

Guide to Petroleum Engineering Certification Programme for Petroleum Engineers



**Engineering Professionalism Committee
Society of Petroleum Engineers**

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FOREWORD

This Guide has been prepared to aid petroleum professionals in obtaining certification under the SPE Petroleum Engineering Certification Programme. A separate exam study guide can be obtained from SPE Professional Development (see page 12 for contact information). This Guide includes a full sample exam that can be used to help prepare for the certification exam.

INTRODUCTION

SPE certification has been discussed both within and outside the Society for many years. Many petroleum engineers have not been required to be certified until the past few decades. The environmental and consumer era of the past few decades have given the public greater awareness of pollution, energy, and the need for more industry professionalism.

In 2004, SPE established a pilot program to provide a Society-sponsored Petroleum Engineering Certification Programme at the request of the membership.

ACKNOWLEDGMENTS

The SPE Petroleum Professional Certification Subcommittee gratefully acknowledges the contributions of the authors of *A Guide to Professional Engineering Licensure* and the SPE U.S. Engineering Registration Subcommittee and Engineering Professionalism Committee for permission to use material from that book. The Subcommittee also recognizes past and present Committee members for their efforts in preparing this guide, with thanks to Gus Mistrot, P.E., Bing Wines, P.E., Charles Haynes, P.E., and William McCain, P.E., for their contributions to earlier editions of *A Guide to Professional Licensure for Petroleum Engineers*. Special thanks to Cindy Reece, P.E., for her contributions in revising this edition to reflect significant changes in the exam format.

SECTION 1 ENGINEERING AS A PROFESSION

Profession -let's define it. Professor W.C. Wickenden, in *The Second Mile*, describes it: "If one searches the authorities for definitions of a profession, he will probably find four kinds. One is likely to hold that the determining quality is 'attitude of mind,' that an altruistic motive can lift any honorable calling to the professional level. A second may say that it is a certain 'kind of work,' one requiring special skill on a high intellectual plane. A third may state that it is a special 'order in society,' such as the bar, the bench or the clergy. Still others insist that no work can be professional without a 'confidential relationship' between a client and his agent, as that of a patient to a physician, litigant to lawyer, and so on. None of these definitions are self-sufficient. Taken together, like the legs of a table, they give a profession a stable base of support."

How many of us thought of engineering as a profession when we planned our college majors and our careers? Very few of us looked into the matter until we were presented with the opportunity to take licensure, chartering, or certification exams. Some of us wondered what it was, thought about it, and decided to go ahead and take the exams.

Orientation Into Industry

Many graduate petroleum engineers found themselves active in one way or another in the practice of petroleum engineering. We were drilling, completing, and working over wells; interpreting logs and taking care of production operations; designing and installing artificial lift equipment and waterfloods; doing reservoir studies; taking bottomhole pressure buildup and drawdown tests; and, in general, helping our company find, develop, and produce more oil and gas.

Most of us, when just out of college, found ourselves lacking the practical experience to analyze problems and situations in terms of general principles. Our industry had to take us and adapt us to practical usefulness. Our industry provided most of us with a sound practical program of:

1. On-the-job practice rather than mere observation.
2. Evaluation and counseling on a continuing basis.
3. Progression toward greater responsibility.
4. Professional stimulation and incentives.
5. Program assignments to use available talents.
6. Encouragement to actively participate in technical society work.
7. An atmosphere favorable to professional development.
8. An understanding that there is individual responsibility for professional development.

Continuing Education

We sometimes see a considerable difference among companies in their consideration of what represents a professional attitude. Regardless of the company environment, an engineer must accept responsibility for his/her own development, using all possible means to provide for a continuing self-development program. A true professional's education is never-ending.

Active participation in professional or technical society work is one form that continuing education can take. Industry helps by encouraging company lectures, symposiums, and short courses, both in-house and those offered by outside sources, such as consultant firms and universities.

The professional's long-range education program should include preparation for undertaking civic and social responsibilities. The scope of subjects undertaken will provide an intellectual challenge.

Ethics

Professional standing is not the result of technical education alone. It is a matter of one's attitude and one's approach to work.

In every professional group, the central theme-minister to the people-is found. The physician who ministers to a patient takes charge by right of superior technical knowledge of a highly personal aspect of the affairs of the individual. The attorney assumes professional responsibility for guiding the legal acts of his/her client and speaks from the authority of a legal background. Similarly, the professional engineer who ministers to the public, either directly or remotely removed, must be trustworthy and morally responsible. In short, the professional engineer must be ethical. The laymen look to the professional because they know nothing about the professional's technology. They have to depend on the professional's integrity.

The Society of Petroleum Engineers (SPE) has prepared and periodically updates a Guide for Professional Conduct that includes the following fundamentals of ethics or rules for professional conduct.

Petroleum Professionals, in the fulfillment of their professional duties, shall:

1. Hold paramount the safety, health, and welfare of the public in the performance of their professional duties.
2. Perform such services only in the areas of their competence.
3. Issue public statements only in an objective and truthful manner.
4. Act in professional matters for each employer or client as faithful agents or trustees, and shall avoid conflicts of interest.

The full SPE Guide for Professional Conduct is included in the Appendix.

Engineering Technical Knowledge

The SPE SPE Petroleum Engineering Certification Programme requires that applicants demonstrate a minimum level of technical knowledge to be certified. This is established through a four-step evaluation of each applicant:

1. Education-An engineering degree from an accredited institution.
2. Examination-An examination to measure the level of engineering fundamentals learned from education and to measure the applicant's ability to solve practical engineering problems. The examination may be waived if the applicant has previously passed a written examination qualifying him/her to practice in petroleum engineering as a registered, licensed, chartered, or professional engineer.

3. Experience-Experience and training in the engineering community, usually for a minimum of 4 years.
4. Ethics-Professional peer references as to performance and attitudes.

The only judge of a professional's total knowledge is the professional himself or herself. Thus, most certification programs have put the ethical burden of proof of technical knowledge on the engineer.

Petroleum professionals, in general, are in a secondary position in their relationship to the public. Most of us perform services for another professional or a corporation. In these circumstances, the petroleum professional works with knowledgeable clients who can detect incompetence and will not continue to use the services of an incompetent person. The petroleum professional must maintain knowledge competence to remain in the profession.

SECTION 2 WHY BECOME CERTIFIED UNDER THE PROGRAMME?

Many petroleum engineers have not been faced with the necessity of becoming certified. They hold positions that do not, at present, require a professional certification. However, times are changing.

History of Certification

The trend by associations, societies, and professions to offer voluntary certification programs to their members was one of the primary reasons for the development of the SPE certification program for petroleum professionals. Some of these certification programs have more stringent requirements than others, but all promise at least one thing: increased recognition of the recipient's high professional standards and commitment to the profession.

Certification Advantages

There are several reasons why one might seek certification even if not required by the employer:

1. Public recognition of compliance with the standards established by SPE for the Petroleum Professional designation.
2. The self-satisfaction of complying with the spirit of the certification on a voluntary basis to demonstrate one's commitment to the profession.
3. Certification confers a recognition of technical knowledge. It qualifies those who meet a minimum standard.

What Certification Is Not

1. Certification does not proclaim competency; it only attests to minimum technical knowledge.
2. The fulfillment of certification requirements by an individual does not guarantee that the petroleum professional has the skills required for specific assignments.
3. Certification is not intended to be used as a substitute for employment requirements established by a company.
4. Certification does not ensure that an applicant will be able to obtain employment or be guaranteed improved career prospects.

Professional Recognition

If petroleum engineering is to achieve full professional recognition and stature, three conditions must be met. Those who practice petroleum engineering (1) must be technically knowledgeable; (2) must be ethical; and (3) must recognize and support the public trust aspect of their profession.

A major concern among all engineers is the conference or adoption of the title 'Petroleum Professional' to or by those who are not truly qualified by education, training, and experience to practice engineering.

The sooner all qualified petroleum professionals become certified and actively support the certification process, the sooner the profession will achieve the recognition it deserves from the public.

SECTION 3 SPE Petroleum Engineering Certification Programme

The basis for petroleum professional certification is the obligation of the individual to demonstrate technical knowledge to SPE, employers, and peers. The judgment process includes a formal examination. There are educational and experience requirements for admission to examination.

Petroleum Professional Certification Subcommittee of SPE

The Petroleum Professional Certification Subcommittee of SPE is responsible for the content of the Petroleum Professional Certification examination.

The Petroleum Professional Certification Subcommittee of the SPE Engineering Professionalism Committee consists of up to 15 SPE members who are engineers and who serve staggered 4-year terms. The Subcommittee develops and reviews for the SPE certification examination.

Requirements for Certification Under the Programme

The granting of a certification under the programme is predicated upon education, experience, and examination. SPE has adopted the following minimum requirements for certification:

- Must be a member in good standing with SPE at the time of application.
- Must hold an undergraduate degree in engineering, science or technology from an accredited university.
- Must have 4- years of hands-on engineering experience.
- Must complete a one-time comprehensive examination satisfactorily. The examination may be waived if the applicant has previously passed a written examination qualifying him/her to practice in petroleum engineering as a registered, licensed, chartered, etc., professional engineer.
- Must declare acceptance of SPE's Guide to Professional Conduct.
- Must participate in 16 hours of continuing professional and technical education annually.

The Examination System

SPE uses examinations prepared by the Petroleum Professional Certification Subcommittee and provides a central scoring service. The examination process is employed to determine whether an applicant possesses minimum technical knowledge. The tests are not comprehensive. They merely demonstrate the candidate's ability to apply basic engineering principles to the solution of typical practical problems in his/her major field.

SECTION 4 STEPS TO CERTIFICATION UNDER THE PROGRAM

Education

Educational background of any kind and level can apply toward qualifying for certification. The absolute minimum is an undergraduate degree.

Education experience falls into two classifications:

1. Graduates of petroleum engineering programs.
2. Graduates of other engineering or geoscience programs.

Work Experience

An applicant's engineering work experience must be of a character and performance satisfactory to SPE. Experience must be broad in scope and of such a nature as to have developed and matured the applicant's knowledge and judgment and to have shown the applicant's progression in responsibility. Keeping a journal of your detailed work history will make this task easier.

Application Forms

Contact SPE Professional Development or the SPE Middle East office (see page 12) to request the forms. Applying for the forms takes personal initiative. From here on, the real certification procedure begins. It can take up to 6 months to complete the certification process once you start with your application.

Filling out the application form takes some work. Conservatively, plan on taking a week or two to do this properly. Take care to complete all information.

Your experience will be evaluated on the basis of what is written on the application form and especially by how well the evidence has been documented. Account for all time. List all experience of an engineering nature. Demonstrate professionalism and increasing responsibility in your experience. This is not a time to be modest. However, be truthful, because all experience must be attested to by those you name as references.

References are needed to attest to your work record and to the fact that your experience meets SPE's requirements. Use good references-provide accurate and current contact information. Obtain prospective references' permission before listing them. Your immediate supervisor and other engineers with whom you have worked are your best sources. References will be checked by mailing of reference forms and/or phone calls.

A typical application form also requires a transcript of your college education. Last, but not least, include a check, money order, or credit card number for the proper fee when filing the forms.

Accreditation

You will be notified within 60 days of submission of your application if you are qualified (not qualified) to take the written petroleum professional examination. By now, this whole process typically has taken 2 to 4 months, *so start the application process 6 months before the next exam date.* The SPE Petroleum Engineering Certification Programme examination administered at conferences and stand alone sessions throughout the year (dates and locations to be announced).

SPE Petroleum Engineering Certification Programme Examination

The examination, covering the principles and practice of engineering, is taken after the applicant has gained the required experience after graduation. The petroleum professional exam is an 8-hour, open-book examination given in two 4-hour segments. Each 4-hour segment comprises 50 multiple-choice problems in each morning and afternoon sessions.

The examination problems are based on common problems seen in actual day-to-day operations. The examination covers the subjects of drilling, production operations, reservoir engineering and formation evaluation. The categories, subjects, and problem mix are established by the Petroleum Professional Certification Subcommittee, using the SPE Competency Matrix (see www.spe.org/careers). The current examination specifications are shown in the SPE Study Guide for the Petroleum Professional Certification Exam, along with a sample examination.

Your areas of expertise will need to be varied to enable you to pass the examination. If your experience has been concentrated in one category, such as exclusive work as a drilling engineer, you are advised to study the other subdisciplines to improve your ability to pass the certification exam.

SECTION 5 PETROLEUM PROFESSIONAL

Certification

SPE will notify you of your examination results within 3 to 4 months. If you have passed the examination, you will receive a certificate stating you are certified under the SPE Petroleum Engineering Certification Programme.

Appeals

In the interest of exam security, reviews and appeals are not permitted. This prevents overexposure of the questions. SPE does offer “hand scoring” of answer sheets to provide verification of examination scores. A U.S.\$50 fee is assessed for each request for hand

scoring. Requests must be made within 60 days following the release of examination scores to the examinees.

Reciprocity and Recognition

Certification does not imply reciprocity or recognition by government or licensing organizations.

Renewal

Certification must be renewed annually. An invoice will be sent to the certified member on or before the annual date of being certified.

Section 6 WHAT IS THE NEXT STEP?

Contact SPE Professional Development or the SPE Middle East Office for additional information on the program, applications, study guides, next exam date, and location.

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