



American Nuclear Society

Nuclear Criticality Safety Division Newsletter

Fall 2000
<http://ncsd.ans.org/>

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Message from the Chair

Jack Bullington, NCS Chair

October is now upon us and the winter meeting in the United States Capitol is just around the corner. The winter meeting promises new interesting experiences as the planned sessions cover a wide variety of great subjects. From the preliminary program I've extracted the following session information as a reminder of the sessions to help plan your schedules.

*We will revisit the Tokaimura accident and review the lessons learned on Monday afternoon.

*Stabilization and Storage of Legacy Excess Fissile Materials is scheduled for Tuesday morning.

*Sensitivity and Uncertainty Analysis Methods for Establishing Area of Applicability and Subcritical Margins will also be Tuesday morning.

*Three Burnup credit sessions will be held Tuesday afternoon, Wednesday morning and Wednesday afternoon.

*Implementation of Nuclear Criticality Safety Controls is also scheduled for Tuesday afternoon.

** A poster session of the ANS 8 Criticality Safety Standards will be held on Wednesday morning in parallel with the Burnup Credit Sessions. Tom McLaughlin suggested that the working groups make good use of available audio visual aids. Watch out for the blue flashes.

*The sessions will be concluded on Thursday morning with our regular but interesting session on Data, Analysis, and Operations for Nuclear Criticality Safety.

Division Committee Meetings

The Division Committee Meetings will all be held on Sunday with the Education Committee starting at 9:30 a.m., Program Committee at 1:00 p.m., and the Executive Committee at 3:00 p.m.

ANS 8 is scheduled to meet Wednesday at 4:00 p.m.

NCS Dinner

The NCS Dinner is scheduled for Tuesday night at Maggiano's Little Italy at a cost of only \$35. They have put us at the top of the stairs in a room that can be expanded to accommodate 70 – 80 people. Maggiano's Little Italy is an easy walking 1/2 block from the metro stop (see page 3 of this newsletter for more information). I'd like to extend many thanks to Bonnie and Cecil for helping set this up. Come on down and join your criticality safety comrades.

The DOE Nuclear Criticality Safety Program

Adolf Garcia

Purpose

The US Department of energy Nuclear Criticality Safety Program (NCSP) was initiated in response to DNFSB Recommendation 97-2, "Continuation of Criticality Safety". The NCSP is a comprehensive, crosscutting program that integrates the need to maintain the US criticality safety infrastructure with effective support for criticality safety programs throughout the DOE complex. The first session presents the current status of the NCSP elements with reviews of recent accomplishments and descriptions of near-term plans. The second session includes a review of the DOE criticality safety initiative, including the complex-wide self-assessment program and presented by DOE management and the DNFSB. These sessions while not part of the official ANS program have been arranged through the courtesy of the ANS Headquarter staff. The presentations are intended to report on the DOE CS Program, but because of the global application of the products developed by the DOE NCSP, feedback is necessary from anyone interested in the needs of a diverse, well-organized criticality safety program. International, NRC and Licensees CS personnel are encouraged to participate. Extensive

audience participation is planned. Contact Adolf Garcia at (208) 526-4420 or garciaas@id.doe.gov for more information.

Detailed Schedule:

Thursday, November 16, 2000

- 1:00 p.m. - Introduction (Rogers Dintaman and Hoyt Johnson)
- Nuclear Criticality Safety Project management Team - Status
- 1:30 p.m. - Criticality Experiments (Rick Anderson - LANL)
- 2:00 p.m. - Nuclear Data (Bob Roussin/Mike Westfall - ORNL)
- 2:20 p.m. - Benchmarking (Blair Briggs - BBWI, INEEL)
- 2:40 p.m. BREAK
- 3:00 p.m. - Analytical Methods (Mike Westfall - ORNL)
- 3:20 p.m. - AROBCAD (Calvin Hopper/Cecil Parks - ORNL) (Applicable Ranges of Bounding Curves and Data)
- 3:40 p.m. - Training and Qualification
- LANL Training Course (Tom McLaughlin - LANL)
- Training Modules on the NCSP Web Site (Jim Morman - ANL)
- Qualification Programs (Jerry McKamy - DOE/EH)

4:10 p.m. - Information preservation and Dissemination

- Criticality Safety Information Resource Center (Tom McLaughlin et al - LANL)
- NCSP Web Site (Song Huang - LLNL)

4:40 p.m. - Session wrap-up (Adolf Garcia - DOE Idaho Operations Office)

Friday, November 17, 2000

- 8:00 a.m. - Deputy Secretary's Nuclear Criticality Safety Initiative
- 8:30 a.m. - EH Self Assessments (Jerry McKamy - DOE-EH)
- 9:00 a.m. - The view from the DNFSB and Staff (Herb Kouts, DNFSB)
- 10:00 a.m. BREAK
- 10:15 a.m. - Ends-Users Group (DOE Contractors NCS Personnel) (Kevin Carrol - LMES)
- 11:30 a.m. LUNCH BREAK
- 12:30 p.m. - 3:00 p.m. - End-Users Roundtable: Open Discussion.

Program Committee

Mark D. DeHart

The ANS Annual Meeting is scheduled for June 17-21, 2001, in Milwaukee Wisconsin. The NCSD sessions are

below and paper submittals are due at ANS Headquarters **by January 5, 2001**. See www.ans.org for a copy of the Call for Papers. Please note that with the new ANS electronic submittal process it will not be possible to accept late summaries! So get your summary in by the deadline.

Data and Analysis for Nuclear Criticality Safety. This session is the general session for NCSD papers, which do not fit any other session topic. For more information contact Mark DeHart, (865-576-3468, dehartmd@ornl.gov).

Domestic and International Critical Experiment Programs – There are several ongoing critical and subcritical experiment programs, both domestically and internationally. This session will focus on the availability of critical and approach to critical experiments from such sources, including their associated biases and uncertainties. It also includes contributions related to recent critical experiments, planned experiments, the future of experimental programs face. Session Organizers: Larry Wetzel, (804) 522-6580 <larry.l.wetzel@mcdermott.com> and Tom Doering, (702) 295-4382 tdoering@epri.com

Analyses and Evaluation of Criticality Experiments - This session will focus on the programs for and development of benchmarks from experimental data in support of criticality safety analyses. This session will serve as an avenue to disseminate recent evaluations of critical and approach to critical experiments. The session will also provide a forum for evaluation needs and methods to be discussed. The session will include lattice, and non-lattice, MOX, plutonium and uranium systems. This session complements the session on Criticality and Approach to Critical Experimental Data. Session Organizers: Fitz Trumble, (803) 208-2659 <fitz.trumble@wxsms.com> and Blair Briggs, (208) 526-7628 <bbb@inel.gov>

Use of Risk-Informed Methodology in Nuclear Criticality Safety - The nuclear industry and regulators are moving to a 'Risk-Informed' methodology in the evaluation of

Nuclear Criticality Safety Division (2000-2001)

Officers

- Chair: Jack Bullington <jack.bullington@wxsms.com>
- Vice Chair: Robert Wilson <robert.wilson@rfets.gov>
- Secretary: Steve Bowman <st5@ornl.gov>
- Treasurer: Jim Baker <jbaker@lanl.gov>

Executive Committee and Committee Chairs

- 2002 Kathleen Bhanot, International Relations, <keb3@bnfl.co.uk>
- 2001 Tom Doering, Membership, <tdoering@epri.com>
- 2002 Kevin Kimball, <kkimball@nisyscorp.com>
- 2003 Jerry McKamy, Education, <jerry.mckamy@eh.doe.gov>
- 2003 Lon Paulson, Government Relations, <lon.paulson@gnf.com>
- 2001 Jeffrey Philbin, <jsphilb@sandia.gov>
- 2003 Valerie Putnam, Honors and Awards, <vputnam@inel.gov>
- 2001 Christa Reed, Publications, <804-522-5927, ncsdnews@att.net>
- 2002 Richard Taylor, <rgt@ornl.gov>
- Mark DeHart, Program Committee Chair, <dehartmd@ornl.gov>
- Thomas McLaughlin, ANS-8 Chair, <tpm@lanl.gov>
- Doug Croucher, Nominating Committee Chair, <douglas.croucher@rfets.gov>
- John Schlessler, ANS-8 Liaison, <john.schlessler@wxsms.com>
- R. Michael Westfall, Fellow Award-Coordinator, <rwe@ornl.gov>

Nuclear Criticality Safety (e.g., the Disposal Criticality Topical Report YMP-004Q and the standard review plans for Part 70 licensees). Moving to a 'Risk-Informed' methodology has two components; the first is a likelihood of occurrence; the other is the consequence associated with the proposed event. This panel discussion will focus on what it means to be "Risk-Informed," how the 'Risk-Informed' criticality safety methodology has been, is being, or will be implemented within nuclear facilities and systems (e.g., fabrication and enrichment facilities, storage and transportation casks, disposal systems). The panel will be selected to represent domestic and international regulatory agencies, nuclear facilities, and other interested organizations. **Session Organizers:** Harry Felsher, (301) 415-5521 <hdf@nrc.gov>, Christa Reed, (804) 522-5927 <nscsdnews@att.net>, and Tom Doering (702) 295-4382 TDoering@epri.com

"Slide Rule" for Emergency Response to Criticality Accidents – A Tutorial (Two half-day sessions) - A hand-held slide rule to assist in the response to potential nuclear criticality accidents involving various material types has been developed by ORNL and made available by the NRC. Given information that can be measured at the time of the accident (e.g. radiation dose) and known information about the facility operations, the slide rule provides valuable real-time information regarding the estimated fission yield of the accident, information on expected instantaneous and integral doses at various locations from the event, etc. The slide rule can also be used in training exercises and to help develop emergency response routes for personnel in the event of a criticality. This tutorial on use of the slide rule will be a full day, two-session tutorial involving lecture and hands-on use of the slide rule under various scenarios. Session Organizer: Cecil Parks, (865) 574-5280 <ParksCV@ornl.gov>

News & Announcements

• Congratulations! to Debdas Biswas and Roger Bartholomay who won the **NCSA Best Paper Award** at the 2000 Annual ANS Meeting for their

paper, "An Approximate Method to Calculate the 12-Rad Zone".

- Appreciation to Santiago Parra for organizing the Best Paper Award.
- Congratulations! to Joetta Goda who won first place in the **NCSA Student Paper Award** at the 2000 Annual ANS meeting. Joetta's paper was entitled "Fundamental-Mode Sources in Approach to Critical Experiments" and she received a certificate and a \$400 award.
- Congratulations! To C. Tyler Scott who won second place for the **NCSA Student Paper Award** at the 2000 Annual ANS meeting. Tyler's paper was entitled "Uranyl Nitrate Source Characterization for Criticality Alarm Placement Analysis", and he received a certificate and a \$300 award.
- Appreciation to Bob Busch for organizing the student awards.
- Nuclear Criticality Safety Experiments, Calculations, and Analyses-1958-1999: Compilation of Papers from the Transactions of the American Nuclear Society, (New edition; April 2000). Reprints 1632 criticality safety paper summaries originally published in Transactions Volumes 1 through 81. The compilation is available in 4 volumes. Volume 1 includes an index and key-term and author concordances plus a supplement to the first edition. The remaining volumes include reprints of paper summaries published in over forty years of Transactions publication. (2,400 pp., PB, \$350. Order from Golden Valley Publications, 669 Joyce St., Livermore, CA 94550; phone 925/447-0614; fax: 503/212-6247; e-mail: <GoldenValleyPubl@aol.com> or <bkoponen@hotmail.com>).
- The standard working group has completed its work on a draft revision to ANSI/ANS 8.17, *Criticality Safety Criteria for Handling, Storage, and Transportation of LWR Fuel Outside Reactors*, and is soliciting comments before submittal of the draft to ANS8 for balloting. If you currently use the standard in support of operations for your facility or think you have a need for the standard, you may request a copy of the draft for review. Please contact the working group chairman Brian Kidd at BWX Technologies

(phone 804-522-6311). The working group would like to finalize the draft before the Winter ANS meeting in November, so if you want to have a voice, please call Brian soon.

• The next **NCSA topical meeting** will be an embedded topical meeting at the ANS November 11-15, 2001 in Reno, Nevada. The Call for Papers is on page 4 of this newsletter, and will also be in the November Nuclear News.

NCSA Awards

The NCSA awards will be presented at the upcoming ANS winter meeting at the NCSA dinner (see below) in Washington, DC. The H&A Committee is confirming the qualifications of nominees and selecting the awardees by consensus. The first award is the **NCSA Award for Distinguished Service**. This award is for outstanding service in carrying out the activities of the NCSA. The second award is the **NCSA Award for Technical Excellence**. This award is for outstanding contributions in the development and application of nuclear criticality safety technology.

NCSA Honors Banquet

The NCSA Honors Banquet is Tuesday, November 14, 2000 in Washington D.C. with a 6:00 Cash Bar and 6:30 Dinner. It will be at Maggiano's Little Italy which is located 1/2 block off the Metro at Friendship Heights Metro Station. That is only a couple of metro stops from the Hotel going towards Maryland. The meal will consist of 2 appetizers, 2 salads, 2 pasta entrees, 2 meat entrees, 2 desserts, coffee and tea. It will be served family style so everyone will be able to try every dish. The NCSA Division is covering part of the cost. Tickets are \$35.00. The deadline for signing up for the dinner is Sunday, November 12, 2000. However, to help us coordinate the dinner and because space may be limited **we strongly encourage you to sign up as soon as possible** by contacting Bonnie Rumble at brumble@niscscorp.com or (740) 897-4047. Please make the check out to "Jack Bullington," note on the memo line "NCSA dinner", and Bonnie will give you payment mailing instructions.

CALL FOR PAPERS

Summaries Due March 31, 2001

The American Nuclear Society
Embedded Topical Meeting on

Practical Implementation of Nuclear Criticality Safety

Reno, Nevada
November 11-15, 2001

The Nuclear Criticality Safety Division of the American Nuclear Society invites you to attend its 6th topical meeting to be held in Reno, Nevada, in November 2001. The meeting will be an embedded topical held along with the ANS Winter Meeting. The theme of the meeting will be the *Practical Implementation of Nuclear Criticality Safety*. The meeting will focus on the challenges and changes that are taking place within the field of criticality safety and how these will be implemented in the design of new facilities, the operation of existing processes, and in the decommissioning and waste storage areas. Please visit our web site at <http://ncsd.ans.org/topical> for more information on the meeting. Abstracts are requested on the implementation of criticality safety in the following topical areas:

REGULATORY GUIDANCE and RULES

- DNFSB 97-2
- DOE Regulations
- NRC 10CRF70 and Standard Review Plans
- Influence of Regulatory Rules on Future of NCS

DECONTAMINATION & DECOMMISSIONING

- Characterization of Fissile Material
- Legacy Processes

NCS PROGRAMS (Postings, Infractions, Procedures)

- Infraction Tracking, Trending, and Interpretations format, Use, and Effectiveness
- Corrective Action Programs and Their Effectiveness

MOX

- Licensing
- Fabrication
- Transport

VALIDATION

- Implementing ANS 8.1
- Practical Use of Validation
- AOA / Subcritical Margin

BURNUP CREDIT

- DOE Spent Fuel
- Commercial Spent Fuel
- Transportation

DOUBLE CONTINGENCY PRINCIPLE

- Future of DCP vs. Other Risk Assessment Methods Posting
- Regulatory Views on the DCP
- Incredible or Double Contingent?

TRAINING AND QUALIFICATION

- NCS Engineers or Operator Training

GEOLOGICAL DISPOSAL

- Methodology, DOE Spent Fuel
- Commercial Spent Fuel

Guidelines for Summaries

Abstracts should be 500-1000 words in length. The program committee requests that all abstracts be submitted electronically in ASCII text, HTML, or PDF (Adobe Acrobat) format. Paper submission will be performed using the ANS online submission system. **The deadline for abstracts is March 31, 2001.** Submitters will be notified by May 15, 2001 if their paper is accepted. Full papers will be due electronically by July 15, 2001 and will be published in ANS Proceedings on CD-ROM. Follow the detailed instructions for electronically submitting abstracts at <http://ncsd.ans.org/topical>. Please email topical@ncsd.ans.org, call (804) 522-5927, or fax (240) 248-2588 with any questions.

<i>Honorary Chair</i> Francis Alcorn	<i>General Chair</i> Steve Bowman	<i>Technical Program Chair</i> Fitz Trumble	<i>Tech Program Co-Chair</i> Kevin Kimball	<i>Publications Chair</i> Christa Reed
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