Not to withdraw an issued report; or
 - iv. Not to communicate matters to an issuer's audit committee.
- c. In addition, in the case of an investment company registered under section 8 of the Investment Company Act of 1940 (15 USC 80a-8), or a business development company as defined in section 2(a)(48) of the Investment Company Act of 1940 (15 USC 80a-2(a)(48)), no officer or director of the company's investment adviser, sponsor, depositor, trustee, or administrator (or, in the case of paragraph (c)(2) of this section, any other person acting under the direction thereof) shall, directly or indirectly:
 1.
 - i. Make or cause to be made a materially false or misleading statement to an accountant in connection with; or
 - ii. Omit to state, or cause another person to omit to state, any material fact necessary in order to make statements made, in light of the circumstances under which such statements were made, not misleading to an accountant in connection with:
 - A. Any audit, review, or examination of the financial statements of the investment company required to be made pursuant to this subpart; or
 - B. The preparation or filing of any document or report required to be filed with the Commission pursuant to this subpart or otherwise; or
 2. Take any action to coerce, manipulate, mislead, or fraudulently influence any independent public or certified public accountant engaged in the performance of an audit or review of the financial statements of that investment company that are required to be filed with the Commission pursuant to this subpart or otherwise if that person knew or

should have known that such action, if successful, could result in rendering the investment company's financial statements materially misleading.

Eighth Claim: Violations of Section 15(d) of the Exchange Act and Rules 12b-20,15d-1 and 15d-13 Thereunder

Exchange Act Section 15: Registration and Regulation of Brokers and Dealers

Part (d): Filing of supplementary and periodic information

Each issuer which has filed a registration statement containing an undertaking which is or becomes operative under this subsection as in effect prior to August 20, 1964, and each issuer which shall after such date file a registration statement which has become effective pursuant to the Securities Act of 1933, as amended [15 USC 77a et seq.], shall file with the Commission, in accordance with such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors, such supplementary and periodic information, documents, and reports as may be required pursuant to section 78m of this title in respect of a security registered pursuant to section 78l of this title. The duty to file under this subsection shall be automatically suspended if and so long as any issue of securities of such issuer is registered pursuant to section 78l of this title. The duty to file under this subsection shall also be automatically suspended as to any fiscal year, other than the fiscal year within which such registration statement became effective, if, at the beginning of such fiscal year, the securities of each class to which the registration statement relates are held of record by less than three hundred persons. For the purposes of this subsection, the term "class" shall be construed to include all securities of an issuer which are of substantially similar character and the holders of which enjoy substantially similar rights and privileges. The Commission may, for the purpose of this subsection, define by rules and regulations the term "held of record" as it deems necessary or appropriate in the public interest or for the protection of investors in order to prevent circumvention of the provisions of this subsection. Nothing in this subsection shall apply to securities issued by a foreign government or political subdivision thereof.

Rule 12b-20: Additional Information

In addition to the information expressly required to be included in a statement or report, there shall be added such further material information, if any, as may be necessary to make the required statements, in the light of the circumstances under which they are made not misleading.

Rule 15d-1: Requirement of Annual Reports

Every registrant under the Securities Act of 1933 shall file an annual report, on the appropriate form authorized or prescribed therefor [sic], for the fiscal year in which the registration statement under the Securities Act of 1933 became effective and for each fiscal year thereafter, unless the registrant is exempt

from such filing by section 15(d) of the Act or rules thereunder. Annual reports shall be filed within the period specified in the appropriate report form.

Rule 15d-13: Quarterly Reports on Form 10-Q (§249.308 of this chapter)

- a. Except as provided in paragraphs (b) and (c) of this section, every issuer that has securities registered pursuant to the Securities Act of 1933 and is required to file annual reports pursuant to section 15(d) of the Act on Form 10-K (§249.310 of this chapter) shall file a quarterly report on Form 10-Q (§249.308 of this chapter) within the period specified in General Instruction A.1. to that form for each of the first three quarters of each fiscal year of the issuer, commencing with the first fiscal quarter following the most recent fiscal year for which full financial statements were included in the registration statement, or, if the registration statement included financial statements for an interim period after the most recent fiscal year end meeting the requirements of Article 10 of Regulation S-X, or Rule 8-03 of Regulation S-X for smaller reporting companies, for the first fiscal quarter after the quarter reported upon in the registration statement. The first quarterly report of the issuer shall be filed either within 45 days after the effective date of the registration statement or on or before the date on which such report would have been required to be filed if the issuer had been required to file reports on Form 10-Q as of its last fiscal quarter, whichever is later.
- b. The provisions of this rule shall not apply to the following issuers:
 1. Investment companies required to file reports pursuant to §270.30b1-1;
 2. Foreign private issuers required to file reports pursuant to §270.15d-16 and;
 3. Asset-backed issuers required to file reports pursuant to §270.15d-17.
- c. Part I of the quarterly reports on Form 10-Q need not be filed by:
 1. Mutual life insurance companies; or
 2. Mining companies not in the production stage but engaged primarily in the exploration for the development of mineral deposits other than oil, gas or coal, if all the following conditions are met:
 - i. The registrant has not been in production during the current fiscal year or the two years immediately prior thereto; except that being in production for an aggregate period of no more than eight months over the three-year period shall not be a violation of this condition.
 - ii. Receipts from the sale of mineral products or from the operations of mineral producing properties by the registrant and its subsidiaries combined have not exceeded \$500,000 in any of the most recent six years and have not aggregated more than \$1,500,000 in the most recent six fiscal years.

- d. Notwithstanding the foregoing provisions of this section, the financial information required by Part I of Form 10-Q shall not be deemed to be "filed" for the purpose of section 18 of the Act or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act.

Ninth Claim: Aiding and Abetting El Paso and CGP's Violations of Section 13(a) of the Exchange Act and Rules 12b-20, 13a-1 and 13a-13 Thereunder

Tenth Claim: Aiding and Abetting El Paso, EPPH and CGP's Violations of Sections 13(b)(2)(A) and 13(b)(2)(B) of the Exchange Act

Eleventh Claim: Aiding and Abetting EPPH's Violations of Sections 15(d) of the Exchange Act and Rules 12b-20, 15d-1 and 15d-13 Thereunder

APPENDIX B

LAWS FREQUENTLY CITED BY SHAREHOLDERS IN CLASS ACTION

LAWSUITS RELATED TO RESERVES OVERSTATEMENTS

Below are three securities law violations which are common allegations in class action lawsuits related to reserves overstatement cases. These violations are by no means limited solely to reserves overstatement cases. The full text of these securities laws is presented below. The US Code and Code of Federal Regulations are available from a number of different sources. Text below has been obtained from The Cornell University Law School Legal Information Institute (2010).

First Claim: Violation of Section 10 of the Exchange Act

Exchange Act Section 10: Manipulative and Deceptive Devices

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce or of the mails, or of any facility of any national securities exchange—

- a.
 1. To effect a short sale, or to use or employ any stop-loss order in connection with the purchase or sale, of any security registered on a national securities exchange, in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors.
 2. Paragraph (1) of this subsection shall not apply to security futures products.
- b. To use or employ, in connection with the purchase or sale of any security registered on a national securities exchange or any security not so registered, or any securities-based swap agreement (as defined in section 206B of the Gramm-Leach-Bliley Act), any manipulative or deceptive device or contrivance in contravention of such rules and regulations as the Commission may prescribe as necessary or appropriate in the public interest or for the protection of investors.

Second Claim: Violation of Exchange Act Rule 10-b5

Rule 10b-5: Employment of Manipulative and Deceptive Devices

It shall be unlawful for any person, directly or indirectly, by the use of any means or instrumentality of interstate commerce, or of the mails or of any facility of any national securities exchange,

- a. To employ any device, scheme, or artifice to defraud,
- b. To make any untrue statement of a material fact or to omit to state a material fact necessary in order to make the statements made, in the light of the circumstances under which they were made, not misleading, or

- c. To engage in any act, practice, or course of business which operates or would operate as a fraud or deceit upon any person, in connection with the purchase or sale of any security.

Third Claim: Violation of Section 20(a) of the Exchange Act

Exchange Act Section 20: Liabilities of Controlling Persons and Persons Who Aid and Abet Violations

- a. Joint and several liability; good faith defense

Every person who, directly or indirectly, controls any person liable under any provision of this title or of any rule or regulation thereunder shall also be liable jointly and severally with and to the same extent as such controlled person to any person to whom such controlled person is liable, unless the controlling person acted in good faith and did not directly or indirectly induce the act or acts constituting the violation or cause of action.
- b. Unlawful activity through or by means of any other person

It shall be unlawful for any person, directly or indirectly, to do any act or thing which it would be unlawful for such person to do under the provisions of this title or any rule or regulation thereunder through or by means of any other person.
- c. Hindering, delaying, or obstructing the making or filing of any document, report, or information

It shall be unlawful for any director or officer of, or any owner of any securities issued by, any issuer required to file any document, report, or information under this title or any rule or regulation thereunder without just cause to hinder, delay, or obstruct the making or filing of any such document, report, or information.
- d. Liability for trading in securities while in possession of material nonpublic information

Wherever communicating, or purchasing or selling a security while in possession of, material nonpublic information would violate, or result in liability to any purchaser or seller of the security under any provisions of this title, or any rule or regulation thereunder, such conduct in connection with a purchase or sale of a put, call, straddle, option, privilege or security-based swap agreement (as defined in section 206B of the Gramm-Leach- Bliley Act) with respect to such security or with respect to a group or index of securities including such security, shall also violate and result in comparable liability to any purchaser or seller of that security under such provision, rule, or regulation.
- e. Prosecution of persons who aid and abet violations

For purposes of any action brought by the Commission under paragraph (1) or (3) of section 78u (d), any person that knowingly provides substantial assistance to another person in violation of a provision of this title, or of any rule or regulation issued under this title, shall be deemed to be in violation of such provision to the same extent as the person to whom such assistance is provided.

f. Limitation on Commission authority

The authority of the Commission under this section with respect to security- based swap agreements (as defined in section 206B of the Gramm-Leach-Bliley Act) shall be subject to the restrictions and limitations of section 78c-1 (b) of this title.

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