

Date: 7 December 2021

Subject: CSSG WebEx Meeting

Participants: Hayes, Brady, Erickson, Trumble, Wilson, Reynolds, Hicks
McKamy, Hopper, Chambers

Agenda:

- ANS Panel Session Presentation/Discussion
- 3007 Maintenance
- Next Steps

Discussion:

ANS Panel Session

The panel session was held Wednesday, December 1 2:30pm EST at the ANS Winter Meeting in Washington, DC. David Hayes served as the session moderator. Both Hayes and Heinrichs attended in person. There were approximately 12 in-person attendees. This first attempt of the ANS to hold a hybrid (dual in-person/virtual) was not entirely successful. Virtual panelists/speakers had issues with connections to the meeting platform. Virtual attendees were restricted the chat feature for participating in discussions. This limited open discussion. There was no specific feedback on the CSSG use of the ANS standards inquiry process for ANS 8.1. Recommend that future panels only be considered as in-person events unless considerable improvements are made by ANS. The final improved slide package included in these minutes.

- Mikey will distribute the final presentation to all.

3007 Maintenance

- Mikey will email an action to all CSSG members to review and provide feedback on item 2 of the proposed resolution in CSSG Tasking 2020-03 prior to Angela's meeting tomorrow at 9am CST to discuss the potential need to revise DOE-STD-3007.

Discussion was initiated to determine if the safety philosophy described in CSSG Tasking 2016-04 should be brought to bear in any potential changes considered for 3007.

- Since 2020-03 specifically asks for changes to 3007, it was considered prudent to send an email to Angela as the lead for 3007 to inform that group of the CSSG inquiry to ANS-8.1. Action to Mikey (cc to Larry Berg)

Discussion emphasized that the CSSG is providing this as information and continues to advise caution regarding the potential to make changes to 3007 that could change the words or intent of direction already given in the ANSI/ANS standards.

DNFSB

It was noted that staffing changes at DNFSB have given the CSSG and NCSP another opportunity to engage/inform DNFSB staff in NCSP training and resources.

Next Steps, Potential Taskings

Input from the NCS Community:

- Dave Hayes will develop draft input for the NCSP Winter Newsletter and distribute to CSSG members basically summarizing the intent of the ANS Panel Session and asking for feedback from the user community as to how and on what topics the CSSG may be able to assist them and their sites.
- Mikey will reach out to the NCSD Newsletter and inquire if CSSG can use that publication as a vehicle for CSSG outreach to the community.
- Action for all: In the look ahead for articles for both Newsletters, should seek volunteers to write short summaries of CSSG activities and information available, e.g., best practices for contractor self-assessments, CSSG safety philosophy, etc.

Another suggestion was to emphasize the purpose of CSSG in the NCSP Training Courses. Need to discuss with Bowen.

Contract Transition at Y-12:

This is the highest priority for CSSG action (shortest timeline, less than 90 days).

- Angela will offer CSSG assist similar to that provided for the SRPPF project but focused on transition and past CSSG experience to avoid backtracking on progress made responding to accumulation issues in the name of efficiency without context.
- Hayes will develop draft tasking should either the Transition Team or NPO decide to accept CSSG assistance

Criticality Safety and NDA Measurements:

Communication and cooperation amongst these two groups is an on-going issue that has been noted in the causal analysis of occurrences at several sites over the past decade and longer. A review of this history and development of recommendations moving forward could prove beneficial to the NCS community.

CSSG Self-Assessment and Gap Analysis:

This has been discussed in the past. Need to develop a draft tasking to perform the self-assessment including a gap analysis of topics that have been addressed by the CSSG in the past, topics of interest that have not been addressed, identify any changes or trends in CSSG positions. The gap analysis would best be accomplished by development of an impact survey to the NCS Community as to what CSSG has addressed, the perceived impact of that information and the identification of additional needs.

- Hayes to initiate draft tasking for self-assessment

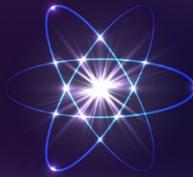
The meeting was adjourned.



REVIEW OF RECENT CRITICALITY SAFETY SUPPORT GROUP (CSSG) ACTIVITIES

December 1, 2021

Michaele (Mikey) Brady, CSSG Deputy Chairman (CS Engineering)
David Hienrichs, CSSG (LLNL)
David Erickson, CSSG Immediate Past Chairman (SRS)



- Background
- Key concerns currently under consideration by the CSSG
 - Criticality Safety Program Self Assessments
 - Criticality Safety considerations in the design of new facilities
 - CSSG Tasking 2016-04, *Position of the CSSG on Natural Phenomena and Other Extreme Events vis-à-vis ANSI/ANS-8 Standards*
 - Criticality Safety Officer Training
- Solicit feedback from audience
 - How can CSSG support you and your site?

Purpose and Function



- The CSSG functions as the technical support group to the Nuclear Criticality Safety Program (NCSP) Manager, providing operational and technical expertise pertinent to the criticality safety needs of DOE missions.
 - The CSSG is an assistance group, NOT an assessment/oversight group
- The scope of CSSG activities also includes reviewing
 - Activities or conditions that have the potential for serious degradation of nuclear criticality safety at DOE facilities
 - New nuclear facility designs where criticality is a credible hazard
 - New or revised DOE directives, standards and guides related to criticality safety
 - Contractor nuclear criticality safety programs at DOE facilities in support of DOE line management

Resources

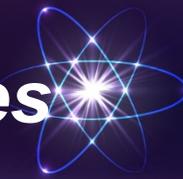


- The CSSG currently has 10 voting members, 3 ex-officio members and 6 emeritus members all serving with the approval of the NCSP manager, Angela Chambers
- The current CSSG Chairman is David Hayes, LANL
- A list of the current membership and the group's Charter are available on the NCSP website, <https://ncsp.llnl.gov/criticality-safety-support-group>
- The CSSG executes "Taskings" issued formally by the NCSP manager.
- A record (back to 2006) of these Taskings and the formal CSSG "Responses" are maintained on the website, https://ncsp.llnl.gov/criticality-safety-support-group/cssg_tasking

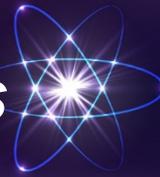
Best Practices for CSP Self Assessments



- DOE-Standard-1158-2010 Self Assessment for Contractor Criticality Safety Programs was archived by DOE in November of 2018
- ANSI/ANS 8.19 had been revised in 2014 with no update to 1158
- In 2020 the CSSG was tasked with creating a document similar to DOE-STD-1158 that was consistent with the revised ANSI/ANS 8.19
- The CSSG revisited the format from the 1999 “What’s Wrong with Criticality Safety” presentations made shortly before the Tokai-mura accident and provided an update as part of the tasking response
- The CSSG has issued Tasking 2020-01 response “Contractor Assurance Best Practices Guide for Self Assessment and Continuous Improvement of Nuclear Criticality Safety Programs” which is posted to the NCSP website and available for use.



- Expectations for criticality safety design strategy in pre-conceptual and conceptual design consistent with DOE-STD-1189
- Information that should be provided for the conceptual design with respect to criticality safety
 - ✓ Evaluate alternatives for satisfying the Mission Need Statement to identify the preferred alternative for preliminary design
 - ✓ Consequences associated with design basis accidents (DBAs)
 - ✓ Hazard control strategies for significant hazard scenarios and DBAs
 - ✓ Facility level safety functions, including major safety SSCs
 - ✓ Initial classification of major safety SSCs
 - ✓ Preliminary assessment of NPH design categories for major SSCs
 - ✓ Identify project risks early to ensure no major surprises at end of design



- Challenges in the integration of safety functions in design (CSSG Tasking Response 2016-05)
- In 2020 the CSSG provided (Tasking Response 2020-04) a review of the SRPPF submittal for CD-1 to evaluate the completeness of the information provided and provide suggestions for efficiencies.



Tasking Statement

The CSSG is directed to develop a position on criticality prevention during natural phenomena and other extreme events to include a discussion of the safety philosophy which implements a graded approach consistent with the understood/interpreted intent of ANSI/ANS-8.1. The CSSG shall explicitly state any interpretive assumptions or philosophies they consider in forming their position. The CSSG is further directed to provide specific language to recommend to ANS-8 for consideration when revising affected standards.



“It is the philosophy that facility and operation safety limits and controls be established to **reduce the risk of a nuclear criticality accident, preferably by prevention, while balancing the costs of those limits and controls using a risk-informed, graded approach that is founded upon an understanding of all of the attendant risks of the operation.**”



“Foreseeable criticality accidents should be prevented down to the lower limit of credibility when personnel are at risk of significant radiation exposures, but when operations and facility personnel are not at risk of significant radiation exposures then the acceptable likelihood of the criticality accident could be significantly greater, e.g., “unlikely.” These likelihoods descriptors, **“credible” and “unlikely,” shall be determined by a peer review process** and should generally be based on the engineering judgment of SMEs. While always desirable, quantification is often impractical due to lack of data.”

ANS-8.1, Section 4.1.2

Current:

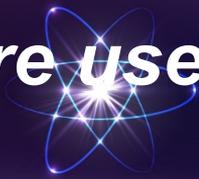
Before a new operation with fissionable material is begun, or before an existing operation is changed, it shall be determined that the entire process will be subcritical under both normal and credible abnormal conditions.

CSSG recommendation:

Before a new operation with fissionable material is begun or before an existing operation is changed, it shall be determined that the entire process will be subcritical under normal conditions and, *when personnel are present*, under credible abnormal conditions. *When personnel are not at significant risk from the radiation consequences of a criticality accident then the word “credible” should be replaced by “unlikely,” consistent with ANS-8.10 guidance. This requirement is not applicable to response and recovery actions for which guidance is provided in ANS-8.23.*

In addition, guidance in Appendix B of ANS-8.1 on the application of the Process Analysis requirement should include “when personnel are not at significant risk” such as subsequent to evacuation from a design basis event or other significant, disruptive event.

How can CSSG be more useful to the community?



- Training: Criticality Safety Officer Training, other needs?
- Additional Tools/Communication Venues:
 - Improve website by making the Taskings searchable, use of keywords for example?
 - Would NCSD members like to be on distribution for CSSG Taskings?
- Regulations: Issues/concerns with particular regulatory concerns that provide burden with questionable benefit?
- Specific challenges at sites that could benefit from CSSG experience and broad perspective?

INTENT: SOLICIT SESSION PARTICIPANTS TO INTERACT WITH PANEL