RPSD Newsletter

April 2011

http://rpsd.ans.org

American Nuclear Society

Radiation Protection and Shielding Division

Message from the Chair

Greetings RPSD members!

As I have stated previously, it is truly a privilege to be the current chair of the Radiation Protection and Shielding Division (RPSD). At this time, I wish to express my best wishes to our colleagues and friends in Japan. Though the past few weeks have been difficult for the Nuclear Industry as a whole in responding to questions surrounding the nuclear crisis unfolding in Japan, it has also been a time of growth and learning for us. I would like to thank those of you in our division who has been a voice of reason in the community, by offering your time and talents to get reliable information out to the public. Personally, I have had various opportunities to represent RPSD on behalf of ANS in the media. These have included both a national television appearance and interviews on Fox Radio in diverse markets across the USA. This crisis represents a chance for us to raise our voice, and I encourage everyone to be proactive in your spheres of influence in providing correct information about health and radiation safety. The ANS website (www.new.ans.org) provides a wealth of information to help you in this endeavor.

I look forward to the 2011 ANS Annual Meeting in Hollywood, FL, where RPSD offers a great program. In addition to our standing sessions, we will also be offering a forum to highlight and demonstrate the activities of various RPSD standards working groups. The ANS is accredited by the American National Standards Institute for the purpose of developing and maintaining standards that are applied to Nuclear Science and Technology. RPSD actively participates in ANS-6 standards and projects. Furthermore, I am pleased to announce that RPSD will co-sponsor a special session on Fukushima. The session will take place on Tuesday June 28; 4-6 PM. Please keep an eye out for more information closer to the conference date.

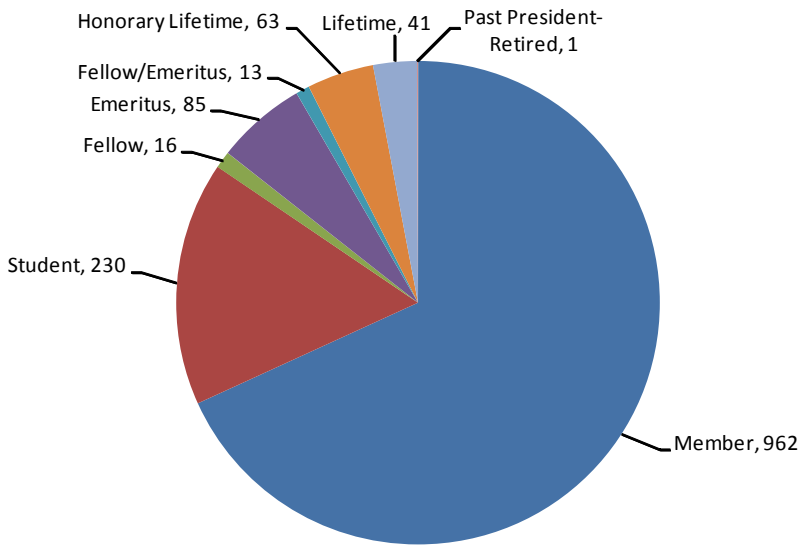
I wish to continue to encourage everyone to become more active in RPSD activities, which includes presentations at our technical meetings, involvement on standards committees or division committees, and participation in governance meetings. Our meetings are open to all members, and we would welcome your ideas and input so that we are all better served. If you will be at the upcoming 2011 ANS Annual Meeting, you are invited to attend the following meetings on *Sunday, June 26th,* in room 205:

	Shielding Standards	12:00 P.M – 12:30 P.M
	RPSD Program	12:30 P.M – 1:30 P.M
	RPSD Executive	1:30 P.M – 2:30 P.M
	Thank you for your support and membership of RPSD.	
	Sincerely,	
	Charlotta Sanders	

Membership

Arzu Alpan

Based on the March 2011 data, RPSD has 1411 members. The pie chart below shows the different membership classifications, with the number of RPSD members in that classification. Student membership is 16 %.



In the beginning of each year, RPSD receives financial credit based on the number of their members who renew their memberships, or sign up to become new members, by the end of December of the previous year. **We would like to thank our members who contribute to our budget by sending their membership dues to ANS by the end of December!**

The Professional Engineer License: How do you get one?

Dr. Rebecca Steinman, PE, Advent, a Tetra Tech Company

Nuclear energy is finally experiencing resurgence. However, engineers under the age of 40 have little experience with designing and building a new nuclear power plant. Less than 5% of newly degreed nuclear engineers become licensed professional engineers (PEs). In fact, only a very small group of practicing engineers, approximately 10% of the four-million U.S. engineers, has demonstrated through education, experience, and examination the ability to meet the minimum requirements necessary to protect the health, safety, and welfare of the public, i.e., obtained a PE [1]. What level of confidence does this give the public that the next generation of nuclear power is going to continue the excellent safety record of the current generation of plants?

For many young engineers, the question of whether or not to pursue licensure often boils down to whether or not their employer supports their effort to obtain their PE versus an advanced degree, and whether or not obtaining their PE will result in immediate benefits, such as a promotion or increase in salary. The fact of the matter is that an advanced degree and a PE license are both valuable, but in different ways. An advanced degree fills the role of increasing technical knowledge in a specific engineering discipline. However, the role of a PE is to ensure that practicing engineers maintain a minimum acceptable level of competence and ethical duty necessary to protect the health, safety, and welfare of the public. In the past, many practicing nuclear engineers have gone their entire career without having to obtain a professional license to perform their daily job duties. However, a change in attitude towards nuclear licensure may be on the way.

The National Society of Professional Engineers (NPSE) recently released a statement saying that the nuclear energy industry should require a PE to supervise all engineering design, operations, and maintenance decisions [3]. This statement was also provided to the Blue Ribbon Commission's Reactor and Fuel Cycle Technology Subcommittee of the US Department of Energy [3].

Additionally, many states already have or are proposing very strict laws prohibiting the use of the words "engineer" or "engineering" in a company name or any advertisement without that company or association having a PE on its full-time staff. Nevada, for example (NRS 625.520 1 (a) (3)), imposes restrictions using variants of the term "engineer" in any solicitation for engineering work in that state (such as a job title on a business card if you are not licensed and your card is distributed to the public as a solicitation for work) unless it is disclosed that "the person is not qualified, registered or licensed to practice professional engineering in this state."[4] Without this disclosure, someone can give the impression that they are legally able to provide engineering services when they are not legitimately entitled. The bottom line is that if the public has to rely on their safety being provided by the lowest bidder, that chosen individual/contractor is legally bound to be at least minimally qualified (as evidenced by the PE process) to provide a product that will ensure public safety.

Perhaps you are wondering how one becomes licensed as a professional engineer. To become licensed, engineers must typically complete an ABET accredited, four-year degree; pass the Fundamentals of Engineering (FE, also referred to as the Engineer-in-Training (EIT)) exam; work under the direction of a PE for at least four years; pass the PE exam; and be approved for licensure by their state's licensure board.

The FE exam is an eight-hour, closed-book exam administered by the National Council of Examiners for Engineering and Surveying (NCEES) in April and October of each year. The exam is 180 multiple-choice questions that cover a broad scope of engineering topics that are designed for students nearing the end of an engineering degree program. The exam is split into a morning session (120 questions) of general engineering scope that everyone takes and an afternoon session (60 questions) that is specific to one of seven engineering disciplines (chemical, civil, electrical, environmental, industrial, mechanical, and "other"). Although a person may apply for and take the FE exam at any time, the highest pass rate is when the FE exam is taken during an engineering student's senior year. The average pass rate for first-time FE exam takers drops from 75% to 52% for those waiting just two years after college to take the FE exam.

The PE exam is also an eight-hour exam designed to test your competency to perform tasks in a specific engineering discipline. The Nuclear PE exam is administered by the NCEES in October of each year. This discipline-specific exam enhances the opportunity for nuclear engineers to qualify for a PE license; since taking the exam in an alternative discipline, such as mechanical or electrical engineering, could be more difficult. However, the Nuclear PE exam is in danger of being discontinued if the number of applicants taking the exam does not increase. The exam currently consists of 80 multiple-choice questions covering the following five broad categories: power systems; fuel and waste management; radiation protection/shielding/interactions of radiation with matter; criticality/kinetics/neutronics; and measurements and instrumentation. This exam is currently an open-book exam, which means that exam takers are allowed to bring in any number of their own personal bound reference materials for use during the exam. (Note: For security reasons, the NCEES is currently discussing a limit of 15 reference books being allowed into the PE exam. Additionally, NCEES places restrictions on the type of calculators that can be used on the PE exam.)

Although all FE and PE exams are now administered by the NCEES, the exact process for applying to take either exam depends on the state in which you work since part of the process is being approved to sit for the exam from your state board. In general, states require an application to be submitted with appropriate proof of education and applicable references to be submitted for board review and approval several weeks prior to the NCEES registration deadline. General information about the exam registration process for each state and updated information about registering through the NCEES site is available via http://www.ncees.org/Exams.php. NCEES opens registration for the April exams in January and the October exams in July, and closes registration sometime in March and September, respectively. You must already have your state board's approval to sit for the exam when you register with NCEES.

In addition to the exam application, many people choose to participate in exam preparation courses or order exam study guides to aid in exam preparation. The American Nuclear Society (ANS) offers a study guide, published in CD-ROM format, containing over 500 pages of information pertaining to PE registration, the FE exam, the PE exam, suggested references to prepare for the exam, and sample problems with solutions. This study guide can be purchased from ANS at http://www.new.ans.org/store/i_690025. ANS also offers a one-day Nuclear PE exam preparation workshop in conjunction with the society's annual meeting in June of each year.

If nuclear engineers are to be among the engineering decision-makers in the future, they need to follow a path to obtaining a PE license. There is a considerable sense of pride derived in qualifying for a PE license and considerable respect for those that have a PE license from associates and the public in general. Passing scores are typically easier to achieve earlier in your career, but it is never too late to apply for and pass the requisite exams.

References:

1. "Gulf Oil Spill and the Role of Professional Engineers", Larry Jacobson Executive Director NSPE, June 29, 2010
2. Transcript of the August 31, 2010 meeting of the Reactor and Fuel Cycles Technology Subcommittee of the Blue Ribbon Commission on America's Nuclear Future, pg 323-325 available at http://brc.gov/Reactor_Fuel_Cycle_Technology_SC/docs/Aug_30-31_Mtg/0831musc.pdf
3. "PE Licensure and America's Nuclear Future", available at http://newsmanager.commpartners.com/nspeupdt/issues/2010-09-22.html
4. http://www.leg.state.nv.us/NRS/NRS-625.html#NRS625Sec520

For more information please contact Dr. Steinman at RLS@adventengineering.com or by calling 734-930-7500.

Radiation Protection and Shielding Division Student Executive Update

Shaheen Azim Dewji

Approaching Soon! 2011 Student ANS Conference – Georgia Institute of Technology

RPSD is keenly anticipating the quickly approaching 2011 American Nuclear Society Student Conference hosted by the Georgia Institute of Technology Student Section of the American Nuclear Society. This event is being held April 14-17, 2011 at Hyatt Regency Atlanta. The conference is an ideal occasion for students to interact with professionals, hear world-class speakers, network with recruiters, and gain real-world perspectives. With division support at a Meitnerium-level sponsorship, over 123 podium talks and 43 posters have been accepted!

Be sure to look for our booth at the conference!

For more information, please visit the Student Conference website at http://gtans.org or contact ans2011@gtans.org.

Student Participation at the ANS National Level

The Radiation Protection and Shielding Division continues to foster student development at the National ANS Meeting-level by awarding their student members who contribute to RPSD sessions in ANS National Meetings.

Students will be eligible for the award if they meet all conditions listed below:

- The student is an RPSD student member (this can be done when you apply/renew National ANS Membership).
- The student submits his/her summary to an RPSD session for an ANS National Meeting and the summary is accepted.
- The student is the primary author of the summary.

- The student presents the summary at the ANS National Meeting.

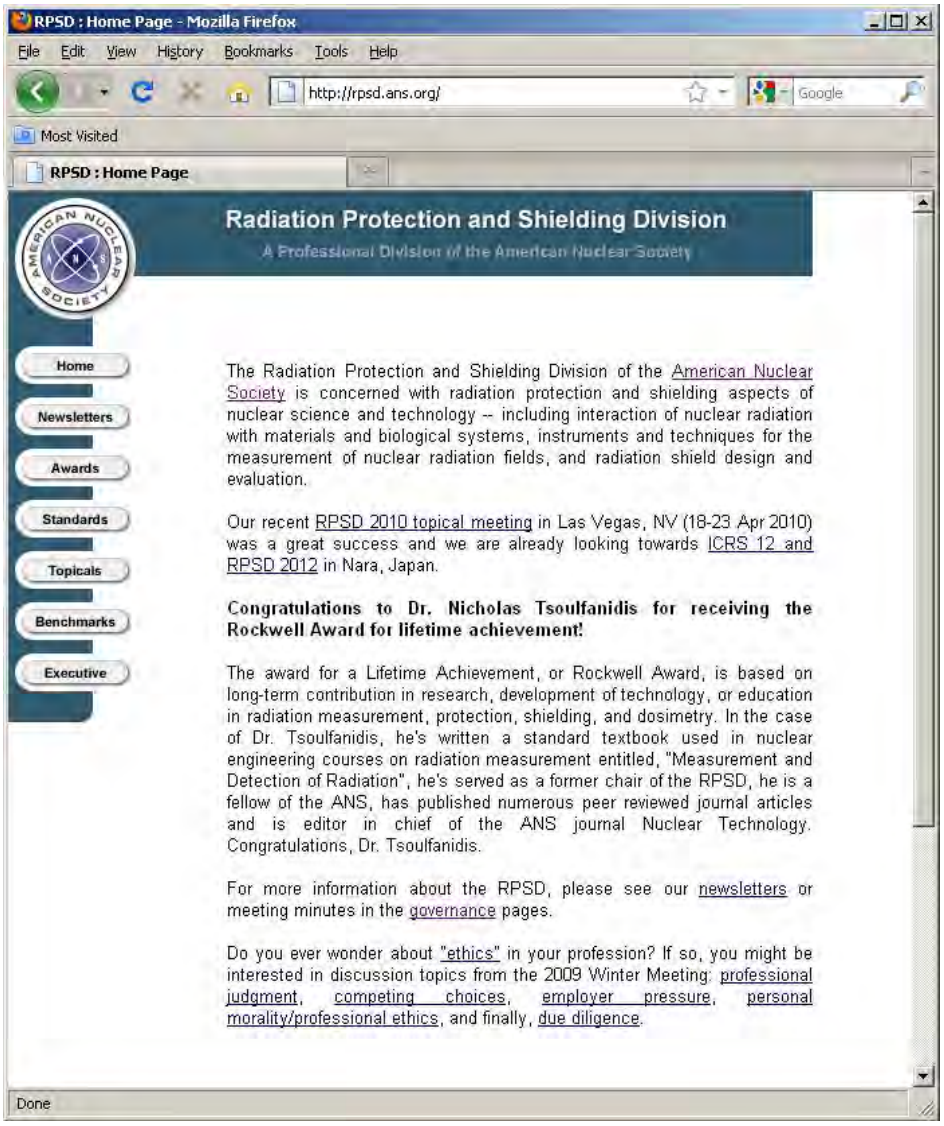
The award is up to $100 per qualifying student, and will be awarded to multiple students if there is more than one student that meets the conditions listed above.

Watch for paper submission deadlines and encourage students to contribute to RPSD sessions!

Web Site

Erik Shores

We continue to maintain our website (http://rpsd.ans.org) and encourage members to provide comments and suggestions for improvement! The screen snapshot below illustrates the site.



For those RPSD members unable to make the National Meetings, we'd like to draw your attention to the following specific links:

- Executive committee meeting minutes are posted at http://rpsd.ans.org/executive/minutes_of_meetings/minutes.html
- Our next topical meeting, ICRS12 and RPSD 2012, that will be hosted in Nara, Japan and is linked at http://www.icrs12.org/main/

Honors and Awards

The RPSD Honors and Awards Committee are currently soliciting the RPSD membership for suggestions of candidates to be nominated for the **RPSD Professional Excellence Award.** The basis for this award is usually a major contribution to the state-of-the-art, an important publication, a major technical achievement, or a sustained record of significant accomplishment and technical excellence. Please submit your suggestions along with a brief statement of support/justification of the nomination to Martin Williamson at williamsonmr@y12.doe.gov by May 31st 2011.

ANS 6 Standards

1. John Wagner has stepped down as chair of **ANS 6.6.1** after successfully getting the reaffirmation of ANSI/ANS-6.6.1-1998, "Calculation and Measurement of Direct and Scattered Gamma Radiation from LWR Nuclear Power Plants." Dick Amato is the new chair of this standard.

2. **ANS-6.4.3**, “Gamma-Ray Attenuation Coefficients & Buildup Factors for Engineering" is being resurrected as an official ANSI standard. Jeff Ryman is chair of the working group for this. A new Project Initiation Notification System (PINS) form is needed ASAP to start the new resurrection process.

3. F. Arzu Alpan's working group for **ANS-6.1.2**, "Neutron and Gamma-Ray Cross Sections for Nuclear Radiation Protection Calculations for Nuclear Power Plants" (revision of ANSI/ANS-6.1.2-1999) has been re-reaffirmed by ANSI. This reaffirmation was so that they may have more time to update the standard.

4. Nolan Hertel is still reviewing the logistics of a new revision and/or a temporary reinstatement of **ANS-6.1.1-1991**, "Dose Conversion Coefficients" and the possible separation of the standard into two separate standards. One is on operational quantities - ambient dose equivalent, personal dose equivalent, and directional dose equivalent. The good news is he is now chairing the ICRU committee that will review these operational quantities (1st meeting in November) to see if there is a need to change these dose conversion factors or retain them at all. The second one would be for effective dose whose definition and radiation weighting factors which were just changed in ICRP Publication 103. He plans to draft the PINS for a vote at ANS 6 shortly after October since the ICRP revision to publication 74 (effective dose conversion coefficient) should be in completed draft form by then.

5. Jennifer Tanner's working group's standard received ANSI final approval on the reaffirmation of ANSI/**ANS-6.3.1-1987** (R2007). A revision is anticipate and needs a new PINS form.

6. Dick Faw (**ANS-6.4/6.4.2**) Both standards were updated in 2006 and will be needing review for change or reaffirmation in 2011.

RPSD Officers and Committees

Officers:

Chair: Charlotta E. Sanders, UNLV, sander59@unlv.nevada.edu
Vice Chair: Arzu Alpan, Westinghouse Electric Company, alpanfa@westinghouse.com
Secretary: Erik F. Shores, LANL, eshores@lanl.gov
Treasurer: Scott W. Mosher, ORNL, moshersw@ornl.gov

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John D. Court (2011), LANL, davec@lanl.gov
Shaheen Dewji (2011), Georgia Tech, shaheen.dewji@gatech.edu
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Pedro Vaz, (2011), ITN, pedrovaz@itn.pt
Martin R. Williamson (2013), Y-12, williamsonmr@y12.doe.gov

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Standards: Arzu Alpan (temporary assignment), Westinghouse Electric Company, alpanfa@westinghouse.com
ANS Board Liaison: Joe F. Colvin
Staff Liaison: Sharon S. Kerrick
Ex-Officio: Donald R. Hoffman, John S. Hendricks, Robert Hayes

Message from the Editor

The RPSD newsletter is issued twice a year, in spring and fall, by the RPSD Vice-Chair/Chair Elect. RPSD newsletters are available at http://rpsd.ans.org/news/news.html. If you have any comments on the RPSD newsletter, or would like to contribute an article for the upcoming newsletter in fall 2011, please e-mail the current editor, Arzu Alpan, at alpanfa@westinghouse.com.