

# American Nuclear Society Standards Committee Subcommittee 8 Meeting

Doug Bowen  
ANS-8 Subcommittee Chair

Marriott Philadelphia Downtown  
June 21, 2018



# Agenda

- Welcome
- Discussion of agenda
- Approval of prior SC8 minutes (Washington, DC – November 2017)
- ISO TC85/SC5/WG8 Standards Activity Report – D. Bowen
- NCSCC Activity Report – L. Wetzel
- Reports from Working Group Chairs
- Old/New Business

# Approval of ANS-8 SubC Minutes - 2017 ANS Winter Meeting

APPROVAL

PASSED

## Ballot

### Ballot Question

Should ANS-8 SubC Minutes - 2017 ANS Winter Meeting be approved?

### Document for Approval



Draft ANS-8 SubC Minutes - 2017 ANS Winter Meeting

Download

### Options

<input checked="" type="radio"/> Affirmative	Comment Optional	11	100%	Tue, Mar 20 2018 7:23 pm PDT
<input type="radio"/> Negative	Comment Required	0	0%	
<input type="radio"/> Abstain	Comment Required	2		

This ballot needs at least 51% Yes/Affirmative votes to pass.

RECIRCULATE



# ANS-8 membership

#	ANS-8 SC Members	Company	E-mail address
1	J. S. Baker	Savannah River Nuclear Services	<a href="mailto:james.baker@srs.gov">james.baker@srs.gov</a>
2	D. G. Bowen (+)	Oak Ridge National Laboratory	<a href="mailto:bowendg@ornl.gov">bowendg@ornl.gov</a>
3	M. Barnett	URS Professional Solutions, LLC	<a href="mailto:Marvin.barnett@aecon.com">Marvin.barnett@aecon.com</a>
4	N. Brown	Nuclear Fuel Services	<a href="mailto:nwbrown@nuclearfuelservices.com">nwbrown@nuclearfuelservices.com</a>
5	M. Crouse (+++)	Consolidated Nuclear Security, LLC	<a href="mailto:michael.crouse@cns.doe.gov">michael.crouse@cns.doe.gov</a>
6	E. Elliott	N3B Los Alamos	<a href="mailto:ernest.elliott@em-la.doe.gov">ernest.elliott@em-la.doe.gov</a>
7	D. Erickson	Savannah River Nuclear Services	<a href="mailto:david.erickson@srs.gov">david.erickson@srs.gov</a>
8	C. Percher (*)	Lawrence Livermore National Laboratory	<a href="mailto:percher1@llnl.gov">percher1@llnl.gov</a>
9	K. Kimball	U.S. Department of Energy, Y-12	<a href="mailto:kimballkd@y12.doe.gov">kimballkd@y12.doe.gov</a>
10	T. P. McLaughlin	Los Alamos National Laboratory (retired)	<a href="mailto:tpm@pobox.com">tpm@pobox.com</a> ; <a href="mailto:tpm@lanl.gov">tpm@lanl.gov</a>
11	J. A. Morman	Argonne National Laboratory	<a href="mailto:jamorman@anl.gov">jamorman@anl.gov</a>
12	L. E. Paulson	GE Hitachi Nuclear Energy	<a href="mailto:lon.paulson@ge.com">lon.paulson@ge.com</a>
13	A. Prichard	Pacific Northwest National Laboratory	<a href="mailto:andrew.prichard@pnnl.gov">andrew.prichard@pnnl.gov</a>
14	K. Reynolds (++)	Consolidated Nuclear Security, LLC	<a href="mailto:Kevin.Reynolds@cns.doe.gov">Kevin.Reynolds@cns.doe.gov</a>
15	C. Tripp	Nuclear Regulatory Commission	<a href="mailto:christopher.tripp@nrc.gov">christopher.tripp@nrc.gov</a>
16	D. Winstanley	Sellafield Sites (U.K.)	<a href="mailto:ddw1@sellafieldsites.com">ddw1@sellafieldsites.com</a>
17	C. Haught (*)	Consolidated Nuclear Security, LLC	<a href="mailto:haughtcf@y12.doe.gov">haughtcf@y12.doe.gov</a>

+ ANS-8 Chair; ++ ANS-8 Vice Chair; +++ ANS-8 Secretary; \* new member

# Use of Standards Workspace for all ANS-8 work

<b>YouTube Links to Recorded Trainings</b> (Policies, Rules, Procedures, Process)	
<b>*Table Acronyms:</b> WG = working group	CC = consensus committee SB = Standards Board SubC = subcommittee VChair = vice chair
Description of Training	Recommended Audience
<b>Training Module #1: Overview of Nuclear Related Standards</b> <a href="https://www.youtube.com/watch?v=RiSVzLSW1DO">https://www.youtube.com/watch?v=RiSVzLSW1DO</a>	<ul style="list-style-type: none"> <li>• CC members</li> <li>• SubC chairs, Vchairs, members</li> <li>• WG chairs &amp; Vchairs</li> <li>• RP3C at-large members</li> </ul>
<b>Training Module #2: ANS Standards Organization &amp; Staffing</b> <a href="https://www.youtube.com/watch?v=2viBGwHpnwk">https://www.youtube.com/watch?v=2viBGwHpnwk</a>	<ul style="list-style-type: none"> <li>• CC members</li> <li>• SubC chairs, Vchairs, members</li> <li>• WG chairs , Vchairs, and members</li> <li>• RP3C at-large members</li> </ul>
<b>Training Module #3: Voluntary Consensus Standards Development Process</b> <a href="https://www.youtube.com/watch?v=74oRKQPrM_w">https://www.youtube.com/watch?v=74oRKQPrM_w</a>	<ul style="list-style-type: none"> <li>• CC chairs, Vchairs, and members</li> <li>• SubC chairs, Vchairs, and members</li> <li>• WG chairs , Vchairs, and members</li> </ul>
<b>Training Module #4: Governing Documents (Part 1) includes:</b> 1) ANS Bylaws, Rules, and Procedures (not audited by ANSI) 2) ANSI Essential Requirements: Due process requirements for American National Standards 3) ANS Standards Committee Rules and Procedures <a href="https://www.youtube.com/watch?v=DARFskn-U1w">https://www.youtube.com/watch?v=DARFskn-U1w</a>	<ul style="list-style-type: none"> <li>• SB members</li> <li>• CC chairs, Vchairs, and members</li> <li>• SubC chairs &amp; Vchairs</li> <li>• WG chairs &amp; Vchairs</li> </ul>
<b>Training Module #5: Governing Documents (Part 2) includes:</b> 1) Policy Manual for the ANS Standards Committee 2) ANS Standards Committee Procedures for Consensus Committees 3) ANS Standards Toolkit <a href="https://www.youtube.com/watch?v=4ic8Y5awwAM">https://www.youtube.com/watch?v=4ic8Y5awwAM</a>	<ul style="list-style-type: none"> <li>• SB members</li> <li>• CC chairs, Vchairs, and members</li> <li>• SubC chairs &amp; Vchairs</li> <li>• WG chairs &amp; Vchairs</li> </ul>

# ANS-8 Ballots Since the Last ANS-8 Meeting

Details	Results			Actions
<b>ANS-8 Approval of Response to Inquiry for ANS-8.14-2004; R2016 approval ballot</b> <div>Did Not Pass 0 days left   closes on 2018-05-17   11 voter comments</div>	Affirmative	2	16.667%	<a href="#">View</a>
	Negative w/com...	10	83.333%	
	Abstain w/com...	0		
<b>Approval of ANS-8 SubC Minutes - 2017 ANS Winter Meeting approval ballot</b> <div>Passed 0 days left   closes on 2018-04-03   4 voter comments</div>	Affirmative	11	100%	<a href="#">View</a>
	Negative w/com...	0	0%	
	Abstain w/com...	2		
<b>ANS-8 Approval of ANS-8.23-201x DRAFT approval ballot</b> <div>Passed 0 days left   closes on 2018-02-15   26 voter comments</div>	Affirmative	8	80%	<a href="#">View</a>
	Negative w/com...	2	20%	
	Abstain w/com...	0		
<b>Approval of ANS-8 June 2017 Minutes approval ballot</b> <div>Passed 0 days left   closes on 2017-11-02   4 voter comments</div>	Affirmative	12	100%	<a href="#">View</a>
	Negative w/com...	0	0%	
	Abstain w/com...	3		



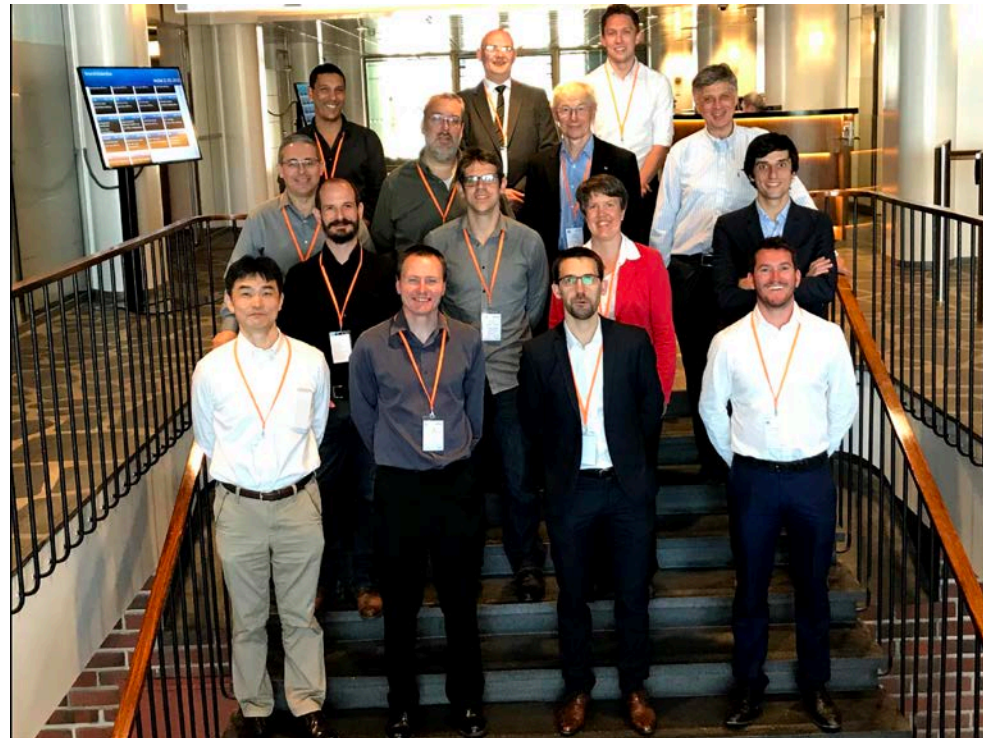
# SC8 chair project activity (continued)

- **Issue:** The statements appear to be clear, but they may not be to those using the standards but not involved with their development
- **Goal:** Provide an intent or basis statement for each requirement and recommendation in the ANS-8 standards during the revision process
  - To develop associate member's understanding
  - Have guidance for future working groups to support clarifications or standards development
- **Task:** Generate a whitepaper for each ANS-8 standard to provide a basis statement for each recommendation or requirement in the standard.
  - Store on the ANS Standards Workspace

# ISO TC85/SC5/WG8 standards activity report



- ISO TC85/SC5/WG8, Nuclear Criticality Safety meeting on May 14–18, 2018, hosted by METSTA, Mechanical Engineering and Metals Industry Standardization, in Helsinki, FI
- Countries represented:
  - 1-CA
  - 4-FR
  - 1-JP
  - 1-SE
  - 3-UK
  - 2-US
  - 1-FI



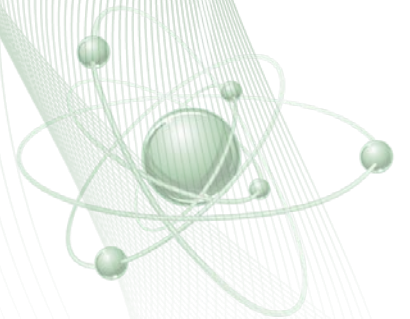


# ISO TC85/SC5/WG8 standards activity report – in progress

Reference	Title	Leader	Current stage 2018	Next stage 2019
ISO 1709 R	Principles of criticality safety in storing, handling and processing	UK	DIS	ISO
ISO 7753 R	Performance and testing requirements for criticality detection and alarm system	France (+UK)	WG8 draft	WG8 draft
ISO 11311	Critical values for homogeneous Plutonium-Uranium oxide fuel mixtures outside of reactors	France	ISO	ISO (R: 2021)
ISO 11320	Emergency preparedness and response	UK	ISO	ISO (R: 2021)
ISO 14943	Administrative criteria related to nuclear criticality safety	?	ISO	ISO (R: 10/2018)
ISO 16117	Estimation of the number of fissions of a postulated criticality accident	France	ISO	ISO (R: 07/2018)
ISO 27467	Analysis of a postulated criticality accident	?	ISO	ISO (R: 07/2019)
ISO 27468	Evaluation of systems containing PWR UOX fuels — Bounding burnup credit approach	France	ISO	ISO (R: 10/2021)
ISO 21391	Geometrical Nuclear Criticality Safety dimensions	France	DIS	ISO
ISO 22946	Solid Waste (excluding Irradiated and non-Irradiated Nuclear Fuel)	UK	CD	ISO
ISO 23133	Nuclear Criticality Safety Training for Operations	UK	CD	ISO
-	Nuclear Criticality Safety Risk Assessment	Canada	WG8 draft	WG8 draft

# NCSCC activity report

L. Wetzel



# Reports from working group chairs

Standard	Title	Chair
<b>ANS-8.1</b>	Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors	N. Brown
<b>ANS-8.3</b>	Criticality Accident Alarm System	J. Hicks
<b>ANS-8.5</b>	Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material	J. Hicks
<b>ANS-8.6</b>	Safety in Conducting Subcritical Neutron-Multiplication Measurements in Situ	B. Myers
<b>ANS-8.7</b>	Nuclear Criticality Safety in the Storage of Fissile Materials	K. Kimball
<b>ANS-8.10</b>	Criteria for Nuclear Criticality Safety Controls in Operations With Shielding and Confinement	A. Prichard
<b>ANS-8.12</b>	Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors	C. Tripp
<b>ANS-8.14</b>	Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors	L. Berg
<b>ANS-8.15</b>	Nuclear Criticality Control of Special Actinide Elements	C. Rombough

Standard	Title	Chair
<b>ANS-8.17</b>	Criticality Safety Criteria for the Handling, Storage, and Transportation of LWR Fuel Outside Reactors	B. Kidd
<b>ANS-8.19</b>	Administrative Practices for Nuclear Criticality Safety	J. Miller
<b>ANS-8.20</b>	Nuclear Criticality Safety Training	R. Knief D. Hill
<b>ANS-8.21</b>	Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors	D. Erickson
<b>ANS-8.22</b>	Nuclear Criticality Safety Based on Limiting and Controlling Moderators	M. Crouse
<b>ANS-8.23</b>	Nuclear Criticality Accident Emergency Planning and Response	J. Baker
<b>ANS-8.24</b>	Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations	L. Wetzel
<b>ANS-8.26</b>	Criticality Safety Engineer Training and Qualification Program	K. Reynolds
<b>ANS-8.27</b>	Burn-up Credit for LWR Fuel	D. Lancaster
<b>ANS-8.28 (in dev.)</b>	Administrative Practices for the Use of Non-Destructive Assay Measurements for Nuclear Criticality Safety	J. Chapman



## ANS-8 Standards Report - 6-20-2018

ANS-8 Subcommittee Chair: Douglas Bowen (bowendg@ornl.gov)

ANS-8 Secretary: Michael Crouse (michael.crouse@cns.doe.gov)

Designation	Title	Working Group Chair	PINS Submitted	ANSI Approval	Extension Date	Action Needed By	Comments
ANS-8.1-2014	Nuclear Criticality Safety in Operations with Fissionable Materials Outside Reactors	N. Brown	12/8/17	4/15/14		4/15/19	Draft in development. Consider RF to keep standard current during revision.
ANS-8.3-1997 (R2017)	Criticality Accident Alarm System	J. Hicks	8/1/2012 12/14/2017	10/25/17		10/25/22	New chair to replace S. Monahan. RF approved 10/25/2018. PINS resubmitted after RF on 12/14/2017. Revision in progress.
ANS-8.5-1996 (R2012)	Use of Borosilicate-Glass Raschig Rings as a Neutron Absorber in Solutions of Fissile Material	J. Hicks		2/23/2012	12/31/19	2/23/17	There has been no action on 8.5. We need to either reaffirm it or withdraw it. Will be consolidated into ANS-8.21.
ANS-8.6-1983 (R2017)	Safety in Conducting Subcritical Neutron-Multiplication Measurements in Situ	B. Myers		8/24/17		8/24/22	RF approved 8/24/2017.
ANS-8.7-1998 (R2017)	Nuclear Criticality Safety in the Storage of Fissile Materials	K. Kimball		12/14/17		2/23/17	RF approved 12/14/17. Revision in progress.
ANS-8.10-2015	Criteria for Nuclear Criticality Safety Controls in Operations with Shielding and Confinement	A. Prichard		2/12/2015		2/12/20	ANS 8.10 is currently in maintenance mode. Initial discussions have started about the next revision. In addition, I am checking with the working group to see if they will be willing to serve during the next revision.



### ANS-8 Standards Report - 6-20-2018

ANS-8.12-1987 (R2016)	Nuclear Criticality Control and Safety of Plutonium-Uranium Fuel Mixtures Outside Reactors	D. Biswas		5/6/2016		5/6/21	RF approved 5/6/2016. A lot of work had been done towards a revision, but nothing is currently planned. I would like to hold a working group meeting in November, to decide the direction and work towards a draft revision.
ANS-8.14-2004 (R2016)	Use of Soluble Neutron Absorbers in Nuclear Facilities Outside Reactors	L. Berg		6/29/2016		6/29/21	There has been no change in status for WG 8.14 – it is currently in maintenance.
ANS-8.15-2014	Nuclear Criticality Control of Selected Actinide Nuclides	C. Rombough		10/10/2014		10/10/19	Standard 8.15 is in good shape. Consider RF or PINS to revise before action needed by date.
ANS-8.17-2004 (R2014)	Criticality Safety Criteria for the Handling, Storage and Transportation of LWR Fuel Outside Reactors	E. Saylor		7/28/2014		7/28/19	Consider RF or PINS to revise before action needed by date.
ANS-8.19-2014	Administrative Practices for Nuclear Criticality Safety	J. Miller		7/28/2014		7/28/19	Consider RF or PINS to revise before action needed by date.
ANS-8.20-1991 (R2015)	Nuclear Criticality Safety Training	R. Knief D. Hill		8/3/2015		8/3/20	
ANS-8.21-1995 (R2011)	Use of Fixed Neutron Absorbers in Nuclear Facilities Outside Reactors	D. Erickson	6/1/11	5/19/2011		5/19/16	Draft @ NCSCC ballot; comments being resolved.

### ANS-8 Standards Report - 6-20-2018

ANS-8.22-1997 (R2016)	Nuclear Criticality Safety Based on Limiting and Controlling Moderators	M. Crouse		10/11/16		10/11/21	8.22 was reaffirmed in 2016. We are working to develop the PINS necessary for a revision to address ANS-8 comments and suggestions received during the reaffirmation ballot.
ANS-8.23-2007 (R2012)	Nuclear Criticality Accident Emergency Planning and Response	J. Baker	7/7/16	5/31/2012		5/31/17	Draft issued for ANS-8 ballot; resolutions to comments provided to commenters.
ANS-8.24-2017	Validation of Neutron Transport Methods for Nuclear Criticality Safety Calculations	L. Wetzel	3/18/14	12/12/17		12/12/22	Approved on 12/12/2017.
ANS-8.26-2007 (R2016)	Criticality Safety Engineer Training and Qualification Program	K. Reynolds		12/15/16		12/15/21	ANS-8.26 was reaffirmed and is officially in maintenance mode. I am working a new PINS to go with the revision that we intend to publish in 2018.
ANS-8.27-2015	Burnup Credit for LWR Fuel	D. Lancaster		11/10/2015		11/10/20	Since the 2015 issue of ANS-8.27 we have been at rest. The industry is working the issues through NEI-12-16. This effort may finish in 2017 and we may try to coordinate ANS-8.27 with NEI-12-16, starting in 2018.
ANS-8.28	Administrative Practices for the Use of Non-Destructive Assay Measurements for Nuclear Criticality Safety	J. Chapman					For 8.28, we continue on with the development and writing group. See briefing slides from last few years.



# Old and new business



**Next ANS-8 standards forum:**

**Hilton Orlando Bonnet Creek**  
**November 15, 2018**