An Analysis of Reserve Recognition Accounting to Determine its Effectiveness and Implications

by

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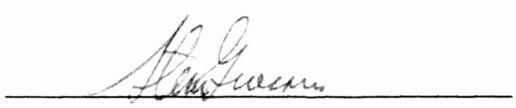

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ABSTRACT

Reserve Recognition Accounting, the accounting method created by the Securities and Exchange Commission in Accounting Series Release 253 for oil and gas companies, is not an effective disclosure system. An oil company's reported financial position, if reported using Reserve Recognition Accounting, will vary widely and erratically from year to year due to changes in the estimates of reserves and changes in prices of oil. Reserve Recognition Accounting does not provide financial statement users with more information than current accounting methods, and the costs of implementing and maintaining Reserve Recognition Accounting are very high. In addition, investors rely on several sources of information, not just published financial statements. Also, Reserve Recognition Accounting is not an attempt by the Securities and Exchange Commission to become the standards setting body for the accounting profession. The Securities and Exchange Commission has recently decided not to implement Reserve Recognition Accounting and to rely on the Financial Accounting Standards Board to set the disclosure requirements.

An Analysis of Reserve Recognition Accounting to Determine its Effectiveness and Implications

INTRODUCTION

Setting accounting standards for disclosure is done in a political environment.[1] The affected companies, accountants, investors, and government agencies all have reasons why certain regulations should or should not be adopted. In response to these groups, the Financial Accounting Standards Board (FASB) must weigh various alternatives to determine which method is best. The trend of FASB pronouncements has been toward increasing the objectivity and comparability of financial statements, often at the expense of theoretically preferable methods. An example of this trend is in the FASB's disclosure standards for oil and gas producing companies.

[1]The style sheet for this paper is from the journal Accounting Review.

THE OIL AND GAS INDUSTRY

Since the sale of oil products is virtually guaranteed, there are two places to recognize revenue. Of these two alternatives, when the petroleum is discovered or when it is sold, the FASB chose the latter. In Statement No. 19, the FASB decided to require the use of successful efforts accounting. This method capitalizes, and thus defers, the direct costs of drilling a successful well and charges to expense in the current period all costs associated with unsuccessful wells. Revenue is recognized when the petroleum products are sold. This method is consistent with all of the accounting principles that have guided accounting regulation in the past. These principles, see Appendix I for a complete list, are used to evaluate proposed regulations to determine if they should be instituted. The principles were established in an effort to create consistency and stability in financial statements, and the principles have been used over the years to evaluate new disclosure rules. However, the FASB does weigh other factors when setting disclosure requirements.

In determining that the oil and gas industry should use a single accounting method, the FASB recognized that in some circumstances, alternative accounting methods may be useful. However, the FASB also stated, "the facts and circumstances surrounding the search for and development

and production of oil and gas do not differ because of the size of the company or whether its securities are publicly traded" [FASB Financial Accounting Standards, 1980]. In reaching its decision on successful efforts accounting, the FASB [1980, p. 1034] rejected discovery value accounting because:

> Measurements of discovery value require estimates of a) the quantity of reserves, b) the amount and timing of costs to develop these reserves, c) timing of production of the reserves, d) the production costs and income taxes, e) selling prices, f) appropriate discount rates that reflect both an interest element and a risk factor. Those estimates, in turn, might be based on predictions of changes in government regulations and restrictions, technological changes, and domestic and international economic conditions. All of the uncertainties inherent in those estimates and predictions tend to make estimates of reserve values highly subjective and relatively unreliable . . .

Successful efforts accounting was consistent with most of the accounting principles, where discovery value and current cost accounting were inconsistent with most of the principles.

ACCOUNTING SERIES RELEASE 253

After the issuance of Statement No. 19, the Securities and Exchange Commission (SEC) issued Accounting Series Release (ASR) 253 on August 31, 1978. ASR 253 created Reserve Recognition Accounting which was a mixture of discovery value and current cost account.

Background

Although the FASB did not have the power of the law behind its pronouncements, the SEC did and usually backed the FASB. However, with the creation of Reserve Recognition Accounting (RRA), the SEC directly contradicted the FASB by allowing the use of both successful efforts and full cost accounting methods for the oil and gas industries while RRA was being developed. This nullified Statement No. 19, so the FASB, to save face, issued Statement No. 25 which allowed, but did not endorse, full cost accounting. In Release 253, the SEC states, "traditional accounting methods fail to provide sufficient information on financial position and operating results of oil and gas producers, and development of an accounting method based on a valuation of proved oil and gas reserves would provide significant useful information."

The release also states:

> The Commissioner's policy recognizes that the FASB operates to establish accounting standards, but it does not involve a delegation of the Commission's

> substantive rule-making authority to the FASB. While the Commission recognizes that, in general, it is most desirable for the private sector rather than the government to develop accounting standards, the Commission retains the final authority to promulgate rules, including financial accounting standards, that govern the preparation and presentation of financial statements issued by publicly owned companies, regardless of the FASB's determinations.

With this statement of position, the SEC set out to create RRA.

RRA Disclosure Requirements

The specific disclosure requirements of RRA are summarized below:

a) quantities and annual changes in quantities of proved oil and gas reserves,

b) costs incurred in exploration, development, and production activities,

c) capitalized costs relating to oil and gas producing activities,

d) historical information on cash flow and value of transfers from producing oil and gas,

e) cash flow and value of transfers (net revenue) from estimated future production of proved oil and gas reserves calculated on the basis of current economic conditions, and

f) present value of net revenue from estimated future production of proved oil and gas reserves using a ten percent discount rate.

The two significant departures from current accounting practice are: 1) recognizing revenue upon discovery of oil and

gas and, 2) discounting estimated future production back to the present at a ten percent discount rate. The SEC concluded that "The discovery of oil and gas is the most significant event in exploration, development, and production activities."

Subsequent Releases. While Statement No. 19 required the disclosure of various quantity estimates, RRA calculates a dollar value measure of proved reserves. Since determining a reliable dollar value of the reserves is very difficult, the SEC has issued several statements and interpretations to try to clarify the calculations. The SEC's first twelve issuances attempted to define terms and eliminate contraditions with other FASB statements. On September 24, 1980, the SEC issued Release 270, the thirteenth release, which postponed the auditing requirements for reserve calculations for one year. This acknowledged the fact that the development of RRA as an objective, reliable accounting method was behind schedule. Release 277, which was issued a few months later, postponed the auditing requirements indefinitely. Establishing effective auditing procedures for the numerous subjective estimates of RRA was not feasible. The current standards require all historical data related to revenues from producing oil and gas, capitalized costs, costs incurred, and the method of accounting followed be audited. All disclosures of estimated future revenues, reserve quantities, and RRA values are regarded

as supplemental information and are not required by the SEC to be audited.

The RRA Earnings Summary. In addition, the SEC has proposed that oil and gas producers supplement their financial statements with an earnings summary prepared on the basis of RRA. In the RRA framework, revenues are defined as sales and transfers of produced oil and gas and current additions to proven reserves. Expenses are defined as all current period costs of exploring and developing additions to proven properties and all costs determined to be non-productive during the period. In addition to proven reserves reported in previous periods, revisions should be included in the RRA earnings summary. Furthermore, to compute estimated future net revenues, the companies should use current oil and gas prices with no adjustment for changes in the prices or production costs. To discount these future net revenues back to the present, a ten percent discount rate is used.

REGULATED DISCLOSURE

To the extent that required disclosure helps investors and managers make better decisions, it does produce benefits.

Justification and Benefits

There are four broad justifications of government intervention in a free enterprise economy. They are: 1) to encourage equity and fairness, 2) to enhance economic efficiency, 3) to instigate paternalistic policies, and 4) to insure individual freedom [Browning and Browning, 1979].

Some of the benefits of required disclosure commonly mentioned are: 1) the prevention or reduction of fraud and misrepresentation, 2) fairness to non-insiders, 3) lower transaction and information costs to investors, and 4) more efficient allocation of investor's resources among companies [Benston, 1976]. Of these benefits, improved resource allocation is the major benefit and is based on "the presumption that financial disclosure facilitates and may even be necessary for resources to flow to those companies in which the marginal return (net of risk) is greatest, thus maximizing the wealth of the nation" [Benston, 1976]. However, this presupposes that financial statements provide information in time before it is leaked out and acted on by others.

Limitations

Consider the results of a study on investor behavior in response to reported profits. This study by Ball and Brown [Hopwood, 1974] compared the stock prices of companies that reported above average profits to companies that reported below average profits. The stock prices of companies that eventually reported above average profits rose continuously during the twelve months before the profit announcement. In addition, the share prices of companies that eventually reported below average profits dropped continuously during the twelve months before the release. Furthermore, approximately 90 percent of the price change occurred before the profit figures were released.

A more specific example is found in the study by John S. Herold, Inc. The analysts at Herold calculated the value of oil reserves per share for 34 major oil companies [Chakravarty, 1980]. Herold is regarded as a conservative outfit, and the computations excluded reserves in politically unstable areas. Even allowing for this adjustment, in 24 of the 34 cases the value per share of reserves exceeded the recent stock price per share. Figure 1 gives specific examples. If this data is information, why are some analysts skeptical about oil stocks? Wholesale reliance on per share reserve values is risky because of the uncertainties between discovering oil and collecting cash from sales. It is obvious investors rely on informa-

Figure 1

The Comparison of Value of Reserves
Per Share and Recent Stock Prices

	Value of reserves per share	Recent stock price
Marathon Oil	124.65	65
Royal Dutch	184.84	94
Standard Oil of Ohio	203.75	65
Texaco	86.15	37

Source: "Like Buying Gold at $35 an Ounce," Forbes, 126 (1980).

tion from a variety of sources and regulated disclosure plays only a limited role in furnishing information.

Costs

The costs of government regulation must be considered when determining a regulation's effectiveness. Even if a regulation provides benefits, in this case information, the costs of compiling and presenting the information may exceed the benefits.

The Characteristics of Expensive Regulation. Arthur Andersen and Co. prepared a study of direct incremental costs incurred by 48 companies in complying with the regulations of six federal agencies in 1977 [Arthur Andersen and Co., 1978]. This study did not consider the costs of secondary effects like: 1) the loss of productivity, 2) investment disincentive, 3) international competitiveness,

4) lost opportunity, 5) construction delays, 6) inflation, 7) resource misallocation, and 8) shortage of supplies. The incremental costs measured in this study were defined as "the direct costs of those actions taken to comply with a regulation that would not have been taken in the absence of that regulation" [Arthur Andersen and Co., 1978]. After completing the study, Arthur Andersen and Co. developed nine attributes of regulations with high incremental costs. These attributes are:

1) Continuous monitoring
2) Forcing new technology
3) Capital intensity
4) Recurring costs
5) Retrofitting
6) Specified compliance action
7) Inadequate risk assessment
8) Engineering solutions
9) Changing requirements

This list does not represent all of the attributes of costly regulation, just the attributes discovered in this study.

Expensive Characteristics of RRA. Of the nine characteristics, RRA has six. Continuous monitoring, the first, is expensive because of the costs of hiring enough professionals to verify and revise quantity estimates in all reserve locations every year. The second characteristic, forcing new technology, applies to RRA because current es-

timation methods are not accurate enough to form a basis for an accounting system. Before RRA can be implemented, quantity estimates must be made more accurately. Capital intensity, the third characteristic, does not apply to RRA, except to the extent of forcing new technology. The recurring costs of RRA are very significant. A few months after the issuance of ASR 253, complaints to the SEC revealed that there probably were not enough petroleum engineers in the world to complete all of the estimating and verifying the initial regulation required. Consequently, the SEC revised some of the rules and eliminated the auditing requirements with ASR 277. Still, all estimates must be revised annually and the recurring costs are prohibitive.

Characteristic five, retrofitting, does not apply to RRA; however, specified compliance action, characteristic six, is present in RRA. RRA information is required of all oil and gas companies selling securities to the public. There is no flexibility to recognize different circumstances or alternate techniques. Inadequate risk assessment, number seven, is a characteristic of RRA. The recommendation of a ten percent discount rate for both domestic and foreign reserves assumes the same amount of risk of recoverability. The engineering solutions characteristic is not present in RRA, but characteristic nine, changing requirements, is. Trying to comply with regulations that are still being defined and clarified is difficult, and often just as a com-

pany develops the techniques to meet the requirements, the requirements change. Since RRA has many of the characteristics of expensive regulation, justification of RRA based on a cost vs. benefit analysis is difficult.

RESERVE RECOGNITION ACCOUNTING

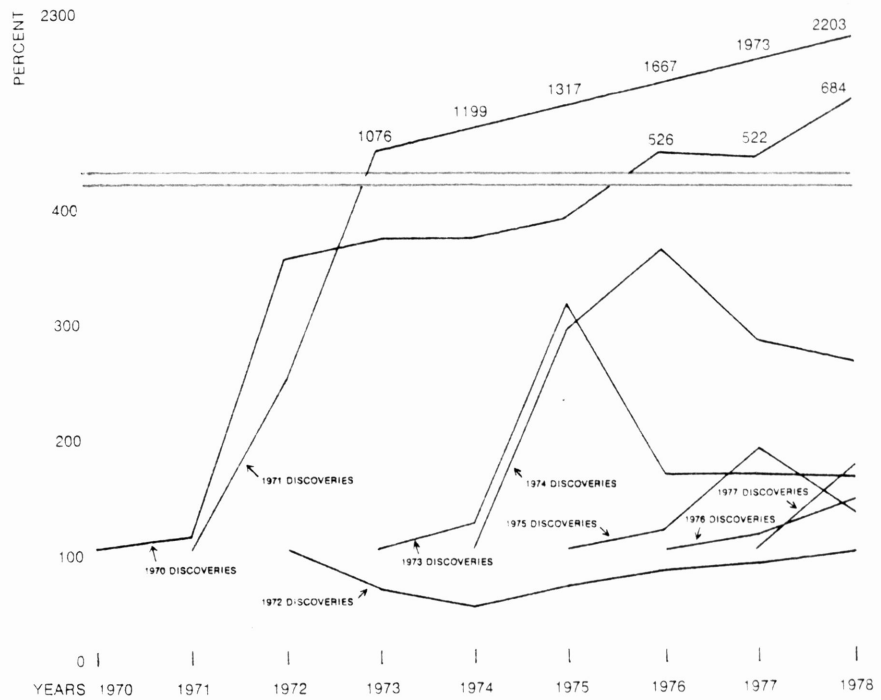
To justify the extra costs it will create, RRA must provide benefits in the form of information.

Comparison of RRA and Traditional Accounting Methods

To determine the impact of RRA on a company's reported financial condition, Price Waterhouse and Co. calculated the various RRA requirements and compared them to current accounting practice [Price Waterhouse and Co., 1979]. In only one case out of five comparisons of RRA income and historical income did RRA follow the same trend as historical income. In addition, the RRA income figures for all five companies were more erratic than the historical cost income figures. One of the study's participants changes in ultimate recovery estimates of yearly discovered reserves is reproduced in Figure 2. The 1971 discoveries have been revised, by 1978, up 2203 percent. The 1973 discovery estimates were increased 300 percent by 1975, but then were reduced back to 165 percent of their 1973 level by 1976. Furthermore, in nine of the ten years between 1969 and 1978, the revisions of previous estimates of crude oil discoveries have exceeded the quantities of discoveries for the whole United States. The petroleum engineering firm of DeGolyer and MacNaughton estimates that "it is at least five years after discovery before quantity estimates can be made within a $\pm$ 20 percent error range" [Price Waterhouse and Co., 1979].

Figure 2

Estimates of Ultimate Recovery of Discoveries



Source: Price Waterhouse. Reserve Recognition Accounting. 1979.

Implication of Subjectivity and Variability

In addition to the impact of estimated quantity revisions, RRA income would also reflect the impact of price revisions. This means the widely erratic quantity estimates of proven reserves would be multiplied by a changing price amount to determine the company's financial condition.

Since the price of oil and gas has risen almost constantly over the last few years, a company, under RRA, could show income even if no oil or gas was sold, discovered, or produced. This income could be based on upward quantity and price revisions. Since the company's reported financial position would vary widely and erratically with the changes in quantity estimates and prices, the data RRA would present is not very useful as information. Although current accounting practice for any industry does not totally eliminate the chance for the manipulation of reported figures by company management, RRA, with all of its estimates and revisions, not only gives management more chances for manipulation, it makes detecting manipulations very difficult.

CONCLUSIONS AND RECOMMENDATIONS

In conclusion, RRA is not an effective disclosure requirement. RRA possesses many of the characteristics of very costly regulation. Also, RRA does not provide much reliable, useful information to financial statement users, as shown in the Price Waterhouse study. RRA does not provide any more of the previous benefits (the prevention or reduction of fraud, fairness to non-insiders, lower transaction and information costs, or more efficient allocation of resources) than current oil and gas accounting systems. Even if RRA did produce some benefits, the excessive costs of implementing and maintaining it would override the benefits.

Even though the SEC appeared to be claiming a share of the standards setting process from the FASB when they issued release 253, recent statements and interpretations have moved away from that independent stand. In addition, in a statement of commission position dated February 26, 1981, the SEC announces that it " . . . no longer considers Reserve Recognition Accounting to be a potential method of accounting in the primary financial statements of oil and gas producers. In addition, the Commission is announcing its support of an undertaking by the FASB to develop a comprehensive package of disclosures for those engaged in oil and gas producing activities."

My recommendations after concluding this research are:

1) Develop definitions of proved reserves, tenuous reserves, and currently unrecoverable reserves,

2) Classify reserve discoveries under one of the categories listed above,

3) Disclose in a supplementary note the estimated quantities of each of the three classifications according to the reserve's geographic location,

4) Disclose the net change from last year in each reserve classification in a supplementary note.

The information provided by these disclosures would not need to be audited because of the inherent imprecisions of the estimates. Also, there would be no incentive to falsify the quantity estimates since they would be disclosed in a supplementary note and would not be the basis for reporting income.

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APPENDIX 1

1. The business entity principle - the business is a separate entity and its affairs are distinguished from its owners.

2. The going-concern principle - the accountant assumes the business entity will continue indefinitely.

3. The monetary principle - money is a useful measuring unit for reporting on a company's activities.

4. The revenue realization principle - assets should be carried at cost until appreciation in value is realized through sale.

5. The cost principle - cost is assumed to be the proper basis of accounting for assets acquired, for services received, and for the interests of owners or creditors in the business.

6. The matching principle - when the revenue for a period is determined, the costs associated with that revenue should be deducted to compute net income.

7. The objectivity principle - to the maximum degree possible, accounting should be based on objective evidence.

8. The consistency principle - consistent application of accounting principles is necessary so that year to year comparisons can be made.

9. The disclosure principle - financial statements must include all information necessary for fair presentation of a company's position.