APEGGA

The Association of
Professional Engineers, Geologists
and Geophysicists of Alberta

Practice Standard for the Evaluation of Oil and Gas Reserves for Public Disclosure

v1.0

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FOREWORD

An APEGGA practice standard presents a level of performance expected of APEGGA members. Although a standard is not specifically legislated under the Engineering, Geological and Geophysical Professions Act or the General Regulation, members must conform to it in order to be practising in accordance with what is deemed to be acceptable practice.

Practice standards documents use the word *shall* to indicate requirements to be followed in order to conform to the standard (S*hall* equals *is required to*). The word *should* indicates that among several possibilities, one is recommended as particularly suitable without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain course of action is disapproved of but not prohibited *(Should* equals *is recommended that)*. The word *may* is used to indicate a course of action permissible within the limits of the standard *(May* equals *is permitted)*.

Participants

APEGGA's Practice Standards Committee (PSC) publishes practice standards and guidelines to promote high levels of professional service. A subcommittee of PSC prepared this practice standard. At the time the standard was completed, the subcommittee had the following membership:

Steve Gordon, P.Eng., *Chair*
Mike Brusset, P.Eng.
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CONTENTS

1. OVERVIEW

The public, regulators and others use publicly disclosed evaluations of oil and gas reserves in the course of making investment, regulatory and other decisions. Reserves evaluation is professional practice as defined by the Engineering, Geological, Geophysical Professions Act. As the regulator of the professions of engineering, geology and geophysics, one of APEGGA's roles is to maintain appropriate standards of professional practice.

1.1 Scope

This is a standard of practice for the evaluation of oil and gas reserves for the purpose of public disclosure, such as mandated disclosure by securities regulators or disclosure through other regulatory bodies (e.g., National Energy Board, Alberta Energy Utilities Board) or voluntary disclosure through publications (e.g., press releases, technical papers).

This standard also applies to evaluations that can reasonably be expected to become public (e.g., regulatory submissions, court documents, etc.). It may also, but need not necessarily, apply to evaluations of oil and gas reserves prepared for a company's internal purposes.

1.2 Purpose

This standard is meant to set out APEGGA's expectations of its members who prepare evaluations as noted above. APEGGA's committees and boards may use the standard to assess whether the professional practice of APEGGA members is or is not acceptable.

1.3 References

This standard is to be read in conjunction with the following documents:

Canadian Oil and Gas Evaluation Handbook (First Edition): June 30, 2002, Society of Petroleum Evaluation Engineers (Calgary Chapter) and the Canadian Institute of Mining, Metallurgy and Petroleum (Petroleum Society).

Practice Standard for Authenticating Professional Documents: April 2002, APEGGA.

1.4 Definitions

For the purposes of this standard, the following terms and definitions apply.

Act
The Engineering, Geological, Geophysical Professions Act

Authentication
Application of the professional member's stamp, signature and date

CIM
Canadian Institute of Mining, Metallurgy and Petroleum

Evaluation
The estimation of oil and gas reserves and their economic value

Member
A professional engineer, professional geologist, professional geophysicist, registered professional technologist (engineering), registered professional technologist (geological), registered professional technologist (geophysical), licensee or permit holder entitled to engage in the practice of engineering, geology or geophysics under the Act.

SEC
U.S. Securities and Exchange Commission

SPE
Society of Petroleum Engineers

SPEE
Society of Petroleum Evaluation Engineers (Calgary Chapter)

2. THE RESERVES EVALUATION PROCESS

Evaluations of oil and gas reserves are prepared to provide estimates of the recoverable volumes and values of known hydrocarbon accumulations. Recoverability is based on what is technically feasible as well as on the use of appropriate economic factors. The public, regulators and others use these estimates in the course of making investment, regulatory and other decisions.

The evaluation process requires a multidisciplinary approach often involving geology, geophysics and a variety of engineering disciplines, followed by economic analyses. The first step requires the gathering and technical analysis of physical parameters which provide an estimate of the technical volume of hydrocarbons that could be economically recovered from the accumulation. The subsequent steps involve economic analysis to determine the volumes that could be economically recovered. The resulting estimate of volumes and values is a forecast of future outcomes. The actual outcomes may differ materially.

3. STANDARDS FOR PREPARING EVALUATIONS OF OIL AND GAS RESERVES

3.1 Professional Work

The evaluation of oil and gas reserves for public disclosure is professional practice as defined in the Act. A member shall apply his or her expertise to the gathering, analysis and documentation of his or her work and shall engage appropriate expertise from others on matters outside his or her area of expertise.

3.2 Quality Management

A permit holder conducting reserves evaluations shall develop, maintain and apply a quality management program to ensure the ongoing integrity of reserves evaluation work. This program should include elements such as:

- management's role and responsibilities
- evaluators' roles and responsibilities
- evaluators' qualifications
- access to all relevant data
- documentation and record management
- authentication of professional documents
- conflict resolution.

3.3 Technical Standards

In preparing evaluations for purposes of Canadian disclosure, members shall adhere to the technical standards as set out in the *Canadian Oil and Gas Evaluation Handbook (First Edition)* (the "COGE Handbook") prepared by SPEE and CIM. APEGGA's Practice Standards Committee has reviewed the handbook and is satisfied that the technical elements of the handbook are appropriate.

In preparing evaluations for other than Canadian disclosure purposes, members shall clearly identify the specific standard to which the evaluations are being prepared.

3.4 Accountability

Permit holders and individual members are accountable for the quality and integrity of reserves evaluations conducted under their direction and guidance. Inappropriate influence shall not be allowed to affect the results of reserves evaluations prepared under their direction. The most senior member, under whose supervision the evaluation was done, shall authenticate (sign, date and stamp) all final evaluation documents. Members should refer to the APEGGA *Practice Standard for Authenticating Professional Documents* for clarification of the authentication requirements.

3.5 Information Gathering

A member shall incorporate all available, relevant information in preparing a reserves evaluation.

3.6 Third Party Evaluation

A member or permit holder preparing an evaluation for a third party shall obtain written assurance from that third party that all data relevant to the evaluation, as at the effective date, has been made available to the evaluator. Further, a member should include a caveat within the evaluation report requiring the third party to obtain prior approval for the public disclosure of any excerpt from the report.

3.7 Information Analysis

Key attributes of a proper evaluation include:

- consideration of all relevant data
- reconciliation of conflicting data
- proper application of appropriate analytical techniques, checking for alternate interpretations
- checking for reasonableness
- complete and objective analysis and documentation with clear reference to the reserve definitions, analytical approaches and economic standards applied.

A member shall critique the quality and completeness of the information, identify gaps and inconsistencies and ensure that the reserves evaluation is founded on the best interpretation of the information, as of the effective date

3.8 Documentation

A member shall document his or her work supporting the reserves evaluation and shall include a discussion regarding the following matters:

- the quality and completeness of the information used,
- the rationale for dealing with any inconsistencies,
- the analysis technique(s) used,
- any limitations or compromising factors affecting the accuracy of the evaluation.

A member shall clearly state the reserve definitions used in the evaluation (e.g., CIM, SEC, SPE) as well as other professional (e.g., COGE Handbook) or regulatory standards (e.g., NI 51-101, U.S. Financial Accounting Standards Board).

3.9 Professional Objectivity

A member shall not allow unsupported technical opinion or other inappropriate influence to affect the analysis or conclusions incorporated in the evaluation.

3.10 Professional Competence

The technical knowledge and judgement required for proper reserves evaluation require a combination of academic training and practical work experience. Members should make use of mentoring, continuing professional development and purposeful career management to develop and maintain the necessary competency. Permit holders should ensure that their evaluation staff develop and follow specific training and capability development plans.

The COGE Handbook refers to certain minimum aspects of qualifications and experience required for reserves evaluators and auditors. APEGGA's practice standard (this document) does not require, specifically, the number of years of experience noted in the handbook. Under the Act, a registered professional member is entitled to practice his or her profession on the basis of having obtained sufficient training and experience in order to attain professional registration. However, the Code of Ethics emphasizes that members shall only undertake work that they are competent to perform by virtue of training and experience and that they shall express opinions on professional matters only on the basis of adequate knowledge.

3.11 False Precision

A member shall ensure that the results of the evaluation are presented in a manner consistent with the certainty of the expected outcome and that the accuracy of the estimate is not misrepresented by the manner of the documentation. A member should also include, within the evaluation report, a statement regarding the forward looking nature of reserves evaluation and the potential for future material change as a result of new information or changing economic, regulatory or operating conditions.