



Spring 2006
<http://ncsd.ans.org/>

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**Maria LeTellier and
Randy Shackelford, Editors**

American Nuclear Society

Nuclear Criticality Safety Division Newsletter

Message from Chair



Steve Bowman,
bowmansm@ornl.gov

I am glad to report that the Executive Committee voted at our November meeting to allocate \$4,000 for an NCS Pioneers Scholarship Fund. The concept is to honor the memory of pioneers in nuclear criticality safety by creating an “NCS Pioneer Hall of Fame” on the NCS website and have a special scholarship account to which anyone can contribute to honor a particular “pioneer.” Kevin Kimball and I are working with the Scholarship Committee to prepare a proposal for the ANS Scholarship Policy and Coordinating Committee.

We are significantly increasing our support of students and young members of ANS. Existing student support is being doubled this year, and a one-time contribution has been made to support the International Youth Nuclear Congress 2006 meeting.

The ANS Winter Meeting in Washington, D.C., on November 14–17 was another outstanding meeting for our division. In addition to several excellent technical sessions, we gathered for what has become a tradition at the Washington meetings, the NCS Awards Banquet at Maggiano’s Little Italy. It was my privilege to present the 2005 Distinguished Service Award to Hans Toffer, who was also named an ANS Fellow at the meeting, and the 2005 Technical Excellence Award to Tom McLaughlin, who accepted on behalf of a 6-person group [see later article for details].

Thanks to Rob Frost for his tireless efforts as the NCS Program Chair. Rob has done an admirable job in organizing our technical sessions for the past few meetings. He is passing the baton to Lane Paschal. Congratulations to Peter Angelo for winning the Best Paper Award in November for his interesting presentation “Personal Annunciation Device (PAD) – A Wireless Technology for CAAS Compensatory Notification.”

It has been an honor to serve this year as your division chair. Thanks to the Executive Committee and all the NCS volunteers who continue to contribute to our success.

Upcoming Meetings (at a glance)

Dates and locations of national ANS and International NCS meetings are listed below:

June 4–8, 2006, Reno, NV
(Annual ANS Meeting)

November 12–16 2006,
Albuquerque, NM (Winter ANS Meeting)

May 28–June 1, 2007,
St. Petersburg, Russia (ICNC International Meeting)
<http://www.icnc2007.com>

June 24–28, 2007, Boston, MA
(Annual ANS Meeting)

November 11–15, 2007
Washington, DC (Winter ANS Meeting)

Electronic Distribution of NCS D Newsletters- No More Paper Copies Mailed

Randy Shackelford

The NCS D is planning electronic distribution of all future NCS D newsletters. Electronic distribution of newsletters is free. Approximately 95% of NCS D members have e-mail addresses associated with their membership profiles. We strongly encourage those members without e-mail addresses to update their membership profiles (see article on Accessing Member and Membership Information from the ANS) to include e-

mail addresses so that they can receive future newsletters via electronic distribution. The newsletters are also available via the NCS D website.

Executive Committee

The people who run our division:

2005-06 Officers

Chair

Stephen Bowman,
865-574-5263

Vice Chair/Chair Elect

Kevin Kimball, 770-497-8818

Treasurer/Finance Officer

David Hayes, 505-667-4523

Secretary

Davis Reed, 865-576-6359

Other Members

Term ending 2006

Nigel "Jim" Gulliford
Dennis Mennerdahl
Fitz Trumble

Term ending 2007

Adolf Garcia
Maria LeTellier
Randy Shackelford

Term ending 2008

Lawrence J. Berg
Thomas D. Burns, Jr.
Charles D. Harmon, II

Election Results

Congratulations to the following who will take office at the conclusion of the June ANS meeting:

Chair - Kevin Kimball

Vice Chair - Fitz Trumble

Secretary - David Erickson

Treasurer - Robert Frost

Executive Committee

Terms ending 2009

Sedat Goluoglu
Sandra Larson
John Miller

Trying to Find Someone?

Randy Shackelford

Did you know that you can access information about ANS members from the ANS website? (Note: Membership number and password are required) Here's how: see the following link to the member section of the ANS web site: www.ans.org/members/dir/. You can also view and edit information about yourself to ensure accuracy. It is recommended that you view your personal information and edit the information (if necessary) to correct any inaccuracies. In addition, you can also perform searches of the ANS membership directory based on specific search criteria; however, you are only allowed to view 10 member records per day. ANS put this limitation in place to help protect the membership from misuse of personal information (e.g., mining of the membership database by spammers). Check out these and other resources available thru the ANS website!

Website

Check out the Division website at:

<http://ncsd.ans.org/>

Click on the mail icon in the site to let our webmaster, Bob Smith, know if you have any suggestions.

ANS Meeting Program Details

Lane S. Paschal,
lpaschal@comcast.net
 (270) 217-0548

June 2006

The **2006 ANS Summer Meeting** will be held June 4–8 at the Reno Hilton in Reno, Nevada. There will be a total of six sessions for the meeting. The sessions are shown below. Program information can be found at:

<http://www.ans.org/meetings/annual/>

- Nuclear Criticality Safety Related to TA-18 Relocation, Mon. p.m.
- Data, Analysis, and Operations for Nuclear Criticality Safety, Tues. a.m.
- Integrating New Technology and Innovation Within Nuclear Criticality Safety, Tues. p.m.
- Transport and Storage of Commercial Spent Nuclear Fuel, Tues. p.m.
- Validation of Nuclear Criticality Safety Computer Codes–Tutorial, Wed. p.m.
- Nuclear Criticality Safety Standards–Forum, Thurs. a.m.

November, 2006

The **2006 ANS Winter Meeting** will be held November 12–16, 2006 at the Hyatt Regency Convention Center in Albuquerque, New Mexico.

The deadline for summary submission for the Winter Meeting is June 9, and the Call for Papers for the meeting is available on the Internet at: <http://www.ans.org/meetings/docs/2006/tfe06-cfp.pdf>

A total of six sessions have been proposed for the meeting. Summaries describing the sessions are shown below.

1. Data, Analysis, and Operations for Nuclear Criticality Safety

The purpose of this session is to provide a forum for timely presentation of general issues in the area of nuclear criticality safety that are not covered in other special session topics. **Session Organizer:** Robert Frost, (423) 610–0249, robert.frost@nuclearassociates.com.

2. Nuclear Criticality Safety Standards Forum – Panel

Subcommittee ANS-8, Operations with Fissile Material Outside Reactors, meets to discuss various technical and administrative aspects of the approximately 20 national consensus standards under its purview. In addition to status and progress updates by representatives of individual working groups, formal presentations on the technical bases of numerical values such as subcritical limits and experiences with applications of particular standards are solicited. Agenda topics such

as new and expanded standards are also encouraged. **Session Organizer:** Tom McLaughlin, (505) 667–7628, tpm@lanl.gov.

3. Fire Protection and Nuclear Criticality Safety

A facility is much more likely to experience a fire than it is a nuclear criticality accident and fire protection provisions are made that rely on mechanical and human responses. The most common fire extinguishing media is water. Water is also commonly considered in nuclear criticality safety evaluations as a reflector and a moderator and it is potentially a transporter of fissile material under the chaotic conditions of a major fire. This session will explore facility practices for evaluating, integrating, and implementing nuclear criticality safety considerations into fire protection planning and response. **Session Organizer:** Richard Taylor, (865) 482-8086, rtaylor238@comcast.net.

4. Issues Associated with LWR Fuel Enriched to Greater Than Five Weight Percent

Currently LWR fuel is limited to 5 wt % ²³⁵U but many have suggested that higher enrichments would yield benefits. The benefits include longer fuel cycles and higher achievable burnup. This session will address many a

number of issues. What should be the new enrichment limit? Do the benefits end at a certain enrichment? Are there criticality issues that would limit the enrichment? Will this new limit challenge criticality validation? What is the impact of a new limit on fabrication, transport, fuel management, spent fuel storage, transport, and disposal? **Session**

Organizer: Dale Lancaster, (814) 231-5223, dale@nuclearconsultants.com.
Cosponsors: RPD, FCWM.

5. Validation – How Much is Enough?

Validation of commonly used codes to determine neutron multiplication factors has been studied in detail for many years, and significant resources continue to be expended on the subject. In any study of complex systems there is a point of diminishing returns. Has this point been reached for validation of some common systems and processes? If criticality groups are forced to devote scarce resources to validation in order to meet ever-increasing expectations, does this represent risk-informed decisions being made by the criticality safety community? These and other questions related to the needed rigor of validation studies will be addressed by papers in this session. **Session Organizer:** Lane Paschal, lpaschal@comcast.net

6. Use of Hand Calculations in Nuclear Criticality Safety Analyses

Before the advent of high-speed desktop computers, pioneers in the field of nuclear criticality safety created various criticality safety hand methods for single fissile units or fissile units arranged into array configurations. However, much of the lore has been lost and the information scattered among numerous documents. This session will focus on regaining this information through presentations by NCS practitioners using hand calculations in their day-to-day activities. It is expected that papers will cover the most commonly used hand methods for criticality safety calculations: one group and modified one-group diffusion theory, buckling conversions, core-density conversions, surface density method, density analog method, solid angle method and the limiting surface density method. **Session Organizers:** Robert Busch, UNM, Douglas Bowen, LANL

ICNC 2007 – Russia

Robert L. Frost, Program Chair
Robert.Frost@nuclearassociates.com

The 8th International Conference on Nuclear Criticality Safety will be held May 28 through June 1, 2007, in St. Petersburg, Russian Federation. The conference web site is now online at <http://www.icnc2007.com>, although it is not yet fully functional (you can't register, submit abstracts, etc.—yet). This conference is sponsored by the OECD Nuclear Energy Agency, the Nuclear Society of Russia, and the American Nuclear Society. If you plan to prepare a paper for this conference, be aware that the deadline for submitting a 500-word abstract is July 1, 2006. Authors will be notified of acceptance by October 1. Be aware that attending this conference requires significant pre-planning, including applying for the appropriate visa. Visit the conference website for details.

Submission deadline for abstracts:
July 1, 2006!



ANS Standards: A Secret No More

Brian Kidd, ANS-8 Vice Chair

In 1991, James Mallay published an article in Nuclear News titled “ANS standards: Our best-kept secret.” Mallay was at the time, a member of the Standards Steering Committee (now known as the Standards Board) of the American Nuclear Society and had previously been the committee chair. In the article, Mallay describes the process used to initiate, review, and approve a standard within the sponsorship of the American Nuclear Society. He also describes the standards organizational structure within ANS, including Consensus Committees, Subcommittees, and working groups.

Since 1991, much has occurred to affect the development and use of consensus standards within ANS. In October 1993, the Office of Management and Budget (OMB) issued Circular A-119, “Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities.” The Circular, revised in February 1998, essentially requires government agencies to use voluntary consensus standards in lieu of government-unique standards except where inconsistent with law or otherwise impractical. The policies in the Circular are intended to reduce to a

minimum the reliance by agencies on government-unique standards. The goals, as stated in the Circular are to:

- “a. Eliminate the cost to the Government of developing its own standards and decrease the cost of goods procured and the burden of complying with agency regulation.
- b. Provide incentives and opportunities to establish standards that serve national needs.
- c. Encourage long-term growth for U.S. enterprises and promote efficiency and economic competition through harmonization of standards.
- d. Further the policy of reliance upon the private sector to supply Government needs for goods and services.”

Wow, what an opportunity to serve your country!! But really, with the need for good guidance, why not put in your two cents worth? Standards work can be challenging and rewarding. As a working group member and chair, I have felt the deep satisfaction of receiving my own personal copy of a new or revised standard that took years to complete. It takes hours of discussion within the working group trying to figure out the best set of words to describe the technical issue at hand, then hours more to resolve

comments from ANS-8 Subcommittee members, culminating in hours of discussion to resolve the N-16 Consensus Committee comments.

With the heightened awareness of the need and usefulness of consensus standards brought about by the OMB Circular, our ANS Standards are no longer a secret. In fact, just within the ANS-8 Subcommittee purview, two standards have recently been revised (8.17 & 8.19), two are currently being revised (8.10 & 8.23), one new standard has been published (8.14), and three new standards are being drafted (8.24, 8.26, & 8.27). (Work is also continuing on many of the other standards sponsored by ANS-8; noted are the ANS officially recognized status.) And you too can help. As James Mallay so aptly put it, “The most important product of the standards process in a regulated industry is common understanding. The time and effort expended creates a fuller sense of understanding and appreciation for different views and philosophies.”

If you would like to know more, please contact Tom McLaughlin, ANS-8 Chair (tpm@pobox.com or tpm@lanl.gov) or Brian Kidd, ANS-8 Vice Chair (bokidd@bwxt.com or b.o.kidd@verizon.net).



ANS NCSA Best Paper Award

(excerpts from BWXT-Y12 newsletter)

Angelo receives ANS 2005 Best Paper award

The American Nuclear Society-Nuclear Criticality Safety Division recognized nuclear engineer Peter Angelo with the 2005 Best Paper award for his paper presentation titled *Personal Annunciation Device (PAD), a Wireless Technology for CAAS Compensatory Annunciation*.

The paper was presented at the ANS Winter Meeting in Washington, D.C. (No division paper awards were organized for the June, 2005 ANS meeting).

The paper describes the Personal Annunciation Device™ — a miniature, non-nuclear based, radio frequency receiver that when activated has concurrent alarms — currently being developed at Y-12 in cooperation with Oak Ridge National Laboratory and Kansas City Plant.

The award recognizes the first integration of wireless to nuclear accident annunciation in the nuclear industry and dovetails with emerging wireless Criticality Accident alarm System efforts.

The PAD team is improving the prototype for eventual plant use by shrinking the size of the device for the next generation.

PAD is a trademark of BWXT Y-12, L.L.C.

The award was presented during a local Oak Ridge/ Knoxville Section Dinner meeting in January.



Pictured above, Peter Angelo presenting his paper.

NCSA Special Awards

Mike Westfall, awards committee

Congratulations to winners of the following NCSA special recognition awards at the NCSA dinner November, 2005. Details follow on next page.

Nomination information is located on the NCSA website under the awards committee area.



(left to right) NCSA Chair Steve Bowman, awardee Hans Toffer, Mrs. Toffer, and Honors & Awards Committee Chair Mike Westfall.



Tom McLaughlin (left) accepting on behalf of the group of awardees. Presenting is Steve Bowman (right).

American Nuclear Society - Nuclear Criticality Safety Division

Distinguished Service Award

awarded to: Hans Toffer

Mr. Toffer is recognized for distinguished service to the Division in the performance of governance roles, the development of the Division’s technical program, and the development of consensus standards, including his chairmanship of the working group for ANSI/ANS-8.21, *Use of Fixed Neutron Absorbers in the Design of Nuclear Facilities Outside Reactors*.

This award also recognizes his innovative leadership in the development of the Hanford Data Base, a comprehensive, multi-parameter electronic resource of important safety evaluations and applications. Hans Toffer’s service to the Division and his overall commitment to nuclear safety stand as high examples of professionalism in nuclear criticality safety.



Technical Excellence Award

awarded to:

Thomas P. McLaughlin

Shean P. Monahan

Norman L. Pruvost

Los Alamos National Laboratory, USA

Vladimir V. Frolov

Boris G. Ryazanov

Victor I. Sviridov

Institute of Physics and Power Engineering, Russia

These gentlemen are recognized for their tremendous collaborative effort in researching and developing the document *A Review of Criticality Accidents*, LA-13638, a compilation of criticality accidents that have occurred at 22 processing facilities and 38 experimental facilities around the world. As a result of this work, criticality accidents and their consequences are much better understood, and the safety and efficiency of fissionable material operations have been enhanced.