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Restoring Investor Confidence in Petroleum Reserves Worldwide - A Joint Effort by Industry Professionals

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Abstract

How can an investor or anyone with an interest in oil and gas reserves be assured that an estimate was professionally prepared by qualified individuals, and in full compliance with the relevant definitions? In today's environment, we simply do not have such an assurance. Although many individual companies have developed their own internal standards, they vary widely from company to company and country to country. Standards established by the SPE in 1977 describing the minimum qualifications for individuals estimating and/or auditing reserves estimates and reserves information have been updated somewhat since that time but remain inadequate in the opinion of many to meet the technological, regulatory and ethical challenges of today.

This paper presents the current status of an initiative generated in early 2004 and launched in September of that year by a group of professional geoscientists and engineers to both recognize and elevate the profession of petroleum reserves evaluation. The effort currently involves concerned individuals from across the energy spectrum working to launch a web-based program leading to the certification of qualified individuals in both geoscience and petroleum engineering. The certification program's sponsors are AAPG and SPEE, but other members and observers from a broad spectrum of the industry are also involved in the development. The comprehensive initiative includes steps to define a common body of knowledge for the reserves evaluation function, make available a complete set of training material, develop and oversee examinations required for certification, and develop other standards of ethical and professional conduct expected of the certified members.

Introduction

Information is more useful when it is perceived to be reliable. This is true for information on reserves estimates as well.

Reliability is increased when the user has the assurance that the information was professionally prepared using well-defined standards. How can an investor or anyone with an interest in oil and gas reserves be assured that an estimate was professionally prepared by qualified individuals, and in full compliance with the relevant definitions? In today's environment, we simply do not have such an assurance. There are no recognized standards describing a "Qualified Individual" or acceptable methodologies. Individual companies have, in many cases, established internal standards but these vary widely from company to company and country to country. Some companies are willing to share their internal training manuals; others consider these proprietary.

In this paper, we present the current status of an exploratory initiative generated in early 2004 and launched in September of that year by a group of professional geoscientists and engineers to both recognize and elevate the profession of petroleum reserves evaluation. The effort currently involves concerned individuals from across the energy spectrum working to launch a web-based training program potentially leading to the certification of qualified individuals in both geoscience and petroleum engineering. The program sponsors are AAPG and SPEE, but committee members and observers represent E&P companies of all sizes, petroleum consultants, bankers, a major university, the WPC, USGS, EAGE, SEG, and SPE.

The recommendations presented herein are offered only as steps in the ongoing efforts throughout the industry worldwide to improve the reliability and usefulness of oil and gas reserves estimates (and production and revenue forecasts) which are relied upon by corporate and country leadership for the efficient and effective management of their hydrocarbon assets and, in some cases, for the reporting of their asset volumes and values to appropriate regulatory authorities. There is, of course, always uncertainty and risk associated with any hydrocarbon reserves and economic forecasts. However, our overarching industry goal is to continue to work toward reducing such uncertainties through training and application of recognized industry recommended practices without undue bias.

Accompanying this recitation of steps now underway to provide for voluntary industry-wide training for petroleum reserves evaluators is a brief history of how the certification process for public accountants was developed, along with an effort to standardize a body of knowledge needed for

certification. Further, several observations are offered about how the potential Certification of Petroleum Reserves Evaluators initiative is expected to positively impact the financial side of reserves evaluation and reporting.

Disclaimer

This paper neither suggests nor implies that any company, or the industry as a whole, is currently not properly and reliably estimating and reporting, as appropriate, its petroleum reserves. The reader is cautioned against any such interpretation of the contents of this paper. The reader is encouraged, however, to consider that existing processes for estimation and reporting can be improved through additional training and through the creation of a recognized set of petroleum reserves evaluation practices worldwide. A secondary benefit of this initiative is to allow an engineer and geoscientist in any company to independently expand his or her professional capabilities perhaps beyond that available through their employer.

Sponsorship by SPEE and AAPG

At this writing, the boards of directors of both SPEE and AAPG have enthusiastically endorsed the concept of co-sponsored reserves evaluation training and potentially certification but membership approval has not been sought. While there remain several individuals within both organizations who do not yet see a need for the testing and certification portions of the initiative, surveys of the membership of both organizations overall show a strong positive support, particularly regarding the training aspects.

Background of the Initiative for Petroleum Evaluators

Since about 1986, the oil producing industry has continued to see a reduction in the number of employees in an effort to control costs, improve productivity, and maximize shareholder return. This investment intensive industry has had to compete for increased capital needs by convincing investors that an individual company can find and produce oil and gas at lower costs than its competitors within the industry. By and large, the resulting productivity gains have been outstanding as the E&P industry has developed, refined and effectively employed technology in its search for new supplies in sometimes hostile environments and in optimizing recovery from older discoveries. One of the consequences of this optimization of economic results using fewer number of employees in some companies has been the reduction of ongoing training, particularly in the increasingly complex and important world of reserves evaluation. This observation and opinion shared by the authors of this paper is not at all intended as a criticism of the industry, especially as several producers, large and small, have maintained effective internal training regimens regarding reserves estimation and reporting. Indeed, many companies have renewed their efforts in this regard as a result of the passage of the Sarbanes-Oxley Act of 2002 which added new financial reporting responsibilities on companies reporting to the US Securities and Exchange Commission (SEC).

There are some companies, however, where company-

wide training programs related to reserves estimation are limited or non-existent, perhaps because of a belief that competent reservoir geologists and engineers require little, if any, additional training in the intricacies of reserves estimation and compliance with relevant reserves definitions. However, despite a lack of formal training efforts, some producers within this group seem to have done an excellent job of training and equipping at least a few higher level managers to oversee their internal reserves process, perhaps as part of an internal reserves audit team. These companies apparently assume or expect that these higher level managers can give direction and oversight to all of the personnel contributing in some way toward completing the annual corporate reserves review and report. However, experience has shown that this assumption may not be valid, particularly for larger companies. For example, it is difficult for a reserves auditor, whether internal or external, to detect errors or bias injected into geologic models without having the confidence that every person in the estimation process has received adequate training in several relevant areas.

Areas of Required Training

The authors believe that a compilation of documents constituting "industry recommended practices" can and should be prepared and coalesced into a single course of study in three separate areas. These areas are (1) **Recommended Practices** for the preparation of reserves determinations for (a) geoscientists and (b) engineers, (2) **Reserves Definitions** for several venues for joint study by geoscientists and engineers, and (3) **Ethics Training**, particularly as it relates to the professional aspects of reserves evaluation and interactions with other personnel of the company.

We further believe that no new study material will need to be "invented," as the professional literature already contains excellent reference and training manuals, including examples of almost every evaluation technique required for this initiative. The vast library of SPE and AAPG technical papers and other publications will serve as the primary source for the development of study material for certification. This information is expected to be complemented with the Canadian Oil and Gas Evaluation Handbooks (COGEH) that provide guidance in complying with the Alberta Securities Commission's reserves reporting requirements. Additionally, several oil and gas producers have contributed information from their own internal training manuals which often include excellent graphics designed to focus attention on several widely misunderstood evaluation techniques and approaches.

The Concept of Certification

Whether it is medicine, law, brokerage, or accounting, virtually every major professional occupation in the U.S. and perhaps the world provides a mechanism for the initial certification designed to equip an individual with the necessary information and resources he/she needs to make sound professional decisions, and also requires members to have subsequent ongoing training. This individual may be a "Board-Certified" attorney or physician, a Certified Flagman to assist motorists with traffic congestion or a Certified Mechanic to repair your automobile. In each instance, the

client, or customer, or end-user of information can take a measure of assurance that the individual has received some well-defined level of training in the particular area of services offered and has, in most cases, demonstrated his/her competency through passing an examination.

The concepts of requiring a set of qualifying standards for certification and requiring subsequent adherence by members to established standards of conduct underlie virtually every major recognized profession. In fact, a review of major professions such as medicine, law and auditing, shows the following common elements: 1) Candidate members undergo training to learn a prescribed set of a common body of specialized knowledge, 2) After they meet the prescribed qualifying standards (such as an examination), they are awarded a formal recognition of professional status and membership by means of a certificate or license, 3) Subsequent to membership in the profession, they are required to maintain their specialized knowledge through continuing education, 4) Members are required to follow a prescribed code of professional conduct or a code of ethics to ensure that their work is of highest quality and integrity and to ensure that the profession is held in high regard by the society, and 5) The profession develops a means of enforcing compliance with the code of conduct.

It is not the intent of this paper to review the progression of all the relevant professional certification groups in the world and compare them to the field of reserves evaluation. However, as an illustration of how the concept of certification can effectively aid a professional group's growth and success, it would be useful to review how the accounting and auditing industry has helped its members attain a visible and respected professional status throughout the world. While similar examples of professional certification process can be cited from other related professional groups such as financial analysts, stock market brokers, and business valuation professionals, comparison with the accounting and auditing industry may be particularly relevant given that the field of reserves evaluation shows close parallels to the information production and information auditing functions of the accounting professionals.

Accounting as a field of practice has existed throughout recorded history. Accountants served the small business owners or individuals who needed assistance in keeping the books, but as long as they did not produce any information that needed to be communicated to outsiders or relied on by the public, the profession was able to remain without certification requirements. Hence, until the early 1900s, virtually anyone could call himself or herself a public accountant and there were no education or certification requirements. The early 1900s, however, witnessed the development of large "public" corporations in the U.S., Europe and Japan with widespread share ownership, and also saw the corresponding development of an active stock market in several countries. This led to the development of a new class of users – "investors" – of accounting information who needed reliable financial information to be produced by company accountants. It then became increasingly important

for corporations to issue financial statements that were reliable and useful to these investors and other users. Corporations discovered that financial information was perceived as more useful by their investors and other users when the companies could assure them that the information had been prepared and "audited" by professional accountants who met pre-defined qualifications and also who adhered to rigorous standards of ethics, such as independence and objectivity. This demand for producers of reliable information led to the creation of the CPA certification in the U.S. and the "Chartered Accountant" (CA) certification in the U.K, Canada, Australia, and other countries. As part of the certification process, the need for education material and references led to the development of written accounting and auditing "standards."

Once the certification program was developed in the early 1900s, it was adopted fairly rapidly by all major industrial countries, and also by all the U.S. states. For example, the Texas State Board of Public Accountancy was formed in March 1915 and issued the first set of CPA licenses in early 1916.

Today, depending on the country of certification, the public accountant certification process usually requires the certificate holder to (a) meet certain defined educational requirements, (b) pass an examination or a series of examinations, (c) obtain supervised training in some cases for a specified period either before or after the examination, (d) satisfy annual requirements of a certain number of hours of continuing professional education, and (e) adhere to certain professional conduct and ethics requirements, designed to demonstrate independence of judgment and lack of bias. As an example of the qualifying education requirements, most states in the U.S. now require CPA examination candidates to have a minimum of "150 hours" of college education, which in the U.S. generally means five years of college – one year more than the normal four years needed for an undergraduate degree in the U.S., of which accounting coursework generally should constitute a minimum of 36 hours, or approximately 12 semester-long courses, in order to qualify to take the CPA examination. The 150-hour requirement is a relatively recent development, adopted by most states only in the last 10 years, and illustrates how the professional certification process for any profession needs to be flexible and evolve over time as the profession continues to develop new knowledge and technologies. As a profession's technology evolves, the time needed to train new professionals to meet new minimum standards may also sometimes increase.

A major benefit of the certification process for reserves evaluation is that it creates high expectations of quality and reliability of reserves estimation information in the users' mind. Of course, the fact that an individual has been certified in a field of specialization, whether it is reserves estimation or medicine, does not ensure that the work product will always meet the users' expectations; indeed, the work quality may be below expectations. This fact is disappointing but is not ample reason not to pursue a higher level of excellence in any professional field. What is more important is that the certification allows both users of information and the

professionals who produce the information to refer to a common body of knowledge and set of standards to argue their respective needs and points of view.

Alternative Models of Certification

Along with high expectations of performance following certification comes the need to manage or regulate the possibility of lack of performance. As the reserves industry moves toward developing a certification system for reserves estimators and auditors, it is important to keep in mind three alternative models of certification and the regulation of certificate holders that have been found to work in various professional groups.

The first, and the least common, model is a traditional “regulation” model which is rarely used by commercial professionals in modern times, and is usually limited to certain highly regulated professions, e.g., police force. In this model, both the professional certification process and the subsequent process of ensuring the adherence to professional standards are largely conducted by states or country regulators.

In the second model of certification, the certification process is entirely conducted by the industry, which develops and implements its own standards for education, training, and examination. However, the enforcement of these standards, e.g., taking actions against those who violate the professional standards of conduct, is partly or mostly conducted by the state or country regulators. This is the model adopted by the accounting profession in the U.S. For example, an independent and private industry accounting group, the AICPA, is responsible for the development of the CPA certification examination. However, the CPA “licenses” are then issued by the states. The enforcement of professional standards related to the licenses is done by the states, as well as by some federal agencies.

Given the global nature of the E&P industry and the broad spectrum of companies and professionals who constitute this industry, neither of the above approaches of certification will work to the satisfaction of all the players in the industry. Instead, the authors of this paper believe that a third model of certification involving voluntary participation in the certification process and self-regulation by professional organizations is the preferred approach for a certification system for the reserves estimators and reserves auditors. An example of this voluntary model is the certification approach used by a new professional group, the Chartered Financial Analysts Institute. This group owns worldwide rights to the term “CFA” and issues the CFA “charter” to those who voluntarily choose to satisfy the prescribed minimum education, examination and training requirements. In this third model, the industry group, the CFA Institute, is responsible for all facets of the certification process, including the conducting of the examination, issuance of the CFA charter, and the enforcement of the CFA professional ethics requirements for the CFA charter holders. In this model of certification, a financial analyst or portfolio manager professional can choose to earn the charter or choose to practice without holding the charter. In fact, while tens of thousands of people in these

industries each year are voluntarily choosing to become CFA charter holders, many thousands of practicing professionals in the financial services industries have also chosen not to seek the above certification. Note that the terms certification or “charter” are used in this approach to distinguish this approach from the previous “license” approach. To summarize, unlike a license which connotes at least some regulation by a state agency and potentially connotes mandatory requirements on members, the term certification or charter suggests voluntary participation by members and self-regulation by the industry.

Qualifications

No decisions have yet been made about the qualifications that candidates must demonstrate to be considered for certification as a petroleum reserves evaluator. The current SPE “Reserves Auditing Standards” state that a qualified Reserves Estimator must hold a college degree in engineering or geology, and have at least three years of experience as a petroleum engineer or petroleum production geologist, of which at least one year involved the estimation and evaluation of reserves information.

Many reserves evaluators believe that these standards are inadequate today given the continually increasing expansion of technology and the time required of evaluators to achieve minimal competency. This growth in technology requires that an engineering evaluator have at least a basic working knowledge of seismic applications, reservoir simulation, open-hole and cased-hole logs of numerous types, evaluation software for many purposes, probabilistic reserves assessment methodologies, reserves definitions from several venues and a myriad of production sharing and/or service agreement contracts. An applicant’s experience in one or two geologic basins may be extensive but may not replace the need to have working knowledge of several producing basins in various parts of the world. In addition, given the increased importance of reserves information for stock market investors, regulators, and governments, applicants for Reserves Auditor (and perhaps Reserves Estimator as well) may need to have an understanding of how the information they audit or produce will be reported to the end-users, and their responsibility, if any, to these users.

The SPE’s recommended minimal experience requirement for a Reserves Auditor is a total of 10 years, including three years of estimation and evaluation experience. This greater required level of experience is in recognition of the difficulty in evaluating the work of others.

When the SPE Standards were developed in 1977, many reservoir engineers were comfortable with preparing reserves estimates with or without input from their geoscience counterparts. Log and core analysis along with DST interpretation was routinely made by engineers using rules-of-thumb or other techniques much less rigorous than that used today. Reservoirs being developed in the 1970s were typically much less complex than those being exploited today.

A geoscience-engineer team approach is more critical today than ever before in every aspect of reserves and resource

assessment. The team approach should begin with the design of a data collection and analysis process from “Day 1” of a project with each member fully aware of and trained in the significance of such data in a reserves assessment at some point following a commercial discovery.

Recommended Reserves Evaluation Practices

The target of the geoscience and engineering committees addressing the general topic of reserves evaluation practices is the preparation of a comprehensive manual – one for each discipline – that will contain a digest of the most relevant documents and publications made available through broad industry support. The distillation of hundreds, perhaps thousands, of industry publications, technical papers and industry reserves manuals into a single resource-and-study document of a manageable size will require an enormous effort of numerous qualified and dedicated volunteers.

Following this process, the same committee is to be charged with extracting and developing representative questions to be used in the examination process. The Management Team is expected to secure professional assistance and guidance from the academic community to ensure that the examination content and process meets or exceeds accepted education standards.

The recommended evaluation practices committee for geoscience is anticipated to be focused on (1) creating a “spatially-correct” reservoir model using accepted geological and petrophysical mapping standards and (2) training directed toward the hands-on control of mapping software packages to insist upon sufficient judgment intervention to assure reliability of the work product. Training will also be directed toward the incorporation of geophysical information with subsurface and analog data using accepted and proven techniques. Numerous sub-topics will be addressed related to reservoir parameter estimation, cut-offs, contacts, net-to-gross ratios, compartmentalization and fluid properties.

The geoscience study material is expected to include numerous examples and consequences of the improper use of geologic software and other recognized techniques and practices. The proper and improper reliance upon analogs will also be covered by the study material.

The recommended evaluation practices committee for engineering will overlap some of the geoscience training, particularly with respect to fluid and rock properties and reservoir geometry, but will ultimately be focused on fluid flow properties and conditions. In no particular order and without limitation, the following topics will be considered by this committee at length: (1) what constitutes a viable analog, (2) interpretation of flow tests, (3) reservoir compartmentalization (4) permeability variations (5) aquifer evaluation (6) rock and fluid compressibilities (7) fluid analyses, (8) reservoir simulation, (9) material balance studies (10) decline curve analysis including various commercial software options and (11) economics including capital and operating costs, taxation, marketing options, PSC interpretation and abandonment or dismantlement costs.

All of the above will be delivered as part of a **training** regimen as contrasted with an education program teaching engineering and geological fundamentals. Knowledge of these fundamentals is a part of the qualifications to enter the program.

It is anticipated that the sponsors will make available to candidates for a nominal fee (covering the cost of preparation and production) the study material in both digital and paper form, organized by study topics and designed for both self-study and for use in training programs (e.g., lessons or study sessions). The study material will be copyrighted and protected from inappropriate copying and/or distribution.

It is also anticipated that some candidates or members of the sponsoring organizations may wish to obtain and study the training material but choose not to take the certification examination for one reason or other. For example, we anticipate that some companies may choose to purchase the training material and use it as course material in their own internal training and qualifications programs. These are acceptable uses of the study material because they help in wider acceptance and use of the common body of knowledge covered in the certification process, which is ultimately helpful to the industry in attracting potential new members to the profession.

Ethical and Professional Conduct Training

The portion of the training program related to ethical and professional conduct might be more accurately labeled as being “applied ethics” as contrasted with a study of the basic principles of moral conduct which all qualified candidates should have already demonstrated to their peers. Case studies of real or hypothetical situations will be prepared to assist reserves evaluators to better recognize, analyze and appropriately respond to ethical issues that can be imbedded in virtually every phase of a job assignment. These possibilities are endless but can vary from a simple obligation to use, or at least display, all of the available data in a particular analysis, to ensuring ethical conduct in all challenging situations that might arise at work, such as in dealing with colleagues, in communicating information to others in the company, or in presenting one’s analysis and opinions in a court of law.

Ethics training can remind all of us who practice as engineers and geoscientists that as professionals we need to keep in mind at all times our professional obligations to our employers, fellow professionals, clients, potential clients, and to the public. The training material can help examination candidates to identify potential sources of ethical conflicts that could arise in their work and discuss ways in which they could achieve and maintain prescribed standards of ethical conduct.

More generally, the basic purpose of the ethical and professional conduct portion of the training material is to illustrate through examples the need for a professional reserves evaluator to exercise due professional care in the planning and performance of the reserves estimation or reserves audit work and in the preparation of any reports of the work. In addition, the training material will highlight the

importance of maintaining independent mental attitude in all matters relating to professional work. Independence in mental attitude is also fundamental to maintaining integrity, objectivity, neutrality, and lack of bias in the work performed. These fundamental concepts of due professional care and independence are crucial to any profession to ensure that its members are treated with appropriate recognition and respect by their employers, clients, and society. Not surprisingly, the requirements for due professional care and independence of mental attitude are included as basic or “General Standards” by many professional organizations, including the AICPA and the CFA Institute.

Reserves Definitions

Course materials are now being prepared that will include petroleum reserves definitions in current use by industry and several countries. These definitions are expected to include, without limitation, the SPE/WPC 1997 definitions, the 1978 SEC definitions, the 2002 ASC definitions, the “new” Chinese definitions, the Russian Federation definitions, and definitions recognized by stock exchanges in the United Kingdom, Australia and Hong Kong. The objective of the course material will be to help the candidates develop a common body of specialized knowledge that encompasses these definitions. Candidates are not expected to be experts in all of these definitions, but the common body of knowledge underlying the approaches will help them develop the expertise as needed subsequently in their jobs.

The Examination Process

The certification examination process is expected to be delivered using the Internet to all candidates who elect to take the test and secure a Certificate of completion. Following a course of study of all of the training material – either in a classroom setting or individual self-study – a candidate would apply to take the examination. The examination is expected to be divided into three segments – concepts and definitions, recommended practices, and ethics training.

Procedures have been or are being developed to address several implementation issues, such as the process to develop the examination questions (including the use of education professionals and others to validate that the exam covers the prescribed body of knowledge), the efficient delivery of the examination using the Internet (and the World Wide Web), provisions for candidates in remote locations to take the exam using SPEE/AAPG approved “proctors,” and a grading process that ensures objectivity, speed and accuracy.

Continuing Education

As noted, all major professional certification programs, including the medical, legal and accounting professions, require certificate holders to maintain their body of specialized knowledge through a prescribed minimum continuing education, sometimes called continuing professional education. For example, most states in the US require the CPA license holder to undergo at least 40 hours of approved continuing professional education, including a minimum number of hours of ethics and professional conduct education. Similarly, we anticipate that maintenance of a Certificate for

Reserves Estimator or Reserves Auditor will require some prescribed number of hours of annual continuing education. The details of a proposal for continuing professional education requirements have not been finalized at this point.

What is SPE’s Position on Certification?

The 2004 SPE leadership and Board of Directors chose to not become directly involved with this initiative as a potential sponsor. The SPE Reserves Committee has discussed this topic extensively and has several members who are individually supportive and actively involved in the certification effort. Indeed, the Reserves Committee authorized the “official” participation of two of their members to serve as members of two of the certification initiative committees – recommended practices and reserves definitions.

What about Legal Liability of SPEE and AAPG?

AAPG has a history of more than 25 years with their Certified Petroleum Geologist program without suffering litigation claims or claims for damages. An attorney representing SPEE in this initiative has provided a legal opinion that this program will not subject either sponsor to any unusual risk of litigation.

Impact of Certification on Industry

Many believe, and indeed are concerned, that this initiative for a voluntary program of certification could evolve into a mandatory program. However, as noted earlier in the discussion of the concept of certification, the mandatory model of state licensing and enforcement is neither appropriate for our industry nor the only way. As described earlier, the more appropriate model of certification for our industry is the voluntary participation and self-regulation model in which the certification is administered by the industry to those who voluntarily choose to master the training material and take the examination. In this model, a professional can choose to get the certification, or alternatively learn the same body of specialized knowledge and demonstrate the same standards of due care and independence as the certification requires, but without having the certification. This is, for example, the case with the CFA charter discussed earlier. While many financial analysts and portfolio managers have chosen to become members of the CFA Institute and hold the CFA charter, the vast majority of the professionals in these industries worldwide are not members of the CFA Institute. Nevertheless, the availability of the CFA charter and the education and training material associated with the certification process have enhanced the value of the profession overall for both the charter holders and other members of the profession. The authors expect and hope for a similar effect of the certification process among reserves evaluators.

Conclusion

The authors want to emphasize that the certification initiative is neither being developed in response to a specific industry problem nor is intended to “solve all of the industry’s reserves problems”. Instead, the initiative described here is a crucial and positive step in the developing of a standardized program of training that can become available to reserves evaluators worldwide. Such training is simply not available to hundreds

of evaluators worldwide beyond that provided by their employer.

The Certificate is simply a piece of paper acknowledging the successful completion of a comprehensive training program established by dedicated professionals from across industry. The Certificate's value is enhanced only when the training program and the subsequent standards of professional conduct start to result in increased recognition of our professionals' work by the employers, clients, investors, and society. The certification is also not designed to increase membership in AAPG or SPEE. Finally, the certification is not designed to create work for consultants; indeed, the demand by investors for third-party reserves audits may well decrease as confidence increases in the professionalism and technical ability of a corporate reserves staff. At this point, we cannot be certain as to the effect of the certification on future demand for independent or third-party reserves audits.

The certification initiative remains exploratory at this time. Neither the SPEE nor the AAPG has committed to formally adopt full sponsorship, though both groups are committed to the concepts of the project. It may well be that the training elements may need to be developed, deployed and evaluated by industry over a period of time before the concepts of examination and certification become accepted by the various professional groups or members. In the meantime, comments from any segment of the industry are cordially invited by the authors of this paper and the leadership of SPEE and AAPG.