

Mobility requires united state boards

The year has gone by quickly. Just a short while ago, NCEES committees and task forces were discussing their charges for the first time. Now the committee reports and recommendations are finalized and being shipped to all Member Boards and Annual Meeting delegates. As we look back at the Council's work this year, we also look ahead to what it means to the future of our professions.

Raising the bar

In 2005, the Council voted to increase the educational requirements for licensure, and this year the Committee on Uniform Procedures and Legislative Guidelines will present proposed language to require 30 additional credits beyond a bachelor's degree for engineering licensure. As we discuss this at the Annual Meeting, we need to address how this will affect international mobility.

The United Kingdom will soon require a master's degree to become a Chartered Engineer—the equivalent of our professional engineer—and it may no longer recognize only a bachelor's degree for equivalency. Other European countries are considering the same changes in education requirements. If we are to maintain parity with other world engineers and compete in the growing world market, we must increase our education requirements.

Promoting licensure

The Council has increased its efforts to promote the value of licensure. Each of us must take the responsibility for furthering this goal by presenting the Engineering or Surveying Speaker's Kit.

We should also be looking for opportunities to present our careers to math and science classes, attend career fairs, and increase the visibility of engineering and surveying as a great career choice.

How many of you had a role model who made you decide to become a professional engineer or surveyor? We need to give our own personal time to mentor young people in competitions for bridge building, future cities, and MathCounts and Trig-Star programs so that they can see we are interested in their future and the type of people who become surveyors and engineers.

Changing election policies

The Advisory Committee on Council Activities is recommending a change in our policies regarding the office of president-elect.

Term limits and politics have often caused the Council to lose good leaders before they have a chance to run for president-elect. The committee proposes changing the Constitution to allow current zone vice presidents or treasurers to run for president-elect even if their terms on a Member Board have expired.

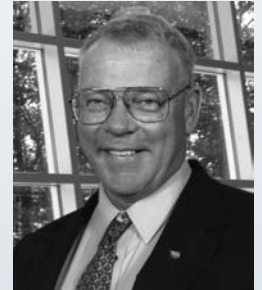
We need to stop acting as 55 different nations and become one nation and one voice as we deal with bilateral agreements with other countries.

Affecting legislation

Looking at challenges facing the Council in the years ahead, we must protect our right to govern our own professions by becoming more politically active. Most state boards are reluctant to go to the legislature to get their statutes changed because they don't know what the outcome will be. Legislators who do not understand our profession have their own agendas. We recently saw an example of this in California, where there was an attempt to turn the licensing board into a state bureau. I see very few in our profession who are elected as legislators, but we need to make this one of our goals. It requires time, but it would certainly be worth the effort.

Facilitating mobility

One of my goals for this past year was to ease comity restrictions between U.S. licensing boards and Canada. In our discussions



Martin A. Pedersen, L.S.
NCEES President

UPDATE

Annual Meeting highlights Council progress



Betsy Browne
NCEES Executive Director

This year's Annual Meeting in Anchorage, Alaska, promises beautiful sights and entertaining events for delegates and guests. In the midst of these enjoyable surroundings, delegates will discuss and vote on the important licensure issues facing the Council.

Delegates will also have a chance to learn about the newest NCEES initiatives. One of Wednesday's workshops will focus on the Center for Professional Engineering Education Services, which opens September 5. The Registered Continuing Education Providers Program and the improved security measures for tracking exam collusion will be discussed Saturday.

These are significant achievements—the result of years of Council discussion, planning, and work. As NCEES works to add new services and enhance security, it also continues to maintain the high-quality examinations that its Member Boards rely on.

Updates to Civil PE exam

The Board of Directors has approved new specifications based on the 2003 PAKS for the Civil Principles and Practice of Engineering (PE) exam. Beginning with the spring 2008 exam administration, the exam will include a construction engineering depth module.

The Council has been discussing and researching the possibility of a construction depth module for more than five years. In 2001, the Council voted to include construction issues in the upcoming PAKS to update Civil PE exam content. The PAKS survey was sent to more than 10,000 licensed civil engineers, including more than 1,600 construction engineers. Survey responses confirmed the need for a construction module.

The NCEES Construction Engineering Exam Subcommittee is currently creating questions for the depth module based on the new specifications. The subcommittee is made up of 27 licensed construction engineers working with the Civil PE exam committee. More

detailed information about the specifications and content areas of the exam will be published after the fall 2007 exam administration.

Exam usage and scoring

The number of Fundamentals of Engineering (FE) exams taken in 2005–2006 increased by 4.7 percent, making it the largest pool of candidates to take the FE exam since 1996–1997. The number of PE exams taken in 2005–2006 was less than last year (–1.5 percent), and the number of Structural II examinees increased by 6.26 percent. The Fundamentals of Surveying (FS) exam showed a decrease of 1.4 percent from last year, and the Principles and Practice of Surveying (PS) exam declined by 3.6 percent.

This year, NCEES scored a total of 42,996 FE exams, 24,959 PE exams, 2,739 FS exams, and 1,572 PS exams. NCEES began scoring the FE exam in-house beginning with the October 2005 administration.

For the October 2005 administration, NCEES released FE, PE, and surveying exam results in just over seven weeks. For the April 2006 administration, NCEES released the results of the surveying exams in four-and-a-half weeks and the FE and PE exams in seven weeks. The Structural II exam's essay format requires more time to grade, and the results were released ten weeks after the October 2005 administration and eight-and-a-half weeks after the April 2006 administration. See April pass rates on the facing page.

I look forward to seeing you in September at the 85th Annual Meeting. In addition to enjoying the company of friends and meeting new members, you will have the opportunity to learn more about the Council, gain professional development hours, undergo ABET and other training workshops, and make decisions on committee motions that will shape the future of NCEES for years to come.

Betsy Browne
NCEES Executive Director

April 2006 exam pass rates

Fundamentals of Engineering

FE exam pass rates reflect results for examinees who attended EAC/ABET-accredited engineering programs.

All modules

| Examination Module | First-time takers | Repeat takers |
|--------------------|-------------------|---------------|
| Chemical | 85% | 52% |
| Civil | 73% | 34% |
| Electrical | 70% | 19% |
| Environmental | 78% | 23% |
| Industrial | 65% | 31% |
| Mechanical | 79% | 36% |
| General | 73% | 27% |

General exam only

| Examinees' College/University Degree Discipline | First-time takers | Repeat takers |
|---|-------------------|---------------|
| Aeronautical | 82% | 80% |
| Agricultural | 74% | 40% |
| Architectural | 68% | 46% |
| Biological | 68% | 50% |
| Chemical | 75% | 28% |
| Civil | 71% | 23% |
| Computer | 57% | 27% |
| Electrical | 58% | 19% |
| Eng. Mechanics | 56% | 0% |
| Eng. Physics | 84% | 7% |
| Environmental | 66% | 27% |
| General Eng. | 79% | 34% |
| Geological | 73% | 0% |
| Industrial | 39% | 10% |
| Materials | 79% | 0% |
| Mechanical | 79% | 35% |
| Mining & Mineral | 61% | 29% |
| Naval Arch./Marine | 73% | 50% |
| Nuclear | 79% | 67% |
| Ocean | 75% | 50% |
| Petroleum | 50% | 62% |
| Structural | 83% | 37% |
| Other | 69% | 22% |

Principles and Practice of Engineering

| Examination | First-time takers | Repeat takers |
|-----------------------|-------------------|---------------|
| Agricultural* | 28% | 20% |
| Architectural | 63% | 31% |
| Chemical | 70% | 31% |
| Civil | 67% | 35% |
| Control Systems* | 78% | 37% |
| Electrical & Computer | 64% | 33% |
| Environmental | 73% | 28% |
| Fire Protection* | 43% | 39% |
| Industrial* | 62% | 26% |
| Mechanical | 63% | 33% |
| Metallurgical* | 45% | 19% |
| Mining and Mineral* | 62% | 23% |
| Naval Arch./Marine | 81% | 75% |
| Nuclear* | 58% | 43% |
| Petroleum* | 89% | 43% |
| Structural I | 38% | 21% |
| Structural II | 57% | 21% |

*These PE exams are offered only in the fall. Pass rates shown are for the October 2005 administration.

Surveying

| Examination | First-time takers | Repeat takers |
|-------------|-------------------|---------------|
| FS | 63% | 30% |
| PS | 68% | 30% |

MESSAGE

Exams and CPC comity rank high in 2006–2007



Louis A. Raimondi, P.E., L.S.
NCEES President-Elect

For the past three years, I have had the opportunity to serve on the NCEES Board of Directors. This experience has taught me a great deal about how the Council operates in carrying out its mission.

I've seen how important it is for us to ensure that our examinations are secure and relevant. I've heard the increasing frustrations of licensed engineers and surveyors in managing continuing education requirements in multiple states. I've learned of the depth of the Council's commitment to advancing licensure. These are some of the issues that the Council will continue to address as we enter a new year.

Relevancy and validity of examinations

If exam questions are too hard, they run the risk of creating lower cut scores, which could ultimately allow less than minimally competent examinees to pass. Conversely, if the exams are too easy, they also run the risk of passing candidates who are less than minimally competent. Studying the difficulty level of each question helps ensure that NCEES exam results remain relevant and valid.

This year, the Committee on Examinations for Professional Engineers (EPE) was charged with monitoring the level of difficulty and complexity of exam items relative to minimum competency. The EPE Committee recommends that the Council stress the concept of writing items to test for minimal competency. This coming year, a new task force will be charged with continuing this work of evaluating the difficulty of NCEES exam questions.

Continuing professional competency

As continuing education becomes mandatory in more jurisdictions, mobility of continuing education credits is affecting comity. Variations in credit requirements could soon become an obstacle in the licensure-renewal process. Because of this, the Council is creating the Registered Continuing Education

Providers Program. This service will review educational processes used by organizations and monitor providers against established criteria to recognize providers that adhere to effective practices. (For more information, see article on page 15.)

The 2005–2006 Continuing Professional Competency Task Force investigated ways to get all states to accept credits from a licensee's state of residence to prevent a multistate licensee from having to complete courses in several jurisdictions. During the coming year, discussion will continue on the topic of comity for continuing professional competency requirements.

Importance of involvement

This coming year marks 100 years of engineering licensure in the United States. Wyoming created the first engineering licensing board in 1907, and NCEES intends to celebrate this important anniversary throughout the year. As we observe this milestone, I encourage Member Board members to become more involved in Council activities and to attend Council meetings. I understand that term length, travel, expenses, and time constraints can often restrict the ability of board members to do so. But it is vitally important that they consider this to be part of their responsibility, not only to their board, but also to NCEES.

Every day I learn something new about the Council, but one thing that is always obvious to me is the cooperation and enthusiasm that current members have. I thank all of you for your willingness to help fulfill the mission of NCEES, and I look forward to next year and trust we will be able to accomplish the tasks ahead. Your continued support is most appreciated.

Louis A. Raimondi, P.E., L.S.
NCEES President-Elect

Q&A

2006–2007 Board Officer

The Council will vote for president-elect at the Annual Meeting on Thursday, September 14. The Committee on Nominations received the Central Zone recommendation—W. Gene Corley, Ph.D., P.E., S.E.—and submitted it as a nomination for the Council’s consideration.

In addition to this nomination, delegates have the privilege of making nominations for president-elect from the floor. Such nominations must be seconded by at least four Member Boards, and the nominees must meet constitutional requirements for office.

The terms of Central and Western Zone vice presidents expired this year, and the zones elected candidates to fill the positions. The Committee on Nominations was advised that David L. Whitman, Ph.D., P.E., of the Wyoming Board was elected Western Zone vice president, and Donald E. Rathbone, Ph.D., P.E., of the Kansas Board was elected Central Zone vice president. Northeast Zone Vice President L. Robert Smith, P.E., and Southern Zone Vice President Mitchell S. Tibshrary Jr., P.E., are beginning the second year of their two-year terms.

Nominee for President-Elect W. Gene Corley, Ph.D., P.E., S.E.

2002–2004 Central Zone Vice President; Chair, member, or liaison, NCEES Committee on Uniform Procedures and Legislative Guidelines, Special Committee on Constitution and Bylaws, Committee on Examination Audit, Structural Engineering Examination/Recognition Task Force, Committee on Experience Evaluation, Advisory Committee on Council Activities; Chair, Illinois Structural Engineering Board; Member, National Academy of Engineering; Past president, National Council of Structural Engineers Associations (NCSEA), Structural Engineers Association of Illinois; Honorary member, American Society of Civil Engineers (ASCE), American Concrete Institute; Member, National Society of Professional Engineers (NSPE), International Association for Bridge and Structural Engineering; Recipient, NCSEA Best Structural Publication Award, ASCE T.Y. Lin Award, Illinois ASCE Structural Division’s Lifetime Achievement Award, ASCE Opal Award for Lifetime Achievement in Design, NSPE Presidents’ Award; Author of more than 170 papers and books; Research and development coordinator, U.S. Army Corps of Engineers; Chartered Engineer, UK Institute of Structural Engineers; Director of development, Portland Cement Association; Senior vice president, CTL Group; Licensed in 25 jurisdictions with over 40 years’ experience in structural and civil engineering.

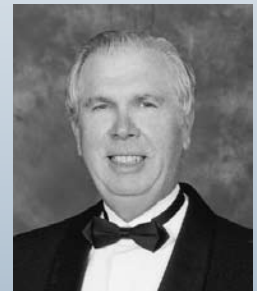
Q: *What do you plan to focus on as president-elect? What are your goals for the next two years?*

A: As president-elect, I would assist President Raimondi with his goals for the year. I would participate in the Board of Directors’ discussions and zone meetings to learn more about the issues affecting Member Boards at this time.

One of the most important issues is comity. This is not a new topic, and the Council has made considerable progress in this area. But comity is still a significant issue for Member Boards. We should continue to encourage greater uniformity in licensure laws among jurisdictions.

As a member of this year’s Advisory Committee on Council Activities, I participated in the committee’s work to develop a plan to encourage more Member Boards to adopt the NCEES *Model Law*. Nationwide adoption of the *Model Law* would greatly assist comity by furthering uniformity in examination, education, and experience requirements.

The committee came up with a workable plan, but it will take time to implement. We understand that the process will not be easy, that many Member Boards do not wish to open their practice acts to legislative scrutiny, and that some boards are not satisfied with certain *Model Law* provisions.



W. Gene Corley,
Ph.D., P.E., S.E.

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Adopting these national standards offers a number of advantages, including increased mobility and greater authority in a court of law. The Council needs to make boards more aware of these benefits. We need to continue to identify the common ground among jurisdictions and revise the *Model Law* as necessary to encourage more boards to accept it into their legislation.

Another important issue is exam security. The Council has improved security measures this year by implementing the collusion analysis, and we must continue to pursue methods of maintaining the highest security possible. Calculators have been the subject of much discussion over the past few years, and the Council will continue to discuss them at this year's Annual Meeting.

The approved calculator list has settled the issue for now, but we need to continue to look for the best solution. The solution should increase consistency by simplifying enforcement. It should also be logistically and economically feasible. I believe that we have the ability to find such a solution. The Council is made up of innovative, talented members who are definitely capable of working through this challenge.

Q: *At the upcoming Annual Meeting, the Special Awards Task Force will present a motion for the Council to authorize the Board of Directors to implement an NCEES Practice in Engineering Education Award. Do you think this award fits in the Council's overall plan to promote licensure?*

A: A national award is an excellent tool because it generates an enormous amount of enthusiasm. This award could contribute to closing the gap between education and practice and make more students aware of the licensure process.

In my professional career, I've seen the effectiveness of awards in promotional efforts. Incentive is the key component. People are motivated by the financial incentive as well as the prestige that the award offers. To win the award, people change what they are doing, and those who are the most successful are recognized for their achievement. Others then take note of what the award recipients did, and the cycle continues, affecting more people each year.

Q: *This year, the Council is launching two programs: the Registered Continuing Education Providers Program and the Center for Professional Engineering Education Services. What are your thoughts on these new services for Member Boards?*

A: Both of these programs have potential to help the Council achieve its goal of promoting greater consistency in the licensure process. From my own experience, CPC requirements can be incredibly burdensome for engineers and surveyors licensed in multiple jurisdictions. Certain states have particularly restrictive requirements.

The Registered Continuing Education Providers Program is a great step forward for engineering and surveying continuing education. It will reduce the confusion about CPC requirements and assist those of us licensed in multiple jurisdictions. Ultimately it will advance CPC mobility.

The Center for Professional Engineering Education Services is also a promising new service. I know that boards have been disappointed by other evaluation services in the past. They've often received unreliable and sometimes unsubstantiated results from foreign credential evaluators.

With this centralized service, however, the Council will be able to provide effective, transparent evaluation methods to its Member Boards. I hope to see boards take full advantage of this new service because the Council will need a certain amount of participation to ensure its cost-effectiveness.

Q: *Serving as president-elect requires a great deal of time and energy. What compels you to serve as an officer of NCEES?*

A: I've been a civil and structural engineer for many years now, and my work has given me a great deal of satisfaction. At this point, I'd really like to use my experience and training to assist NCEES in any way I can. I understand that the commitment is significant, but I consider it an appropriate amount of time and effort to give back to my profession. I believe in the importance of licensure, and I want to help further the goals of the Council and its Member Boards.

Incoming Central Zone Vice President

Donald E. Rathbone, Ph.D., P.E.

Member, Kansas State Board of Technical Professions; Member, NCEES Committee on Nominations; Chair, NSPE Professional Engineers in Education, NSPE National Task Force on Engineering Licensure; Founder, Board for the Kansas Entrepreneurial Center; Past chapter president, Kansas Society of Professional Engineers; Member, Education Council Board of Directors, Engineering Dean's Executive Board, National Board of Governors of the Order of the Engineer, Kemper Military School Board of Trustees, Institute of Electrical and Electronics Engineers; Recipient, 1993 Kansas Engineering Society Engineer of the Year Award; Director, National Institute for Land Management and Training; Author of numerous publications and professor and dean of engineering at Kansas State University for more than 20 years.

Q: *What do you plan to focus on in your term as Central Zone vice president? What are your goals for the next two years?*

A: NCEES should continue efforts to implement the recommendations of the 2004–2005 Licensure Qualifications Oversight Group. This committee is to be commended for its work. The proposed licensure model may eventually need to be simplified, but it provides an excellent basis for discussion by our Member Boards. It would be helpful to have *formalized* feedback from the Member Boards about the *Model Law* and *Model Rules* proposals.

The Council should also focus on making progress with comity issues. Most state boards have similar licensure requirements, but each state has small variations. We need to discuss ways to facilitate comity licensure. Licensure between states should be almost automatic. Engineers and surveyors who have gone through the licensure process in one jurisdiction should be able to become licensed in another jurisdiction easily through comity.

We need to do more to improve international engineering mobility. The number of engineering degrees awarded in other countries surpasses those awarded in the

United States. The outsourcing of engineering design and manufacturing and the increasing number of foreign-educated engineers coming to the United States have already added new dimensions to our mission. We need to develop an awareness of international engineering issues and ask ourselves what we should do about them. The Center for Professional Engineering Education Services is a step in the right direction. We need to continue to understand licensure processes and requirements in other countries and evaluate what we should do about international mobility.

I would also like to see NCEES assist the surveying community in establishing its desired education needs.

Q: *At the upcoming Annual Meeting, the Special Awards Task Force will present a motion for the Council to authorize the Board of Directors to implement an NCEES Practice in Engineering Education Award. Do you think this award fits in the Council's overall plan to promote licensure?*

A: I am certainly in favor of promoting licensure. While the NCEES Practice in Engineering Education Award could help, I'm not sure that it would have a major impact. It is certainly a positive step.

Q: *Based on your experience as an educator, what is your opinion of requiring 30 additional credits in engineering education as a basis for licensure?*

A: An additional 30 credits in engineering education would definitely strengthen the engineering graduates who chose that path. However, I don't see that it is necessary for licensure—desirable perhaps but not necessary. I suppose the argument could be made that an individual with the additional education would be more technically competent and therefore more effective in design, providing a higher level of protection for the public.

Q: *Serving as a zone vice president requires a great deal of time and energy. What compels you to serve as an officer of NCEES?*

A: I have spent a lifetime trying to improve and enhance the engineering profession, and more recently I have had interactions with the surveying profession. As vice president, I hope to continue on this path.



Donald E. Rathbone,
Ph.D., P.E.

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David L. Whitman,
Ph.D., P.E.

Incoming Western Zone Vice President David L. Whitman, Ph.D., P.E.

Member, Wyoming Board of Registration for Professional Engineers and Professional Land Surveyors; Member, NCEES Committee on Examinations for Professional Engineers; Participant, NCEES cut score study for FE exam; Co-author, NCEES white paper “Using the Fundamentals of Engineering Examination to Assess Academic Programs”; Member and committee chair, Wyoming Engineering Society; Section coordinator, Mortar Board National Honor Society; Recipient, Outstanding First-Year Student Advocate Award from the National Resource Center for the First-Year Experience and Students in Transition, Tau Beta Pi Outstanding Undergraduate Teaching Award from the University of Wyoming, John P. Ellbogen Meritorious Classroom Teaching Award from the University of Wyoming, American Society for Engineering Education Rocky Mountain Section Outstanding Teaching Award; Member, Order of the Engineer; currently professor of electrical and computer engineering at the University of Wyoming.

Q: *What do you plan to focus on in your term as Western Zone vice president? What are your goals for the next two years?*

A: NCEES needs to continue to assist in developing a culture in our universities that promotes professional engineering licensure. For example, at the University of Wyoming, all of our engineering freshmen watch a presentation based on the NCEES Engineering Speaker’s Kit. I believe that early exposure to the concept of licensure is critical to getting students to pursue such a path. I look forward to making this presentation at other universities in the Western Zone.

NCEES needs to find ways to encourage more young people to pursue surveying as a professional career. Using the NCEES Surveying Speaker’s Kit is a start, but the message needs more promotion. Individual board members need to become more involved in this recruitment process through activities such as visiting high schools in their own states.

I plan to continue my presentations that deal with the use of the FE exam for assessment purposes. While the primary purpose of the FE exam is to test those wishing to enter the licensure pipeline, universities have found a variety of ways to use data from the exam results for both ABET and internal assessment activities. Universities should be encouraged to take advantage of this benefit of the FE exam.

Finally, I would also like to find ways to encourage more members from the various jurisdictions in the Western Zone to become involved in the exam development process. Because examinations are the lifeblood of NCEES, more members need to be aware of the work that goes into creating them. Volunteering for an exam committee and writing exam questions is a great way for engineers and surveyors to serve their profession.

Q: *At the upcoming Annual Meeting, the Special Awards Task Force will present a motion for the Council to authorize the Board of Directors to implement an NCEES Practice in Engineering Education Award. Do you think this award fits in the Council’s overall plan to promote licensure?*

A: From the information presented at the recent Western Zone Interim Meeting, I like the concept of the award, but the monetary amount of the award should be reexamined. If the application process is not overly burdensome, I believe that NCEES will find universities that would be interested in applying without the necessity of a large cash award for the winner. In fact, reducing the amount of the award would allow NCEES to recognize more programs each year.

Receiving national recognition for successfully incorporating professional practice into the educational process would be invaluable for any institution. This type of recognition would boost recruiting efforts and would help institutions retain students and perhaps even faculty. While I do believe that the award fits the Council’s overall plan to promote licensure, I’d like to see the Board of Directors consider offering this award in conjunction with other professional organizations such as NSPE.

MISSION

The Mission of NCEES is to coordinate with domestic and international organizations to promote licensure of all engineers and surveyors.

NCEES Strategic Plan

Q: *Based on your experience as an educator, what is your opinion of requiring 30 additional credits in engineering education as a basis for licensure?*

A: I'm not a supporter of the 30 additional credit hours of education that is being proposed for new licensees. I understand the information gathered by ASCE indicates a drop in the number of hours required for the B.S. degree in engineering. I also understand that some institutions are being pressured by outside forces to keep the number of credit hours down.

However, I believe that educators continue to do a marvelous job of covering the information necessary for designing today's infrastructure, products, and processes. We need to continue to rely on the evenly balanced three-legged stool of education, examinations, and experience to give the profession adequately prepared engineers who can become licensed. In addition, I'm not yet convinced that other professional organizations are fully supportive of this additional educational requirement.

I believe that this requirement may backfire against one of the Council's other goals: increasing the percentage of practicing engineers who pursue licensure. Many potential licensees will either see this requirement as an impediment to becoming registered or will not be able to afford either the time or cost of pursuing additional education.

Q: *Serving as a zone vice president requires a great deal of time and energy. What compels you to serve as an officer of NCEES?*

A: There's a line in The Eagles famous song "Hotel California" that says, "You can check out anytime you wish, but you can never leave." Personally, I don't plan to either check out or leave the Council any time in the near future. I am passionate about professional licensure and the examination process it requires. Serving as Western Zone vice president will provide one more way for me to stay involved. I am willing to dedicate whatever level of time and energy is needed.

Mobility requires united state boards (continued from page 1)

with the Canadian Council of Professional Engineers, we proposed a study of the FE exam results of graduates of Canadian accredited engineering programs. Exam results of candidates in Alberta and New Brunswick have already suggested that these graduates are highly qualified.

But we need to go further. Too often U.S. jurisdictions are divided in many of the areas that would help our professions. We need to stop acting as 55 different nations and become one nation and one voice as we deal with bilateral agreements with other countries. U.S. jurisdictions need to continually look for ways to make changes in the statutes and rules that restrict comity licensure and international mobility.

We need to accept the fact that professional engineers in Canada, the United Kingdom, Australia, and other countries are highly educated and qualified professionals. If they have a comparable education, extensive experience,

and a clean record of practice, they should be granted a license to practice in the United States. If we are going to continue to compete internationally, we need to address this issue.

Many of these issues demand further study and Council discussion. But I am confident that we can develop effective solutions. This is possible because of the commitment of Council members who serve on committees and task forces. They freely give untold hours of labor and thought for our professions.

This year has been a wonderful year for my wife and me as we have traveled to board meetings, zone meetings, and other society meetings. It has truly been an honor to represent the Council as its president. I thank each of you for the dedication and commitment that you have to the Council, your board, and the profession.

*Martin A. Pedersen
NCEES President*



Bob Whorton, P.E.
NCEES Compliance and
Security Manager

Collusion analysis bolsters defense against exam fraud

People who gain licenses through dishonest means weaken the licensure system and put the public at risk of receiving substandard service. NCEES exams exist to protect the public from unqualified engineers and surveyors, but the exams are only as effective as they are accurate in determining who should be licensed. When examinees receive unearned scores on licensure exams, they affect the validity of the exams as measurement tools.

The Council's new collusion analysis system is guarding against these possibilities by enhancing exam security, preventing examinees from obtaining undeserved scores, and creating a general deterrent to copying.

What is a collusion analysis?

The collusion analysis is a result of a 2001 charge to the Committee on Examinations for Professional Engineers (EPE). The committee studied the effects of random guessing on the FE exam institution report data. Bill Dickerson, P.E., who has served on the EPE Committee for eight years, developed software to determine the number of potential random guessers. Further analysis indicated that other examinees were not making an honest effort to pass the exams.

After the October 2005 exam administration, the Council purchased a license from an educational resource development company to use a program that detects collusion in multiple-choice examinations. Released in February 2005, the program uses five separate methods to discover collusion.

While the program is relatively new, the methods it employs are not. Academic researchers have published the methods in peer-reviewed literature, and the methods have all been used for more than 15 years.

What does it prove?

Because each method uses a unique approach to flag pairs of examinees with similar incorrect response patterns, exam results flagged by any one method should be carefully scrutinized.

When a pair of examinees is flagged for possible collusion, the program indicates a statistical certainty for that method of analysis. The thresholds for these levels are set to very conservative values to avoid incorrectly identifying collusion. The results are further reviewed to indicate which examinees were seated in close proximity to one another during the exam.

While the collusion analysis can point out unusual similarities between incorrect exam responses, statistical evidence alone cannot prove exam collusion. However, the analysis does provide enough information to warrant an investigation to determine whether the results of these examinees should be invalidated.

How has the Council used it?

Over the past year, the Council has performed collusion analyses on exam results from two administrations. For the October administration, 23 Member Boards had examinees flagged for possible collusion; for the April administration, there were 28 Member Boards.

NCEES staff reviewed the exam booklets and answer sheets of flagged examinees and notified the appropriate Member Boards, providing them with detailed reports of the collusion analysis. The Council then asked these Member Boards to conduct additional investigations of these examinees.

Boards carrying out such investigations have used a variety of methods.

- ◆ Conducting background checks

- ◆ Comparing flagged examinees' performance to their performance on previous attempts
- ◆ Asking examinees to give a written account of the exam day
- ◆ Conducting face-to-face interviews, some including a court reporter
- ◆ Noting flagged examinees who failed and monitoring them closely during future administrations
- ◆ Invalidating results and asking examinees to retake the exam at no additional charge

To date, six examinees have admitted to copying examination answers during the October 2005 administration, and the results of over 30 examinees have been invalidated.

Before the collusion analysis was available, Member Boards had to rely on irregularity reports alone during investigations of exam fraud. The statistical evidence revealed by this new program can greatly enhance a board's investigations. It acts as an important defense in protecting the integrity of NCEES exams and the licensure process.

Bob Whorton, P.E.
NCEES Compliance and Security Manager

Find out more about these two security initiatives at the Annual Meeting workshop on Saturday, September 16. The workshop will offer an overview of the scoring irregularity process, a panel discussion of the investigative methods used by various Member Boards, and details about how the new exam administration audit program will be implemented. Attendees will also have an opportunity to ask questions and participate in the discussion.

Exam administration audit plan

The Board of Directors recently approved an exam administration audit plan as another way for NCEES to strengthen exam security. The audit will provide greater uniformity at NCEES exam sites by monitoring how Member Boards follow exam administration policies and procedures.

The Council developed the audit plan in response to the 2002 and 2003 recommendations of the Examination Security Task Force. Formed to address concerns about reports of inconsistencies in exam administration procedures, the task force was charged with developing parameters for an audit program. The task force recommended an audit plan that would address all aspects of handling and administering the exams. The plan includes exam site visits as well as a self-audit form that Member Boards complete and return to NCEES after each exam administration.

Member Boards will conduct self-audits beginning with the October 2006 exam administration. The self-audits will be used to evaluate Member Board procedures and to compare them to the procedures outlined in NCEES exam administration policies. Subsequent onsite audits will be performed as needed during future administrations.

The Council has contracted with Caveon, a test security firm, to develop an audit checklist based on NCEES policies and appropriate Caveon Security Standards. The checklist will focus on exam security and will serve as the guide for conducting onsite audits.

Onsite auditors will meet with the appropriate Member Board representative and chief proctor at the exam site. On each administration day, the auditor will observe the arrangement of the admission area and exam room and the delivery of the tests from secure storage. The auditor will also observe the admission process, proctoring procedures, and the post-administration activities such as collection and inventory of exam materials.

NEWS



John F. Greenhalge
Executive Director
Ohio State Board of
Registration for Professional
Engineers and Surveyors

Enforcement begins with exams

Unethical and illegal behavior in the fields of engineering and surveying is not limited to professional practice. It also appears in the exam room. We work to prevent exam collusion and theft and prosecute such behavior as necessary. But licensing boards must also know how to deal with examinees who break other exam policies.

It will be some time before the Ohio State Board of Registration for Professional Engineers and Surveyors will forget the October 2005 PE exam administration. Three candidates acted in such a disruptive and inappropriate manner that they were sanctioned by the board. Because of their actions, they will not be allowed to take the PE exam until October 2010.

One candidate came to the exam site late and tried to enter the exam room. After a proctor explained that no one could enter after the exam had begun, the candidate demanded to be allowed to take the exam and repeatedly refused to leave the exam site.

We informed him that we would call the police, and after some time he finally left. The Ohio Board decided to take action against this candidate because of his failure to follow exam instructions and the excessive disruption he caused.

The same morning, some examinees were asked to leave the exam administration because they were using unapproved calculator models. To limit the amount of disruptions and to avoid moving all of their reference materials during the exam, the chief proctor instructed these examinees to retrieve their belongings after the morning exam session had ended.

One of the dismissed examinees was very argumentative and disrespectful to board staff, proctors, and the ELSSES observer before leaving the exam site. When he returned at noon, the other examinees had not yet been dismissed for lunch. Instead of waiting for the doors to open as many of the others were doing, he and another examinee who had been dismissed for the same reason began pounding on the doors to the exam room and demanding entrance.

In my 15-plus years of law enforcement and my experience with nearly 20 exam administrations, I've never seen people act so out of control. Their... actions clearly presented a threat to board staff and proctors.

They continued to yell and curse while the proctors were collecting the exam materials. When they were finally allowed to come in, they persisted in their verbal abuse of board and ELSSES staff. One of them refused to leave until we repeatedly told her that we would call the police.

In my 15-plus years of law enforcement and my experience with nearly 20 exam administrations, I've never seen people act so out of control. Their threatening manner and argumentative behavior were totally inappropriate, and their actions clearly presented a threat to board staff and proctors.

As law enforcement staff, I investigated these incidents and presented the cases to the board. In my report, I stated that allowing these candidates to take an exam in Ohio would place proctors in an unsafe environment. The board's director at that time and I both recommended multiple-year restrictions for the candidates.

Board members reviewed the cases and prohibited the candidates from taking the exam for five years. When they reapply after that time, they will need to demonstrate to the board that they should be permitted to retake the exam. To make other boards aware of this

disciplinary action, we sent out a news release and posted the information on the NCEES Enforcement Exchange.

I believe that we may see more of this behavior at exam sites across the United States. These examinations present an extremely high-pressure situation, and some people cannot restrain their anger when faced with the disappointment of not being able to complete the examination.

Boards need to be prepared to address this type of behavior if it occurs. It is very important that they train exam staff to limit the number of disruptions during the exam and to properly handle situations like this.

When deciding what disciplinary measures are necessary for such behavior, boards must take into account the factors surrounding each individual case as well as the precedent that has been set by previous cases. Adequately dealing with these situations will ensure greater consistency in exam policy enforcement and will help protect the safety of proctoring staff and other examinees.

*John F. Greenhalge
Executive Director, Ohio State Board of
Registration for Professional Engineers and Surveyors*

Massachusetts and New Mexico boards require Record for comity

Two NCEES Member Boards recently voted to begin requiring a Council Record for comity licensure. The Massachusetts Board of Registration of Professional Engineers and Professional Land Surveyors now requires a Council Record for engineering and surveying comity licensure. The New Mexico Board of Licensure for Professional Engineers and Surveyors requires a Council Record for engineering comity licensure.

The Puerto Rico Board of Examiners of Engineers and Land Surveyors also requires a Council Record for comity licensure; and, since August 2005, the Kentucky State Board of Licensure for Professional Engineers and Land Surveyors has required a Record.

NCEES Records Department Manager Leigh Fricks invites boards to meet with her if they would like information about implementing this requirement. Those interested in learning more can reach her by e-mail at lfricks@ncees.org or by phone at 800-250-3196.

NCEES Staff

Send letters to *Licensure Exchange* editor at NCEES, PO Box 1686, Clemson, SC 29633 or dtalbert@ncees.org.

Please include your name and state of residence on the letter. Letters may be edited for clarity, brevity, and readability.

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NEWS

ILLINOIS SE

- ◆ David L. Greifzu is a new appointee to the board.

NEW JERSEY

- ◆ James J. Purcell is a new appointee to the board. The term of Pravin H. Patel has expired.

NEW MEXICO

- ◆ Patricio Guerrerortiz is the new board chair.

NEW YORK

- ◆ Alan Casey is a new appointee to the board.

OREGON

- ◆ George Gross is a new appointee to the board. Richard Persons and David Taylor are no longer on the board. The board's new address is 670 Hawthorne Avenue SE, Suite 220, Salem, OR 97301. Its phone and fax numbers remain the same.

SOUTH CAROLINA

- ◆ Thurl M. Amick Sr. is a new appointee to the board.

TENNESSEE LS

- ◆ Jackie Dillehay is a new appointee to the board. Kenneth Max Billingsley is no longer on the board.

TENNESSEE PE

- ◆ Robert G. Campbell Sr. is the new board chair. Richard Thompson and Raymond White are new appointees to the board. The terms of Mark Freeman and Theodore E. Wynne have expired.

TEXAS PE

- ◆ Govind Nadkarni is the new board chair. Elsie Allen, G. Kemble Bennett, James Greer, and Daniel Wong are new appointees to the board. Roland Haden, William Lawrence, and Robert M. Sweazy are no longer on the board. James R. Nichols is now an emeritus member.

VERMONT LS

- ◆ Patricia Sartelle (psartell@sec.state.vt.us) is the new board administrator. She replaces Theodore McKnight.

VERMONT PE

- ◆ Loris Rollins (lrollins@sec.state.vt.us) is the new board administrator. She replaces Patricia Sartelle.

WISCONSIN

- ◆ Steven Nielsen is a new appointee to the board. The term of Robert Hoskins has expired.

Registered Continuing Education Providers Program launched

This month marks the beginning of a new service at the Council: the Registered Continuing Education Providers Program (RCEPP).

The new program will form a registry of continuing education providers that have demonstrated adherence to high-quality, effective practices in professional education for engineers and surveyors. It is a joint effort between NCEES and the American Council of Engineering Companies.

On August 1, NCEES will launch www.rcep.net, a comprehensive Web site that will make it easier for engineers and surveyors to fulfill and track continuing professional competency (CPC) requirements. Engineers and surveyors will be able to look up CPC requirements, search for registered providers, find educational activities on a master calendar, and manage their CPC activities.

RCEPP will be a complement to—not a substitute for—existing Member Board approval programs. Authority to approve CPC activity remains with the individual licensing boards, and licensees will continue to be ultimately responsible for the acceptability of CPC courses and activities.

The program will provide information for Member Boards to streamline the CPC auditing process. Licensing boards will have access to licensees' records for professional development hours and detailed descriptions of education activity. Boards will also be able to view CPC requirements by jurisdiction and search the list of registered providers.

Complete information about RCEPP continuing education standards will be available online in the RCEPP provider information.

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