

CBT Task Force considers shifting NCEES exams to computer format

In examining the potential for NCEES to move toward administering exams by computer, the 2007–08 Computer-Based Testing Task Force faced a charge that, while simply stated, required consideration of some complex issues.

The task force was charged with studying CBT to determine if it is now in the Council's best interest to pursue this method of exam administration in the near future. The task force was further charged with proposing a plan for conversion and an implementation schedule if it concluded that the move to CBT is the correct course for NCEES exams.

The following summarizes several of the considerations involved with the debate over CBT:

In recent years, many tests have begun to be administered on computer. In some cases, the tests are developed for or converted to a computer-based format for no better reason than the trend value. Computerized exams frequently are perceived as being "state of the art" or automatically better than traditional, standardized, paper-and-pencil exams. These clearly are not accurate assumptions, and a testing program should not elect to computerize an exam without stronger reasons than these. Indeed, there are many challenges inherent in computer-based testing, and development of a computerized exam program should not be undertaken lightly. However, while computerized tests are not intrinsically better than paper-and-pencil tests, there are some distinct advantages available in computerized test administration.

Parshall, Cynthia. *Practical Considerations in Computer-Based Testing*. New York: Springer-Verlag, 2002.

Learning from other professions

As part of its investigations, the task force examined other licensed professionals' use of CBT. This testing format has been

implemented in licensure exams for architects, accountants, nurses, and software professionals. Each group had a different approach to CBT, and the results experienced by each varied as well.

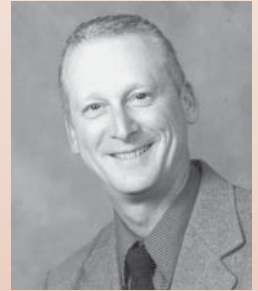
The architects converted to CBT in 1997. Discussions with those involved with the conversion indicated that they initially experienced significant increases in expenses and decreases in candidate volumes. These results were attributed to failures in planning, issues with test design, and poor communication with potential candidates.

The licensure exam administered by the architects currently consists of seven divisions offered throughout the year. Recently, the exam length has been reduced. Candidates must pass all seven divisions within a rolling five-year window. If a candidate does not pass all seven divisions within that five-year window, his or her scores are voided and the candidate must start over. The volume of exam candidates has rebounded somewhat since the initial decline. Much like engineers, architects are exempt from licensure if they are practicing under the supervision of a licensee.

The accountants converted to CBT relatively recently. Their exam has four sections and lasts 14 hours in all. Exams are offered four times a year during two-month windows. Candidates may take any number of the four exam sections within a two-month window, but they cannot retake any single section within that window. Candidates must pass all four sections within a five-year period, or all scores are voided. The exam is closed book, and a diagnostic is provided to those who do not pass. Accountants are also exempt from licensure if they practice under licensee supervision.

The nursing profession converted to an adaptive CBT exam over roughly a 10-year period. It gradually increased the price of the paper-and-pencil exam over that period to fund

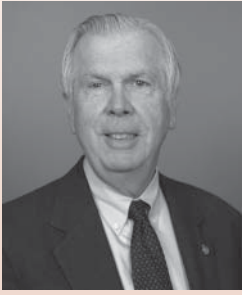
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David L. Curtis, P.E.
 Chair, Computer-Based
 Testing Task Force

MESSAGE

Council to vote on new governing document at Annual Meeting



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

In this issue of *Licensure Exchange*, you will see that the Council is getting down to business in preparation for the Annual Meeting in August.

The most recent issue of *Licensure Exchange* featured the progress of the Bachelor's Plus 30 Task Force, whose members are working to create a framework for implementing additional education requirements for professional engineers. On page 6 of this issue you can find a timeline that summarizes this requirement and the history of its development.

Successfully implementing this requirement is one of the best ways we can uphold the prestige of the engineering profession. It is important that new members of licensing boards throughout the Council become familiar with the bachelor's plus 30 initiative.

NCEES Bylaws

Another important item on the Council's agenda is the merging of the NCEES governing documents. For years, NCEES has operated under a pair of documents named the NCEES Constitution and Bylaws. They outline the organizational structure of the Council and define the means by which it conducts its business.

Legal counsel has recommended that NCEES combine the two documents into a single governing document in accordance with provisions in the South Carolina state law outlining the organization of nonprofit corporations.

Last year, the Council approved a motion to move forward with combining the two documents. It is important to note that changes will be made only to remove inconsistencies and redundancies between the existing Constitution and Bylaws. Any changes made will be minor, and will reflect the current practices of the Council so that no current members become disenfranchised as a result of the process. On January 31, a memo indicating these proposed changes was distributed to Member Boards in accordance with NCEES guidelines.

One important issue involves how the Council will make amendments to the new Bylaws. In its current form, the Constitution states in Section 7.02:

This Constitution may be amended at any Annual Business Meeting of the Council by a two-thirds affirmative vote of the Member Boards present and in good standing. Any amendment proposed shall be sent to a Committee on Constitution and Bylaws by the President at the President's initiative or as requested based on action by the Council.

However, the existing Bylaws can be amended with the approval of a simple majority of Member Boards present at the Annual Meeting. This issue has been discussed at the zone meetings this spring, and most of those in attendance have expressed support for requiring a two-thirds majority to approve proposed amendments. Therefore, the Bylaws that will be put forward for the Council's approval at the Annual Meeting will reflect this stance.

Transitioning to a new Bylaws

During the Annual Meeting, the existing Constitution and Bylaws will have to be suspended while the Council considers approving the new Bylaws presented by the Special Task Force on Governance. Provided the Council approves the document as it appears in the 2008 *Action Items and Conference Reports*, any amendments to the Bylaws will be made after it is adopted by the Council.

The adoption of the new Bylaws is one of many items that will be on the agenda at this year's Annual Meeting. I encourage you to stay abreast of these issues, and I look forward to seeing all of you in Minneapolis in August.

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

UPDATE

Preparations for Annual Meeting under way

In recent months, the Council has continued to work toward setting the agenda for the Annual Meeting in August. The zones recently held their interim meetings, where they discussed many issues that will be decided at the Annual Meeting.

At its meeting May 14–15 in Bismarck, North Dakota, the Board of Directors reviewed the committee and officer reports and determined its position on each of the motions the Council. It also named the items that will appear on the consent agenda. These positions will be included in the Summary of Action Items section of the *Action Items and Conference Reports*, which will be sent to everyone who registers for the Annual Meeting. It also will be online and available for download from CouncilNet by July 3.

Please note that the registration and refund policy approved by the Board of Directors will apply to this year's Annual Meeting. The policy outlines the procedure for making refund requests. (See the Annual Meeting registration materials to read the policy in full: ncees.org/annual_meeting_2008/.)

This issue of the newsletter features an overview of the workshops scheduled for the Annual Meeting. In addition to the developmental workshops offering PDH credits, a number of workshops will be held to discuss the ongoing work of NCEES and its affiliates.

International developments

The United States Council for International Engineering Practice (USCIEP) will be the focus of one of these informational workshops; the International Issues in Engineering Licensure workshop will address how USCIEP can serve Member Boards and candidates who wish to practice internationally.

The Board of Directors wants USCIEP to be a valuable resource for Member Boards. Toward this end, USCIEP President Dale

Sall, P.E., L.S., and I will attend a meeting of the International Engineering Alliance in Singapore on June 23–26. We hope to gain a better understanding of international comity from learning more about how other countries license professional engineers and how those processes impact NCEES Member Boards.

Foreign entities continue to express interest in NCEES examinations. A Saudi official visited Council headquarters May 7 to discuss our exam development procedures and evaluate the potential for making NCEES exams available in Saudi Arabia. A similar visit from a Chinese delegation is scheduled for July 3.

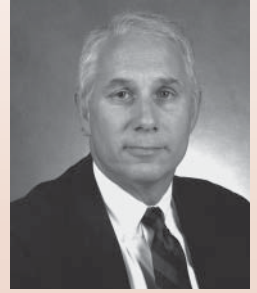
Draft agreements with the American University of Cairo and the Korean Professional Engineers Association were considered by the Board of Directors at its May meeting and will be presented to the Council at the Annual Meeting.

Disaster recovery

Council staff conducted a comprehensive review of our ability to function in the event of a major business disruption. This review highlighted a risk associated with the loss of electronic data. Those who conducted the review concluded that this risk required immediate action. At its February meeting, the Board of Directors reviewed the disaster recovery plan and authorized its immediate implementation and also approved the necessary budget variance.

All NCEES business lines, including exam development, ELSEES, the Center, and the Records Program, depend on access to our databases and the Internet. The implementation of this plan will improve our ability to protect the Council's electronic data and to recover this information if an unforeseen catastrophe were to occur.

Jerry T. Carter
NCEES Executive Director



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NCEES Executive Director

NCEES to launch branding campaign

Efforts aim to consolidate messages, communicate benefits of licensure

Select engineering students at random from an ABET-accredited engineering program and ask them, “What is NCEES?”

Their answers will undoubtedly vary. Some may not have any idea.

NCEES is embarking on a branding and marketing campaign designed to increase name recognition of NCEES, particularly among groups who may not be aware of the benefits of pursuing engineering or surveying licensure.

By raising its profile and promoting its accessibility, NCEES looks to continue the steady increases in candidates pursuing licensure while promoting additional services designed to facilitate comity in engineering and surveying licensure across its 70 Member Boards.

While the notion of branding is usually associated with highly visible consumer brands that advertise products through the mass media, nonprofits such as NCEES also rely on branding to fulfill their missions, albeit through less expensive and more finely targeted methods. Rather than generating demand for a consumer product, NCEES marketing efforts will seek to raise awareness and interest in something that benefits the public at large—engineering and surveying licensure.

“The Member Boards have entrusted the marketing function to the Council,” said Executive Director Jerry Carter. “One of the Council’s responsibilities is to promote the public welfare by encouraging licensure and ‘selling’ the benefits of licensure to unlicensed engineers and people considering careers in engineering or surveying.”

NCEES is currently weighing proposals from several advertising and marketing agencies competing to become the agency of record for the Council. In February, NCEES submitted a request for proposals to agencies. The request outlined several objectives for the branding campaign, including

- ◆ Establishing a unified look for NCEES marketing communications

- ◆ Increasing awareness and usage of NCEES examinations and programs
- ◆ Forging a stronger brand connection between NCEES and ancillary services such as the Center, ELSEES, and the Registered Continuing Education Providers Program
- ◆ Maintaining organizational focus on serving NCEES Member Boards and their licensees

According to Marketing Associate Erin Carroll, who is organizing the process of identifying a creative agency, NCEES will select an agency in early June. The campaign will focus on such elements as the Council’s Web sites and the logo associated with NCEES. Other elements will include developing a consistent messaging platform for the Council’s communications, which include brochures, print advertisements in engineering publications, exhibits for use at conventions, and direct mailings.

“This campaign will focus on making NCEES identifiable to licensees through all steps of the licensure process, from the FE exam to the PE and seeking comity licensure,” said Carroll, who will be the point of contact with the selected agency. “This is an organization-wide brand development campaign.”

The decision to hire an agency to guide the Council’s branding and marketing efforts is based on previous marketing research that shed light on how different groups perceive NCEES and the licensure process.

One study conducted in 2001 determined that more than one-third of college engineering students had not heard of the FE exam. The study consisted of survey results from more than 3,000 students in ABET-accredited programs at 12 colleges and universities throughout the United States. Besides demonstrating a lack of awareness of the FE exam, the study pointed to a lack of understanding of the licensure process in general among undergraduate engineering students—a factor that shrinks the pool of potential P.E.’s before they even have the opportunity to consider the benefits of licensure.

Later studies conducted in 2006 gathered information from engineer interns (those who passed the FE exam) and P.E.'s to determine how engineering students and unlicensed engineers make the decision to pursue licensure. The results from this research have led to increased attention on the part of NCEES to promoting licensure among these groups. This focus has resulted in increased funding for activities such as the development of the NCEES Speaker's Kit. It has also led to NCEES becoming a regular presence at yearly gatherings of professional organizations and student groups, such as the American Society of Civil Engineers Congress and the Society of American Military Engineers meetings that NCEES representatives attended in May.

The new agency of record will advise NCEES on the best mix of media for effectively and efficiently communicating with potential licensees.

"We want to be able to measure the success of our promotional efforts, and the agency we choose will be able to advise us on what methods are most effective," said Carter, who noted that NCEES wants to focus on specific groups, such as engineering students and

working engineers whose career goals make licensure a good career move. Other groups targeted include middle and high school students who may be interested in pursuing careers in engineering or surveying.

A major component of the marketing campaign involves linking the various licensure-related services offered by NCEES under a single umbrella.

Besides the engineering and surveying licensure exams, NCEES has become increasingly involved with other services designed to assist Member Boards and licensees.

"With the expanded range of services we now offer, it has become apparent that they need a common look," said Carter. "It's important to let people know that when they have contact with ELSSES or the Center or the Records Program, they're dealing with NCEES."

Expenditures for the branding and advertising campaign will be in the 2008–09 budget that will be considered by the Council at the Annual Meeting in August.

Doug McGuirt
NCEES editor

Send letters to *Licensure Exchange* editor at NCEES, PO Box 1686, Clemson, SC 29633 or dmcguirt@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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Bachelor's plus 30 timeline

The issue of higher education requirements for engineering licensure has played a large role in the Council's activities in recent years.

This year, President Gene Corley, Ph.D., P.E., S.E., constituted the Bachelor's Plus 30 Task Force to focus on defining the specifics of the requirement and proposing measures to assist Member Boards in its implementation. The group's motions and recommendations will be presented at the Annual Meeting in Minneapolis this August.

The following timeline provides a recap of the process that has led to this point.

2001 Engineering Licensure Qualifications Task Force established

The ELQTF was established in 2001 to evaluate the U.S. licensure system. The task force consisted of representatives from professional practice, government, industry, and education.

2003 ELQTF presents findings to Council

The ELQTF spent two years evaluating the engineering licensure system. At the 2003 Annual Meeting in Baltimore, it presented its findings. Of note was the group's determination that the number of academic credits required for undergraduate engineering degrees had steadily declined over the previous 50 years, while at the same time the knowledge base required for competent practice had expanded dramatically.

The task force concluded that additional education would be necessary to prepare future engineers for the advances in the knowledge base required for competent practice and to compensate for the decline in technical coursework requirements for engineering students. It recommended that the *Model Law* require a bachelor's degree in engineering plus additional coursework in specialties related to practice.

The ELQTF made no specific recommendations on the number of additional credits but encouraged further study and debate. One motion passed: "Consider charging the Licensure Qualifications Oversight Group with researching the conclusions and

recommendations contained in the ELQTF report and preparing appropriate recommendations for NCEES consideration."

2004 LQOG reports to Council

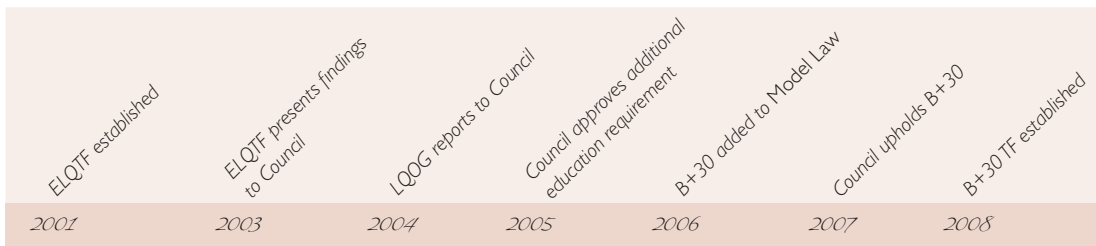
The Licensure Qualifications Oversight Group, which was created the previous year and comprised exclusively of NCEES members, reported its progress to the Council at the 2004 Annual Meeting in Cleveland. The group presented a motion (which passed) calling for the NCEES president to consider initiating a process to determine specific recommendations regarding additional engineering education. LQOG was charged with continuing its work for another year.

2005 Council begins process of changing Model Law

At the 2005 Annual Meeting in Memphis, the Council took another step toward strengthening the education requirements for engineering licensure when the LQOG presented a motion to charge the Committee on Uniform Procedures and Legislative Guidelines (UPLG) with amending the *Model Law* to incorporate the additional academic requirements in upper-level undergraduate or graduate-level courses as a prerequisite for engineering licensure. After two years of evaluating the work of the ELQTF and other engineering groups representing industry, academia, and government, the LQOG recommended that the new *Model Law* language require 30 academic credits beyond the bachelor's degree in engineering.

2006 Council votes to make the "bachelor's plus 30" official

At the 2006 Annual Meeting in Anchorage, the Council voted in favor of making the bachelor's plus 30 requirement a part of the NCEES *Model Law*. In its third motion, the UPLG Committee submitted language stating that an engineer intern with a bachelor's degree, with an additional 30 credits of acceptable upper-level undergraduate or graduate-level coursework from approved course providers, and with a specific record of an additional



4 years or more of progressive experience on engineering projects of a grade and character which indicate to the board that the applicant may be competent to practice engineering would be eligible to sit for the PE examination. The motion passed, 39–27.

An additional motion was passed with an amendment from the floor. It added language to the *Model Rules* that would allow graduates of bachelor's degree programs requiring more than 120 credit hours to request that earned credits in excess of 120 be applied toward meeting the bachelor's plus 30 requirement. (A revision to this language will be proposed at this year's Annual Meeting; for details, see the April *Licensure Exchange* at www.ncees.org/licensure/licensure_exchange.)

2007 Council votes to uphold the bachelor's plus 30 requirement

After voting in favor of the bachelor's plus 30 requirement at the 2006 Annual Meeting, the implications of the decision began to be discussed throughout the Council's 70 member jurisdictions as well as throughout the engineering industry at large.

Although the individual states and territories each have their own laws outlining the requirements for licensure, this change to the *Model Law* would still have many implications regarding the comity licensure process. Much discussion centered on the challenges presented by the January 1, 2015, effective date.

At the 2007 Annual Meeting in Philadelphia, a floor motion was presented that called for rescinding UPLG Motion 3, which contained the language outlining the bachelor's plus 30 requirement. While debating this floor motion to rescind the bachelor's plus 30, the discussion centered on the challenges individual

states would face when trying to implement the requirement as it is worded. Proponents of the bachelor's plus 30 stressed that the Council was committed to allowing Member Boards time to work out such issues.

Ultimately, the Council voted in favor of upholding the bachelor's plus 30 with the understanding that a committee be charged with addressing some of the challenges associated with the plan's implementation. These challenges included developing definitions of approved coursework and approved course providers that could be effective guidelines for Member Boards.

2008 Bachelor's Plus 30 Task Force formed to address challenges of implementation

After the 2007 Annual Meeting, President Corley constituted the Bachelor's Plus 30 Task Force and charged it with devising a strategy to assist Member Boards with implementing the requirement. The task force was also charged with addressing potential barriers to mobility that could result from implementing the requirement and with developing workable definitions for approved coursework and approved course providers.

Changes recommended by the Bachelor's Plus 30 Task Force that involve amending the *Model Law* and *Model Rules* will be referred to the UPLG Committee, which is responsible for proposing amendments to these documents.

The Bachelor's Plus 30 Task Force is finalizing its report for inclusion in the 2008 *Action Items and Conference Reports*, which will be mailed to Council members who register for the Annual Meeting this summer. It will also be posted online by July 3 at the NCEES CouncilNet site (www.ncees.org/councilnet).

MISSION

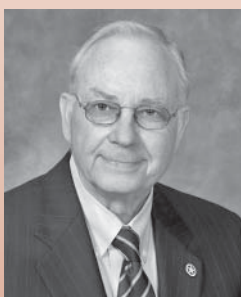
- ◆ Assist Member Boards in the promotion and promulgation of regulatory processes for engineering and surveying which demonstrate high standards of knowledge, competence, professional development, and ethics.
- ◆ Provide services to Member Boards that promote uniform licensing procedures which emphasize quality education, examination, experience, and continuing professional competency.
- ◆ Coordinate and cooperate among domestic and international organizations to promote licensure of all engineers and land surveyors.

NCEES Strategic Plan

EPE, EPS, EPP committees work to ensure fairness, continuity in exams



Gilbert Chavez, P.S.
Chair, Examinations for
Professional Surveyors



Bill Dickerson, P.E.
Chair, Examinations for
Professional Engineers

The committees on Examinations for Professional Engineers (EPE), Examinations for Professional Surveyors (EPS), and Examination Policy and Procedures (EPP) are the three standing NCEES committees responsible for most aspects of the licensure exams. As such, they play an important role in the day-to-day activities of NCEES.

Recurring charges for EPE and EPS committees

The EPE and EPS committees, chaired by Bill Dickerson, P.E., and Gilbert Chavez, P.S., respectively, are responsible for oversight of the subcommittees that write and maintain the FE, PE, FS, and PS exams. This oversight includes item writing and testing, conducting professional activities and knowledge studies (PAKS) to update exam specifications periodically, and training the volunteers who write and test the exam items.

Both the EPE and EPS committees meet at least twice each year. The exam subcommittees meet throughout the year to conduct item-writing sessions. Exam subcommittee members also attend training and item-review sessions and cut score workshops.

This year, the EPE Committee completed a PAKS for the Architectural PE and Mining and Mineral PE examinations. A PAKS for the new Structural exam, which will combine the existing Structural I and II exams and is scheduled for first administration in 2011, is in the early stages of development.

The EPS Committee did not conduct a PAKS for the surveying exams in 2007–08. In its report, it recommends a new PAKS be conducted in the next two to three years.

Other recurring charges addressed by the EPE and EPS committees include making recommendations to EPP on changes to exam policies and procedures when needed.

In its 2008 report, the EPE Committee recommends that the NCEES Board of Directors authorize the Council to administer the Industrial PE exam twice each year, beginning in April 2010 for a three-year period, after which the EPE Committee would make a recommendation to the Board on whether or not to continue offering the exam

semiannually. This recommendation came at the request of the Institute of Industrial Engineers and the Puerto Rico Board of Examiners of Engineers and Land Surveyors. State law in Puerto Rico has no industrial exemption for engineers, and the new policy is designed to accommodate industrial engineers in the territory who must currently wait at least a year before retaking the Industrial PE exam. The exam will maintain its Group II status.

Other highlights from the EPE Committee's report

Nuclear PE exam

EPE was charged with considering the situation of the Nuclear PE exam, which has experienced low numbers of examinees in recent years and is currently under probation, meaning that the American Nuclear Society (ANS), which funds the exam, must fund cut score panels for each exam administration.

The ANS has proposed administering the Nuclear PE exam every two years to reduce its costs. However, in recent years the nuclear exam subcommittee has noted a rise in students enrolling in nuclear engineering degree programs and in nuclear engineering students taking the FE exam, which will likely lead to increases in Nuclear PE exam candidates. As a compromise, the EPE Committee voted to accept a temporary solution that would allow for a 2008 administration of a Nuclear PE exam consisting entirely of previously used items with known statistics. This temporary solution would lower costs for the ANS and would allow time to see if the number of Nuclear PE examinees rises to prior levels.

Cut score workshop recommendations

The EPE Committee was also asked to provide recommendations for policies that would prevent major fluctuations in pass rates for the FE exam. The committee recommends classifying as “outliers” members of cut score committees whose estimates differ widely from committee averages. Information on outliers would be presented to EPE Committee decision-makers, who would then determine whether or not to include the data in setting cut scores. The Council’s psychometric consultants have recommended adopting this classification.

Measuring “practice items” and “academic items”

EPE continued to evaluate exam items according to their performance in two groups: examinees who recently graduated from college and examinees with several years’ work experience. Items performing better among the former were named “academic items.” Those performing better among the latter were named “practice items.” EPE analyzed items from the October 2007 Civil and Mechanical PE exams and made the following recommendations:

- ◆ NCEES staff should program the scoring database to analyze these patterns for every exam and to provide results to exam subcommittee chairs for review.
- ◆ A future EPE Committee should develop a document outlining the characteristics of practice items and academic items to provide guidance in item writing.

EPE was also asked to develop a survey of recent examinees to gather information on how candidates believe they have learned certain skills. Respondents were presented with 20 skills and asked to identify whether each skill was learned through work experience or through academic coursework. The survey results will be included with the committee’s conference report.

Item difficulty training

EPE was charged with making recommendations based on the work presented by last year’s Item Difficulty Task Force. Its recommendations include:

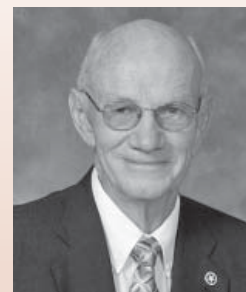
- ◆ Providing information packages to new exam subcommittee members outlining the exam development process
- ◆ Having new exam subcommittee members serve as pretesters
- ◆ Assigning mentors to new exam subcommittee members and requiring refresher courses every two years for exam subcommittee members
- ◆ Recording statistics on item performance for each exam subcommittee member
- ◆ Having several exam subcommittee members review each new item
- ◆ Encouraging review of item performance statistics after each administration
- ◆ Having exam subcommittees develop a succession plan to provide continuity

Highlights from the EPP Committee report

The EPP Committee is chaired by Roy Entz, P.E., P.L.S. It will present six motions to the Council at the Annual Meeting in Minneapolis. Here are some highlights from its report:

- ◆ EPP will move for an amendment to Exam Administration Policy (EAP) 2 to require that all exam administration dates that differ from the published dates be approved by the NCEES Compliance and Security Manager. This requirement addresses exam administration sites in foreign countries, which often have an exam date that differs from the published date for administrations within the United States.
- ◆ The committee will move to add language to Exam Development Policy (EDP) 7 to indicate that the EPE Committee will review requests for deleting, combining, or renaming an exam discipline or module and make recommendations to the Board of Directors.
- ◆ The committee will move to add language to EAP 8 to define the Council’s policy on Member Board notification after the release of examination results. The language will indicate that for up to one year after the release of scores, NCEES will adjust candidate scores and notify the appropriate Member Board in the event it finds an error in an exam item. After one year has elapsed from the date of release, NCEES will not adjust scores because of an error in an exam item. However, there will be no time limit if it is found that a candidate has acted improperly with regard to an NCEES examination, in which case the appropriate Member Board will be notified.
- ◆ The committee will move to amend EDP 1 to define Group I and Group II exams. The new language designates the EPE Committee and the NCEES Board of Directors to review new and existing exams on a case-by-case basis when determining Group I or II status.
- ◆ The committee presented the Board of Directors with a list of approved calculators for use during NCEES exam administrations for 2008.

NCEES staff



Roy Entz, P.E., P.L.S.
Chair, Examination
Policy and Procedures

Scheduled workshops: *87th* NCEES Annual Meeting

August 13–16, 2008 ♦ Minneapolis, Minnesota

While the business sessions remain at the center of the Annual Meeting agenda, this four-day event scheduled for August 13–16 will feature many opportunities for licensees to network and earn professional development hours (PDHs) while learning more about how the Council operates.

The deadline for registration is July 3, 2008. Materials are available online at www.ncees.org/annual_meeting_2008. Those registering by June 16 will be entered in a drawing to have their room at the Hilton Minneapolis upgraded to a suite.

Wednesday August 13

Study and Application of Fundamental Principles of Engineering Ethics (1.5 PDHs)

Jimmy Smith, Ph.D., P.E., of Texas Tech University will provide an overview of the fundamentals of engineering ethics and the importance of ethics in engineering practice. Examination of case studies will allow attendees to consider the importance of ethics in problem solving.

Surveying Ethics (1.5 PDHs)

Steven Frank, Ph.D., P.E., of New Mexico State University will address the definition of professionalism, the surveyor as a professional, understanding ethics, ethical tenets, and applying ethics to surveying-specific situations.

Surveying Education

This session will focus on the status of four-year surveying education and the implementation of the four-year requirement by Member Boards, along with other issues relevant to the profession.

Center for Professional Engineering Education Services Update/Exam Administration Forum

Center Director Eva-Angela Adán will discuss current operations at the Center and ongoing issues in foreign-credential evaluations. Then, ELSSES Director of Operations Pam Powell will lead a forum on NCEES exam administration issues, including discussion of exam irregularities and collusion activities.

The Role of Fire Protection Engineers in Designing Safe Buildings (1.5 PDHs)

Chris Jelenewicz, P.E., of the Society of Fire Protection Engineers will explore the evolution of fire protection engineering and will also discuss emerging issues in the fire protection profession.

Member Board Administrator Professional Development

NCEES Parliamentarian Jesse Binnall will provide an overview of *Robert's Rules of Order*, and attorney Barbara Jean D'Aquila of Fulbright & Jaworski, L.L.P., will provide information on retention of electronic records and e-mails and guidance to minimize liability exposure.

Ethical Leadership, a Vital Element of Engineering Practice (1.5 PDHs)

Jimmy Smith, Ph.D., P.E., of Texas Tech University will provide an overview of ethical leadership. Discussion of case studies will highlight the importance of communication, understanding, insight, and problem-solving skills.

Automated Machine Control—Man vs. Machine (1.5 PDHs)

Harry Ward, P.E., of Carlson College will lead this workshop exploring the ramifications of 3D/GPS machine control on design firms.

Green Building, LEED, and the Proposed ASHRAE Standard 189.1 (1.5 PDHs)

This session will provide an overview of Leadership in the U.S. Green Building Council's Energy and Environmental Design (LEED) programs, with an emphasis on areas of importance to engineers.

ABET, Inc., Workshop

ABET leadership will provide an overview of the organization. Topics will include how professional and technical societies work together through ABET to develop the standards used in the accreditation process and how the professionals who evaluate programs ensure those standards are met.

New Member Orientation

Learn about the Council, its products and services, and volunteer opportunities within the organization. This session will benefit first-time meeting attendees and new board members as well as anyone wanting to learn more about NCEES.

The Expanding Scope of Surveying Practice (1.5 PDHs)

This workshop will concentrate on new and emerging surveying and mapping technologies such as GIS and photogrammetry and their effects on licensure processes.

Computer-Based Testing Task Force Update

The task force will present information covering the background of the NCEES study of computer-based testing, case studies of other professions that have converted from paper-and-pencil exams to CBT, and the potential benefits of and concerns about NCEES following suit.

Infrastructure and Transportation Workshop (3.0 PDHs)

Ann Johnson, P.E., of the University of Minnesota will present a session related to civil engineering, infrastructure, and transportation studies. Johnson is faculty director of the university's construction management degree program.

Surveyors' Use of Historical Maps and the Web (1.5 PDHs)

Many local, state, and federal agencies are digitizing historical maps and other land records for preservation. As a result, many historical maps are being made available online. Learn how surveyors can make use of these historical maps in their everyday practice.

Bachelor's Plus 30 Task Force Update

The task force will provide an overview of its work to address implementation issues relative to the future additional education requirement for engineering licensure. Its charges include defining approved course credits and course providers.

Thursday August 14

Surveyors' Forum

Topics will include the ongoing evolution of the approved list of calculators, the status of surveying education, exam performance statistics and trends, and reports on EPS Committee charges.

Engineers' Forum

Discussion topics will focus on areas of interest to the entire engineering community, including updates from the Structural Exam and Governance task forces, the NCEES calculator policy, and possible new NCEES exams.

MBAs' Forum

Moderated by leaders of the MBA Networking Group, the session will focus on topical issues of interest to MBAs.

Friday August 15

Law Enforcement Forum

This forum will focus on current enforcement issues affecting Member Boards. A panel with representatives from each zone will address attendees' questions and discussion topics.

Saturday August 16

International Issues in Engineering Licensure

This forum will provide an outlet for open discussion of international issues relating to the engineering profession and licensure. It will also address how USCIEP can serve as a resource to Member Boards and candidates.

Licensure Promotion and Outreach Efforts

NCEES Director of Professional Services Davy McDowell, P.E., will lead this workshop outlining the Council's efforts to promote the engineering and surveying professions.

Exam Development 101 (3.0 PDHs)

Have you ever thought about serving on an exam committee? Ever wondered what makes a good exam question? Director of Exam Development Tim Miller, P.E., will explain how NCEES exams are developed and how you can contribute your time and expertise.

Law Enforcement Program (3.0 PDHs for a.m. session, 2.0 PDHs for p.m. session)

This training program will explore the investigative process, including interviewing, handling evidence, preparing a case, and testifying. The afternoon session will include mock interviews and a Q&A session.

development of the computer-based exam. It did not experience a decline in candidate volume upon the switch to CBT.

The adaptive exam used by the nurses provides an examination that evaluates a candidate's performance on items of a level of difficulty at or near the line that separates the minimally competent from those who are not. Those who consistently answer the questions correctly at this level might answer only 75 questions before being determined minimally competent to practice. Likewise, those who consistently get these questions wrong may face only 75 questions. Those in-between candidates on the cusp of competency may have to answer as many as 265 questions in order to be properly assessed. Unlike engineers, architects, and accountants, registered nurses have no exemptions from licensure and must hold a license in order to practice.

Software developers now use a computer-based exam that was developed with IEEE. They have experienced relatively few problems, but the small size of their candidate pool makes it difficult to compare their exam with a potential NCEES exam administered in the same manner.

Reexamining barriers to CBT

The task force spent a considerable amount of time reviewing past NCEES investigations into CBT. The 10-year CBT Plan adopted in 2002 and amended in 2003 called for the Board of Directors to revisit the issue each year and for staff to keep abreast of developments in exam security applicable to CBT.

The task force took a fresh look at concerns raised in the past, including the following.

Do candidates prefer CBT to paper-and-pencil exams?

The only available information concerning this question is anecdotal and not sufficient for making a decision on the matter. While most college engineering students are comfortable and familiar with many computer applications, most exams in college are not administered by computer. A formal survey reaching a representative sample of potential candidates is needed to gather reliable information related to their preferences. This will be part of the first motion of the task force.

Are NCEES item banks sufficiently large for CBT, and are items appropriate for this method?

Exam committees have revised item banks to make items more adaptable to CBT, but item banks are not sufficiently large to prevent overexposure of items. The Council would need to consider alternative means (other than increased volunteer hours) of growing the item banks. The task force will move that the Council approve creating a request for information (RFI) to gather information on how to best develop item banks for CBT.

Are the current exam formats appropriate for CBT? Is the Council willing to modify its exams?

The 8-hour exams used by NCEES are in many cases specifically required by state laws. This is not an appropriate length for a computer-administered exam, as this would challenge candidates' endurance and would be very expensive to develop. This concern was confirmed during discussions with vendors contacted by task force members. To convert to CBT, the Council must be willing to change the format to include modules of shorter lengths.

Would the value of licensure on the part of potential candidates warrant conversion to CBT?

The willingness to register for a licensure exam is determined by the value a candidate places on holding the license. Because exemptions allow many engineers to work without holding a license, sudden jumps in price may cause potential candidates to forgo the licensure process, particularly when they are not aware of all the benefits of licensure.

The Council has initiated several outreach programs designed to raise awareness of the benefits of licensure and to educate students about the licensure process. The feasibility study proposed by the task force in its first motion should also measure potential candidates' awareness of the licensure process and its benefits. That information would be used in proposing CBT conversion.

What are the costs of conversion, and how would exam security be affected by converting to CBT?

The costs of developing and administering a computer-based exam program have decreased in recent years because of increased competition among vendors and the use of different business models. However, costs would still

be higher than what the Council currently experiences, and fees for examinees would also be higher. These could be mitigated somewhat through planning and communication, and costs can vary according to exam format and design. Also, many costs associated with the current paper-and-pencil exams, such as site rental, shipping, scoring, and printing costs, would be eliminated. Regardless of these savings, the Council should plan for decreases in ELSSES revenue if CBT is implemented.

The security risks associated with CBT differ from those currently experienced. The task force did not find evidence of any instances of hacking into exams; measures such as firewalls, encryption, and network perimeter security systems seem to be effective when used correctly. Vendors contacted indicated that CBT is more secure than traditional paper-and-pencil testing. Item exposure and item harvesting are concerns that are common to both CBT and current methods.

More detailed information on costs and security concerns would be obtained through the RFI proposed in the second motion.

Looking ahead

The topic of CBT needs to be considered carefully by the Council before it decides to go forward with investing the necessary time and money. This view forms the rationale behind the two motions the task force will present at the Annual Meeting. The motions are designed to provide the information necessary to make a decision on whether or not to convert to CBT. I encourage you to consider the matter carefully before the Annual Meeting this August.

David L. Curtis, P.E.

Chair, Computer-Based Testing Task Force

Motion 1. Move that the Council authorize a feasibility study of potential examination candidates to determine their exposure to and acceptance of CBT delivery including factors such as cost, length, and exam format. The study should also assess the subjects' knowledge of the licensure process and how they value licensure.

Financial Impact: The scope of this study and the number of people contacted must be limited to make the study valuable but not overly expensive. A vendor would have to develop the scope, design interview protocols, define the cohorts to be studied, develop telephone interviews and/or focus groups, develop surveys, complete surveys, and develop a final report and presentation. The study would focus on price points for test fees, familiarity and comfort level with CBT, experience in the classroom, and coordination of educational experience in CBT. The estimated cost of such a study for budget purposes is \$175,000.

Motion 2. Move that the Council develop and issue an RFI to determine vendor capabilities, customer service and staffing, suggestions for exams to convert, strategies for reference materials, calculators, length and format of exams, item-bank requirements, item-banking software, cost, availability of seat space, frequency of exam administrations, security, estimated timeline for implementation, and concerns about sole-source contracting.

Financial Impact: Tasks would include defining the existing situation of testing (with input from test committees, staff, and the CBT Task Force), outlining concerns, setting goals for CBT conversion, and developing a clearly worded scope of work for vendor response. A panel would review the information to determine when there is overlap or consensus on recommendations from the vendors. The panel would then provide a report to the Board of Directors, the CBT Task Force, and the Council. The estimated cost of this undertaking is \$35,000.

Member Board
NEWS

California

- ◆ William Silva is a new appointee to the board.

Delaware LS

- ◆ John H. Murray, P.L.S., and Stephen Sellers, P.L.S., are new appointees to the board.
- ◆ Roy B. Kemp III, P.L.S., and Elton M. Murray, P.L.S., are no longer on the board.

Florida PE

- ◆ Jonathan F.K. Earle, Ph.D., P.E., and Nola Garcia are new appointees to the board.

Guam

- ◆ Liza J. Provido is a new appointee to the board. Hermenegildo C. Moguel is no longer on the board.

Iowa

- ◆ Gowri S. Kalavala and Jerry F. Shellberg, P.E., L.S., are new appointees to the board. Susan Albright, Forrest M. Holly Jr., Ph.D., P.E., and Lyle G. TeKippe, P.E., L.S., are no longer on the board.
- ◆ Christy Vanbuskirk, P.E., is the new board chair.
- ◆ The phone number for the board is now (515) 281-4126.

Louisiana

- ◆ James Bowie, P.E., and Miles Williams, P.E., are new appointees to the board. Kerry M. Hawkins, P.E., and Joseph C. Wink Jr., P.E., are no longer on the board.

Maine PE

- ◆ David W. Jackson Jr. is a new appointee to the board.

Massachusetts

- ◆ Robert Figuerido is a new appointee to the board. Arjun Rao, P.E., is no longer on the board.

Minnesota

- ◆ David Landecker, L.S., Lyn Berglund, and Paul May are new appointees to the board. Donald Borcharding, L.S., Caren S. Martin, and Douglas Hildenbrand are no longer on the board.

South Carolina

- ◆ Theresa Hilliard Hodge, P.E., and Charles M. Joye II, P.E., are new appointees to the board. Gaye Garrison Sprague, P.E., and Mitchell Tibshirany Jr., P.E., are no longer on the board.

Tennessee PE

- ◆ Landscape Architect member John G. Love II passed away on Friday, January 25. His position on the board has been filled by Paul W. Lockwood.

Vermont PE and LS

- ◆ Katherine E. Hill, P.E. is a new appointee to the board. Thomas F. O'Connor, P.E., is no longer on the board.
- ◆ The phone number for the engineering and surveying boards is now (802) 828-2191. The fax number for both boards is now (802) 828-2368.

Virgin Islands

- ◆ Kenrick Robertson is a new appointee to the board. Andrew Rutnik is no longer on the board. Board member Bernard S. Fabio has passed away.

West Virginia

- ◆ Nelson B. Douglass, P.E., P.S., is a new appointee to the board. Leon K. Spencer, P.S., is no longer on the board.

I read with interest the pending legislation in Alabama regarding the creation of a rural surveyor category. I would propose that there is a correlation between this issue and the profession of physician assistants.

The following is paraphrased from the U.S. Department of Labor's description of the occupation of physician assistant. (www.bls.gov/oco/ocos081.htm)

Physician assistants (P.A.'s) practice medicine under the supervision of physicians and surgeons. They should not be confused with medical assistants, who perform routine clinical and clerical tasks ... P.A.'s are formally trained to provide diagnostic, therapeutic, and preventive health care services, as delegated by a physician. Working as members of the health care team, they take medical histories, examine and treat patients, order and interpret laboratory tests and x-rays, and make diagnoses ... P.A.'s record progress notes, instruct and counsel patients, and order or carry out therapy.

In 48 States and the District of Columbia, physician assistants may prescribe some medications. ...

Physician assistants work under the supervision of a physician. However, P.A.'s may be the principal care providers in rural or inner city clinics where a physician is present for only one or two days each week. In such cases, the P.A. confers with the supervising physician and other medical professionals as needed and as required by law. P.A.'s also may make house calls or go to hospitals and nursing care facilities to check on patients, after which they report back to the physician. The duties of physician assistants are determined by the supervising physician and by state law. ...

If rural surveyors were working under the supervision of licensed surveyors, who would ultimately be responsible for the rural surveyors work, then both the integrity of the system is maintained and the needs of the rural communities are covered.

*Kelly Blythe, P.E.
Menlo Park, CA*

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NCEES announces changes to Electrical and Computer PE exam

The Principles and Practice (PE) examination in electrical and computer engineering will have a different look beginning in April 2009.

According to a memo distributed April 18 to Member Board administrators and representatives of several testing services, the Electrical and Computer PE exam will no longer be a breadth and depth exam beginning with the spring 2009 exam administration. The announcement was provided one year in advance as required by NCEES policy.

Most notably, the exam will become three separate exams divided by subdiscipline. The three exams within the Electrical and Computer PE exam will be referred to as the Power Examination, the Computer Examination, and the Electrical and Electronics Examination.

Electrical and computer candidates to declare subdiscipline

Consequently, as of the April 2009 administration, candidates for the Electrical and Computer PE exam will be required to specify during registration which one of these exams they wish to take.

The current Electrical and Computer PE exam consists of a morning breadth exam and an afternoon depth exam made up of three separate modules. The changes to the specifications resulted from feedback received from a Professional Activities and Knowledge Study (PAKS) conducted by the NCEES subcommittee responsible for overseeing the Electrical and Computer PE exam.

“The results of the PAKS did not support the breadth examination in its current form,” said Frank Loudon, P.E., the chair of the electrical exam subcommittee. “The majority of respondents indicated that the breadth knowledges presently examined are not important for engineers in the computer and power fields of practice. However, many of the breadth knowledges were rated as important for those in the other areas of electrical engineering.”

Licensure

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