

CHAPTER

15**OIL AND GAS
ACCOUNTING****LEARNING OBJECTIVES**

After reading this chapter, you should be able to:

- Understand the nature of full cost (FC) and successful efforts (SE) accounting.
- Grasp the background and politics of standard setting for oil and gas accounting.
- Understand the SEC's reserve recognition accounting (RRA) proposal.
- Understand SFAS No. 69 and its relationship to RRA.

Oil and gas accounting is an interesting though specialized area, one that demonstrates many theoretical problems of the type discussed in this book. Standard setting in this area has been the subject of controversy for nearly two decades. Moreover, several of the decisions rendered by standard-setting agencies have been extremely dubious. From a theoretical point of view, financial accounting and reporting in the oil and gas industry illustrates very well a situation in which information produced by the historical cost model generally is considered to be much less relevant for decision makers than information produced by some form of current valuation. Because of this factor and the politics of the oil and gas accounting controversy, we have seen more empirical research using security price movements to ascertain the economic impact of an accounting standard in this area than in any other single area of accounting.

In this chapter we first look at an example of the impact on financial statements of full cost (FC) versus successful efforts (SE) accounting (the two broad methods of applying historical cost). Then we take up a discussion of the conceptual differences between the two methods in the application of historical costing. We also review standard setting for oil and

gas accounting and the various empirical studies, compare oil and gas accounting to the conceptual framework, and examine the current value approach proposed by the Securities and Exchange Commission that was called *reserve recognition accounting* (RRA). Last, we take up the current status of financial accounting and reporting in the oil and gas industry.

In practice, there are variations in the application of both FC and SE because of such factors as the definition of a cost center (to be discussed later). However, in this chapter the two methods will be examined in their broadest sense. The basic difference between the two is their treatment of incurred exploration costs that do not result in the discovery of oil or gas reserves. Under FC, all the costs of exploration are capitalized, regardless of whether those costs lead to a specific discovery of reserves. The rationale supporting FC is the probabilistic nature of exploration: it may require, on average, that numerous exploratory wells be drilled in order to find a reservoir that can be developed. Therefore, costs of all exploration are included in the cost of successful wells. Under SE, only the exploration costs that result in a producing well are capitalized; exploration costs that result in dry holes are expensed immediately. If four exploratory wells are drilled and three are dry holes, the costs of those three will not provide future benefits and therefore should be expensed.

The following example will illustrate the possible impact on financial statements of applying FC versus SE for a relatively young enterprise. XYZ Corporation was formed three years ago and has drilled four exploratory wells per year with a success rate of 25 percent. Depletion expense is 20 percent of beginning-of-year oil properties (that is, XYZ produces 20 percent of its proven reserves each year), and depreciation expense is 10 percent of beginning-of-year other assets. Production cost is 8 percent of revenues. In the current year, 100,000 barrels of oil were sold at \$32 per barrel. Four exploratory wells were drilled at an average cost of \$525,000. One well was successful. Exhibit 15-1 presents the beginning-of-year balance sheets, 15-2 the current-year income statements, and 15-3 the end-of-year balance sheets under both the FC and SE methods.

Although the illustration is hypothetical, it does point out that the two methods may have a significant impact on financial statements, particularly for a relatively new or developing enterprise. In this illustration, assets differ by \$4.5 million, or approximately 54 percent (FC as base) at year end. The difference is even more pronounced in stockholders' equity, where SE's stockholders' equity is only 24 percent of FC's. Net income varied by \$843,000, or 45 percent.

These results appear unusually large; however, the potential effects are substantiated by several studies of the financial statements of operating enterprises. For example, in a study of 28 enterprises, Klingstedt's

EXHIBIT 15-1 XYZ Corporation Balance Sheets, Beginning of Year

	<u>FC</u>	<u>SE</u>
Assets		
Current assets	\$ 800,000	\$ 800,000
Oil properties	4,880,000	1,220,000
Other assets	1,000,000	1,000,000
Total	<u>\$6,680,000</u>	<u>\$ 3,020,000</u>
Liabilities and Stockholders' Equity		
Current liabilities	\$ 600,000	\$ 600,000
Long-term liabilities	2,000,000	2,000,000
Common stock	2,000,000	2,000,000
Retained earnings (Deficit)	2,080,000	(1,580,000)
Total	<u>\$6,680,000</u>	<u>\$ 3,020,000</u>

EXHIBIT 15-2 XYZ Corporation Income Statements, Current Year

	<u>FC</u>	<u>SE</u>
Revenues (100,000 barrels at \$32)	<u>\$3,200,000</u>	<u>\$ 3,200,000</u>
Expenses:		
Production costs	\$ 256,000	\$ 256,000
Depletion	976,000	244,000
Depreciation	100,000	100,000
Exploration costs	—	1,575,000
	<u>\$1,332,000</u>	<u>\$ 2,175,000</u>
Net Income	<u>\$1,868,000</u>	<u>\$ 1,025,000</u>

data revealed that earnings may increase from 10 percent to several hundred percent by merely switching from the SE method to the FC method.¹ Touche Ross & Company (now Deloitte and Touche) found in a study of 36 enterprises that net income would be reduced by 20 percent, assets by 30 percent, and stockholders' equity by 16 percent if the enterprises were required to switch from FC to SE.² Similarly, the First Boston Corporation's analysis showed net income reductions as high as

1 Klingstedt (1970, pp. 79-86).

2 Touche Ross & Co. (1977).

EXHIBIT 15-3 XYZ Corporation Balance Sheets, End of Year

	<u>FC</u>	<u>SE</u>
Assets		
Current assets	\$1,445,000	\$ 1,445,000
Oil properties	6,004,000	1,501,000
Other assets	900,000	900,000
Total	<u>\$8,349,000</u>	<u>\$ 3,846,000</u>
Liabilities and Stockholders' Equity		
Current liabilities	\$ 401,000	\$ 401,000
Long-term liabilities	2,000,000	2,000,000
Common stock	2,000,000	2,000,000
Retained earnings (Deficit)	3,948,000	(555,000)
Total	<u>\$8,349,000</u>	<u>\$ 3,846,000</u>

55 percent as a result of switching from FC to SE.³ The Financial Accounting Standards Board staff found similar but smaller variations in a study of its own.⁴

CONCEPTUAL DIFFERENCES BETWEEN FC AND SE

Both FC and SE methods of accounting in the oil and gas industry are allowed under generally accepted accounting principles. The fundamental difference between FC and SE is the size of the cost center used in the capitalize/expense decision for exploration costs. Under FC, the largest possible cost center is the country or even a continent, and all costs of finding oil and gas reserves would be capitalized regardless of whether a specific local effort is successful. Under SE, the smallest possible cost center is the property (lease), reservoir, or field (most SE companies use the field), and all costs of that well would be expensed unless oil and gas reserves are found. Establishing a direct cause-and-effect relationship between costs incurred and reserves discovered is not relevant to recording the costs as assets under FC, while such a relationship must exist to record the costs as assets under SE. Both methods eventually will produce the same accounting results because the same costs are incurred and the same discoveries made. The timing of those results,

³ First Boston Corporation (1978).

⁴ FASB (1978).

however, may vary significantly. Notice that SE embodies finite uniformity: if exploration is unsuccessful, exploration costs are expensed; however, when successful exploration occurs, costs are capitalized.

SE accounting was the only method used prior to the late 1950s and early 1960s. About that time, FC came into use, and by the late 1960s it was widely used. A reason suggested for the increase in the use of the FC method was problems with the application of the historical cost model.⁵ In the oil and gas industry, amounts spent on exploration have no predictable relationship to the value of oil and gas discovered. For example, a large amount may be spent to find nothing, but in another geographical area a small amount spent could result in a large discovery. The motivation for FC was frustration with a historical cost concept that penalizes enterprises for exploration efforts that result in no discoveries and does not reward those efforts that result in discoveries with recognition of the value discovered. Although FC does not accomplish the latter goal, it does accomplish the former by capitalizing all exploration costs as long as discovery values exceed costs on a company-wide basis.

Regardless of the theoretical reason(s) for its increasing use, FC does have a desirable impact on reported income, not to mention net assets of growing firms as illustrated in Exhibits 15-1, 2, and 3. FC also results in a smoothing of reported income because costs that are written off in the current period under the SE method are capitalized and amortized against revenues of a number of future periods. Generally, the larger, more mature and fully integrated enterprises in the oil and gas industry use SE, while the smaller, less integrated enterprises use FC. In using FC, the larger enterprises, simply because of their size and the extent of their operations, would receive a relatively smaller smoothing impact than the smaller enterprises. A 1973 survey of approximately 300 enterprises found that nearly one-half used FC.⁶ However, a 1972 survey found that SE enterprises were responsible for 87 percent of the oil and gas produced in the United States.⁷ A later survey, in 1977, found that only 6 percent of the oil and gas produced in the United States and Canada came from enterprises using the FC method.⁸

This flexibility, with either FC or SE being permissible, caused the FASB to reconsider whether either method of accounting was appropriate:

Neither full costing nor successful efforts costing reflects success at the time of discovery. Under both methods, success is reported at the time of

5 Arthur Young (1977, p. 5).

6 Ginsburg, Feldman, and Bress (1973, p. 31).

7 Porter (1972, p. 6).

8 Arthur Young (1977, p. 4).

*sale. It might be said, therefore, that both methods tend to obscure, or at least delay, the reporting of success, but that is the consequence of the historical cost basis of accounting, and its adherence to the realization concept.*⁹

Not only is the “sale basis” of revenue recognition questionable in the oil and gas industry, but the use of acquisition cost as a measure of economic value is gravely deficient. Under the historical cost model, at the time an asset is purchased the value to the purchaser is normally assumed to be measured by the cost. Both SE and FC, although they differ significantly in their treatment of costs, present as assets only the costs incurred in exploration and development. Those costs typically do not have any relationship whatsoever to the economic resources acquired. Because of these problems and the political concern in the United States regarding the compilation of meaningful information on domestic oil and gas reserves, standard-setting bodies have struggled with oil and gas accounting for several decades.

STANDARD SETTING FOR OIL AND GAS ACCOUNTING

Financial accounting and reporting for the oil and gas industry has been studied by standard setters for a long time. Ijiri put the issue into perspective when he stated that “. . . never in the history of accounting has the choice of an accounting method attracted so much attention as the controversy over full versus successful efforts costing.”¹⁰ The issues raised in the standard-setting process for oil and gas accounting are all-encompassing. They provide one of the best examples of interaction between accounting researchers and accounting standard setters. Many of the issues involved relate closely to the FASB’s conceptual framework project. Another interesting aspect is that political pressure resulted in a breakdown of the standard-setting process in the private sector. After a brief historical review of oil and gas accounting standard setting, we will examine these three broad subjects.

History of Standard Setting for Oil and Gas Accounting

In 1964 the AICPA commissioned an accounting research study (ARS) of various accounting practices used in the extractive industries in order to make recommendations to the APB. This project represented the first

⁹ FASB (1977, para. 152).

¹⁰ Ijiri (1979, p. 20).

ARS-commissioned study of an industry-related accounting practice, as opposed to general accounting practices applicable to all industries. The general recommendation of ARS 11 was that the SE method rather than the FC method should be used.¹¹

Following the publication of ARS 11 in 1969, the APB asked its Committee on Extractive Industries to review the ARS 11 recommendations and draft a proposed APB Opinion that would narrow the acceptable accounting practices in the extractive industries. The committee's paper, "Accounting and Reporting Practices in the Petroleum Industry," was published in 1971. Again, the principal recommendation favored the SE method. The APB scheduled a public hearing on the paper for late November 1971. Just prior to the public hearing, however, the Federal Power Commission issued Order No. 440, which required the FC method for mineral leases acquired after October 6, 1969.¹²

Because of Order No. 440 and mixed reactions to the SE method at the public hearings, the Committee on Extractive Industries was unable to finalize its paper for the APB. Subsequently, the AICPA supported the formation of the FASB, and as a result the APB dropped long-term projects from its agenda, including accounting in the extractive industries. In the meantime, the SEC entered the scene. In December 1972, the SEC proposed that those enterprises that do not follow SE should disclose what net income would have been under that method.¹³ Later, however, the SEC retreated from its proposal, though it was obvious that the SEC favored the use of SE over FC. Although financial accounting and reporting in the extractive industries, in particular the oil and gas industry, was proposed as a subject the newly formed FASB should add to its original agenda, the FASB decided not to do so.

The foreign oil embargo of 1973 had a significant impact on accounting in the oil and gas industry in the United States. During that period, public policy was concerned with attaining self-sufficiency in energy supplies. While pursuing that goal, U.S. oil and gas producers reported substantial increases in income, an outcome that aroused opposition to the industry and generally caused its reporting practices to be viewed with skepticism. In December 1975, President Ford signed Public Law 94-163, "The Energy Policy and Conservation Act." The accounting thrust of the act was that the SEC do one of two things, either

prescribe rules applicable to persons engaged in the production of crude oil or natural gas, or make effective by recognition, or by other appropriate means indicating a determination to rely on, accounting practices

¹¹ Field (1969, pp. 150-151).

¹² Federal Power Commission (1971, 36 F.R. 21963).

¹³ SEC (1972, 38 F.R. 1747).

*developed by the Financial Accounting Standards Board, if the Securities and Exchange Commission is assured that such practice will be observed by persons engaged in the production of crude oil or natural gas to the same extent as would result if the Securities and Exchange Commission had prescribed such practices by rule.*¹⁴

By this time, two months prior to the act, the FASB had added to its agenda a project to promulgate accounting standards for oil and gas enterprises. The FASB worked closely with the SEC, issuing a discussion memorandum in December 1976 and holding a public hearing in the spring of 1977. In July 1977, the FASB issued an exposure draft (ED), which required the SE method of accounting. Prior to that issuance, the FASB had begun several empirical research studies. Although the results of the studies were not conclusive, they did indicate that “the method of accounting would not affect their loan officers’ investment and credit decisions regarding oil and gas producing companies.”¹⁵ The SEC apparently agreed with this conclusion. On August 31, 1977, it issued “Securities Act Release No. 5861,” which proposed to amend regulations to incorporate the accounting standards set forth in the exposure draft in the event a statement of financial accounting standards was not issued by December 22, 1977 (the mandatory date established by the act). Subsequently, the FASB issued SFAS No. 19 in December 1977. SFAS No. 19 required SE and eliminated FC. However, bending to political pressure, the SEC effectively circumvented SFAS No. 19 in ASR 253, which permitted either FC or SE. As a result, SFAS No. 25, which suspended the mandatory SE provisions of SFAS No. 19, was issued in February 1979. This was a virtual repeat of what happened in APB Opinion Nos. 2 and 4 on the investment tax credit. The APB backed off its single method choice and later allowed flexibility in light of the SEC’s decision to allow either cash flow or accrual methods for handling the ITC.

Empirical Studies of Oil and Gas Accounting

There have been numerous empirical research studies of oil and gas accounting. Several of these studies were sponsored by the FASB and represented a major attempt to work with accounting researchers in the standard-setting process and to evaluate the economic consequences of proposed accounting standards.

¹⁴ Energy Policy and Conservation Act (1975, SEC 503(b)(2)).

¹⁵ FASB (1977, para. 90).

FASB-Sponsored Studies

Prior to the issuance of the exposure draft, but after issuance of the discussion memorandum, the FASB sponsored one research study and conducted another itself. In the former, the purpose was to determine how investment and credit decisions regarding oil and gas enterprises are made and, in particular, whether the method of accounting, FC or SE, had an impact on those decisions. Academic consultants interviewed various individuals who made investment and credit decisions in the oil and gas industry. Interviewees included loan officers of large and small banks making loans to all sizes of oil and gas enterprises, bank trust department officers, institutional securities underwriters, and security analysts. In general, a wide spectrum of individuals involved in the everyday investment and credit decisions for oil and gas enterprises, but not employees of those enterprises, were interviewed. However, the total number of interviewees was only 24, thus somewhat limiting the conclusiveness of the results. The interviewees indicated that the method of accounting, FC or SE, did not affect the investment and credit decision. To the contrary, most interviewees relied on such factors as their own valuations of oil and gas reserves and cash flow data rather than on reported earnings.¹⁶

The second study, conducted by the FASB's staff, concerned the application of SFAS No. 9, "Accounting for Income Taxes—Oil and Gas Producing Companies." SFAS No. 9 allowed two alternative approaches to tax allocation for certain timing differences. The purpose of the study was to determine whether the approach adopted by an enterprise was correlated to either the method of accounting it used, FC or SE, or its size. The results showed that a correlation did not exist with regard to either variable.¹⁷

After the exposure draft was issued, the FASB commissioned two additional studies. Both studies were directed toward determining the economic consequences of proscribing the FC method of accounting. An argument frequently given in opposition to the draft was that if FC enterprises were forced to follow SE accounting, their ability to raise capital would be materially hampered and, as a result, their exploration activities would have to be either eliminated or curtailed drastically. If true, then the market value of these firms should have declined.

Dyckman conducted research designed to determine whether the release of the draft had a negative impact on the security prices of FC enterprises. Two research designs were employed. In one, the sample

¹⁶ *Ibid.*

¹⁷ *Ibid.*

enterprises derived more than 50 percent of their revenue from exploration and production activities. In that study, the market prices for 22 FC and 22 SE enterprises were studied for the 11-week period prior to issuance of the draft and the 11-week period after issuance. Testing the differences in security returns, Dyckman found that FC enterprises were somewhat negatively affected around the time the draft was issued, but that negative impact was short term; for the 22-week period there was no statistically significant difference between FC and SE enterprises.¹⁸ This would be in line with the allocation nature of the differences not affecting prices.

The other approach used different statistical tests and was not limited to enterprises engaged primarily in exploration and production. The sample included 65 FC and 40 SE enterprises. The time period studied was 21 weeks, 10 prior to and 11 after the issuance of the ED. Although the differences in the security returns of FC and SE enterprises generally were statistically significant at the 10 percent level of probability, they were not significant at the 5 percent level.¹⁹ Incidentally, Dyckman conducted a similar study after the issuance of SFAS No. 19. The methodology was identical to his second study and covered 17 weeks, 8 prior to and 9 after issuance of SFAS No. 19. The results indicated that differences between security returns of FC and SE enterprises were not statistically significant at the 10 percent level of probability.²⁰

The second study commissioned by the FASB was a telephone interview survey. The survey was of 27 senior executive officers of relatively small- and medium-sized SE enterprises. The purpose was to determine whether those executive officers believed that the use of SE had any negative impact on their enterprises' ability to raise capital. None of the executive officers surveyed indicated that the company's use of successful-efforts accounting had hindered its ability to raise capital.²¹ Generally, the results of the FASB sponsored research indicated that few, if any, economic consequences would result from proscribing FC accounting. These findings were used, in part, to justify the elimination of FC in SFAS No. 19.

Other Research Studies Involving FC and SE

The majority of non-FASB-sponsored research regarding oil and gas accounting focused on two hypotheses: (1) characteristics of the enterprise determine whether FC or SE is used and (2) whether proscribing

18 Dyckman (1979, p. 24).

19 *Ibid.*, pp. 31-37.

20 *Ibid.*, pp. 43-44.

21 FASB (1977, para. 93).

FC would have a negative indirect economic impact on enterprises that use that method. The first hypothesis is concerned with the possibility of relevant circumstances that might justify finite uniformity; the second, with the economic consequences of accounting standards.

Many FC enterprises argued that there were significant differences between them and SE enterprises and that those differences would justify continued use of the FC method. The U.S. Department of Justice agreed with them:

[Uniformity] as a goal can only claim superiority where like entities are being compared. If two entities or groups of entities were significantly dissimilar, attempts to draw simple accounting comparisons would only confuse the analysis.²²

Deakin studied 53 nonmajor oil and gas enterprises. Nonmajor enterprises were chosen because most major oil and gas enterprises use SE and, moreover, the method of accounting has relatively little impact on major enterprises. The study found that it was difficult to distinguish among enterprises. Although some distinguishing characteristics may exist, such as the age of the enterprise (FC enterprises tend to be younger), Deakin concluded that it would be difficult to promulgate accounting methods based on characteristic differences among the enterprises.²³

Several other studies, in addition to the FASB's, were made of the economic consequences of proscribing FC accounting. The results are mixed. The Directorate of Economic and Policy Research of the SEC conducted a study of security returns of FC versus SE enterprises. The sample consisted of 35 FC and 37 SE enterprises, including both large and small enterprises. Security prices were studied over a period of 30 days following issuance of the exposure draft. The finding was that initially upon issuance the security returns of FC enterprises were negatively affected; however, the impact was short lived and generally disappeared within 30 days.²⁴ Dyckman and Smith, in another study, also found that FC firms had no significant stock price reaction to the draft.²⁵

Smith used a "reversal method" to study the economic impact of SFAS No. 19 on FC enterprises. The study examined security prices of FC versus SE enterprises *after* the SEC reinstated FC accounting. The hypothesis was that the securities of FC enterprises would be favorably affected

²² U.S. Department of Justice (1978, p. 18).

²³ Deakin (1979, pp. 730-733).

²⁴ Haworth, Matthews, and Tuck (1978).

²⁵ Dyckman and Smith (1979).

by the reinstatement if proscribing FC had a negative impact. The results indicated

*no evidence . . . of “extreme” price effects of the proposed elimination or retention of full cost accounting. The magnitude of the “unexpected” return observations of the reversal test casts serious doubt that there were extreme “information effects” of the accounting change(s) on individual sample full cost firms.*²⁶

However, Collins, Rozeff, and Salatka used a somewhat different testing approach and found evidence indicating that FC firms had a positive stock price reaction when FC was reinstated.²⁷

Collins and Dent conducted a study similar to Dyckman’s with two major exceptions: (1) Canadian enterprises were excluded and (2) the period studied was extended to one year. Their finding was directly opposite to the earlier study. The results showed that

*. . . over the three, six and eight month periods following the issuance of the ED, the average risk-adjusted return of the full cost firms was significantly less than that of the successful efforts firms.*²⁸

However, Kross, having used the same sample of firms, argued that, when contemporaneous industry effects were controlled, the exposure draft had no effect on firms using FC.²⁹

Lev’s study differed from the others in that he used daily rather than weekly stock prices. Lev believed that a week between price observations is too long to identify the impact of a single event, such as the issuance of the draft. He used only seven days, two prior and five after issuance of the draft. The sample comprised 49 FC and 34 SE enterprises. He found that the issuance of the draft had a negative impact on the stock prices of FC as compared to SE enterprises.³⁰

Several additional studies were made in connection with the FC versus SE controversy. Dhaliwal examined 72 FC enterprises and 41 SE enterprises. The objective of his study was to determine the impact of an enterprise’s capital structure on management’s attitude toward accounting standards. He found that FC enterprises generally were more highly leveraged than SE enterprises and that their managements opposed

26 Smith (1981, p. 207).

27 Collins, Rozeff, and Salatka (1982).

28 Collins and Dent (1979, p. 24).

29 Kross (1982).

30 Lev (1979, p. 500).

SFAS No. 19 more than did the managements of the lower-leveraged SE enterprises, a result consistent with debt-contracting-related incentives hypothesized by agency theory.³¹ Lilien and Pastena similarly found that FC is used by more highly leveraged firms and that larger-sized firms use SE.³² In addition, they suggested that variations in the application of both FC and SE create more of a “continuous choice” of accounting method, and that this *continuum* is associated with income-increasing incentives for highly leveraged firms (due to debt contracts) and income-decreasing incentives for larger-sized firms (due to hypothesized size-related political costs).

Collins, Rozeff, and Dhaliwal also used agency theory to explain the observed decline in stock prices associated with the draft’s elimination of FC accounting. The results seem to indicate that stock price declines were associated with an anticipated increase in the cost of supplying information using SE as opposed to FC and with an anticipated negative impact on important financial contracts, such as debt covenants.³³ Two other studies found a negative stock price reaction. Larcker and Revsine argued that the negative returns were associated with negative income effects that could motivate management to reduce exploration costs in order to maintain incentive compensation levels, and Lys suggested that the reaction was due, in part, to the firm’s leverage level, which proxies for debt covenant effects.³⁴

Three other empirical studies are of interest. Deakin was interested in which FC firms would lobby against the elimination of FC when the discussion memorandum was issued, when the exposure draft came out, and when the FASB’s decision to eliminate FC was appealed to the SEC in March 1978. He found strong evidence indicating that the FC firms that lobbied (as opposed to FC firms that did not lobby) were characterized by larger debt-equity ratios, the presence of management incentive plans that were based on accounting income, and relatively high activity in oil and gas exploration.³⁵ These results are in accord with the tenets of agency theory. Johnson and Ramanan were concerned with characteristics of firms that changed from SE to FC between 1970 and 1976, prior to the appearance of SFAS No. 19.³⁶ The study centered on 19 firms that made the switch during the 1970-1976 period. Firms that switched (as opposed to those that did not) were characterized by higher leverage

31 Dhaliwal (1980, pp. 78-84).

32 Lilien and Pastena (1982).

33 Collins, Rozeff, and Dhaliwal (1981, pp. 37-73).

34 Larcker and Revsine (1983) and Lys (1984).

35 Deakin (1989).

36 Johnson and Ramanan (1988).

(relative usage of debt) and relatively high capital expenditures for oil and gas exploration. Once again, the results are in accordance with agency theory.

Frost and Bernard's study, however, raises some significant questions about debt covenants and economic consequences.³⁷ They investigated how public and private loan agreements were affected by an SEC ruling in May 1986 that tightened capitalization of exploration costs by FC firms in light of a steep decline in oil prices during the first full quarter of 1986. The ruling itself was unexpected and occurred after the close of the fiscal period to which it was applicable, but prior to the release of financial statements.³⁸ Thus, firms could not take any immediate actions to offset the effects of the decision. As a result of the ruling, debt covenants of the FC firms were adversely affected. In the period immediately before and immediately after the SEC ruling, no difference in cumulative abnormal returns between FC and SE firms was noted. Furthermore, both types of firms (FC and SE) had an upward drift in abnormal returns above that of the market right after the decision was announced. Frost and Bernard did see the possibility of a confounding effect in these surprising results owing to discussions at the time of possible favorable tax law changes for oil and gas firms.³⁹ Also, it should be noted that their study involved only 18 firms. Nevertheless, their results are quite interesting.

Overall, it is clear that the numerous stock market studies are inconclusive as to whether there was a negative impact on FC firms when FC was proscribed or, conversely, a positive impact when FC was reinstated. And even assuming there was an impact, the studies are inconclusive as to what caused it. However, the non-stock market research does provide convincing evidence that FC firms strongly favored the FC method for reasons of income-increasing motivation discussed at the outset of this chapter.

Other Empirical Work

Two recent studies involve earnings management and economic consequences. Hall and Stammerjohan found that oil companies facing major law suits attempt to increase non-working capital accruals to lower income and hopefully lower damage awards.⁴⁰ These accruals largely affect depreciation and depletion. Han and Wang found that in the wake of gasoline price increases resulting from the 1990 Gulf War, large petroleum refining firms which deal directly with the public increased their

37 Frost and Bernard (1989).

38 *Ibid.*, p. 789.

39 *Ibid.*, p. 804.

40 Hall and Stammerjohan (1997).

income reducing accruals during the third and fourth quarters of 1990.⁴¹ These were interpreted as political costs which included potential antitrust actions, increased regulations, and excess profits taxes. Han and Wang did not find these large income decreasing accruals for firms in the exploration and extracting industries. These firms tend to be smaller and less visible than major refiners. The studies by Hall and Stammerjohan and Han and Wang accord with the tenets of agency theory.

A study concerned with recognition versus disclosure was conducted by Aboody.⁴² Regulation SX 4-10 of the SEC on the full cost method in 1978 prescribes, under some conditions, asset writedowns by FC firms, whereas footnote disclosure only is required by SE firms. In the case of FC firms, if the net capitalized costs of their assets exceeds the net discounted (at 10 percent) cash flows from proved oil and gas reserves, the differential is an ordinary loss. For SE firms the footnote disclosure is needed only if the net capitalized cost of assets exceeds the **undiscounted** future cash flows from proved oil and gas reserves. Aboody found FC firms having these recognized losses sustaining stronger negative stock price reactions than occurred with SE firms disclosing similar losses in their footnote only. The actual writedown and loss of FC firms as opposed to footnote disclosure only by SE firms may be indicative of different information being received by investors, but Aboody's results should be interpreted cautiously.

Relationship to the Conceptual Framework

SFAS No. 19 was issued prior to the issuance of any Statements of Financial Accounting Concepts; however, concepts discussed in SFAC Nos. 1 and 2 were well formulated in the minds of FASB members and served as background for the decisions reached in SFAS No. 19. The overall criterion of decision usefulness as discussed in SFAC No. 1 was clearly the objective of the FASB in promulgating SFAS No. 19.

Information about enterprises is much more useful if it is comparable between enterprises than if not. For example, if similar enterprises use dissimilar accounting procedures, although the inputs (transactions and events) into the respective systems may be the same, the outputs (financial statements) will be different and not comparable. Thus, to enhance the usefulness of information reported by oil and gas enterprises, the FASB decided that all enterprises should use the same accounting procedures.

SFAC No. 2 contains two broad concepts that make accounting information useful-reliability and relevance. To be reliable, information

41 Han and Wang (1998).

42 Aboody (1996).

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must be faithful to what it purports to represent and it must be verifiable. These two concepts of reliability—representational faithfulness and verifiability—were discussed at length in SFAC No. 2. Information must affect a decision made by decision makers in order for it to have the quality of relevance. Thus, it must have feedback value and predictive value as well as timeliness. Both of the broad concepts—reliability and relevance—weighed heavily on the FASB during its deliberations leading up to SFAS No. 19.

In the oil and gas industry, most generally agree that the critical event for success is the discovery of reserves. As a result, the FASB considered, but rejected, a method of accounting that would have focused on the discovery of reserves. The method, discovery value accounting, is very similar to an SEC proposal called reserve recognition accounting (RRA), which will be discussed shortly. Although many variations of discovery value accounting exist, its primary thrust is that oil and gas reserves would be recorded at their estimated value when discovered. The discovery value would be recorded as revenue from exploration activities and as inventory for future production activities. The inventory would then be charged to the income statement as the reserves are sold.

The FASB rejected discovery value accounting primarily because of the lack of reliability in the measurement process. The measurement process involves estimates of the quantity of reserves, the amount and timing of costs to develop reserves, the timing of production of reserves, the production costs and income taxes, the selling prices, and the discount factor. The board concluded:

The uncertainties inherent in those estimates and predictions tend to make estimates of reserve values highly subjective and relatively unreliable for the purpose of providing the basis on which to prepare financial statements of an oil and gas producing company.⁴³

The board, therefore, was left with the choice between FC and SE. It opted for SE and rejected FC primarily because it believed that SE resulted in more relevant information being reported than did FC. In making decisions about enterprises, investors and creditors are concerned with the relative risk of each enterprise for which a decision must be made. Therefore, financial reports should report information about the relative risk of enterprises. The FASB concluded:

Because it capitalizes the costs of unsuccessful property acquisitions and unsuccessful activities as part of the costs of successful acquisitions and activities, full costing tends to obscure failure and risk. Successful efforts

⁴³ FASB (1977, para. 133).

*accounting, on the other hand, highlights failures and the risks involved in the search for oil and gas reserves by charging to expense costs that are known not to have resulted in identifiable future benefits.*⁴⁴

Another aspect of relevance of information that is discussed in SFAC No. 2 and was considered by the board in its deliberations on SFAS No. 19 is neutrality. Neutrality in the context of accounting information means that economic activity should be reported as faithfully as possible without attempting to alter what is being communicated in order to influence behavior in a particular direction. In other words, it is not the purpose of accounting information to influence behavior in any direction other than the direction indicated by the economic activity being reported. Neutrality has a more obvious impact on standard setters than on those preparing accounting information. The standard setters must establish accounting standards that result in the reporting of reliable and relevant information in accordance with the underlying economic activities being reported and should not be influenced by various special-interest groups, including the federal government, whose policies have their own purposes.

There were many, both inside and outside government, who felt that requiring SE and proscribing FC was contrary to national economic policy in the oil and gas industry. The argument was that prohibiting FC would be anticompetitive and thus would result in less exploration and development of reserves. The board rejected this argument because, notwithstanding the fact that it did not accept the economic consequences argument, national policy is best served by limiting acceptable alternatives and promulgating standards that do not obscure economic facts.

Political Pressure

The FC/SE controversy acquired political overtones involving the federal government to a far greater extent than any accounting issue either before or after. The reason for this lies in the possible ramifications of accounting standards upon the exploration and discovery of oil and gas, an issue of national concern. The ultimate outcome could have seriously harmed the credibility of the FASB; however, such a drastic impact does not appear to have occurred. As noted earlier, an act of Congress empowered 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

⁴⁴ *Ibid.*, para. 15b.

*accounts by persons engaged . . . in the production of crude oil or natural gas in the United States.*⁴⁵

The SEC elected to rely on the FASB, and both groups interpreted the act's charge to mean that a single uniform system of accounting should evolve. Aware of the recommendation several years earlier by the AICPA Task Force (favoring SE), oil and gas industry representatives pushed their viewpoints in various high-profile ways. They lobbied Congress, sponsored and published studies conducted by the American Petroleum Institute, made their views known in the press, and lobbied government agencies in Washington.

This pressure initially appeared to be of no use because the FASB issued its draft favoring SE, and the SEC announced its intention to incorporate the draft in the regulations in the event the FASB was unable to act quickly enough. The FASB, however, did act and issued SFAS No. 19 promptly. The political pressure began to mount shortly after SFAS No. 19 was issued. The oil and gas industry was under attack for high profiteering and little competition. Many blamed the FASB. Shortly after the issuing of SFAS No. 19, the Department of Energy held hearings to consider the impact of SFAS No. 19 on competition; the antitrust division of the Department of Justice also registered its concern about SFAS No. 19; and the Federal Trade Commission urged the SEC to reject SFAS No. 19. Even the SEC decided to hold hearings on FC versus SE. The SEC reversed its position and in ASR 253 indicated that it would accept the FC method and planned to develop some form of a discovery value method. Subsequently, in ASRs 257 and 258, the SEC permitted a method of FC as an acceptable alternative to SE and indicated its intention to require reserve recognition accounting (RRA) in the future. At the same time, to avoid harm to the FASB's credibility, the SEC reaffirmed its basic policy of looking to the FASB for leadership in developing and promulgating accounting standards. The FASB subsequently issued SFAS No. 25, which suspended the mandatory use of SE. In issuing SFAS No. 25, the FASB bent to the political pressure that was brought to bear. From a practical point of view, it had no other choice.

RESERVE RECOGNITION ACCOUNTING (RRA)

A survey of all financial analysts involved with the oil and gas industry was conducted primarily to determine whether analysts favored FC or SE. Over 40 percent responded, and they overwhelmingly favored the SE

⁴⁵ Energy Policy and Conservation Act (1975, Sec. 503(a)).

method. A secondary finding, however, is perhaps more enlightening. The vast majority of the analysts (83 percent) thought that the value of recoverable reserves should be disclosed in financial reports.⁴⁶ This indicates that, for the oil and gas industry at least, the historical cost model simply does not provide adequate information to decision makers. The perceived failure of the historical cost method led the SEC to advocate RRA.

The SEC cited three primary reasons for favoring the development of RRA:

1. Historical cost accounting fails to provide sufficient information on financial position and operating results for oil and gas producers.
2. Additional information, outside the basic financial statements, is required to permit assessments of the financial position and operating results of an enterprise in the oil and gas industry and to allow comparisons between it and other enterprises.
3. An accounting method based on valuation of oil and gas reserves is needed to provide sufficiently useful information.⁴⁷

Hence, the SEC was concerned with providing informative disclosure in terms of oil and gas accounting. There is, however, some evidence to indicate that the SEC proposed RRA because it was caught in a bind between SFAS No. 19, which was seen by some people as a possible deterrent to petroleum exploration due to the faster writeoff of costs, and, on the other hand, the FASB and the major oil companies, which were largely using SE.⁴⁸

In August 1978, the SEC issued Release 33-5969, which ushered in RRA on an experimental basis for three years. If successful, the SEC's plan was to require RRA in the primary financial statements. The valuation method required for RRA was as follows:

1. Estimate the timing of future production of proven reserves, based on current (that is, balance sheet date) economic conditions.
2. Estimate future revenue by using the estimate from (1) and applying current prices for oil and gas, adjusted only for fixed contractual escalations.
3. Estimate future net revenue by deducting from the estimate in (2) the costs to develop and produce the proven reserves on the basis of current cost levels.

⁴⁶ Naggar (1978, pp. 72-77).

⁴⁷ SEC Docket (1978).

⁴⁸ Gorton (1991).

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4. Determine the present value of future net revenue by discounting the estimate in (3) at 10 percent.

Exhibit 15-4 illustrates the format for displaying earnings under RRA suggested by the SEC.

As might be expected, RRA received significant criticism from the oil and gas industry. Most of the criticism was based on concepts discussed in SFAC Nos. 1 and 2, which, although not in place at that time, had been disseminated for public comment. Some questioned the relevance of the information because it represented a relatively objective and uniform approach but did not produce fair market value of an enterprise's oil and gas properties. RRA considered only proven reserves rather than total reserves; therefore, significant quantities could be ignored. More-

EXHIBIT 15-4 *Earnings Summary of Oil- and Gas-Producing Activities***Year Ended December 31, 20XX**

Revenues from Oil and Gas:		
Sales to outsiders	\$XXXX	
Transfers	XXXX	\$ XXXX
Costs of Production:		
Lifting costs	XXXX	
Amortization of proved properties	XXXX	(XXXX)
Income from Producing Activities		XXXX
Current Additions to Proved Properties		XXXX
Costs of Additions to Proved Properties:		
Exploration costs	XXXX	
Development costs	XXXX	(XXXX)
Income from Current Exploration and Development Activities		XXXX
Revisions to Previous Additions to Proved Properties:		
Changes in estimated quantities of proved reserves		XXXX
Changes in rate of production		XXXX
Changes to reflect current prices and costs		XXXX
Holding gains from passage of time		XXXX
Total Revisions		XXXX
Profit Before Income Taxes		XXXX
Provision for Income Taxes		(XXXX)
Profit After Income Taxes		\$ XXXX

over, it did not anticipate future price and cost changes and thus assumed that changes in costs would result in similar changes in prices. This assumption is not necessarily true for oil and gas operations where the price of oil and gas is significantly influenced by the actions of the Organization of Petroleum Exporting Countries and supply and demand, while costs are influenced more by local inflationary conditions. The selection of a discount rate of 10 percent was nothing more than an arbitrary decision to force rigid uniformity and did not consider any of the enterprise-specific factors, such as risk, that enter into the determination of an appropriate discount rate.

The reliability of the information was the subject of numerous research studies. A study undertaken by Stanley P. Porter was designed to determine the accuracy of annual estimates of proven reserves. It included 27 different enterprises that together accounted for 54 percent of crude oil and natural gas liquid production and 50 percent of the oil production in the United States in 1978. Participating enterprises were asked to supply information involving the impact of changes in existing reserves on an annual basis. The results reflect the impreciseness of reserve quantity estimates:

1. In 64% of the years studied, reserve revisions were more than 20% of additions and, hence, income was affected by more than 20%; in 46% of the years, the impact was greater than 40%; and in 23% of the years, it was over 100% . . . ;
2. All companies that reported for the entire ten-year period had at least one year in which the impact of judgement would be in excess of 60% of income on an RRA basis.⁴⁹

Price Waterhouse conducted a study of nine oil and gas enterprises to determine the impact on reported earnings of the various estimates to be made. Some of the findings included:

1. Reserve estimates made in the year of discovery were inaccurate by at least ± 50 percent.
2. Generally, the percentage change in RRA income is at least as much as the percentage change in reserve estimate.
3. Income from reserve revisions, ignoring price changes, greatly exceeded income from discoveries.
4. Income from price changes greatly exceeded income from discoveries.⁵⁰

⁴⁹ Porter (1980, pp. 36-37).

⁵⁰ Price Waterhouse & Co. (1979, pp. 15-21).

In general, the perception was that RRA's relevance was more than offset by its lack of reliability. As a result, the SEC decided not to require it in primary financial statements. The FASB subsequently added a project to its agenda to develop a comprehensive set of disclosures for oil and gas enterprises. However, it should be noted that researchers have found that RRA information was used in setting borrowing limits for firms in the oil and gas industry between 1984 and 1987 for 21 out of 23 firms where borrowing agreements were available for examination.⁵¹

Two studies investigated the effect of RRA disclosures on security prices. Bell reported that the initial RRA disclosures in 1979 had information content; however, Dharan found that RRA data itself had very little information content above and beyond similar information contained in non-RRA data in the accounting reports.⁵² Once again, as has been the case in oil and gas accounting, stock market research provides ambiguous evidence on economic consequences.

CURRENT STATUS OF ACCOUNTING IN THE OIL AND GAS INDUSTRY

The FASB, working with oil and gas representatives and the SEC, moved fairly rapidly in developing a set of required disclosures. The SEC issued ASR 289 on February 26, 1981. It stated that the SEC did not consider RRA as a potential method of accounting in primary financial statements. The FASB added its project on oil and gas disclosure to the agenda on March 4, 1981. By May 15, 1981, it had issued an Invitation to Comment. Public hearings were held in August 1981; a draft was issued in April 1982; and SFAS No. 69, "Disclosures about Oil and Gas Producing Activities," was issued in November 1982, to take effect for fiscal years beginning on or after December 15, 1982.

SFAS No. 69 is significant for at least two reasons. First, it represents an attempt by the FASB to combat the *standards-overload* problem. SFAS No. 69 is not applicable to enterprises that are not publicly traded nor to publicly traded enterprises that do not have significant oil- and gas-producing activities. The reason for exempting those enterprises is "that the costs of providing that information exceed the benefits."⁵³ Second, SFAS No. 69 represents another expansion of the concept of financial reporting. It requires the disclosure of financial information outside the basic financial statements or notes thereto. The reason given by the

51 Chung, Ghicas, and Pastena (1993).

52 Bell (1983) and Dharan (1984).

53 FASB (1982, para. 113).

FASB for this requirement is that the information is not historical cost (the basis of the primary financial statements), and its reliability is not such as to make it comparable with the primary financial statements.⁵⁴

The basic information required from oil and gas enterprises covered by SFAS No. 69 includes disclosures about these items:

1. Proven oil and gas reserve quantities.
2. Capitalized costs relating to oil- and gas-producing activities.
3. Costs incurred in oil and gas property acquisition, exploration, and development activities.
4. Results of operations for oil- and gas-producing activities.
5. A standardized measure of discounted future net cash flows relating to proven oil and gas reserves. The discount rate to be used is 10 percent.⁵⁵

The standardized measure of discounted future net cash flows is calculated by estimating future cash inflow from proven reserves at current prices less estimated future development and production costs and income taxes relating to the cash inflows, both to be computed using current costs and rates. The amount derived is then discounted at 10 percent. The aggregate change in the discounted future net cash flow during the year must also be disclosed, in addition to the sources of that change, if significant. Some likely reasons for a change in the discounted future net cash flow from one year to the next include changes in estimated future sales prices, development and production costs, and income taxes relating to future production as well as revisions of reserve quantity estimates and discoveries.⁵⁶ As can be seen, this calculation is very similar to the calculation of income from exploration and development under the SEC's RRA. The FASB did not go so far as the SEC, however, because an earnings statement based on the various estimates is not required. Presumably the reason is the lack of reliability of the information.

Lack of reliability is an important issue relative to SFAS No. 69. The term "proved reserves," as defined by the SEC, refers to production that will occur under existing economic conditions.⁵⁷ The standard also requires disclosure of "proved developed reserves," which will be produced from existing wells.⁵⁸ SFAS No. 69 also passed by only a four-to-

⁵⁴ *Ibid.*, para. 116.

⁵⁵ *Ibid.*, paras. 10-38.

⁵⁶ *Ibid.*, paras. 30-33.

⁵⁷ Clinch and Magliolo (1992, p. 843).

⁵⁸ Clinch and Magliolo (1992) did not initially find that proved reserves and proved developed reserves provided value-relevant information for financial statement users in their overall tests for 86

three margin, with those voting against the standard raising the issue of a complete lack of reliability stemming from the proposed measurement of discounted cash flows.⁵⁹ The three dissenters questioned the representational faithfulness of the discounting process, which does not “. . . represent current cost, historical cost, fair market value or any other real-world phenomenon. . . .”⁶⁰

Given the turmoil from 1976 to 1982, and the adoption of SFAS Nos. 25 and 69, it came as something of a surprise when the SEC's accounting staff recommended the abolishment of FC in October 1986. The reasons were generally related to uniformity and echoed the sentiment behind SFAS No. 19. Once again, though, political factors dominated the process. *The Wall Street Journal* of October 24, 1986 (p. 8), reported that two cabinet members pressed the SEC not to drop FC, and, one week later when the SEC commissioners met, they voted 4-1 to retain FC. The “reasons” given also echoed those of the 1970s—the potentially adverse economic consequences on small firms and on the incentive to explore for new oil and gas reserves.

SUMMARY

Financial reporting in the oil and gas industry has been the subject of considerable controversy. At the center of that controversy is the adequacy of the historical cost model to provide information for users of financial reports. The most significant event for an oil and gas enterprise is the discovery of oil and gas reserves, not the revenues recognized from oil and gas sales. The historical cost model, however, does not measure or report oil and gas reserves until those reserves have been developed, produced, and sold. A related problem is that the costs incurred to discover oil and gas reserves bear little, if any, relationship to the value of the reserves.

Two accounting methods (FC and SE) have evolved in the industry. In many cases, the financial statement impact of FC versus SE is dramatic and results in financial statements that are not comparable among enterprises. The FASB attempted to solve the uniformity and comparability problem by requiring that all enterprises use SE. Its efforts, however,

firms from January 1984 to December 1987, where weekly returns were analyzed. However, the proved reserve information appeared to be more informative for a subset of their sample, where the reserve quantity estimations appeared to be more reliable. Clinch and Magliolo's study appears to confirm that reliability of information has value-related characteristics, a point made in Chapter 1, though few-if any-studies have examined this issue in detail.

59 FASB (1982, p. 13).

60 *Ibid.*

were undermined by political pressure in general and SEC actions specifically. As a result, both FC and SE accounting continue to be acceptable today.

The SEC attempted to overcome the shortcomings of the historical cost model by eliminating its use in the oil and gas industry. In its place, a form of discovery value accounting (RRA) was to be used. However, measurements made under RRA were perceived to be too unreliable for the basic financial statements. The FASB subsequently issued SFAS No. 69, which requires the disclosure of information similar to the SEC's RRA information outside of the basic financial statements and notes thereto.

The oil and gas controversy has two important ramifications for the standard-setting mechanism today. First, it demonstrates that standard setting is a political process. Second, academic researchers, working together with standard setters, can have a significant impact on the standard-setting process. The decision to press on with SFAS No. 19 was, in part, due to a finding that there were no adverse economic consequences on FC firms vis-à-vis stock prices or their ability to raise capital.

QUESTIONS

1. What factors make the oil and gas industry in general, and oil and gas accounting in particular, so politically sensitive?
2. Both FC and SE represent applications of historical cost. How do the two methods differ conceptually?
3. Why is FC predominantly used by smaller firms and SE by larger firms, and how does this relate to the alleged economic consequences of mandating SE?
4. Would you describe SE, which the FASB wanted to use exclusively in SFAS No. 19, as rigid uniformity, finite uniformity, or flexibility? Using the same uniformity terminology, how would you describe SFAS No. 25, which allows either FC or SE?
5. Many believe that the historical cost model is inappropriate for the oil and gas industry. What is the difference between the oil and gas industry and other industries that leads to the perception of the historical cost model's inadequacy?
6. The FASB readily admitted that historical cost-based accounting systems in the oil and gas industry do not meet the overall objective of financial accounting and reporting as stated in SFAC No. 1. Why, then, did the FASB reject the use of a discovery value method?

7. Defend the following statement: The FASB is a public policy-making agency, so the reaction against SFAS No. 19 was legitimate and the subsequent issuance of SFAS No. 25 represented good public policy making.
8. To those concerned with the FASB's autonomy, SFAS No. 25 was a disappointment. Why?
9. What motivated the SEC's push for RRA in 1978, and why was it discontinued in 1981?
10. Oil and gas disclosures in SFAS No. 69 are not considered part of the basic financial statements or notes thereto and do not require auditor attestation. Why did the FASB adopt this approach?
11. What have been the objectives of stock market research with respect to oil and gas accounting?
12. Despite many studies, it remains an open question as to whether oil and gas accounting standard setting has affected stock prices. What are some reasons for the contradictory findings?
13. Discuss the limitations of using stock market research to evaluate economic consequences of accounting policies.
14. Bismarck said that democracy is not a very pretty thing to watch. How is this statement relevant to standard setting for the oil and gas industry?
15. As reported in a study by Deakin, FC firms that lobbied against elimination of FC (as opposed to FC firms that did not lobby) were characterized by larger debt-equity ratios, the presence of management incentive plans based on accounting income, and relatively high activity in oil and gas exploration. Explain why this is in accordance with the tenets of agency theory.
16. Why is the oil and gas situation, which resulted in SFAS Nos. 19 and 25, reminiscent of the APB's investment tax credit debacle?

CASES, PROBLEMS, AND WRITING ASSIGNMENTS

1. Consider the following case: The XYZ Corporation was formed and commenced operations last year. It began with \$5,000,000 capitalization (cash/capital stock). Oil properties costing \$2,000,000 were acquired by issuing long-term debt. Other assets costing \$600,000 cash were acquired. Three exploratory wells costing \$500,000 cash each were drilled and one was successful. No production occurred and, therefore, no depreciation or depletion was recorded. In the current year, 20XX, three more exploratory wells costing \$525,000 cash each were drilled and one was successful. 100,000 barrels,

representing 20 percent of beginning-of-the-year reserves, were produced and sold at \$30 per barrel (cash). Production costs average 10 percent of revenues (cash) and depreciation is 12 percent of property and other assets. Ignore income taxes.

Required:

- (a) Prepare a balance sheet at end of year 20XX and an income statement for year 20XX under:
 - (1) FC method of accounting.
 - (2) SE method of accounting.
 - (b) Discuss the advantages and disadvantages of both methods.
2. Determine the standardized net cash flow required to be disclosed by SFAS No. 69 using the following information:
- (a) Proven reserves are 1,000,000 barrels.
 - (b) Estimated production is 20 percent per year of proven reserves.
 - (c) Current selling price is \$35 per barrel.
 - (d) Costs to develop and produce proven reserves are approximately 40 percent of the selling price.
 - (e) Depreciation and depletion average 75 percent of development and production costs.
 - (f) Income taxes generally are 38 percent of income before taxes.
3. The Gas Drilling Company (GDC) has asked your opinion as to the appropriate accounting for the following transaction. GDC uses the SE method of accounting.
- GDC is participating in the drilling of an exploratory gas well.
 - The drilling arrangement provides that GDC must drill to 20,000 feet in order to earn an interest in any gas found at the drill site.
 - During drilling, a producing zone was found at 15,000 feet. However, GDC continued drilling to 25,000 feet. There was no definitive determination of gas reserves below 15,000 feet, and GDC has no specific plans to continue exploration.
 - The decision has been made to plug the well back up to 15,000 feet and operate it as a producing well.
 - Total costs of drilling the well were \$12,000,000, of which \$4,000,000 were incurred between 15,000 feet and 20,000 feet, and \$5,000,000 were incurred between 20,000 feet and 25,000 feet.
- (a) What do you believe should be the appropriate accounting (capitalization versus expense) for the costs incurred below 15,000 feet?

(b) What is the appropriate accounting for the costs incurred beyond 15,000 feet under SFAS No. 19?

4. Presented here is Exxon Corporation's comments on RRA in its 1979 10-K:

The following information departs significantly from prior reporting of historical information and attempts to portray 1978, 1979 and future activities of Exxon in oil and gas producing in a highly arbitrary fashion. Therefore, Exxon believes it should warn that the remaining data set forth in this section, for reasons further explained here, are not to be interpreted as necessarily representing current profitability or amounts which Exxon will receive, or costs which will be incurred, or the manner in which oil and gas will be produced from the respective reserves. The arbitrary 10 percent discount rate used in the determination of the present value of estimated future net revenues represents neither a cost of capital nor a borrowing rate, and, additionally, does not necessarily reflect political risks. Actual future selling prices and related costs, development costs, production schedules, reserves and their classifications, and other matters may differ significantly from the data portrayed or assumed.

The requirement to publish such information regarding future activities is part of the SEC's attempted development of a new method of accounting for oil and gas producing activities called "Reserve Recognition Accounting" (RRA). RRA would depart significantly from historical accounting practices. Exxon has taken exception to the SEC's proposal and has indicated the following major concerns with the concept of RRA:

Financial reporting for the oil and gas producing segment of the oil industry would include forecasts of future production rates and future investments in an estimation of potential cash flows. Such reporting would be completely different from the historical cost reporting of the remainder of the oil industry and of all other industries.

The difficulties and uncertainties of estimating the volumes of oil and gas reserves and their production rates appear not to have been appropriately considered, making comparability between companies, and segments thereof, very difficult at best. Quantification of reserves is far from a precise science. A variety of methods and techniques are used to estimate reserves and the answers obtained are subject to wide fluctuations because they are dependent on judgmental interpretations of geologic and reservoir data. The same is true of estimates of future production schedules. While, in management's judgment, the quantities reported herein are reasonable, there is no methodology or certification process in place now, or likely to be in place in the near future, which would permit independent verification of such volumes and rates.

The Regulations prescribe that future net revenues be determined by applying December 31, 1979, prices and costs to the projected production schedules for Exxon's net proved oil and gas reserves as of December 31, 1979. The reserves exclude probable reserves as well as reserves in the Canadian Athabasca Oil Sands. In Exxon's opinion, applying these arbitrary assumptions to the estimated future production schedule for the various categories of reserves can only lead to financial reporting which is more likely to mislead than inform.

In addition to these general areas of concern, the following cautions should be noted when reviewing the information:

Care should be exercised when comparing the "Net Revenues From Producing Oil and Gas in 1978 and 1979" with "Future Net Revenues." The 1978 and 1979 information, in accordance with the Regulations, was determined by subtracting only Production (Lifting) Costs from the gross revenues. Future Net Revenues, in accordance with the Regulations, were determined by subtracting both Development Costs and Production (Lifting) Costs from the gross revenues. Care should also be exercised when using the net revenue data for 1978, 1979 and the future since all applicable costs have not been deducted from gross revenue. The Regulations make no provision for deducting exploration expenses, amortization of acquisition costs (bonus payments), depreciation of capitalized production investments, purchase costs of royalty oil and gas, income taxes, or other payments to governments.

The "Future Net Revenues" and the present value of such revenues, as computed under the Regulations, present neither a true "future value" nor "present value" for the reasons mentioned above in addition to the effect of excluding income taxes from the calculation. In view of Exxon's concern that the absence of this considerable, and in some cases major, cost from the calculation would cause the information to be seriously misunderstood and misleading, particularly in the case of some foreign operations, the undiscounted and present value information presented here is shown on both a before-tax and after-tax basis.

Required:

- (a) Evaluate the merits of Exxon's criticism of RRA.
- (b) How might political visibility (see Chapter 4) have affected Exxon's attitude toward RRA?

CRITICAL THINKING AND ANALYSIS

- What are the salient theoretical issues that have been present in oil and gas accounting?

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