



**Oak Ridge National Laboratory
Oak Ridge, TN**

SUBJECT: Report on Foreign Travel to <destination>
DATE: May, 2020
TO: Dr. Angela Chambers, Nuclear Criticality Safety Program Manager, National Nuclear Security Administration / NA-511
FROM: Douglas G. Bowen

MEETING TITLE: ISO Technical Committee (TC) 85, Subcommittee (SC) 5 Plenary and ISO TC85/SC5/WG8 Working Group 8, “Nuclear Criticality Safety” working group meetings

MEETING LOCATION: Hangzhou, China – cancelled in Dec. 2019; Rescheduled for May 2020 in London, UK, then Sept. 2020 in Paris, FR – cancelled indefinitely. WG8 Convenor (Doug Bowen) scheduled two WG8 virtual meetings via MS Teams to conduct working group business. First meeting was held on May 30, 2020 (3 hours) and the second meeting was scheduled for July 2, 2020 (3 hours).

MEETING DATES: First meeting was held on May 27, 2020 (3 hours) and the second meeting was scheduled for July 2, 2020 (3 hours).

ATTENDEES ON BEHALF OF NCSP: [Only 1 report from the institution for ALL attendees] Doug Bowen

MEETING PURPOSE: To discuss ISO Nuclear Criticality Safety Standards in development or in revision. See the attached agenda and report.

MEETING BENEFITS TO THE NCSP: These meetings allow for the United States and the NCSP to be in the loop on international standards developments that tend to influence US standards and regulations. For example, the TEX low temperature experiments were first discussed during ISO WG8 meetings and in meetings involving ISO transportation regulations. ISO standards directly influence the discussions and, eventually, the content, of ANSI/ANS NCS standards. The NRC is now endorsing ISO standards in its regulatory guidance to licensees. Many of the WG8 participants are also direct collaborators with the NCSP (IRSN, AWE, NNL, OECD/NEA, CEA, etc.), which is in the purview of NCSP MOUs and other collaboration activities. The WG8 agenda and final meeting resolutions are provided here.

PURPOSE OF TRAVEL: To attend the TC85/SC5 Plenary. Travel not taken due to the Plenary being cancelled due to COVID – WG8 meetings held virtually.

Persons Contacted at the virtual meeting

There were 17 WG8 members present at each of the meetings representing 6 countries:

UK

- Andrew Sutton,
- Ben Webborn,
- Neil Harris,



- Lauren Flint,
- France
 - Aurélie Bardelay,
 - Matthieu Duluc,
 - Michael Laget,
 - Michael Prigniau,
 - Grégory Caplin
- Canada
 - Christine McNally,
 - Dranga Ruxandra,
 - Vladimir Khotylev,
- USA
 - Calvin Hopper,
 - Jeremy Munson,
 - Doug Bowen
- Finland
 - Karin Rantamäki,
- Sweden
 - Dennis Mennerdahl.

Presentations, Chair Responsibilities, Etc.:

I am convenor of TC85/SC5/WG8 and ISO Nuclear Technical Advisory Group Deputy Overall Advisor for ISO TC85/SC5/WG8. In this role, I support a neutral position to lead the development of all international Nuclear Criticality Safety Standards. I also lead the development of all domestic Nuclear Criticality Safety standards as the ANS-8 Subcommittee Chairman and my ISO position helps be perform my ANS-8 position. I prepare and lead the group through an annual agenda (attached) for systematic review, revision, and development of all NCS ISO standards. Work is co-managed with project leaders for each standard (led by a particular country) and work is tracked until a standard is issued or withdrawn. Project work is tracked via a resolution or action list that provides discussion points for each meeting. I also work as an NTAG member to provide guidance to US ISO and help to provide the US position within my expertise on ISO standards in development.

Distribution:

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ISO TC85/SC5/WG8 “Nuclear Criticality Safety” Meeting Minutes
ISO TC85/SC5/WG8 Virtual Meeting,
02 JULY 2020, 0600 – 0900 AM Eastern Time

02 JUL 2020 – 0600 AM – 0900 AM Eastern Time		
Time (Duration)	Topic of Discussion	Lead
0600 (10)	(1) Introductory remarks & Status report of the WG8 Virtual Meeting on 27 May 2020	BOWEN (US) CAPLIN (FR)
0620 (40)	(2) WG8 Berlin 2019 meeting and WG8 Virtual Meeting #1 Resolutions (Legend: X = no action; X =in progress; X =complete; X =cancelled/modified) <ul style="list-style-type: none"> ▪ Work Items <ul style="list-style-type: none"> ▪ 1 – WG8 business (May2020 resolutions 1, 2) <ul style="list-style-type: none"> ▪ Discuss Proposed Roadmap from Andy SUTTON ▪ WG8 review request sent by BOWEN on 29Jun2020 ▪ 2 – (FR) 2-Column Guidance N-document (Berlin resolution 10, May2020 resolution 3) <ul style="list-style-type: none"> ▪ No update – Resolution deferred to December during the May meeting. ▪ 3 – ISO 22946 “Waste Standard” is complete ▪ 4 – (CA) Proposed Risk Assessment Standard (Berlin resolution 14, May2020 Resolution 4) <ul style="list-style-type: none"> ▪ WG8 review and comment on updated proposed risk assessment standard 	WG8 and Project Leaders
0700 (5)	Break	
0705 (50)	(3) WG8 Berlin 2019 meeting and WG8 Virtual Meeting #1 Resolutions (Legend: X = no action; X =in progress; X =complete; X =cancelled/modified) <ul style="list-style-type: none"> ▪ Work Items <ul style="list-style-type: none"> ▪ 5 – (UK) NCS Operations Training Standard (May2020 Resolution 5, 6) <ul style="list-style-type: none"> ▪ WG8 to review post-DIS draft and decide to move to the FDIS stage ▪ WG8 review request sent by BOWEN on 29Jun2020 ▪ 6 – (FR) Proposed Revision to ISO 7753 (Berlin resolutions 19, 22, May2020 resolutions 7, 8) <ul style="list-style-type: none"> ▪ NWIP ballot request sent to Steve Lloyd on 19 June 2020 ▪ 7 – (UK/WG8) Terms and Definitions N-document (Berlin resolutions 23, 24, 25, May2020 resolution 9) <ul style="list-style-type: none"> ▪ WG8 review request sent by BOWEN on 01Jul2020 ▪ 8 – (UK/WG8) Role Definitions N-document (Berlin resolutions 26, 27, 28, May2020 resolution 10) <ul style="list-style-type: none"> ▪ WG8 review request sent by BOWEN on 01Jul2020 	WG8 and Project Leaders
0755 (5)	Break	



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Time (Duration)	Topic of Discussion	Lead
0800 (45)	<p>(4) WG8 Berlin 2019 meeting and WG8 Virtual Meeting #1 Resolutions (Legend: X = no action; X=in progress; X=complete; X=cancelled/modified)</p> <ul style="list-style-type: none"> ▪ Work Items <ul style="list-style-type: none"> ▪ 9 – (JP) Proposed Revision to ISO 16117 (Berlin resolution 29, May2020 Resolution 11) ▪ 10 – (UK) Amendment to ISO 1709 Standard (Berlin resolutions 32, May2020 resolution 12, 13) <ul style="list-style-type: none"> ▪ NWIP guidance requested from Steve Lloyd on 30Mar2020; request resent on 01Jul2020 ▪ 11 – (UK, FR) ISO Standard Summary Documents (Brochures) (May2020 resolutions 14, 15) ▪ 12 – (US) Proposed ISO Standard for Validation of Computational Methods (May2020 resolution 16) <ul style="list-style-type: none"> ▪ Discussion about potential NWIP draft ▪ 13 – Other business (May2020 resolution 17) <ul style="list-style-type: none"> ▪ Revision/amendment of ISO 11311 (MOX) ▪ WG8 member exchanges with the IAEA and revision of NCS-related standards; WG8 review/input of these standards 	WG8 and Project Leaders
0845 (15)	(5) New business; new resolutions; plans for the next meeting	WG8
0900	Adjourn	



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WORK IN
PROGRESS &
STATUS
(Berlin
Resolutions –
May 2019
+ May2020
and July2020
Virtual
Meetings)

VIRTUAL MEETING – 02 July 2020 – RESOLUTIONS (BERLIN, MAY2020, JUL2020)

Work Item #1 – WG8 Business

- **Jul2020 Resolution #1:** Andy SUTTON to split the proposed roadmap into two documents: 1. Clean version without standard linkages; 2. Detailed version or table or appendix with standard linkages.

Work Item #2 – 2-Column Guidance N-document

- **Jul2020 Resolution #2:** Revise 2-column guidance NDOC N176 for new standards that have been developed and to clarify the intent/purpose of the document. CAPLIN (FR) – Dec 2020
- **Jul2020 Resolution #3:** Verify the 2-column guidance is accurate and correct, including newly published standard (ISO 22946 “Waste Standard”). Michael PRIGNIAU (FR) (+ support by Dennis, Vladimir and Neil) – May 2021

Work Item #3 – Proposed Risk Assessment Standard

- **Jul2020 Resolution #4:** WG8 to review/comment on latest draft standard. WG8 to provide recommendation about continuing with this proposed standard. WG8 – Sep2020 **IN PROGRESS**
- **Jul2020 Resolution #5:** Create an agenda item at the next WG8 virtual meeting in Sep2020 for a 60 min. focused technical discussion and WG8 decision about an NWIP – Sep2020

Work Item #4 – NCS Operations Training Standard

- **Jul2020 Resolution #6:** Ben WEBBORN to generate a new draft of the NCS Operations Training Standard for a second DIS ballot.

Work Item #5 – Proposed Revision to ISO 7753

- **Jul2020 Resolution #7:** WG8 members to provide information or presentation to WG8 about how they use CAAS in their country. SC5 leadership to provide assistance for an information request. Share this information with WG8. WG8 – Dec 2019 **IN PROGRESS**
- **Jul2020 Resolution #8:** Resolution 19 - mark as in progress – defer to Sept. 30, 2020 on how CAAS is used in members’ country. **IN PROGRESS**

Work Item #6 – Terms and Definitions N-document

- **Jul2020 Resolution #9:** Issue draft 4 of the NDOC. HARRIS (UK)/BOWEN (US) – May 2019 **IN PROGRESS**
- **Jul2020 Resolution #10:** Publish Issue 1 of the Terms and Definitions N-document. HARRIS (UK)/BOWEN (US) – Sep2020
- **Jul2020 Resolution #11:** Commence work on Issue 2 of the NDOC to consider terms in new WG8 standards. (Close Berlin Resolution #24) HARRIS (UK) – Sep2020
- **Jul2020 Resolution #12:** WG8 commence review/comment on the revised NDOC. WG8 – Dec2020



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Work Item #7 – Role Definitions N-document

- **Jul2020 Resolution #13:** WG8 to review/comment and provide comments. WG8 – Sep 2020
- **Jul2020 Resolution #14:** Publish NDOC. BOWEN (US)/HARRIS (UK) – Dec 2020
- **Jul2020 Resolution #15:** WG8 to review Issue 2, draft 3 and to provide comments/feedback to FLINT (UK). WG8 – Sep 2020
- **Jul2020 Resolution #16:** WG8 to review additional roles for inclusion into Role Definitions N-document. WG8 – Sep 2020
- **Jul2020 Resolution #17:** Add an agenda item for the Sep2020 virtual meeting to include discussion about potential new roles for this N-document. – BOWEN (US) – Sep 2020

Work Item #8 – Proposed revision to ISO 16117 “Estimation of the Number of Fissions of a Postulated Criticality Accident”

- **Jul2020 Resolution #18:** Provide WG8 with details about a proposed, minor, revision to ISO 16117, “Estimation of the Number of Fissions of a Postulated Criticality Accident.” YAMANE (JP) – Jun 2021 (Postponed for 1-year)

Work Item #9 – Amendment to ISO 1709 Standard

- **Jul2020 Resolution #19:** ISO 1709 face-to-face discussion as a subsequent revision on deferred topics (HARRIS (UK) to share for members to add to the list for revision scope) beyond the scope of the amendment. BOWEN (US) – Sep2020

Work Item #10 – ISO Standard Summary Documents (Brochures)

- **Jul2020 Resolution #20:** WG8 to review all ISO Standard Summary Documents and provide input to Karin RANTAMÄKI (FI). WG8 – Aug2020
- **Jul2020 Resolution #21:** Karin RANTAMÄKI to update brochures based on WG8 input. RANTAMÄKI (FI) – Sep2020
- **Jul2020 Resolution #22:** Publish updated brochures. BOWEN (US)/RANTAMÄKI (FI) – Sep2020

Work Item #11 – Proposed ISO Standard for Validation of Computational Methods

- **Jul2020 Resolution #23:** Jeremy MUNSON will update the “Status and Items to Discuss List” for discussion at the Dec2020 WG8 meeting. MUNSON – Dec2020

Work Item #12 – Other Business

- **Jul2020 Resolution #24:** Agenda item at next WG8 meeting: WG8 member exchanges with the IAEA and revision of NCS-related standards; WG8 review/input of these standards. BOWEN – Sep2020
- **Jul2020 Resolution #25:** WG8 distribution of the ISO 11311 draft with frontmatter for review/comment. BOWEN(US)/CAPLIN(FR) – Aug2020 **COMPLETE**
- **Jul2020 Resolution #26:** Add an agenda item for the next WG8 meeting to discuss standard issues and the need to publish a correction to the standard. BOWEN(US) – Sep2020



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Current ISO WG8 Standards		
ISO Standard	Standard Title	Revision Date
ISO-7753:1987	Nuclear Energy – Performance and testing requirements for criticality detection and alarm systems	01-AUG-1987
ISO-14943:2004	Nuclear fuel technology — Administrative criteria related to nuclear criticality safety	01-OCT-2004
ISO-27467:2009	Nuclear criticality safety — Analysis of a postulated criticality accident	15-FEB-2009
ISO-27468:2011	Nuclear criticality safety — Evaluation of systems containing PWR UOX fuels — Bounding burnup credit approach	01-JUL-2011
ISO-11311:2011	Nuclear criticality safety — Critical values for homogeneous plutonium-uranium oxide fuel mixtures outside of reactors	01-JUL-2011
ISO-11320:2011	Nuclear criticality safety — Emergency preparedness and response	01-OCT-2011
ISO-16117:2013	Nuclear criticality safety — Estimation of the number of fissions of a postulated criticality accident	01-OCT-2013
ISO-1709:2018	Nuclear energy - Fissile materials - Principles of criticality safety in storing, handling and processing	01-FEB-2018
ISO-21391:2019	Nuclear criticality safety -- Geometrical dimensions for subcriticality control -- Equipment and layout	01-AUG-2019
ISO 22946:2020	Nuclear criticality safety — Solid waste excluding irradiated and non-irradiated nuclear fuel	08-JAN-2020