EMERGENCY MANAGEMENT ROUNDUP

EXPECT THE UNEXPECTED

Results of a Complex-Wide Survey of Consequence Assessment Teams and Modeling Tools at DOE/NNSA Sites

Diana de la Rosa (SNL)
Cliff Glantz (PNNL)
Susan Vosburg (SNL)

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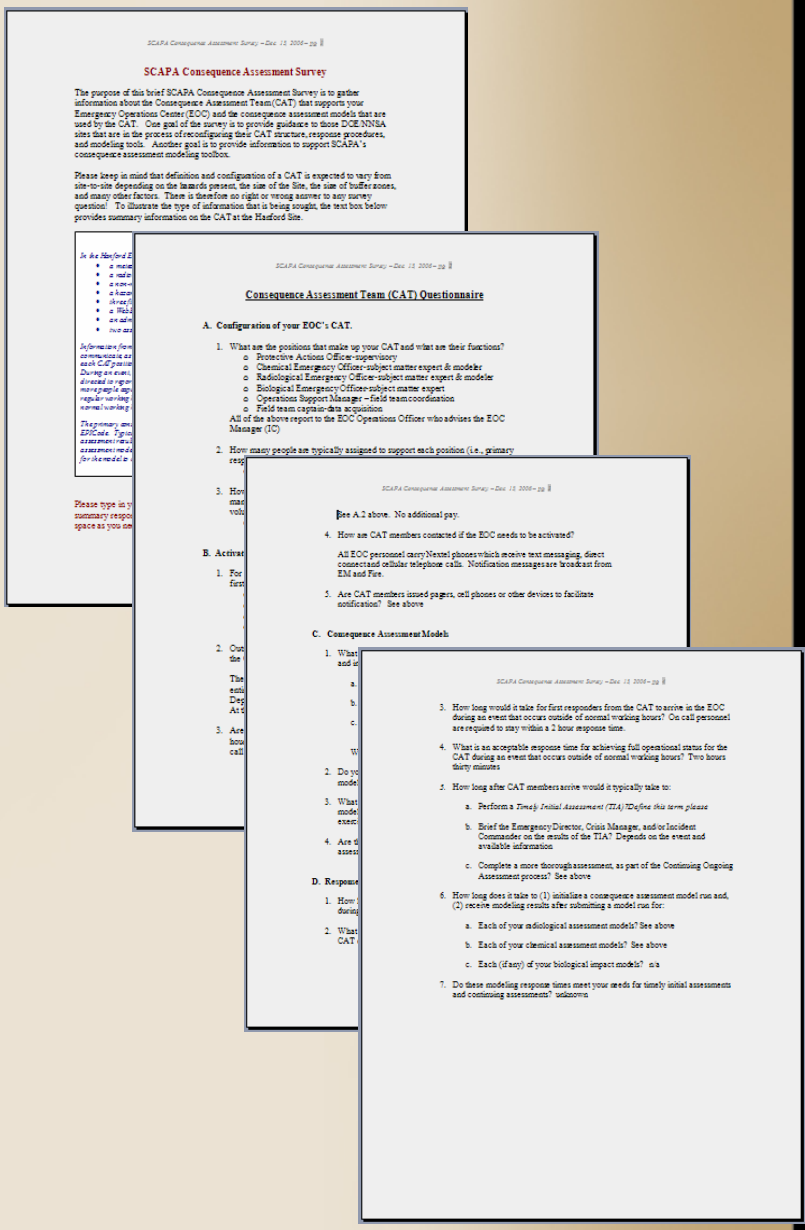
EMERGENCY MANAGEMENT ISSUES

Why a Survey?

- DOE/NNSA Sandia Site Office requested data from other laboratories concerning consequence assessment team response times and models in their site toolboxes
- Survey requested at the 2006 SCAPA meeting by Sandia National Laboratories (SNL)

Who Participated?

- Survey sent to sites by SCAPA (on behalf of SNL) in mid-Dec. 2006:
  - -- ANL
  - -- BNL
  - -- Hanford
  - -- INL
  - -- LANL
  - -- LBL
  - -- LLNL
  - -- NTS
  - -- ORNL
  - -- Pantex
  - -- SNL
  - -- SRS
  - -- Y-12



SCAPA Consequence Assessment Survey – Dec. 13, 2006 – pg 1

SCAPA Consequence Assessment Survey

The purpose of this brief SCAPA Consequence Assessment Survey is to gather information about the Consequence Assessment Team (CAT) that supports your Emergency Operations Center (EOC) and the consequence assessment models that are used by the CAT. One goal of the survey is to provide guidance to those DOE/NNSA sites that are in the process of reconfiguring their CAT structure, response procedures, and modeling tools. Another goal is to provide information to support SCAPA's consequence assessment modeling toolbox.

Please keep in mind that definition and configuration of a CAT is expected to vary from site-to-site depending on the hazards present, the size of the Site, the size of buffer zones, and many other factors. There is therefore no right or wrong answer to any survey question! To illustrate the type of information that is being sought, the text box below provides summary information on the CAT at the Hanford Site.

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Consequence Assessment Team (CAT) Questionnaire

A. Configuration of your EOC's CAT.

1. What are the positions that make up your CAT and what are their functions?
   - o Protective Actions Officer-supervisory
   - o Chemical Emergency Officer-subject matter expert & modeler
   - o Radiological Emergency Officer-subject matter expert & modeler
   - o Ecological Emergency Officer-subject matter expert
   - o Operations Support Manager –field team coordination
   - o Field team captain-data acquisition

   All of the above report to the EOC Operations Officer who advises the EOC Manager (IC)
2. How many people are typically assigned to support each position (i.e., primary resp
3. How

B. Activat

1. For first
2. Out the

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See A.2 above. No additional pay.

4. How are CAT members contacted if the EOC needs to be activated?

   All EOC personnel carry Nextel phones which receive text messaging, direct connect and cellular telephone calls. Notification messages are broadcast from EM and Fire.
5. Are CAT members issued pagers, cell phones or other devices to facilitate notification? See above

C. Consequence Assessment Models

1. What and is
2. Do yo mode
3. What mode event
4. Are t assess

D. Respons

1. How during
2. What CAT

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3. How long would it take for first responders from the CAT to arrive in the EOC during an event that occurs outside of normal working hours? On call personnel are required to stay within a 2 hour response time.
4. What is an acceptable response time for achieving full operational status for the CAT during an event that occurs outside of normal working hours? Two hours thirty minutes
5. How long after CAT members arrive would it typically take to:
   a. Perform a *Timely Initial Assessment (TIA)?Define this term please*
   b. Brief the Emergency Director, Crisis Manager, and/or Incident Commander on the results of the TIA? Depends on the event and available information
   c. Complete a more thorough assessment, as part of the Continuing Ongoing Assessment process? See above
6. How long does it take to (1) initialize a consequence assessment model run and, (2) receive modeling results after submitting a model run for:
   a. Each of your radiological assessment models? See above
   b. Each of your chemical assessment models? See above
   c. Each (if any) of your biological impact models? n/a
7. Do these modeling response times meet your needs for timely initial assessments and continuing assessments? unknown

Configuration of Consequence Assessment Teams

Positions

- Team Lead
- Meteorologist
- Industrial Hygienist
- Health Physicist
- Model Operator
- Field team Coordinator

Configuration of Consequence Assessment Teams

Number Assigned to each position

- Complex Average: Three

Full Time Members

- Complex Average: Two

Volunteer Members

- Complex Average: Two

Activation and Notification

Who is the Typical First Responder for the Consequence team?

Normal Working Hours: Full time EM staff

Off-normal Working Hours: On call member and those closest to the site

Teams assign "on-call" members throughout the complex

No "on-call" pay except Nevada Test Site

Activation and Notification

Pager and cell phones are used to contact members

Team members are issued pagers, cell phones and other devices to facilitate notification by their respective sites

Response Times

During Normal Working Hours

- Time for team member to arrive in EOC:

  Complex Average: 15 minutes

- Time to achieve full operational status:

  Complex Average: 30 minutes

Response Times

During Off-Normal Working Hours

- Time for team member to arrive in EOC:

  Complex Average: 30 minutes

- Time to achieve full operational status:

  Complex Average: 60 minutes

Response Times

Upon Arrival at EOC, how long to:

- **Perform a Timely Initial Assessment?**

  10-15 minutes

- **Brief the Emergency Director, Crisis Manager or Incident Commander on TIA?**

  Less than 30 minutes

- **Complete a thorough assessment?**

  30 minutes to 1 hour (varies thru complex)

Emergency Response Models

	Site	Rad Modeling	Chem Modeling	Bio Modeling	Use of NARAC
1	ANL	Hotspot	EPIcode	Looking	Seldom used
2	BNL	Hotspot & NARAC	EPICode & NARAC	NARAC	Used
3	Hanf.	Hotspot, APGEMS, & NARAC	EPICode & NARAC	NARAC	Used
4	INL	RSAC & INL VIZ	Aloha & EPICode	NARAC	Seldom used
5	LANL	Hotspot & MIDAS & NARAC	Aloha & EPICode & MIDAS & NARAC	N/A	Used
6	LBL	None	None	None	Not Used
7	LLNL	Hotspot & NARAC	Aloha & EPICode & NARAC	NARAC	Used
8	NTS	Hotspot & EPHA & NARAC	EPICode & NARAC	NARAC	Used
9	ORNL	CAPARS & RASCAL & NARAC	CAPARS & Aloha & NARAC	CAPARS	Used
10	Pantex	Hotspot & NARAC & EPHA	Aloha & EPICode & EPHA & NARAC	N/A	Used
11	SNL	Hotspot & NARAC	Aloha & EPICode & NARAC	NARAC	Bio & Occasional Supplement
12	SRS	Puff/Plume & LPDM	Aloha & HPAC	N/A	Seldom Used
13	Y-12	Hotspot & RASCAL & NARAC	CHARM & EPICode & NARAC	NARAC	Used

For Radiological Events: Hotspot

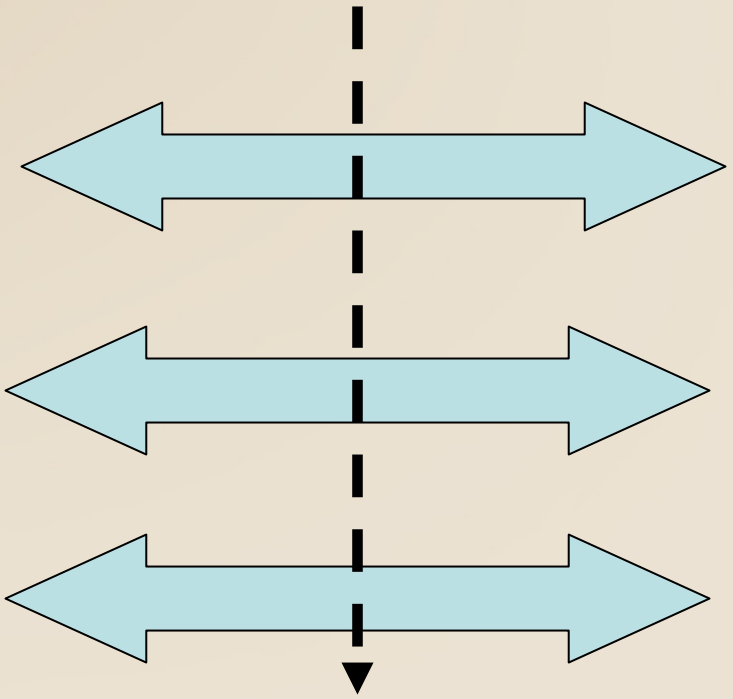
- It is generally used across the complex to provide an initial consequence assessment.
- It is quick and simple to use
- It runs on your own PC
- Simplistic assumptions and limited capabilities limit its application
- Its software quality assurance (SQA) is being upgraded and a new version of the model will soon qualify for the DOE Central Registry of Toolbox models.

For Radiological Events: NARAC

- Offers a sophisticated modeling capability
- Its computation engine is at LLNL
- Supplements other rad models
- A fair amount of training and regular practice is needed to keep users proficient
- It often takes ~10 minutes to get results
- Technical documentation is limited
- Has an evolving SQA program – does not intend to meet Central Registry standards.

For Radiological Events: Review

Hotspot — **NARAC**



Simplistic — **Sophisticated**

Quick — **Slower**

Easy to use — **More Complicated**

Most Sites Also Want a Middle Ground Model

For Radiological Events: "Middle Ground" Models

- APGEMS
- CAPARS
- MIDAS
- RASCAL
- Puff/Plume
- RSAC

- **No one choice for the middle ground model that effectively balances most sites needs for timeliness, ease-of-use, sophistication, control, QA, etc.**
- **Each has their set of strengths and weaknesses**

For Chemicals Events

- Aloha and EPICode provide basic support across the complex
- NARAC is used as a supplemental model.
- Other models used are MIDAS, CAPARS, CHARM, HPAC
- Less need perceived for a middle ground model because of the smaller distance scales of concern
- However, large releases (e.g., Granville) can occur and be of concern to Sites

For Biological or Nano Events

- Sites are just starting to think about these sources
- Many rely on NARAC but are concerned about the lack of source terms for lab release events (as opposed to terrorist events)
- More work is needed for sites to feel comfortable in dealing with biological and nanotechnology source terms

Lessons Learned

- Provide survey answers which allow the sites to “bin” themselves
  - Eliminates guessing of question intent
  - Eliminates interpretation of results by readers
  - Allows for better trending

Lessons Learned from results

- Align team title across complex
- Align team titles/”make up” of members across complex
- Biological model currently not available except for NARAC and weapons grade model
- Energetic release model limited

For more information...

- Please contact:

Diana de la Rosa -- SNL

(505) 844-9570 ddelar@sandia.gov

Cliff Glantz -- PNNL

(509) 375-2166 cliff.glantz@pnl.gov

Susan Vosburg --SNL

(505) 844-1670 skvosbu@sandia.gov