Licensure
EXCHANGE

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NCEES

AN OFFICIAL NCEES PUBLICATION FOR THE EXCHANGE OF INFORMATION, OPINIONS, AND IDEAS REGARDING THE LICENSURE OF ENGINEERS AND SURVEYORS

FROM THE PRESIDENT

MANAGING CHANGE IS OUR ONGOING CHARGE

JOSEPH TIMMS, P.E.
NCEES PRESIDENT

Joseph Timms, P.E., of West Virginia, accepted the office of NCEES president during the farewell banquet held August 21 at the Annual Meeting in Denver. The following is from his inaugural speech.

I accept this office with a lot of mixed emotions that I will not try to describe. I do want to thank the West Virginia PE board for their support and especially Lesley Rosier for gently pushing me to become more involved in NCEES.

One day a student asked me, "Do you like change?" My top-of-the-head response was that I like change, both positive and negative, as long as it doesn't affect me directly.

I think change affects us more than we think.

I once heard a fellow delegate say that he enjoyed working with NCEES because you had a chance to work with so many smart people. That is my feeling also. I will try to do my best to move the organization forward as we take seriously our charge to protect the public's health, safety, and welfare.

Usually, the incoming president talks about the charges for the year. I would like to put that in a different context tonight and talk about change and how we as an organization and the engineering and surveying professions are responding to that change.

One of the things I wanted to do after I retired from the oil and gas business was to teach at the college level. I was fortunate for about five years to teach strategic management at a small liberal arts college in our area. A subject I enjoyed in that context was talking about change and how individuals and organizations react to change.

One day a student asked me, "Do you like change?" My top-of-the-head response was that I like change, both positive and negative, as long as it doesn't affect me directly.

I think change affects us more than we think.

Our professions have gone through a lot of change over the years. Some has been glacial, while more recently other change has moved rapidly. But, it has mostly been glacial change as a result of the conservative nature of engineers and surveyors. ("What, only a safety factor of two?")

I would like to talk about four changes—change in the profession, change in the education of the profession, change in the exemption for licensure, and change in the examinations. I would also like to mention something that looks like change but is only a change in awareness.

The evolving profession

Back in the 1930s, my father was studying to be a mining engineer. Between his sophomore and junior years, he and many other engineering students were required to spend six weeks in surveying camp. Twenty-plus years

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Annual Meeting generates important debate and decisions

Computer-based testing, licensure requirements key issues for 2010 meeting

Full minutes from the meeting will be published on the My NCEES Web page in November. Copies will also be mailed to all licensing board members, administrators, and emeritus members.

Delegates attending the 89th NCEES Annual Meeting addressed a range of issues related to the organization and engineering and surveying licensure. The following summarizes the actions taken at the August 18–21 meeting in Denver, Colorado. Full minutes from the meeting will be published on the My NCEES Web page in November. Hard copies will also be mailed to all licensing board members, administrators, and emeritus members.

NCEES examinations

The Council voted in favor of NCEES preparing and administering the Fundamentals of Engineering and Fundamentals of Surveying exams via computer-based testing at the earliest feasible date. The CBT Task Force will continue work on this issue in 2010–11. (See "FE, FS exams to begin gradual move to computer-based format," page 9.)

To update Exam Development Policy 5 to match current practice, delegates adopted an amendment to stipulate that technical society sponsorship is required to add a new Group II exam to the PE exam program and that requests for new disciplines or depth modules that are more than four years old must be reaffirmed by member boards.

The Council voted to indefinitely postpone the Committee on Examination Policy and Procedures motion to amend Exam Development Policy 8. This motion would have moved responsibility for invalidating Candidate Agreement violations for NCEES exams from the individual member boards to NCEES.

Licensure actions

Committees presented a number of motions to amend NCEES model documents relating to licensure requirements and disciplinary actions.

The Council voted to charge the Committee on Uniform Procedures and Legislative Guidelines to incorporate changes into the *Model Law* and *Model Rules* to clarify the difference between a complaint (typically filed by an individual against a licensee) and a charge (a formal action typically filed after evidence has been reviewed and the need for formal board action established).

After accepting a substitute motion, delegates approved charging the UPLG Committee to incorporate changes into the *Model Rules* to require licensees to earn at least one professional development hour in ethics and/or business-related practice each renewal period to meet continuing professional competency requirements.

The Council approved an amendment to *Model Law* 160.20 to require a firm to have a resident professional engineer or surveyor, as applicable, at each of its branch offices where engineering or surveying services are offered.

In response to its charge to recommend ways to encourage more engineering faculty to become licensed, the Faculty Licensure Task Force presented a motion to amend the general requirements for licensure outlined in *Model Law* 130.10. The motion was to allow individuals with an earned doctoral degree from an institution with EAC/ABET-accredited programs to take an exam

covering licensure laws, professional practice, and ethics instead of the traditional Principles and Practice of Engineering exam. The motion failed.

Education requirements for licensure

NCEES continued to refine the additional education requirement for engineering licensure in the *Model Law*, effective January 1, 2020. The Council approved a new path for satisfying this requirement. The new path is to earn a bachelor's degree from an EAC/ABET-accredited program that has at least 150 semester credit hours; at least 115 of these hours would have to be in math, science, and engineering combined, with at least 75 of the 115 hours in engineering. The current UPLG Committee has been charged with proposing the necessary amendments to *Model Law* 130.10 C.

Delegates also approved charging a committee to further study an alternate path to meet the requirement. This path would include six years of progressive engineering experience, additional coursework, and a structured mentoring program.

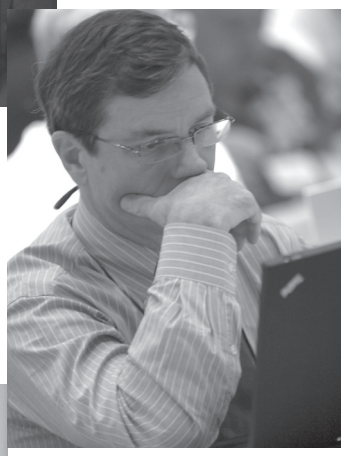
NCEES governance

The Council voted in favor of charging a committee to replace all references to "land surveyor" with "surveyor" and use the title "professional surveyor" and "P.S." in NCEES manuals and governing documents, particularly the *Bylaws*.

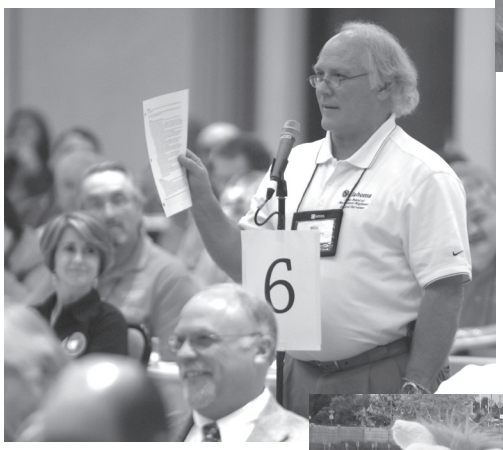
The Council approved an amendment to Position Statement 14, NCEES-Recommended Education/Experience Guidelines for P.E. Licensing, to reflect current practice of most member boards. The policy now recommends six years of experience for graduates of TAC/ABET-accredited programs and eight years of experience for graduates of related science programs.

Additionally, the Council adopted Position Statement 32, Tower Cranes. (See "NCEES urges P.E. seals for crane foundation designs," page 8.)

Maine surveying board member Elwood Ellis, L.S., uses a break to discuss Council issues with President-Elect Joe Timms, P.E., of the West Virginia engineering board.



New Jersey board member Jim Purcell, P.E., follows along during Friday's business session.



Oklahoma board member Bob Zahl, P.E., debates a motion ahead of the Council's vote.

Maryland engineering board attorney Milena Trust and board member Pastor Farinas, P.E., thank Miles the mascot for the tour of Invesco Field at Mile High stadium, home of the Denver Broncos.

JERRY CARTER
NCEES EXECUTIVE DIRECTOR

Council decisions define activity for coming year

The transition to CBT is a major undertaking by NCEES, one that will take the next few years to plan and implement. I am confident that the results will prove to be beneficial to our organization as well as our examinees.

Decisions made during the 2010 NCEES Annual Meeting and the final meeting of the 2009–10 Board of Directors have clearly defined the course of action for NCEES staff as well as committees and task forces for the coming year.

The most significant decision, which will touch every NCEES service in some way, is the Council's vote to move the Fundamentals of Engineering and Fundamentals of Surveying exams to a computer-based testing (CBT) system.

The Computer-Based Testing Task Force, headed by Idaho board administrator David Curtis, P.E., has been hard at work over the past few years investigating the benefits of and impediments to computer-based testing and engaging in dialogue with affiliate professional organizations that have made this transition. Through this effort, the task force was able to provide a comprehensive report to assist member boards with making a decision on whether to support the change. At the Annual Meeting, delegates voted to approve the task force's motion that NCEES prepare and administer the FE and FS exams via computer-based testing at the earliest feasible date.

Implementation of this change will now require the efforts of many. President Joseph Timms, P.E., has charged the CBT Task Force with the considerable job of developing a comprehensive plan and timetable to transition the exams to CBT and assisting NCEES staff with the selection of a CBT vendor and the development of a contract (subject to final approval by the Board of Directors).

The task force has already scheduled a meeting with potential vendors to initiate this process and subsequent meetings during the coming year to address the assigned charges. The transition to CBT is a major undertaking by NCEES, one that will take the next few years to plan and implement. I am confident that the results will prove to be beneficial to our organization as well as our examinees.

NCEES education standard adopted

In another action, the 2009–10 Board of Directors voted at its last meeting to endorse the adoption of an education standard to be used by NCEES Credentials Evaluations in evaluating programs that are not accredited by ABET's Engineering Accreditation Commission. ABET uses outcomes-based accreditation criteria. NCEES decided it needed to establish a recognized standard that met its needs for evaluating the education credentials of licensure candidates with degrees from non-EAC/ABET-accredited engineering programs.

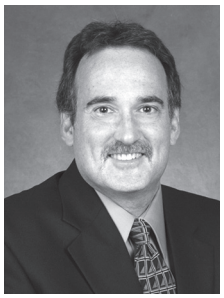
The NCEES Engineering Education Standard was developed during the course of the year by an advisory group made up of NCEES members, member board administrators, and NCEES staff. A draft of the proposed standard was presented to member board administrators at each 2010 zone interim meeting, and suggestions were incorporated into the standard.

The new standard includes minimum requirements that the majority of the NCEES member boards indicated must be present when evaluating non-EAC/ABET-accredited programs to deem that an individual possesses the minimal education

requirements necessary to be considered for entry into the professional practice of engineering. (For more information, see box at right.)

New Credentials Evaluations team in place

On a related topic, we are continuing to move the Credentials Evaluations Service from the Miami office to the NCEES facility in Clemson.



Gregg Corley, P.E., has been hired as manager of credentials evaluations and will lead the effort going forward. For the past several years, Gregg served as an associate professor in the department of construction science and management at Clemson University.

We have also hired Jennifer Gooch, Stefani Goodenow, and Marie Nebesky as credentials evaluators, all of whom have previous experience in evaluating academic transcripts. Eva-Angela Adán, who has served as director of credentials evaluations since the inception of the service, will serve as a consultant to Gregg and his staff starting in January 2011.

We expect to begin routing all mail and new applications to NCEES headquarters in the coming weeks and to have completed the changeover by the end of this year.

NCEES Engineering Education Standard

Applicants having engineering degrees from programs that are not accredited by the Engineering Accreditation Commission of ABET must demonstrate the following:

A. **32 college semester credit hours of higher mathematics and basic sciences**

1. Credits in mathematics must be beyond algebra and trigonometry and must emphasize mathematical concepts and principles rather than computation. Courses in calculus and differential equations are required. Additional courses may include linear algebra, numerical analysis, probability and statistics and advanced calculus.
2. Credits in basic sciences must include courses in chemistry and calculus-based general physics with a minimum of a two-semester (or equivalent) sequence in one or the other. Additional basic sciences courses may include life sciences (biology), earth sciences (geology, ecology), and advanced chemistry or physics. Computer skills and/or programming courses may not be used to satisfy mathematics or basic science requirements.

   Basic engineering science courses or sequence of courses in this area are acceptable for credit but may not be counted twice.

B. **16 college semester credit hours in a general education component that complements the technical content of the curriculum**

Examples of traditional courses in this area are philosophy, religion, history, literature, fine arts, sociology, psychology, political science, anthropology, economics, professional ethics, and social responsibility. No more than 6 credit hours of languages other than English or other than the applicant's native language are acceptable for credit. English and foreign language courses in literature and civilization may be considered in this area. Courses that instill cultural values are acceptable, while routine exercises of personal craft are not.

C. **48 college semester credit hours of engineering science and engineering design**

Courses shall be taught within the college/faculty of engineering and shall have their roots in mathematics and basic sciences but carry knowledge further toward creative application of engineering principles. Examples of approved engineering science courses are mechanics, thermodynamics, heat transfer, electrical and electronic circuits, materials science, transport phenomena, and computer science (other than computer programming skills). Courses in engineering design stress the establishment of objectives and criteria, synthesis, analysis, construction, testing, and evaluation. Graduate-level engineering courses can be included to fulfill curricular requirements in this area. Engineering technology courses cannot be considered to meet engineering topic requirements.

D.C. National Mall to host first USA Science and Engineering Festival

Expo caps two-week national celebration of science and engineering

Lunch with a Nobel laureate, compete in a robotic car race, or take (virtual) flight in an F-35 simulator. These are just a few of the 750-plus activities scheduled for the inaugural USA Science and Engineering Festival, which will be held October 10–24.

The country's first science and engineering festival will feature two weeks of free events across Virginia, Maryland, and the District of Columbia, beginning with a gala concert of science songs performed by over 200 children and adults at the University of Maryland.

> Key goals of the festival are to inspire the next generation of scientists and engineers and to inform parents and children about the exciting opportunities in these professions.

Several school programs are planned. Fifty top scientists and engineers will speak at D.C.-area schools. Nobel laureates will share brown bag lunches with area middle and high school students. Competitions such as the You CAN Do the Rubik's Cube tournament and the Sustainable Dream House contest will give schools and their students the chance to win cash and other prizes.

To make this a true national party, universities, student clubs, and science and engineering organizations will host satellite events around the country. With regional events such as Big Physics Day at Texas A&M University and New Hampshire TechFest 2010, organizers hope to have a million people join in across the nation.

The culmination of the festival, a two-day expo on the National Mall, will feature 750 hands-on exhibits and 40 stage shows for various age groups from preschool to adult. Over 500 science and engineering organizations will take part in the October 23–24 event, including universities, professional societies, corporations, federal agencies, and museums and science centers.

Discover Engineering, part of the EWeek initiative supported by NCEES, will host an interactive exhibit to encourage visitors to use their creativity to solve engineering problems. Other engineering organizations sponsoring exhibits include the American Society of Civil Engineers, IEEE-USA, the National Society of Professional Engineers, and the Society of Women Engineers.

Science and engineering will take center stage at the National Mall on October 23–24. The expo is the grand finale of the country's first national science and engineering festival.

Key goals of the festival are to inspire the next generation of scientists and engineers and to inform parents and children about the exciting opportunities in these professions. According to the National Science Board, the U.S. science and engineering workforce is now at more than 5.5 million and averages a growth rate of 3.2 percent, about double that of the American workforce as a whole. Festival organizers aim to invigorate children's interest in science, technology, engineering, and math by providing compelling and entertaining educational opportunities.

For more information on national and regional events, visit usasciencefestival.org. *From USA Science and Engineering Festival press release, February 17, 2010*

Nominations open for NCEES service awards

Deadline is January 31, 2011

The Committee on Awards is now accepting nominations for NCEES service awards: the Distinguished Service Award, the Distinguished Service Award with Special Commendation, the Meritorious Service Award, and the newly adopted Distinguished Examination Service Award. Delegates at the 2010 Annual Meeting passed a motion to establish this award to recognize contributions to the NCEES exam program.

Nomination materials have been sent to member board administrators. They are also available online at My NCEES or by contacting Executive Assistant Sherrie Holcomb (sholcomb@ncees.org). Nominations for the DSA, DSA with Special Commendation, and MSA must be made by a member board. Nominations for the Distinguished Examination Service Award may be made by a member board, an exam committee, or the NCEES Board of Directors. The deadline for nominations is January 31, 2011. The NCEES service awards will be presented at the 2011 Annual Meeting in Providence, Rhode Island.

The criteria for these awards are specified in Administrative Policy 12 (available on the NCEES Web site). The criteria for the new Distinguished Examination Service Award are as follows:

AP 12 Awards, Distinguished Examination Service Award

- Must demonstrate positive contributions and long-time commitment to the NCEES examination program
- Must have served on at least one of the Council's examination committees or exam-related task forces
- Must demonstrate exemplary service and leadership in the advancement and improvement of NCEES examinations and the exam-development process
- May be nominated by a member board, an exam committee, or the Board of Directors

At this year's Annual Meeting, NCEES presented service awards to the following individuals. Complete descriptions of the recipients are available at www.ncees.org/About_NCEES/News.php.

Distinguished Service Award with Special Commendation

- L. Robert (Larry) Smith, P.E., member, Rhode Island engineering board

Distinguished Service Award

- James Foley, P.E., S.E., G.E., member, California board
- Howard (Skip) Harclerode II, P.E., member, Maryland engineering board
- Peter Hutchison, P.E., P.L.S., emeritus member, Wyoming board
- Theodore Sack, P.L.S., member, Oklahoma board

Meritorious Service Award

- Peggy Abshagen, executive director, Delaware engineering board

NCEES urges P.E. seals for crane foundation designs

New position statement recommends measures to improve crane safety

Recognizing the safety risks associated with using tower cranes, NCEES has recently focused its attention on the design of tower crane foundations and the qualifications of those who sign off on them.

In August, the Council voted to adopt a position statement that recommends that state licensing boards actively pursue enforcement of statutes and rules concerning engineering supervision over the design of tower crane foundations. The statement recommends that a licensed professional engineer prepare and seal foundation design documents and that a P.E. review the erection of the crane to ensure it complies with the design and specifications for its foundation.

A new Occupational Safety and Health Administration rule on cranes and derricks in construction, set to go into effect November 8, includes a similar provision concerning the design of tower crane foundations.

"The member boards of NCEES have an ongoing mission to protect the public's health, safety, and welfare," said NCEES Executive Director Jerry Carter. "Ensuring competent and ethical engineering practices will help protect construction crews and the public at large."

The new NCEES position statement on tower cranes recommends measures to ensure the safety of workers and the general public.

NCEES Position Statement on Tower Cranes

NCEES recognizes that the use of tower cranes—including assembly/erection, climbing, dismantling, and hoisting—exposes the public to a level of risk to health, safety, and welfare.

NCEES recommends that member boards actively pursue enforcement of statutes and rules with local permitting authorities having jurisdiction (AHJ) regarding the engineering supervision over the design and erection procedures related to the foundations of tower cranes.

To implement the above, the following is recommended:

- Foundation design documents shall be prepared by a qualified licensed professional engineer or a licensed structural engineer, as required, and the documents are to be sealed by the engineer.
- Supervision by a qualified licensed professional engineer or a licensed structural engineer is required in the review of erection of the crane for compliance with the engineer's design and specifications for the tower crane foundations.

FE, FS exams begin gradual move to computer-based format

NCEES approves conversion to increase flexibility, strengthen security

The state licensing boards that compose NCEES have voted to begin converting the Fundamentals of Engineering (FE) and Fundamentals of Surveying (FS) exams to a computer-based format.

The decision was made during the NCEES Annual Meeting, held August 18–21 in Denver. It followed a prolonged study by a special task force convened to consider the issue and share its findings with the organization.

The move from paper-and-pencil exams to computer-based exam delivery will not take place overnight, said NCEES Executive Director Jerry Carter.

"The language approved by the Council includes the phrase 'at the earliest feasible date,' which means that NCEES exam writers and staff will be involved in a process that includes adapting exam item banks, selecting vendors, and communicating with licensing boards and examinees before we can begin offering the exams via computer," said Carter. "We anticipate it will be a minimum of two years before FE and FS candidates begin taking the exams at computer-testing centers."

"We anticipate it will be a minimum of two years before FE and FS candidates begin taking the exams at computer-testing centers."

CBT Task Force Chair David Curtis, P.E., (standing, right) presents a motion to Council delegates to move the FE and FS exams to computer-based testing. In 2010–11, the task force will develop a comprehensive plan and timetable for this transition.

Flexibility and security key factors in decision

Among the reasons given by the NCEES Computer-Based Testing Task Force for its recommendation to convert the exams to a computer-based format include greater scheduling flexibility for candidates, more uniformity in testing conditions, and enhanced security for exam content. The vote to move toward computer-based testing for the FE and FS exams was unanimous.

The FE exam is designed for college engineering seniors who intend to pursue a P.E. license. Nearly 50,000 examinees took the FE exam during the 2009–10 academic year, which included October and April administrations. The FS exam is a similar exam designed for those beginning the process toward professional surveying licensure.

The PE and PS exams, which engineering and surveying candidates are also required to take after completing work experience requirements, will continue to be paper-and-pencil exams for the foreseeable future.

RICK HUETT
ASSISTANT EXECUTIVE DIRECTOR, INVESTIGATOR
ALABAMA STATE BOARD OF LICENSURE FOR
PROFESSIONAL ENGINEERS AND SURVEYORS

In combating unlicensed practice, boards should put NCEES tools to use

Boards with active enforcement programs aimed at addressing unlicensed practice issues experience considerable success in achieving compliance from the unlicensed person or firm.

The unlicensed practice of engineering and surveying poses a serious threat to the health, safety, property, and welfare of the people and to the value of licensure itself. NCEES has a lengthy history of encouraging its member boards to obtain the statutory authority to prosecute unlicensed practice. Through its member boards and the Committee on Law Enforcement, NCEES has prepared useful tools for boards to combat this scourge on the professions.

Several factors contribute to the widespread violation of licensing laws by unlicensed individuals and firms. While the majority of violators are simply unaware of the statutes, other reasons for violations include a lack of knowledge by the public of engineering and surveying licensing laws and a lack of understanding on the part of local, county, and state officials. Licensed engineers and surveyors can fail to identify with the problem unless it impacts them monetarily. There's also the problem of people's inclination not to get involved as well as a lack of respect for licensing laws due to little or no enforcement actions taken by boards in some jurisdictions.

Identifying unlicensed practice

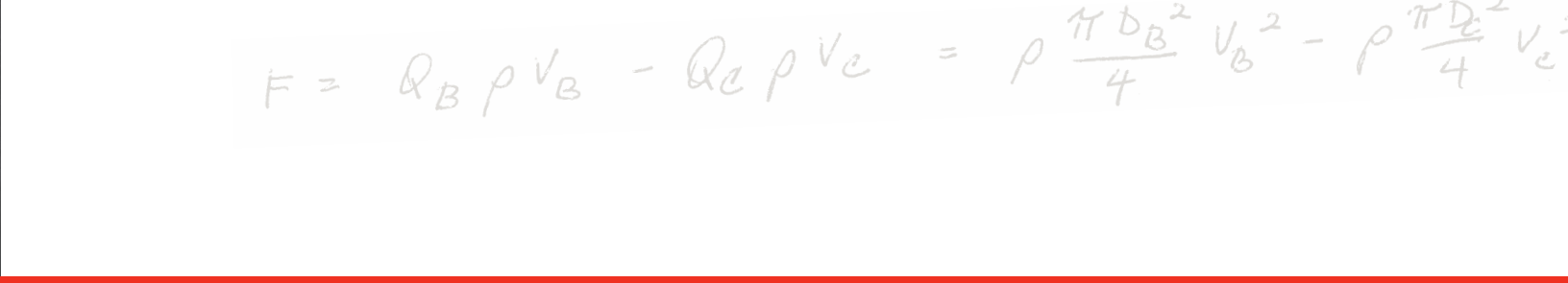
The NCEES *Model Law* provides member boards guidance on which actions by unlicensed individuals should be considered the practice of engineering or surveying. The actions described include the following:

- Engaging in the practice or offer to practice engineering or surveying without being licensed
- Using the words "engineer," "engineering," "surveyor," "surveying," or any modification or derivative thereof in his or her name or form of business activity except as licensed
- Presenting or attempting to use the certificate of licensure or seal of a professional engineer or professional surveyor
- Engaging in fraud or deceit to obtain a certificate of licensure or intern certification
- Impersonating a professional engineer or professional surveyor
- Using or attempting to use an expired, suspended, revoked, inactive, retired, or non-existent certificate of licensure

Conducting effective investigations

Boards with active enforcement programs aimed at addressing unlicensed practice issues experience considerable success in achieving compliance from the unlicensed person or firm. With this in mind, boards wishing to develop similar programs will find the following investigative procedures in the NCEES *Investigation and Enforcement Guidelines* useful:

1. Contact the suspected violator by letter, provide a copy of the pertinent section of the licensing law, and request an explanation of the activity.



2. If no response is received within 30 days, send a second letter by certified mail with return receipt requested.
3. If there is no response to the second letter, conduct an interview with a principal official of the firm or with the individual violator to secure voluntary compliance. Substantiating facts and evidence are obtained at the time of the interview.
4. If no agreement as to compliance is reached, prepare a complete report of investigation and, upon review and direction of the board, refer the matter to the attorney general or appropriate governmental authority or legal counsel for injunctive civil penalty proceedings.
5. In aggravated cases involving non-licensees illegally practicing engineering or surveying to the detriment of the public, the matter after investigation may, upon authority of the board, be presented to the appropriate official for an opinion and prosecution under the misdemeanor provisions in the licensing law.

An enforcement program can be further developed to include methods of identifying possible violators and ways to prevent the continuation of the illegal activity.

The NCEES *Investigation and Enforcement Guidelines* proves helpful in this regard also, as it contains the following recommended procedures:

- Screen the classified section (yellow pages) of telephone directories and other similar directories
- Obtain Articles of Incorporation or Certificates of Authority from the office of the secretary of state on all new companies using the word "engineer" or "engineering" and "surveyor" or "surveying" in their names
- Screen fictitious or assumed-name registers maintained by county clerks
- Review county and city occupational license records under the classifications of "engineers" and "surveyors"
- Establish liaison with state professional engineering and surveying societies
- Establish liaison with governmental agencies at all levels
- Review Dodge Reports, building exchange reports, trade magazines, documents of associated general contractors, and Dodge Plan Rooms

The Alabama board uses these procedures when investigating unlicensed practice complaints, and since 2002 it has conducted 120 such investigations. Of these, 67 resulted in the board taking a formal disciplinary action against the unlicensed individual. In the 67 cases, 14 of the individuals failed to comply with the assessed disciplinary action through payment of the monetary penalty. While these results fall short of the 100 percent compliance goal, it is easy to see the recommended investigative procedures work.

Member boards are strongly encouraged to develop a program of investigating and prosecuting unlicensed practice of engineering and surveying. Following the guidance provided in the NCEES *Model Law* and *Investigation and Enforcement Guidelines* and communicating with other boards that have experience in this type of investigation will prove extremely helpful in fulfilling your mission of protecting the public.

FROM THE PRESIDENT

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later as a civil engineering student at MIT, I had one class in surveying, and most of that was in the classroom and not in the field.

Fifty years later, surveying has either disappeared from the civil engineering curriculum or is not offered at all. In the meantime, surveyors have gone from an experience-based licensing system to the *Model Law* requiring a four-year college degree.

Is this a good thing? If I were still involved with design and construction, I would want my engineers to know a bit about surveying. But there are a couple of conclusions that are evident to me: First, technology has broadened the field of surveying, and the surveyor now needs more formal education to meet the requirements of the profession. Second, I predict that we will see fewer engineers who will also have a license in surveying.

> We need to keep the issue of licensure before industry, academia, and—most importantly—our legislators and the general public.

But if you think of it, this is only one of the many changes that we have seen in our industry.

Changes in engineering education

We as members of NCEES have been talking about education—the first leg of the three-legged stool—for a long time. (Testing and experience represent the other two legs.) Over the last 50 years, engineering education has changed. Many of us white hairs can remember the 140 to 150 credit hours required to graduate. And we have had numerous conversations about the decrease in that number to the 120s, which is similar to the liberal arts degree. At the same time, the course hours were being cut or combined with other courses, the slide rule was being replaced with the personal computer, and the body of knowledge was exploding.

When I was a freshman in college, my first semester was a disaster. I was one of those people who never carried a book home, so I didn't know how to study properly. My father came to Boston one weekend to help me, and when he left he said I was taking courses as a freshman that he had as a senior. I have experienced the same thing in helping my granddaughter with homework. She is being introduced to topics in science as a high school freshman that I wasn't exposed to until my college freshman year.

We have argued about the master's degree requirement for licensure, but one thing that I think that we can all agree on is that the body of knowledge is increasing and increasing rapidly.

We have in the *Model Law* and *Model Rules* what appears to be the Council's best response. The "or equivalent" still needs work, but the advanced education is in place and waiting for the first state to adopt it.

We have been reacting to this change in specialization for some time now. Our Fundamentals of Engineering exam now has seven afternoon depth modules. Additionally, we now have 17 different discipline options for the Principles and Practice of Engineering exam and are in the process of developing another in software engineering. Three of these PE exams—Civil, Mechanical, and Electrical—feature multiple options for depth modules.

What does this mean? Obviously, it means that we are becoming more specialized, just as the doctors have become. We still need engineers as project managers in private practice, industrial practice, research, and governmental practice who can meld all these specialties together into a team. Looking for those people will be a

challenge for the future. I contend that the increasing body of knowledge requires more formal and informal education, including continuing education. More than ever, education is a lifelong challenge for the professional.

Strengthening public protection

Before discussing the industrial exemption, let me say that as someone who spent most of his career in industry I have observed that there are a number of excellent engineers in industry. There are also some who can't meet the standard of minimum competence. I would also say that every year there are licensed engineers who lose their license primarily because of ethics violations or working outside their area of expertise.

The public today is quite upset with the oil and gas industry, the mining industry, and the automotive industry. Have you noticed ads by BP and Toyota where the company's "chief engineer" talks about safety? I see no P.E. after their names, and, as far as I know, a search through the states shows no P.E. license.

But the public has a short memory, and they need to be repeatedly told about the industrial exemption and the fact that only about 20 percent of engineering graduates ever get licensed. With the industrial exemption, many engineering graduates don't need to be licensed to "practice."

So while we drive on highways and bridges and land on runways that are designed by professional engineers, the car and truck and airplane are not. And the drilling rig or the roof and ventilation system in an underground mine may or may not have been designed by a professional engineer.

The lawyers say that the company holds the liability, but that is not our issue; that is for the courts to decide. Our issue is the protection of the public by having individuals who have demonstrated competence and follow an ethical standard.

Unfortunately, it is taking a disaster to require a P.E. to sign off on a design or installation. This happened with the Sago, West Virginia, mine accident, and the government is requiring professional engineers to sign off on air seal breakers. I can only hope that the latest mine accident will require ventilations systems to be properly designed.

As a result of the Gulf oil spill, the federal government is proposing rules to have a P.E. sign off on well casing designs.

We need to keep the issue of licensure before industry, academia, and—most importantly—our legislators and the general public.

Transition to computer-based testing

The move toward computer-based testing is going to dramatically change the operation of NCEES. It is going to take a lot of imagination, knowledge, and just plain hard work to get this system off the ground. In my cynical view of this type of project, I always say, "double the expected development cost and half the benefits." However, having been on the task force that preceded this one, we have come a long way to having a feasible project with the main result being better exam security. We have had, and will continue to have, a lot of knowledgeable people working on this project. We as a Council will need to have patience as this project progresses.

Ethics, an enduring concern

Finally, one aspect of our profession that seems to be getting a lot of attention is ethics. It seems that every professional magazine has at least one article on the subject. While this may appear as change, the issue of ethics has always been a large part of our practice. But are we at the latest thinking on ethics? I have asked the Law Enforcement Committee to take a look at our position papers and model documents to see if we are doing all we can to keep the public's trust. For example—and I am not proposing this without study—do we need to incorporate by reference the latest edition of NSPE's Code of Conduct? Are we covered with our current system, or does it need to be tweaked?

So we have before us a very challenging year. In the musical *Jekyll & Hyde* there is a song that says "the only thing constant is change." I continue to be impressed with all the smart and hard-working volunteers and the NCEES staff that make up this organization, and I am confident that we will wisely manage this change.

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I certify that all information stated above is true and correct. *Jennifer Williams*

MEMBER BOARD NEWS

CALIFORNIA Philip Quartararo is a new appointee.

FLORIDA PS Larry Wright is a new appointee.

HAWAII Clayton Pang is a new appointee.

ILLINOIS PE William Eves, Richard Ray, and John Whitt are new appointees. Proshanta Nandi is no longer on the board.

ILLINOIS PS Joseph Stutz is no longer a board member.

MISSISSIPPI Dennis Truax, Matt Rankin, and Bennie Sellers are new appointees. Bill Waters, Ron Phillips, and Raymond Dearman are no longer board members.

NEVADA Robert LaRiviere is a new appointee. Dean Neubauer is no longer a board member.

NEW MEXICO Augusta Meyers is a new appointee. Charles Atwell is no longer a board member.

OREGON James Doane is a new appointee. Susanna Laszlo is no longer a board member.

TENNESSEE PE Robert Campbell Jr. is a new member of the board. He was appointed to serve the remainder of the term of his father, the late Robert Campbell Sr.

UTAH Thomas Dale Colvin and Max Peterson are new appointees. Gary Knighton is no longer a board member.

WISCONSIN Joseph Eberle and Daniel Fedderly are new appointees. Martin Hanson, Ryan Klippel, Daniel Sheldon, and Rick Van Goethem are no longer board members.

Upcoming Events

October 7-8
NCEES Board of Directors Orientation
Clemson, South Carolina

October 8-9
Environmental Exam Meeting
Clemson, South Carolina

Structural Exam Meeting
Clemson, South Carolina

October 29-30
Exam Administration

November 3-5
CBT Task Force Meeting
Clemson, South Carolina

November 6
EPP Committee Meeting
Atlanta, Georgia

November 12-13
FE Exam Meeting
Clemson, South Carolina

NCEES Board of Directors Meeting
Santa Fe, New Mexico

November 17-20
Chemical Exam Meeting
Clemson, South Carolina

November 19-20
EPS Committee Meeting
Atlanta, Georgia

Structural Exam (Bridge) Meeting
Clemson, South Carolina

Licensure
EXCHANGE

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NCEES installs 2010–11 Board of Directors

Standing (l–r): Widmer, Gavlin, Nadkarni, Mamola. Seated (l–r): Jans, Timms, Whitman, Dinkins

Joseph Timms, P.E., began his term as 2010–11 president at the conclusion of the NCEES Annual Meeting, held August 18–21 in Denver. He replaces outgoing president David Whitman, Ph.D., P.E., who will remain on the Board of Directors as immediate past president. Also during the Annual Meeting, NCEES members elected Dale Jans, P.E., as its president-elect for the 2010–11 term and welcomed newly commissioned Central Zone Vice President Nancy Gavlin, P.E., S.E., and Western Zone Vice President Patty Mamola, P.E.

Rounding out the Board of Directors are three members serving the second year of their two-year term: Northeast Zone Vice President David Widmer, P.L.S.; Southern Zone Vice President Govind Nakarni, P.E.; and Treasurer Gene Dinkins, P.E., P.L.S.