



## SCAPA Consequence Assessment Modeling Working Group (CAMWG)

### Highlights CAMWG Teleconference June 24, 2010, 3:00 p.m. EDT

#### Participants

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Fernando Aluzzi, LLNL/NARC  
Tom Bellinger, BWXT/Y-12  
John Ciolek, AlphaTRAC  
Dan Conners, Fluor-Hanford  
Dave Freshwater, NA-41  
Dennis Finn, ARLFRD/INL  
Jonathan Gaff, ANL  
Cliff Glantz, PNNL  
Gavin Hawkley, INL

Steve Homann, LLNL/NARAC  
Erik Kabela, SRNL  
Steve Lockett, NA-41  
Mike O'Keeffe, NSTEC/NTS  
Phil Pfeiffer, INL  
Jeremy Rishel, PNNL (Chairman)  
Kerry Ward, INL  
Jamie Wright, BWXT/Y-12

#### Roll Call

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Cliff Glantz conducted a roll call and acknowledged that 17 individuals interested in CAMWG activities were present, and the teleconference was called to order. Jeremy Rishel welcomed everyone to the CAMWG teleconference.

#### Administrative Matters

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Jeremy Rishel kicked off the meeting by announcing that a CAMWG Listserv has been established. Currently, 36 people are registered and seven more will be soon be added. Interested SCAPA or EMI SIG members should contact Cliff or Jeremy if they want to join the listserv and participate more closely in CAMWG activities.

Jeremy reviewed the highlights of the last CAMWG meeting, which was conducted at the EMI SIG Annual Meeting in Las Vegas on Tuesday afternoon, May 4, 2010. In that one-hour meeting, the working group accomplished the following:

- Reviewed the status and key points in the draft SCAPA Software Quality Assurance (SQA) guidance document.
- Discussed populating the SCAPA modeling toolbox with codes that comply with, or come close to complying with, the finalized SCAPA SQA guidance document.

- Reviewed the models perceived to represent primary and secondary codes for consideration for inclusion in the toolbox.
- Developed an approach for screening the SQA of candidate models, performing gap analyses, and working with model developers to close the SQA gaps.
- Developed a tentative CAMWG teleconference schedule for the rest of the calendar year.

## Old Business

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### *SCAPA SQA Guidance and the SCAPA Toolbox (Activity Continuing)*

Cliff Glantz reviewed SQA news and the status of the SCAPA SQA guidance document.

Cliff mentioned that he was asked by DOE/HS to participate in the spring meeting of the Energy Facilities Contractor Group (EFCOG) Safety Software Expert Working Group (SSEWG). Twenty-seven people participated in this meeting, including five by phone. Participants included Debbie Sparkman and Subir Sen from DOE/HS, other key figures from the DOE/HS SQA group, DOE site SQA professionals, DOE contractor representatives, and professionals from the Defense Nuclear Facility Safety Board (DNFSB). Cliff briefed the SSEWG members on SCAPA SQA efforts, and the Working Group seemed positive about the direction that SCAPA is going with its draft SQA guidance document for safety-related and non-safety-related software. They provided a number of constructive comments and suggestions that are now being incorporated into the draft SCAPA guidance document.

Some of the key items of interest to SCAPA members from the SSEWG meeting are:

- DOE/HS is reviewing the status of the safety software codes in the Central Registry toolbox. They are aware that a number of the codes in the toolbox are “dated” (i.e., they are not the most recent versions published by their model developers). DOE/HS is making a concerted effort to update the codes in the toolbox so they will reflect the most recent operational versions of the available software.
- San Horton (DNFSB) discussed the recent closure of DNFSB Recommendation 2002-1 on SQA. This is a positive sign that the DNFSB is pleased with the progress DOE has made in improving the SQA of its nuclear safety software. However, some areas of improvement are still needed. In particular, San noted that some DOE sites appear reluctant to appropriately identify software as safety software. Grading of safety software work activities is not consistent and is causing problems. SQA should be applied to non-safety software as well as safety software, and the ten work activities specified in DOE O 414.1C should be applied to all software.

*Note: Cliff stated that our SCAPA SQA guidance for safety-related and non-safety-related software is addressing these latter two concerns.*

- Subir Sen mentioned that DOE G 414.1-4 is going to be revised after DOE O 414.1X is issued and that volunteers are needed for the DOE G 414.1-4 writing team.

## *SCAPA SQA Guidance Document for Safety-Related and Non-Safety-Related Consequence Assessment (CA) Software (Activity Continuing)*

Cliff is still reworking portions of the SCAPA SQA document. Listed below are the three focus areas of activity:

1. The draft document is being modified to address an issue involving the DOE O 414-1C requirement that all organizations institute a Quality Assurance Program (QAP). Some members of the SSEWG thought that the QAP guidance should be incorporated into our SCAPA document, but a careful reading of DOE O 414-1C showed that the QAP is the responsibility of each DOE organization and not of each DOE-sponsored project. All projects are governed by the QAP of their organization. These organizational SQA requirements take precedence over or SCAPA SQA guidance, as the revised document now emphasizes.
2. More information is being incorporated into the draft document on the limits of SQA guidance for CA software. Attention is being given to which activities are in-scope for the software developers and which activities are out of scope. The following presents examples:
  - All procured software that is used within the CA model is subject to the SCAPA SQA guidance for procured software.
  - Software that is external to the CA model but is the only software option that can provide data required by the CA model is subject to the SCAPA SQA guidance for procured software.
  - The responsibility for the SQA for software that is external to the CA model, is not provided with the CA model, and is not the only software that can provide the required data lies with the software user and not the CA model developer. The software user will need to ensure that the external software in question meets SCAPA SQA guidance if it will support a safety-related function.
3. More explicit guidance is being provided for the ten safety software work activities and the prioritization of these work activities.

The current version of the draft guidance is being used to prepare SQA documentation for the Chemical Mixture Methodology (CMM) Wizard project which PNNL is conducting this summer.

## *Populating the SCAPA Toolbox (Activity Continuing)*

Several models have been identified as initial candidates for the SCAPA Consequence Assessment Modeling Toolbox, as follows:

- NARAC modeling systems
- CAPARS
- APGEMS
- RASCAL
- HYSPLIT
- RAMS/LPDM
- Puff-Plume

A second round of candidate models may include:

- ARCON 96
- RSAC-7
- HPAC
- CHARM
- DUSTRAN

To be admitted to the SCAPA Modeling Toolbox, a model must be shown to meet, or be close to meeting, the SCAPA SQA guidance (i.e., model developers are working to close identified SQA gaps). To start the process of populating the SCAPA toolbox, a candidate model will be selected for an SQA assessment. CAPARS has been volunteered as this candidate model. The steps that will be followed are:

- CAPARS developers will be asked to perform a self-assessment on the CAPARS SQA program and identify any gaps between their program and the minimum requirements outlined in the SCAPA SQA guidance document.
- A select group of CAMWG members will review CAPARS SQA documentation (e.g., User's Guide, Technical documentation, V&V plans, Software Project Management, and Quality Planning documentation) and the CAPARS program's SQA gap analysis.
- Any differences in the SQA gap analysis will be resolved.
- A CAPARS web page on our SCAPA toolbox web pages will be populated.

## **New Business**

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John Ciolek reported that ORNL, a CAPARS customer, has expressed interest in learning more about the CAPARS SQA program. The need to perform an SQA review for ORNL will mesh nicely with performing an SQA review for SCAPA. AlphaTRAC is currently estimating the costs for conducting a thorough SQA review, including collecting and re-cataloging hard-copy documentation products.

Jeremy Rishel stated that about five CAMWG members would be needed to participate in the CAPARS SQA review. Likely participants will include Michelle Wolfgram (ORNL and STWG Chair), Jeremy Rishel (CAMWG Chair), Cliff Glantz (SCAPA Chair), and two others familiar with DOE O 414.1C and DOE G 414.1-4.

## **Round Robin**

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**Hanford:** Cliff Glantz reported a problem during the June 17, 2010 Hanford Site emergency response exercise. The NARAC Web operator in the Hanford EOC was confused about what to input under a fire scenario for the source amount. The operator input the amount of material of respirable-size released to the environment. However, the model assumed the source amount entered was the amount of material at risk (MAR) in the fire and applied a 0.01 factor to the input source amount. As a result, the NARAC Web provided dose estimates that were two orders of magnitude less than what other models were estimating. This problem indicated the need for more operator training at Hanford. A highly trained operator would have known not to make this error and would have instead used the *Advanced* entry form to ensure that the airborne release fraction (ARF) and respirable fraction (RF) were appropriately set. This problem also indicated the need for better labeling and more user help information in NARAC Web. The NARAC Web cannot assume that all NARAC Web operators are highly trained and experienced. Guidance is needed for users whose experience levels vary greatly from individual

to individual and are further burdened by having to make quick decisions under the pressure of an emergency situation.

**SNL:** It was reported that in a recent SNL exercise, a problem was encountered accessing NARAC Web with Microsoft Internet Explorer. Fortunately, Mozilla Firefox was next used, and the NARAC Web was accessed without further difficulties. NARAC will look into this problem, which has not been reported by other users.

**NTS:** Mike O'Keefe discussed having NARAC Web use input from the five factor formula to better characterize release information. Hotspot 2.07.01 now does this, and he would like to see NARAC Web add input fields for added damage and leak path factor (LPF). With heightened interest in cyber security and limitations being placed on workstation administration privileges, some consequence assessment software are not working as desired in Windows XP and Windows 7. Mike O'Keefe has experience some "privilege" problems with EPIcode and HotSpot. NARAC looked at this issue for HotSpot. Fernando Aluzzi volunteered to look at the Microsoft discussion forums for a solution to this problem.

**Hanford:** The Hanford EOC recently experienced similar issues after a cyber security "enhancement." Their MetView and APGEMS programs did not work properly when in their default C:\Program Files\... folder. Installing the software outside of "Program Files" took care of this problem. Dan Connors reported on the latest news associated with "double paste" multiplication error in EXCEL. He shared that Microsoft was not releasing a patch for this flaw but hopes to have it fixed in EXCEL 2010.

**AlphaTRAC:** John Ciolek asked about the status of a topic raised in the past by John Nasstrom that involved the work of a consortium to place the output of consequence assessment models into a common format. Fernando Aluzzi will check with John Nasstrom about the status of this activity.

**ORNL:** Kevin Birdwell has worked to get ORNL's IT people to leave the CAPARS system alone. When they did testing or upgrades, it inadvertently interfered with CAPARS operation. Kevin hopes that AlphaTRAC will consider changing CAPARS so that it can better tolerate IT department testing and upgrades.

## **Adjournment**

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The next SCAPA CAMWG teleconference is scheduled for **August 5, 2010 at 3:00 p.m. EDT.**

The meeting was adjourned at **3:55 p.m. EDT.** Jeremy thanked everyone for their time and contributions.