

Recommended Evaluation Practices (REPs) represent the society of Petroleum Evaluation Engineers' (SPEE) suggested treatment of hypothetical reserve evaluation topics. SPEE recognizes that, due to the varied nature of actual reserve evaluation situations likely to be encountered, these REPs are presented merely as suggested approaches. The REPs are not standards or guidelines. The use of or adherence to this SPEE REP is not required in any situation. The REPs should not be considered a substitute for the evaluator's professional judgment. This REP is subject to future revision(s) by the SPEE.

SPEE Recommended Evaluation Practice #1 – Elements of a Reserve Report

Section #1 - Recommendations for Reporting Estimated Reserves of Oil and Gas

Issue:

It is widely accepted that a formal report is a necessary part of most engineering studies or evaluations. What guidance does the SPEE provide to assist engineers in completing a report?

SPEE Recommended Practice:

The wide variation in types of evaluation reports prohibits the development of strict report standards. Individual standards that are generally desirable in most instances will sometimes be inappropriate for specific circumstances. Nonetheless, a set of recommendations has been developed to assist preparers of reserve reports¹ present their findings. It is anticipated that these recommendations will also encourage discussion among preparers of reserve reports and that the recommendations will be revised from time to time.

The Preparer's Responsibility

The preparer should provide a report that presents projections and opinions that fairly reflect the available factual data without a bias to be optimistic or conservative. A series of steps will normally be required to understand engineering and geology, prepare an economic projection, and produce a report. The preparer has a professional responsibility to:

1. Determine the proper engineering procedures and techniques to fairly estimate future producing rates for hydrocarbons;
2. Work with the client to determine financial and economic projections to fairly estimate future cash flow and economic limits; and
3. Prepare a report for the use of the client, which presents the findings in a manner that promotes understanding and does not obscure uncertainties.

¹ The terms "Preparers of Reserve Reports" or "Preparer" are used herein to signify the person(s) responsible for the contents of the report.

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Contents of a Typical Reserve Report

Most reserve reports will include these three components:

1. A cover letter and discussion section, which may be combined or separated;
2. A copy of the reserve definitions used in preparing the report and any regulatory requirements provided by the SEC or others, if applicable; and
3. Tabular data showing summary results and detailed projections.

Most of the preparer's time and attention will be devoted to understanding the available data and preparing the detailed projections shown in the tabular data section. Most of the reader's time might well be spent studying the discussion section and summary tables in an effort to understand the entirety of the work performed. Thus, the preparer is encouraged to give careful consideration to the narrative and summary tables.

Basic information that should be included in virtually every report includes:

1. The client for whom the report was prepared;
2. The purpose of the report;
3. The date the report was completed;
4. The effective date of the report;
5. A discussion of reserve definitions, assumptions, methods, procedures, and sources of data;
6. Disclaimers to warn the reader of limitations;
7. A statement of independence of the preparer; and
8. The signature of the preparer or firm responsible for the report.

Sections #2 and #3 of this REP provide additional guidance for the Discussion Section and the Tabular Data included in evaluation reports.

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Section #2 -- Information Typically Found in the Discussion Section of an Evaluation Report

Issue:

Users of an evaluation report depend on the cover letter or discussion section of a report to gain understanding of the preparer's work. What information should the preparer include in this section?

SPEE Recommended Evaluation Practice:

(See also Sections #1 and #3)

The discussion is sometimes included in the cover letter and sometimes included as a separate section of the report. In either case the preparer should include narrative and tabular data as necessary to allow the reader to address the following items:

1. The preparer should clearly state the purpose for which the report is being prepared and for whom it is prepared.
2. The preparer should clearly present the effective date of the report and the date on which the report was completed. The effective date is the beginning date for projections. Every effort should be made to include historic data as near as possible to the effective date. The reader will appreciate finding the cut-off date, the date after which no new data was available to the preparer. Based on the purpose of the report, the preparer might want to include a discussion of events occurring between the effective date and the report date. Generally, the effective date will occur before the date of the report. In situations where preparer is requested to provide reports with effective dates beyond the date of the report, the preparer might include discussion calling attention to the premature nature of the report. If the report is a "roll forward" of an earlier report, the preparer should include a discussion of all the assumptions involved in the roll forward process.
3. The preparer should state the definitions, assumptions, methods, and procedures used, and state that these are appropriate for the purpose.
 - a. Reports prepared to assist in screening acquisition prospects might use Society of Petroleum Engineers / World Petroleum Congress (SPE/WPC) reserve definitions or the client might provide definitions and assumptions for a specific project evaluation.

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- b. When reports are prepared for year-end filing with the U.S. Securities and Exchange Commission (SEC), it is the responsibility of the preparer to know, follow, and state compliance with SEC reserve definitions and all requirements of the SEC.
 - c. For reports prepared for filing with regulators of the London, Canadian, or other stock markets, it is the responsibility of the preparer to use proper definitions and follow proper requirements.
 - d. Report should clearly identify the data provided by the client. Such data might include maps, production histories, projections of pricing, and operating costs.
4. The preparer should present summary data for each of the reserve categories that have been estimated:
 - a. Proved categories:
 - i. Proved developed producing (PDP);
 - ii. Proved developed non-producing (PDNP), proved developed shut-in (PDSI), and proved developed behind pipe (PDBP) may be combined or separated, as the client or preparer believes appropriate);
 - iii. Proved undeveloped (PUD); and
 - iv. Total proved (PR).
 - b. Probable (PB) and possible (PO) reserve categories, if estimated, should be reported separately.
 - c. At a minimum the summary table should include net reserves of oil and gas, and the present value at the stated discount rate. The preparer may also include summaries of revenues, lease operating expenses, capital investments, and undiscounted cash flow.
 - d. Other reserve categories may be used as appropriate; however, the preparer should define the use of any probabilistic or less frequently encountered deterministic category in the narrative of the report.
5. The preparer should provide a discussion of the data, methods, and procedures used to estimate reserve quantities. This discussion should note that the methods used are appropriate for the purpose and relevant

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- reserve definitions. When a relatively small number of properties are evaluated, this discussion might be detailed; when a very large amount of properties are evaluated the discussion will be very general. Generally, the length and level of detail will be tailored to the needs of the client, with relevant information to facilitate clear understanding of the report. Items for the discussion include, but are not limited to:
- a. Dependence on seismic data.
 - b. Drive mechanisms.
 - c. Production problems such as paraffin or hydrogen sulfide.
 - d. Performance data available for analysis.
 - e. Use of probabilistic or deterministic methods.
 - f. Estimation methods used, or those used most frequently.
 - g. Statement of knowledge and consideration of imbalances or hedges.
 - h. Statement of quality of data and consideration for ownership reversions, required contracts or regulatory approvals.
 - i. Discussion of any tests, inquiries, field inspections, or concerns about data accuracy.
 - j. Caveat about the varying degrees of uncertainty in the reserve categories and caution against summation of the various categories.
6. The preparer should discuss primary economic assumptions. Items for such consideration include, but are not limited to:
- a. The source of data for ownership information.
 - b. The source of price projections for oil, gas, and other products sold. Discuss how projections relate to an index such as WTI or Henry Hub. What assumptions are made for initial prices? Are prices escalated? Are any prices based on long term contracts or hedges?
 - c. A discussion of assumptions for monetization of production. Do gross production quantities include non-hydrocarbon products? Does revenue include sources other than from the sale of hydrocarbons? Are sales quantities reduced for shrinkage? Are product revenues projected separately? Are gathering or transportation fees deducted from the sales price or included in operating costs?
 - d. A discussion of state and local taxes that are deducted from revenues. Preparer should indicate if ad valorem taxes are present and if so, whether they are included with state and local taxes, shown separately, or included with lease operating costs. The basis for calculating ad valorem taxes should be discussed.

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- e. A discussion of lease operating costs. Preparer should identify the source of data used to estimate operating costs and note if non-recurring costs are omitted. What is philosophy and methodology for omitting costs? Did the preparer include estimated costs for repair and maintenance? The preparer should include a discussion of the method for projecting future operating costs noting the fixed and variable portion. The preparer should identify the treatment of COPAS overhead.
 - f. A discussion of the source of data for capital expenditures. Include a discussion of any efforts to independently test data provided by client. If certain proved undeveloped locations have been previously reported for several years, a comment by the preparer might be appropriate.
 - g. The preparer should state any assumptions for plugging, abandonment and salvage. The discussion of assumptions should address the projected costs, the source of funds, and the timing considerations. Any restoration and remediation costs that have been independently verified by a Phase II assessment or other such assessment should be included, with appropriate discussion.
 - h. The preparer should state the discount factor used and the reason for its use.
 - i. For properties located outside the United States, the preparer should summarize the terms of the concession, production sharing agreement, or other such relevant contract.
7. The preparer should provide a statement of independence or a disclosure of matters impairing independence. Ownership in the properties evaluated, certain business relationships with the client, contingency payments, or other events may impair independence.
 8. The report should contain a representation about fair market value. Most reports will not attempt to represent fair market value, and the preparer will typically state that dollar amounts shown in the report do not represent fair market value. However, some reports will be prepared for that purpose. If the report includes an estimate of fair market value, the estimator will be guided by his professional training to provide a clear presentation of those estimates.
 9. The preparer should discuss environmental considerations. Generally, this will be a comment regarding the level of investigation, if any, that the preparer has made to assess environmental uncertainty or the effect of regulation on the ability of the operator to recover the estimated reserves.

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10. The report should contain a caveat or disclaimer to insure that the reader is properly advised of the inherent uncertainties of reserve estimates. This caveat should contain statements similar to the following, at a minimum:
 - a. Any reserve estimate is a function of engineering judgment and interpretation, and should be accepted with the understanding that events subsequent to the effective date could necessitate revisions.
 - b. This report was prepared utilizing conventional petroleum engineering procedures and techniques as were considered appropriate and necessary in the circumstances.

Section #3 -- Information Typically Found in the Tabular Data Section of an Evaluation Report

Issue:

Users of an evaluation report depend on the tabular data included in the report to gain understanding of the preparer's work. What information should the preparer include in this section?

SPEE Recommended Evaluation Practice:

(See also Sections #1 and #2)

The tabular data included in an evaluation report will be a function of the number of properties evaluated, the requests of the client, the preferences of the preparer, and, where appropriate, the requirements of any legal or regulatory authority. In some cases the inclusion of individual projections for thousands of properties are unnecessary. In other cases the failure to show specific data might significantly reduce the user's ability to understand the report. The preparer should work with the client and then use sound judgement in determining how to present tabular data in the evaluation report. SPEE offers the following recommendations as issues that the preparer should consider in determining the format of the tabular data section of an evaluation report.

Summary Tables should be provided to show the summary of data for all properties by each reserve category (PDP, PDNP, etc) in the report, as well as by each reserve classification. (Proved, Probable, etc.). A "Grand Total" summary of all reserve classifications may be included, but the reserve categories included should be clearly identified. The preparer might choose to include summaries for other groupings of properties, such as by fields, districts, states, countries, or other such groupings.

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Tabular data is often provided to show annual projections for:

- Gross (8/8ths) production for each of the hydrocarbon products sold;
- Net production of each product to the ownership interest being evaluated;
- Revenues;
- Production and ad valorem taxes as appropriate;
- Lease operating expenses;
- Capital costs;
- Resulting cash flow; and
- Discounted cash flow (a profile showing results with different discount rates is recommended).

At least ten years of annual projections should be provided unless reserves are depleted earlier. If the reserve life exceeds the number of annual projections, the remainder should be shown on a single line, and the total of all years should be shown.

The amount of data that is provided will be a function of the client's request and the preparer's preference. The following data should generally be considered a minimum for the tabular section of the report:

1. Property identification and location;
2. Initial and final revenue and expense interests;
3. Gross and net future production;
4. Initial and final prices for each product sold;
5. Deductions including state and local taxes, operating costs, capital costs;
6. Future net income before income taxes (undiscounted);
7. Discounted cash flow and discount rate; and
8. Estimated life of production.

The preparer should consider if additional information is appropriate to aid the reader of the report in better understanding the estimate. Such additional information might include:

1. Producing horizon or perforated interval;
2. Drive mechanism;
3. Production method: such as flowing, pumping, gas lift, compression;
4. Secondary or enhanced recovery;
5. Maps, cross sections, or type logs; and
6. Other such specific information as the situation warrants.

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Section #4 -- Reserve Reports provided to the SEC

Issue:

While evaluation reports are typically requested for any number of reasons, the year-end reports requested by clients for purposes of meeting reporting requirements of the SEC must follow SEC requirements and use SEC reserve definitions.

SPEE Recommended Evaluation Practice:

SEC reserve definitions and requirements for year-end reports are contained in the Federal Securities Laws Regulation SX Section 210.4-10 with additional interpretations in Staff Accounting Bulletins Topic 12. Additional rules are provided in Financial Accounting Standards Board Statements of Financial Accounting Standards Numbers 19, 69, and 121 or 144². It is the responsibility of the preparer to understand the requirements for the reserve estimates and the requests of the client.

The following recommendations should be read in combination with the documents from the SEC and FASB that are listed above. These recommendations are intended only to discuss and enhance understanding of the SEC requirements by highlighting some of the areas that are of importance to preparers and users of reserve reports provided to the SEC.

Comments in Sections #1, #2, and #3 can also be considered for general guidance to the extent that they do not conflict with requirements of the SEC.

1. The effective date for a year-end report filed with the SEC should be the last day of the fiscal year, not the first day of the next year.
2. The preparer should state that the report is being prepared for the client's use in filing with the SEC.
3. The cover letter or discussion section should clearly and concisely state that the report conforms to SEC requirements. A statement that "the report uses constant pricing and discounts cash flow at 10% as required by the SEC" is not sufficient. Similarly, the use of any definitions other than the SEC reserve definitions is not acceptable. It is a good practice to include the SEC reserve definitions and an explanation of any departures from those definitions such as reliance on SAB Topic 12.
4. A report following SEC requirements will only report proved reserves.

² FASB 144 replaces FASB 121 for reporting years beginning after 12/15/2001.

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5. The report should contain a discussion of how the preparer determined “year-end prices” and how these prices were applied to the various individual properties in projecting reserves and related cash flow.
 - a. As of May 2000, the SEC staff was interpreting the year-end price to be the spot price adjusted for transportation and quality to estimate wellhead price. Thus, the price actually received may not be the proper price for the report. Adjustments made to estimate wellhead price are worthy of discussion.
 - b. Future prices are not to be escalated unless conditions acceptable to the SEC are met. Special consideration should be given to long-term contracts and price hedges.
 - c. Gains and losses from hedging are addressed in the SPEE Recommended Evaluation Practice #4 (Hedging Positions).
6. The preparer should state any knowledge of imbalances and whether or not imbalances have been considered in the projections of net production.
7. The staff of the SEC would like to see a comment on the preparer's knowledge of the ability of the client to fund the development of proved undeveloped reserves.

