



Emergency Management Issues (EMI)
Subcommittee on Consequence Assessment and Protective
Actions (SCAPA) Consequence Assessment Modeling
Working Group (CAMWG)

Highlights of the CAMWG Meeting
TUESDAY May 6, 2008; 5:00 PM EDT

Participants:

Brian Baumann, Fluor-Hanford
Dave Freshwater, NA-41
Cliff Glantz, PNNL
Jim Jamison, SAIC
Eva Hickey, PNNL
Jeff Long, ORNL
Carl Mazzola, Shaw Environmental
Bill Possidente, NSTec
Chuck Rives, Pantex
Gary Winner, ANL
Ken Young, LLNL

Wayne Davis, WSMS
Gerry Gibeault, INL
Chuck Hunter, SRNL
April Javilakis, WSMS Mid-America
Erik Kabela, SRNL
Greg Martin, SAIC
John Nasstrom, LLNL NARAC
Jeremy Rishel, PNNL
Walt Schalk, ARL/SORD
Michele Wolfgram, WSMS Mid-America

Meeting Highlights

I. Roll Call

Carl Mazzola conducted a roll call and acknowledged that twenty-one (21) individuals were present.

II. Discussion

Cliff Glantz led the discussion which included the following response to, “what transport and dispersion codes are used at your site, and what codes have been developed by your site?”

- PNNL Codes:** Jeremy Rishel mentioned that Hanford uses APGEMS in its EOC along with WebNet broadcast meteorology. PNNL has also developed DUSTRAN, which provides a source term to CALMET/CALPUFF. Lastly, PNNL has developed RASCAL, PAVAN, and ARCON96 for the Nuclear Regulatory Commission (NRC). Brian Baumann indicated that EPHAs are performed by multiple contractors using HOTSPOT, ALOHA, and EPICODE, while the RADIDOSE code from Rocky Flats is also used at Hanford. In the EOC, EPICODE, ALOHA, and HOTSPOT are used;
- SRNL Codes:** Chuck Hunter stated that for early-phase protective actions, SRNL uses its homegrown PUFF-PLUME code which is a segmented trajectory Gaussian model. For late-phase protective actions, it uses RAMS-LPDM with forecasted wind fields. This



**Emergency Management Issues (EMI)
Subcommittee on Consequence Assessment and Protective
Actions (SCAPA) Consequence Assessment Modeling
Working Group (CAMWG)**

**Highlights of the CAMWG Meeting
TUESDAY May 6, 2008; 5:00 PM EDT**

is a three-dimensional terrain-dependent Lagrangian particle-in-cell model. The deposition results of the code are used along with Derived Intervention Levels (DILs) for ingestion pathway decision-making. RAMS is still supported by its Colorado State University (CSU) company and the dose model is FGR-13 ICRP 68/72 Dose Conversion Factors (DCF). For EPHAs, HOTSPOT is used for radiological releases and ALOHA for chemical releases;

3. **INL Codes:** Gerry Gibeault opined that INL uses ALOHA and EPICODE for chemical consequence assessments and its home grown RSAC-6 code for radiological assessments. RSAC-6 uses ICRP 26/30 DCFs. A beta version of RSAC-7 is being developed which incorporates the ICRP 68/72 DCFs;
4. **ORNL Codes:** Jeff Long mentioned that in the Oak Ridge Emergency Operations center (OREOC), CAPARS is used. For consequence assessments involving the High Flux Isotope Reactor (HFIR), a home grown Gaussian spreadsheet is used. NARAC is used to confirm the CAPARS results. Michele Wolfgram uses HOTSPOT and ALOHA for EPHA preparation;
5. **Pantex Codes:** Chuck Rives stated that at Pantex, EPHAs utilize HOTSPOT for radiological releases and ALOHA and EPICODE for chemical releases. NARAC is used exclusively in the EOC for consequence assessments;
6. **ANL Codes:** Gary Winner indicated that ANL uses RSAC-6 and CAPARS for emergency response consequence assessment and HOTSPOT, ALOHA and EPICODE for EPHAs. NARAC is used for confirmatory purposes in the EOC;
7. **LLNL Codes:** Ken Young shared that at LLNL, HOTSPOT is used for radiological EPHAs and ALOHA is used for chemical EPHAs involving gas or liquid releases and EPICODE for solid and fire chemical releases. NARAC is used to get better definition. John Nasstrom discussed various things about the NARAC code, which is resident at LLNL. It contains HOTSPOT Version 2.07 beta version (Note: 95% meteorology will be available in September 2008), FGR-11/FGR-13 DCF options, and research and development modules to address special cases of urban modeling and indoor-outdoor evaluations. Steve Homann is working on a biological release version of HOTSPOT;
8. **DOE/HQ Code:** Dave Freshwater stated that NA-41 uses NARAC in the DOE/HQ EOC; and,



**EMERGENCY
MANAGEMENT
ISSUES**

**Emergency Management Issues (EMI)
Subcommittee on Consequence Assessment and Protective
Actions (SCAPA) Consequence Assessment Modeling
Working Group (CAMWG)**

**Highlights of the CAMWG Meeting
TUESDAY May 6, 2008; 5:00 PM EDT**

9. **NTS Codes:** Bill Possidente mentioned that for EPHAs, EPICODE and HOTSPOT are used. Walt Schalk shared that for consequence assessment, NARAC is exclusively used. However, ARL/SORD is also using ALOHA for chemical assessments, MACCS2 for safety analysis reports, and is working on a version of HYSPLIT for consequence assessment.

Ken Young added that LLNL is using ALOHA 5.4.1 since it has better plume plotting capabilities which is needed for evaluations associated with the Site 300 rolling hills. LLNL protective actions are difficult as there is virtually no buffer distance to the fence lines requiring very rapid assessments and decision-making.

Cliff Glantz mentioned that not all of these codes are in the DOE/HS Central Registry tool box. Subir Sen has taken over the responsibilities of Debra Sparkman at the Registry and will be the point of contact for future tool box submissions.

Cliff Glantz then inquired as to what Software Quality Assurance (SQA) practices are invoked at each of the sites?

1. Chuck Hunter stated that SRS does not have a concern about HOTSPOT not yet being accepted in the Registry toolbox, as the code has been proven by its extensive use and the already existing quality assurance evaluations that have been performed on it. SQA has been performed on PUFF-PLUME and RAMS-LPDM which was recently evaluated through an internal independent audit (i.e., SRS Facility Evaluation Board). There were some findings indicating that the codes had to be tidied up a bit;
2. Cliff Glantz stated that codes that address the clean-up of radioactively-contaminated groundwater should also be considered safety software;
3. Cliff Glantz also indicated that the gap analyses of the six toolbox codes are not being updated to close the gaps or incorporate new capabilities of the software. He cited ALOHA Version 5.4.1 as an example. He mentioned that Subir Sen has established an advisory panel to address toolbox issues. One major issue is that the Central Registry is not funded to close the gap analyses;
4. Cliff Glantz presented the difference between safety software which has to meet Central registry requirements of DOE O 414.1C and safety-related software which has somewhat more graded requirements to be met. These include verification & validation, user guide, configuration management plan and other software documentation;
5. RSAC-7 and CAPARS were discussed as future candidates for the Central Registry toolbox (i.e., models 9 and 10);



**Emergency Management Issues (EMI)
Subcommittee on Consequence Assessment and Protective
Actions (SCAPA) Consequence Assessment Modeling
Working Group (CAMWG)**

**Highlights of the CAMWG Meeting
TUESDAY May 6, 2008; 5:00 PM EDT**

6. John Nasstrom stated that consequence assessment software should not have to meet safety related standards since its results are used with other information to protect the safety and health of the workers and public;
7. Chuck Rives shared that uncertainty issues may overwhelm any SQA efforts;
8. Brian Baumann indicated that using real-time meteorology in an emergency response exercise or drill, frequently leads to failure; and,
9. Ken Young emphasized that in those cases, the contractor should be indemnified and that the DNFSB should force the issue.

Cliff Glantz then opened up the rest of the meeting to other issues.

1. Cliff Glantz stated that it was the goal of the CAMWG to identify SCAPA toolbox models by December 2008. There is a diversity of workhorse models out there and inquired if there is a single model that can be used at each DOE/NNSA site;
2. Ken Young indicated there should be some guidance for connectivity with NARAC; and,
3. Walt Schalk mentioned that it would be worthwhile to have a handbook of dispersion models developed with the strengths and weaknesses listed (Note: This was last accomplished for the OFCM in 1999).

III. Next SCAPA CAMWG Meeting

Carl Mazzola indicated that next SCAPA CAMWG teleconference has not yet been scheduled. The next SCAPA CAMWG meeting is scheduled for **Tuesday, May 5, 2009** during the next EMI-SIG meeting in a west coast city.

IV. Adjournment

The meeting was adjourned at **6:30 p.m. EDT**. Cliff thanked everyone for their time and their contributions.