Federal Radiological Monitoring and Assessment Center (FRMAC): An Overview

Don Van Etten
NSTec Remote Sensing Laboratory

Ricky L. Honaker
Emergency Response Team Leader
NNSA/NFO Office of the Assistant Manager for National Security

History

- March 28, 1979: Three Mile Island highlighted inadequacies in preparedness for a large-scale radiological/nuclear release
  - Inadequate evacuation plans for the nearby cities
  - Significant confusion about protective actions
  - Lack of coordination among Federal agencies and between levels of government
- An Executive Order was issued mandating federal preparations for radiological emergencies
  - focused on nuclear power and weapon accidents
- November 1985: FRERP published and Federal interagency body created - FRMAC

Three Mile Island Nuclear Power Plant

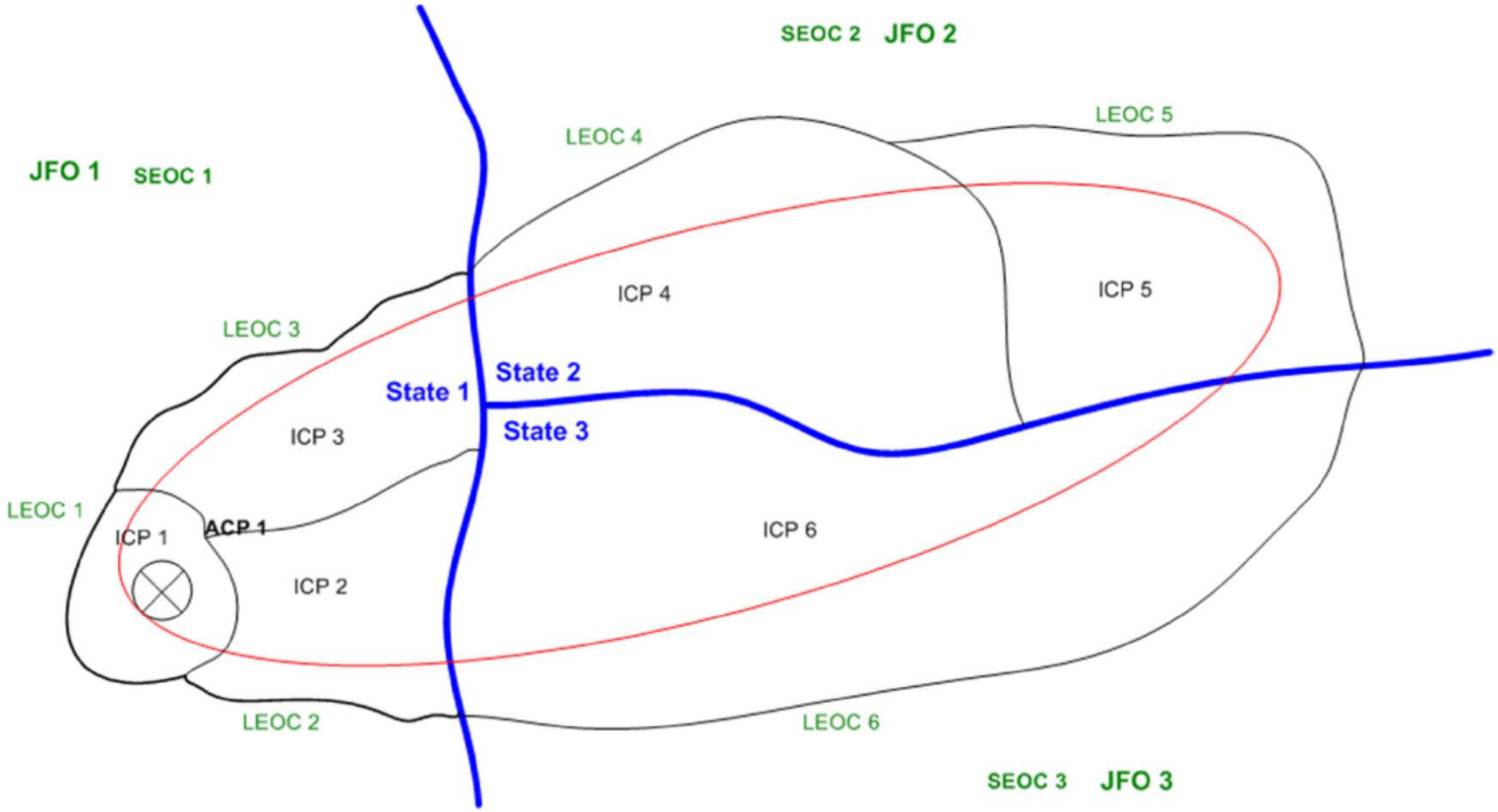
FRMAC Mission

- Provide timely, high-quality predictions, measurements, analyses, and assessments to promote efficient and effective emergency response for the protection of the public from the consequences of nuclear or radiological incidents.
- Mission space includes any deliberate or accidental incident that results in a real, potential, or perceived release of radioactive material that exceeds the capacity of local responders (e.g. nuclear detonation, RDD, nuclear facility accident, weapon accident).

Overview of Process

- Incident occurs
- Local assessment
- Request federal support
- FRMAC activated

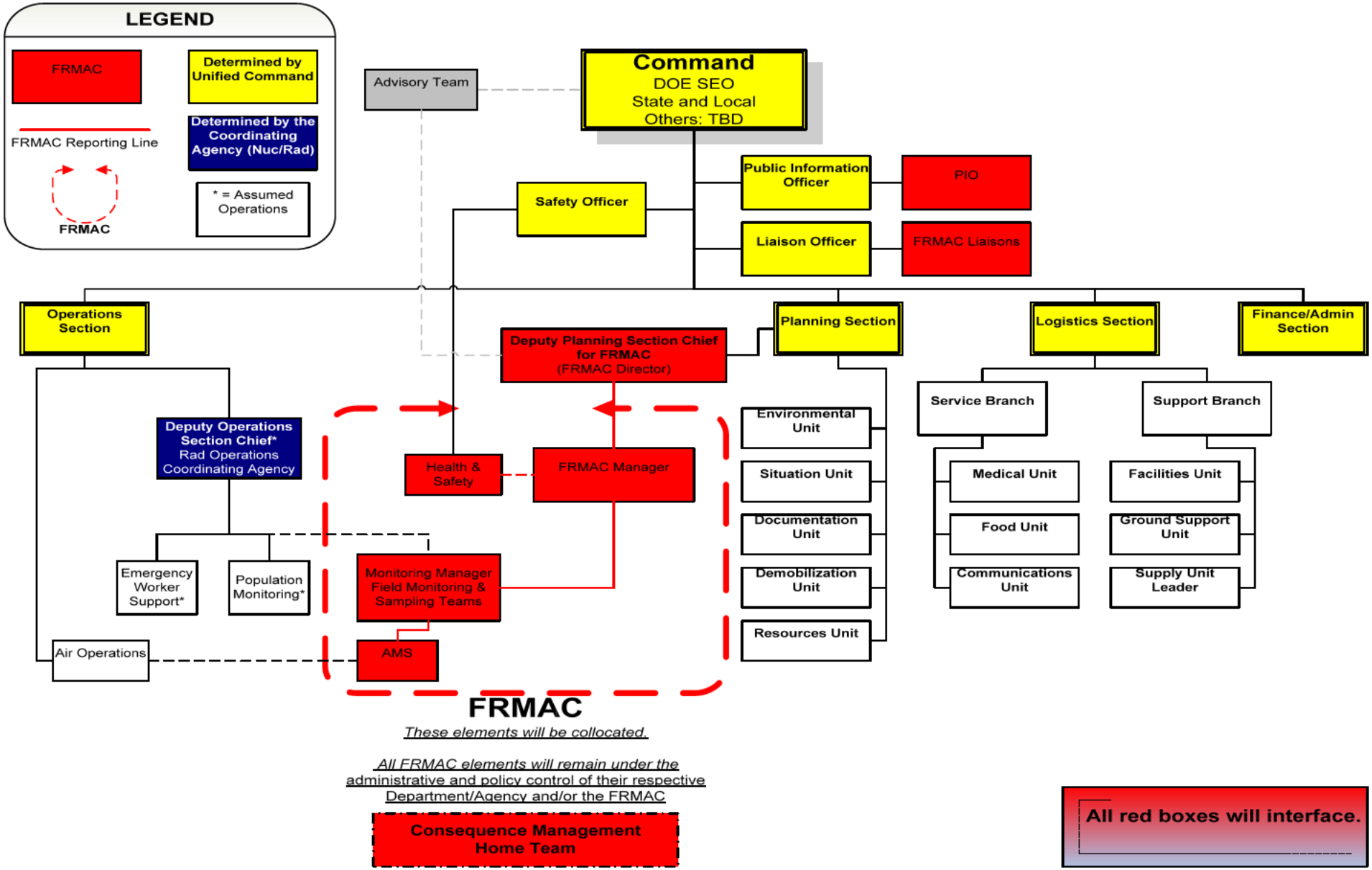
Complexity of Response Support



FRMAC: One Plume - One Response

Deposition footprint
State boundary
SEOC: State Emergency Ops Center
LEOC: Local Emergency Ops Center

ACP: Area Command Post
ICP: Incident Command Post
JFO: Joint Field Office



NIMS/ICS Integration

Remote and Onsite Support

- Home Team Support
  - Provide technical guidance
  - Near real-time response
  - Serve as reachback for field-based assets
- Onsite teams
  - Mobilization and deployment times for federal teams may be longer than regional support
  - Can provide additional resources (personnel/equipment)

Asset Response Timeline

FRMAC
Established

24 – 48
Advisory Team

12 – 24
CMRT II
EPA
HRF

6-12
CMRT I
REAC/TS
CERFP

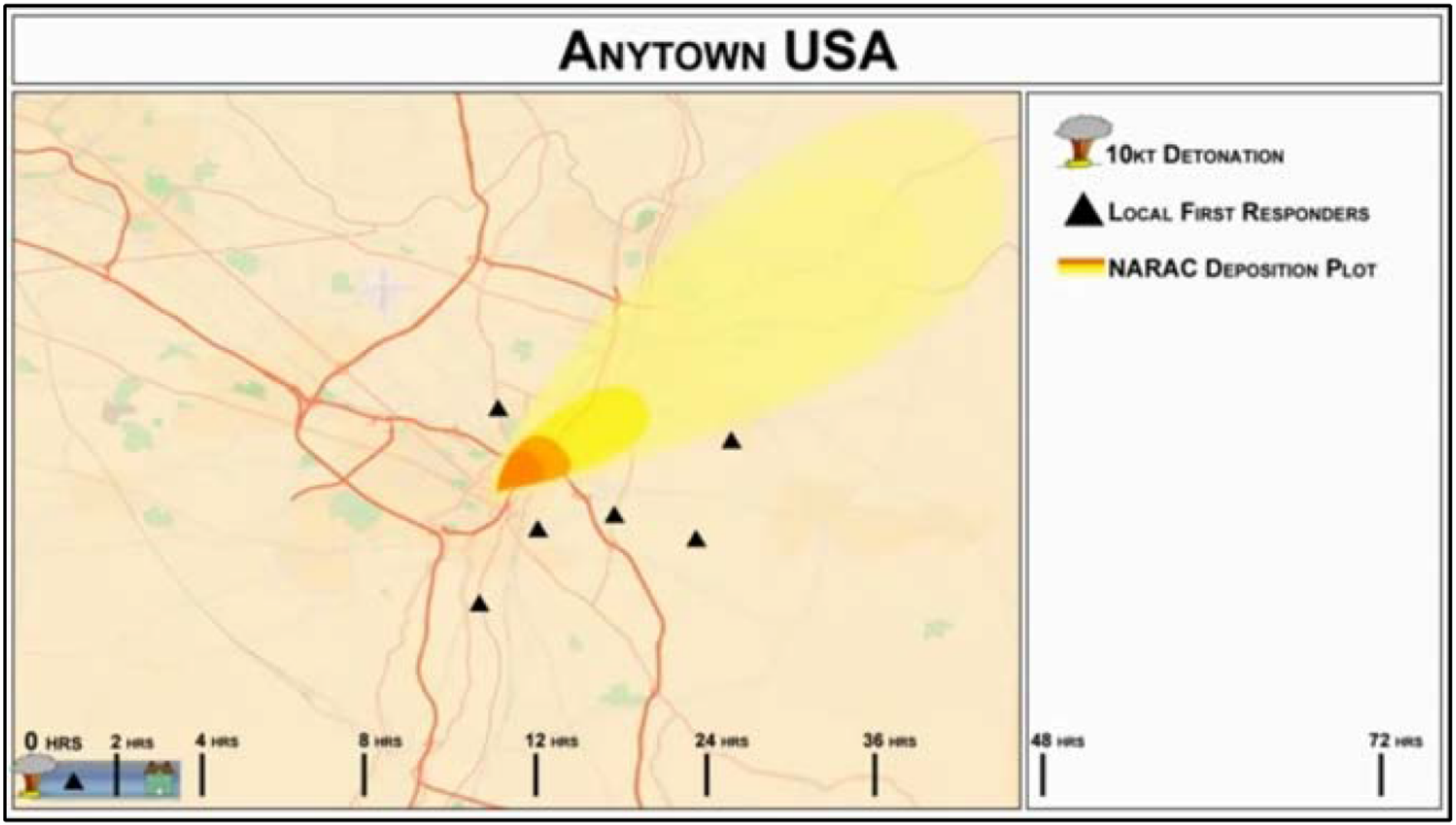
0-6
State/Local
RAP
CST

CMHT
NARAC
Advisory Team
REAC/TS

CMHT -	Consequence Management Home Team
CMRT -	Consequence Management Response Team
NARAC -	National Atmospheric Release Advisory Center
REAC/TS -	Radiation Emergency Assistance Center/Training Site
RAP -	Radiological Assistance Program
CERFP -	CBRNE Enhanced Response Force Package
CST -	Civil Support Team
HRF -	Homeland Response Force

National Nuclear Security Administration

Early Phase –Immediate Needs



Protective Action Decisions

"These actions will be in place until we can get additional information"

"Do not pick or eat food from the affected area until further notice"

"Do not drink tap water"

"Get inside, preferably to the basement"

"Evacuation of entire population warranted"

"The radiation levels in this area are extremely dangerous"

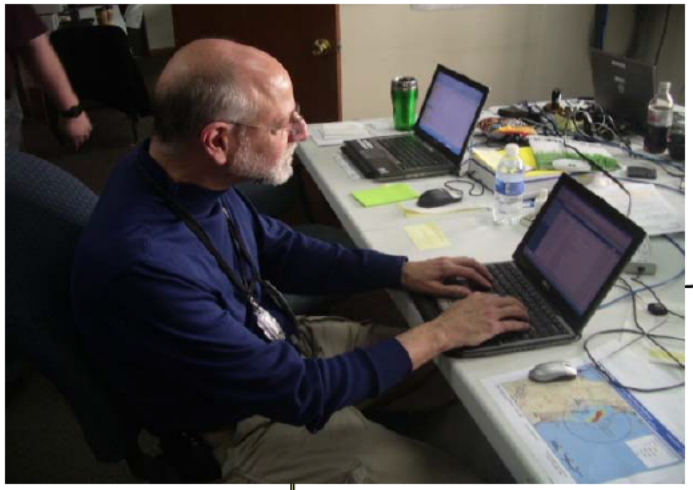
National Nuclear Security Administration

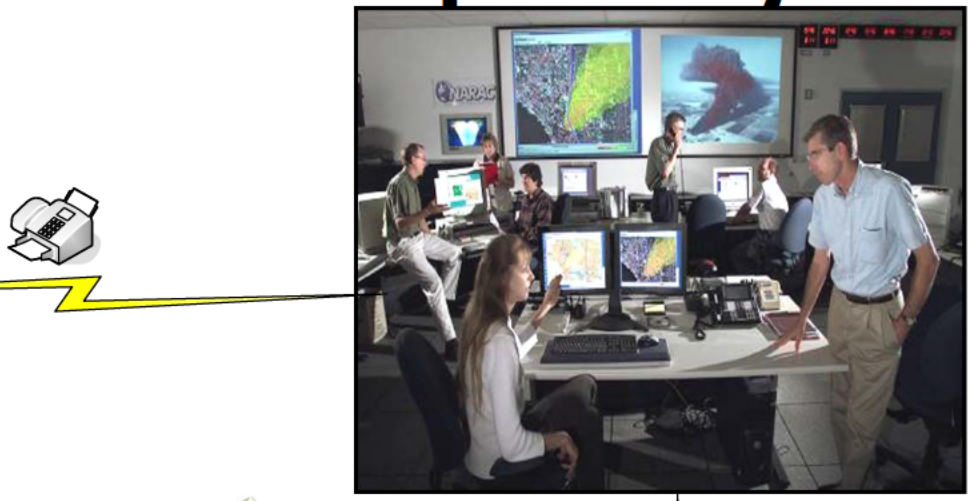
Early Phase – Evacuation/Sheltering Immediate Needs

- Planning/Operations
  - Consequence Management Home Team support with Incident Action Plan and other documents
  - Data transfer protocols determined
- Models
  - Validate/update protective actions
  - Assist with monitoring and sample planning
- Technical Support
  - Assist with data interpretation along with A-Team
  - Some data collection assistance

0-6	6-12	12-24	24-48

Scientific Reach Back Capability

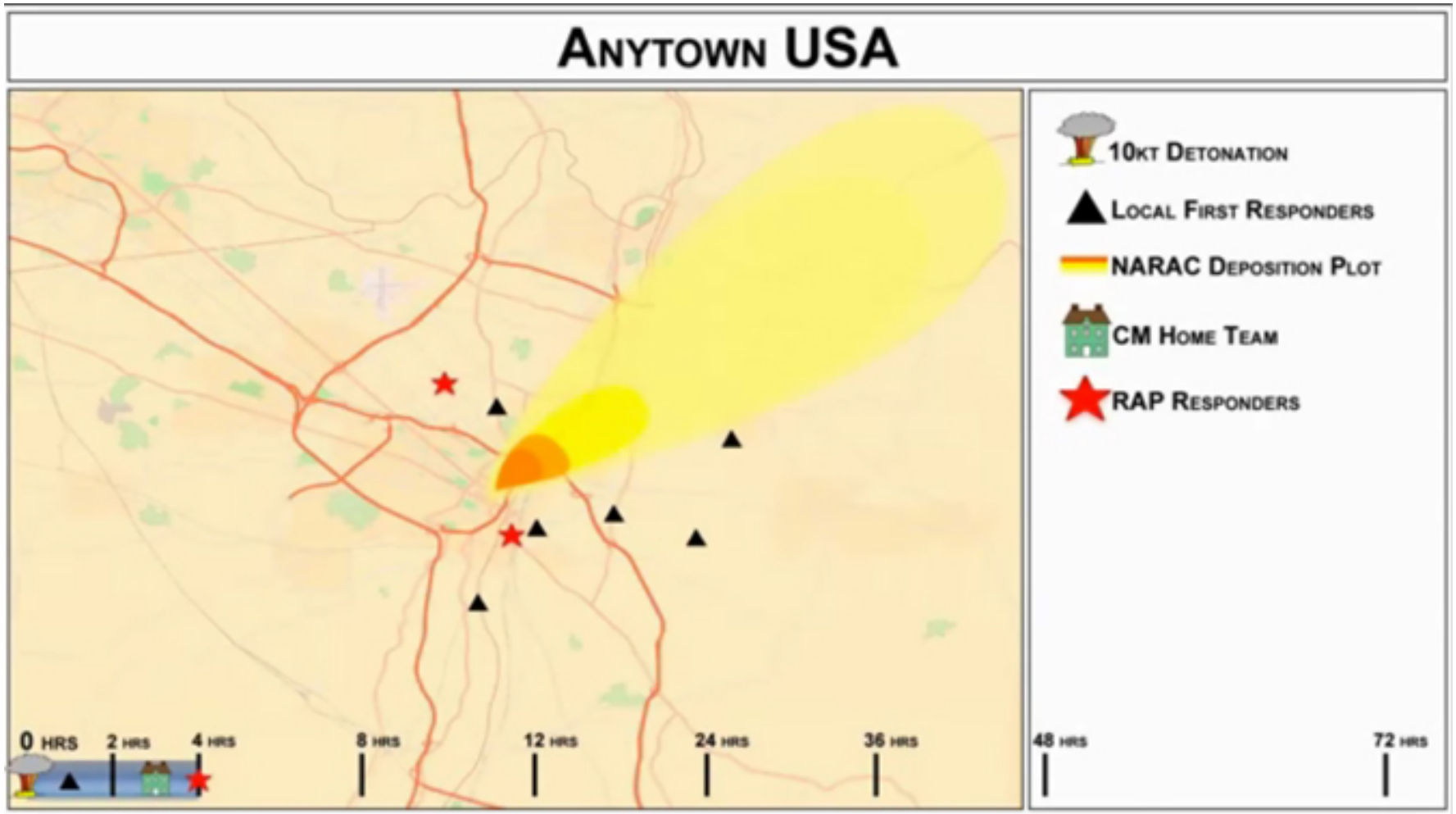




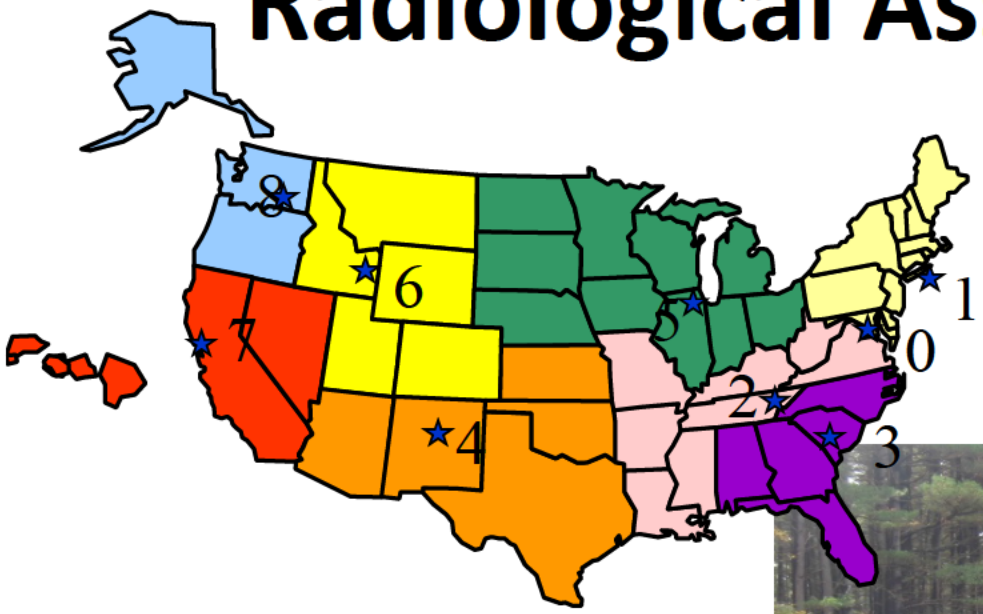
National Atmospheric Release Advisory Center

National Nuclear Security Administration

Ground Monitoring



Radiological Assistance Program



First Responders

After the sirens have stopped…

- Planning/Operations
  - CMHT and A-Team continue to support
  - Data transfer beginning/continuing
- Models
  - Updates may be available
- Products
  - Initial status maps may be generated
  - Other early products
- Technical Support
  - Quality assurance support of field data collected
  - Provide guidance on future monitoring/sampling plans

0-6	**6-12**	12-24	24-48

Aerial Measurements

Data Assessment

Sample Analysis

Field Monitoring

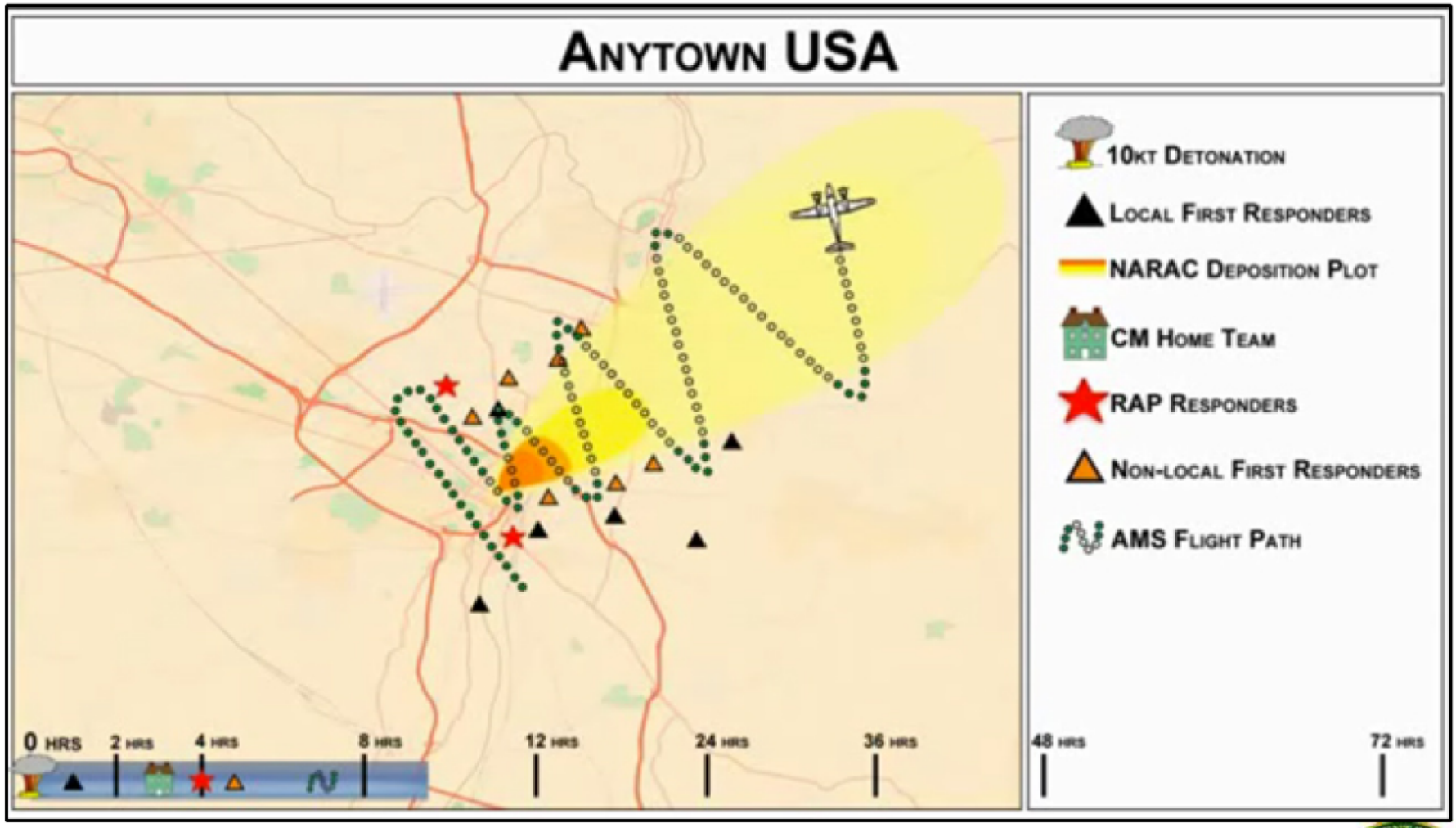
National Nuclear Security Administration

Regional/Federal Teams Arrive

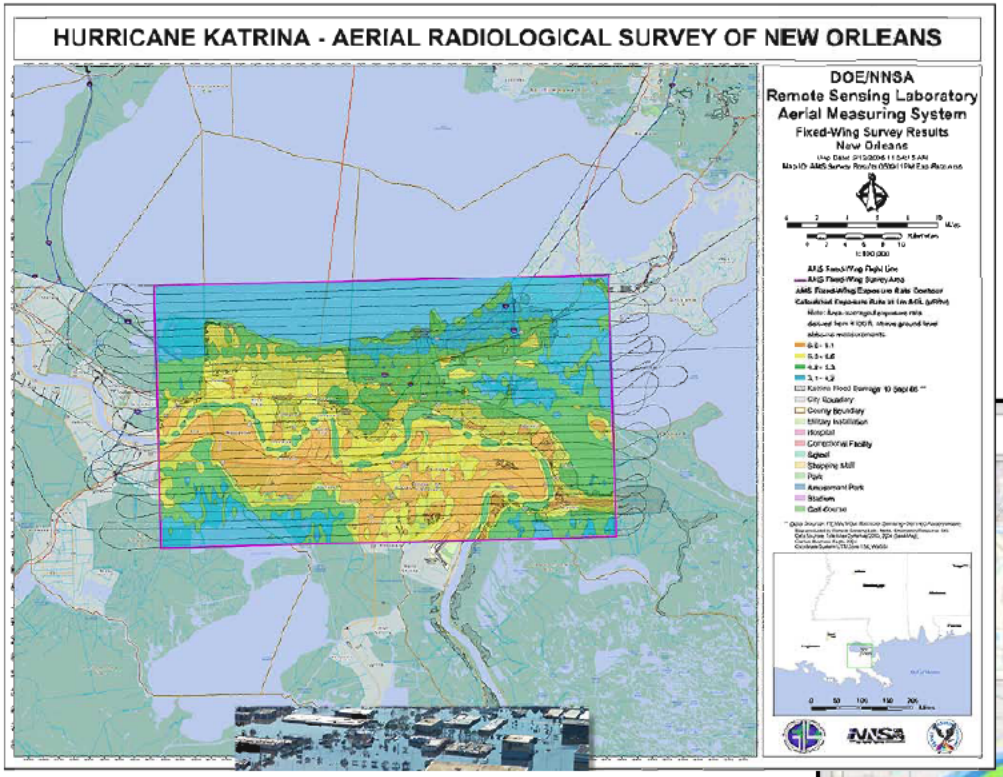
- Planning/Operations
  - Significant field support now available
  - Large scale monitoring plans can be drawn
  - Long term public protection efforts underway
- Models/Products
  - More updates with new data
  - Aerial data products become key
- Technical Support
  - Provide data interpretation
  - Assist refinement of assumptions regarding source term and other technical details

0-6	6-12	**12-24**	24-48

Aerial Monitoring

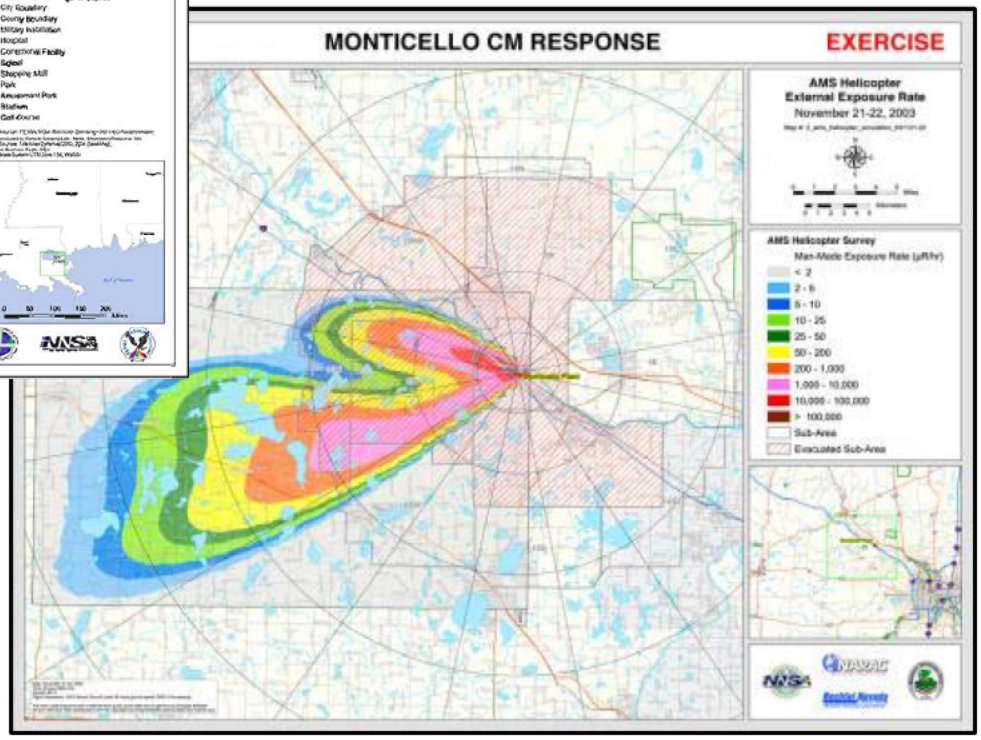


Aerial Measuring System

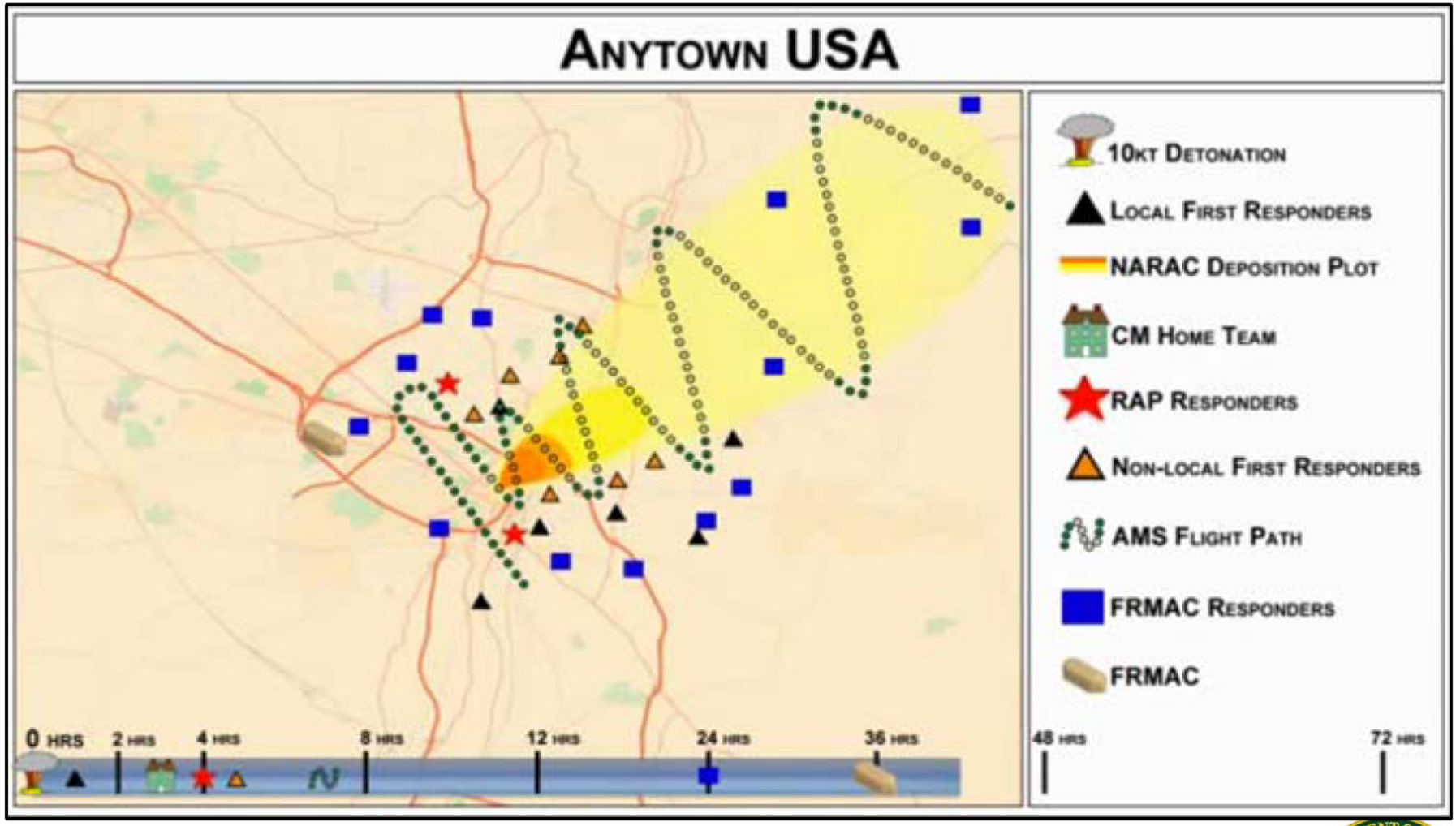


Fixed Wing

Helicopter



Management & Coordination



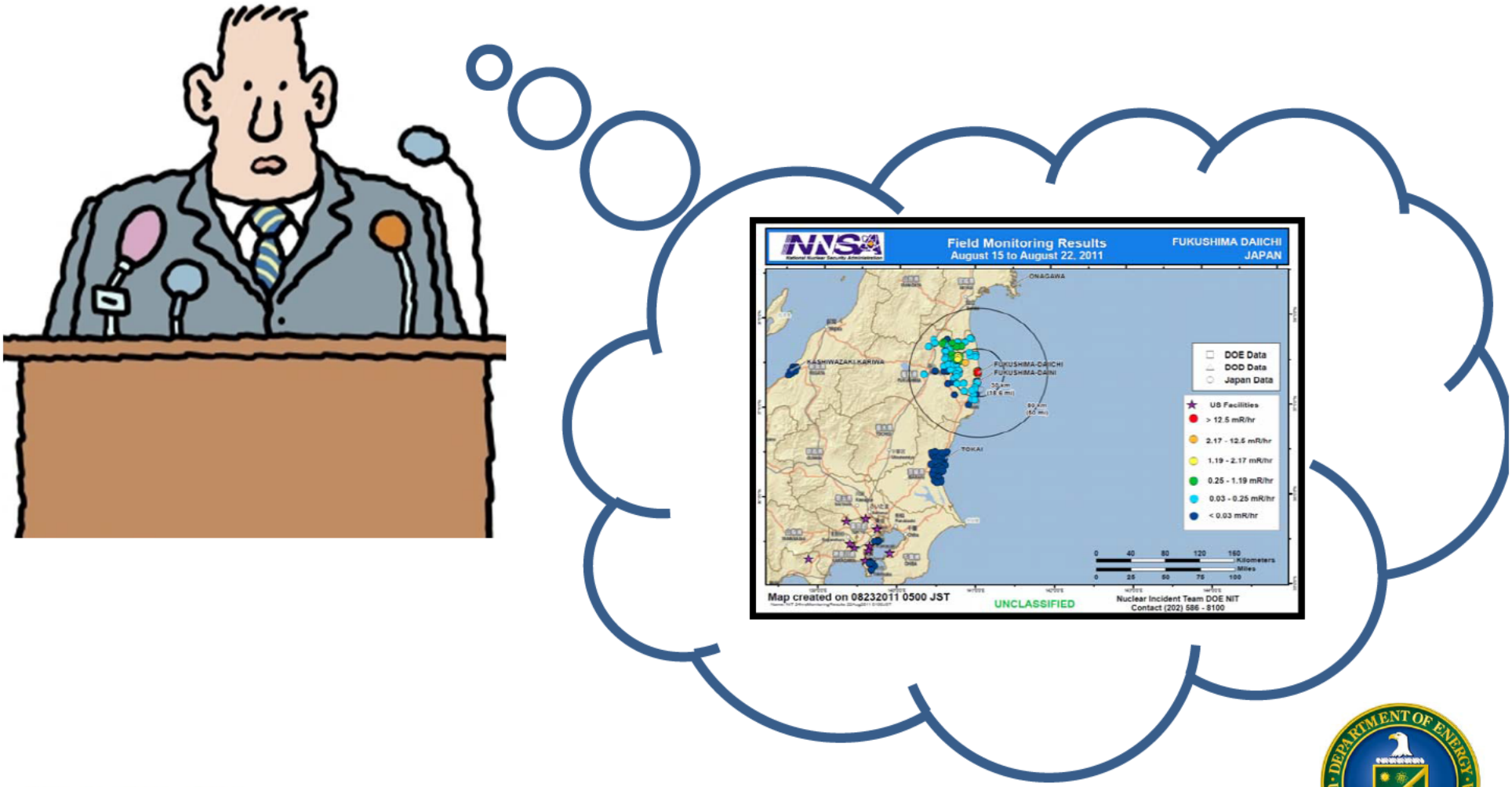
National Nuclear Security Administration

The dust has settled…

- Planning/Operations
  - Establishment of trend analysis for dose and contamination
- Models/Products
  - Updates of products due to source term/weather changes
  - More specialized products
- Technical Support
  - Provide guidance on contamination of food/feed which meet FDA criteria
  - Support creation of more specialized products

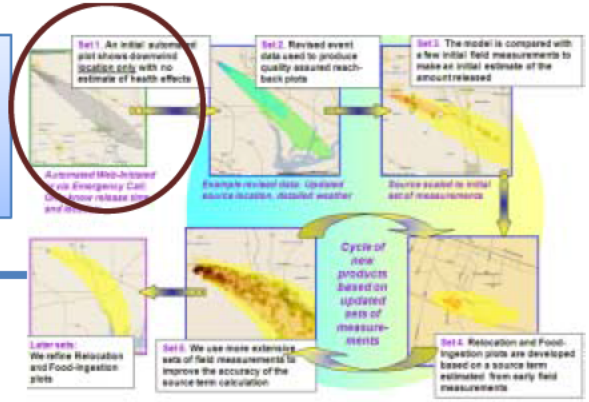
0-6	6-12	12-24	24-48

Decision Support Products/Services

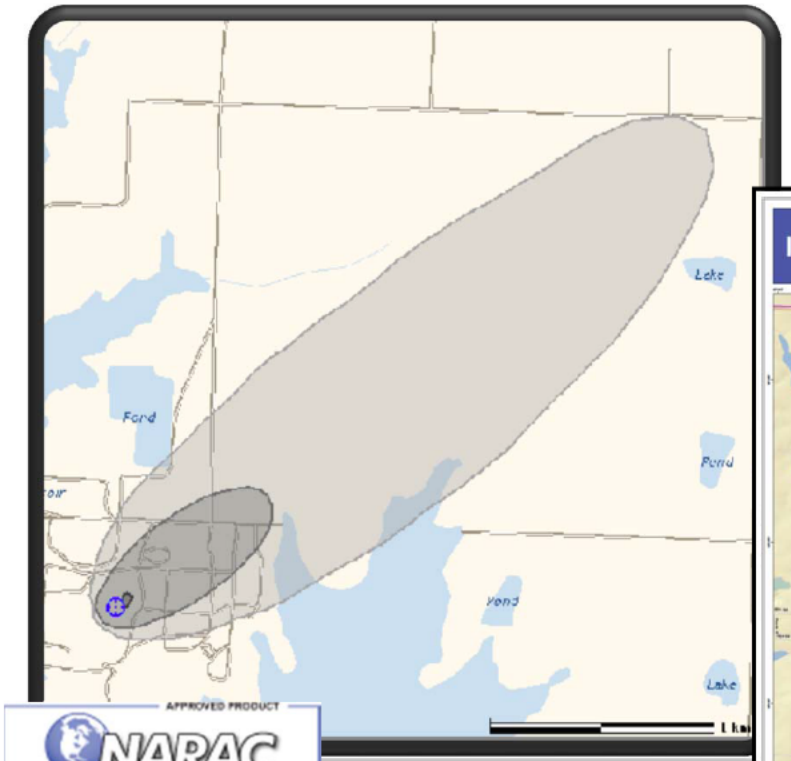


National Nuclear Security Administration

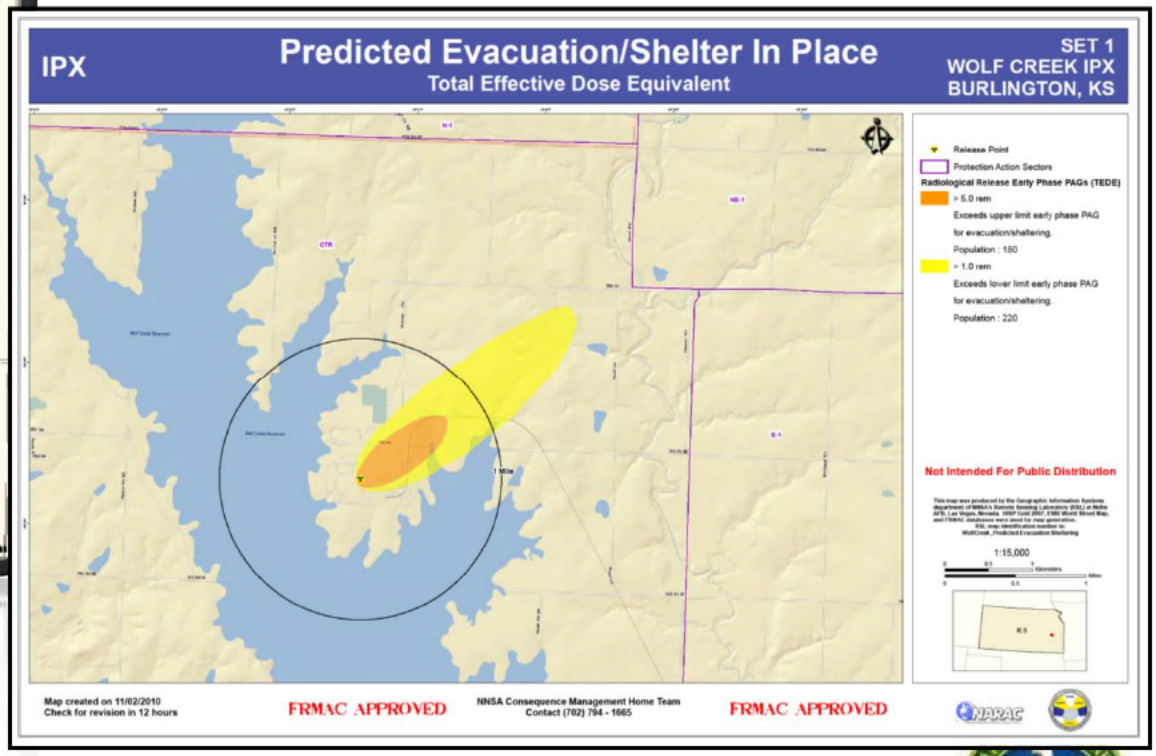
Products



Model Using Available Data



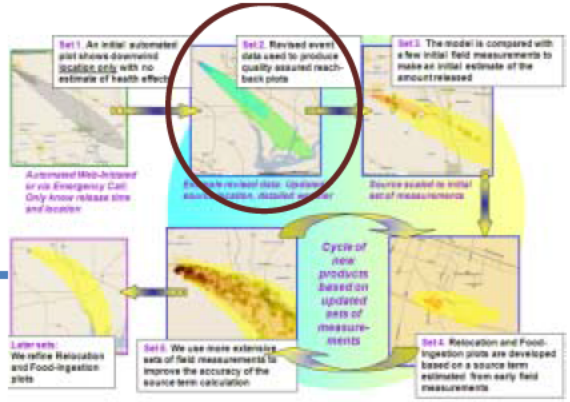
Data Product



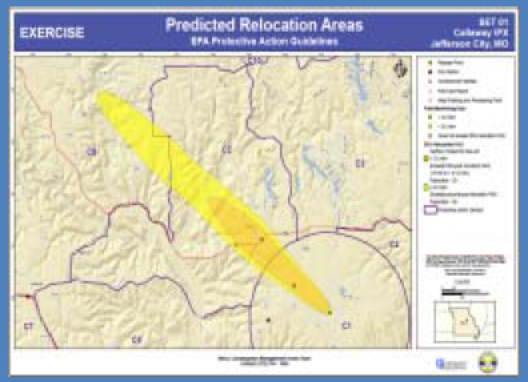
NNSA National Nuclear Security Administration

0-6	6-12	12-24	24-48

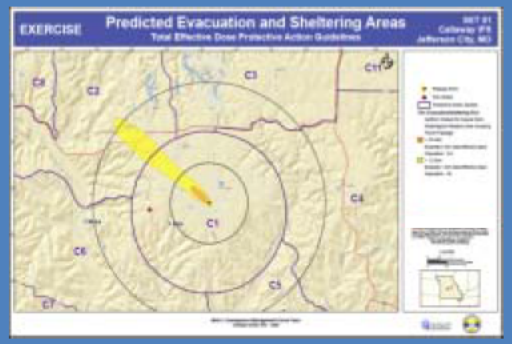
Products



Relocation

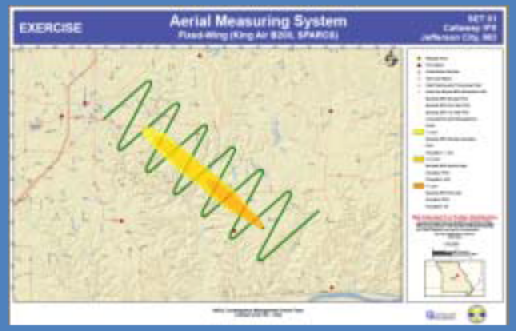


Evacuation



Ingestion

AMS: Initial Flyover

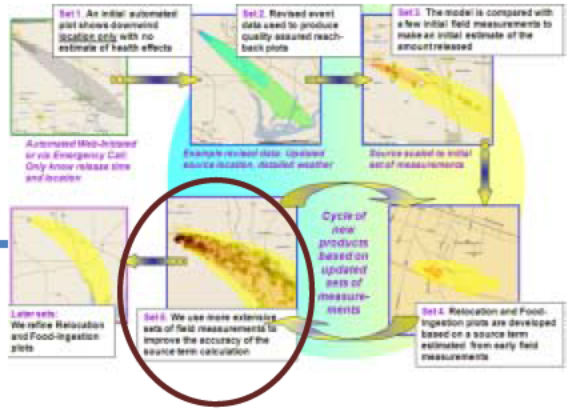


Protective Action Decisions for the Public

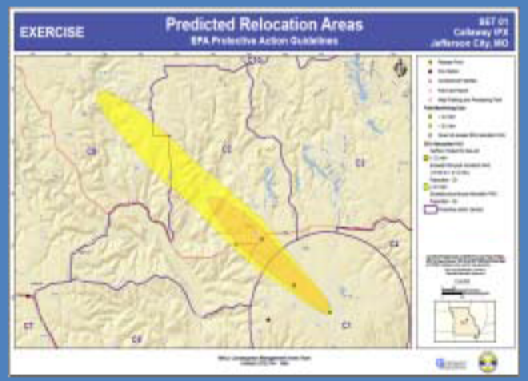
0-6	6-12	**12-24**	24-48

National Nuclear Security Administration

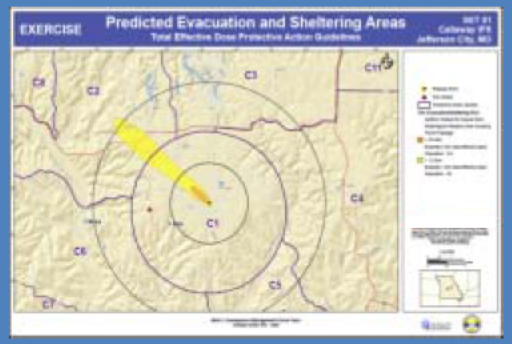
Products



Relocation



Evacuation



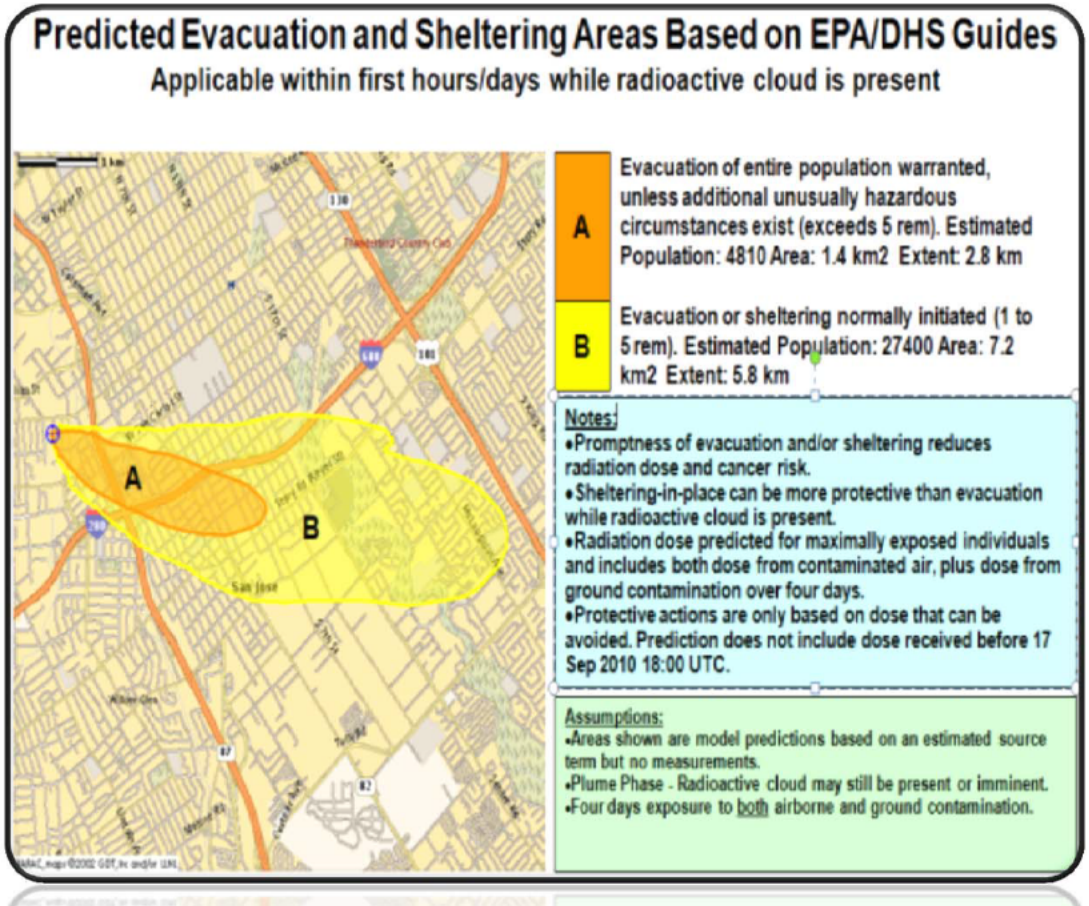
Ingestion

AMS: Detailed Map

Protective Action Decisions for the Public

0-6	6-12	12-24	**24-48**

Modeling Briefing Products



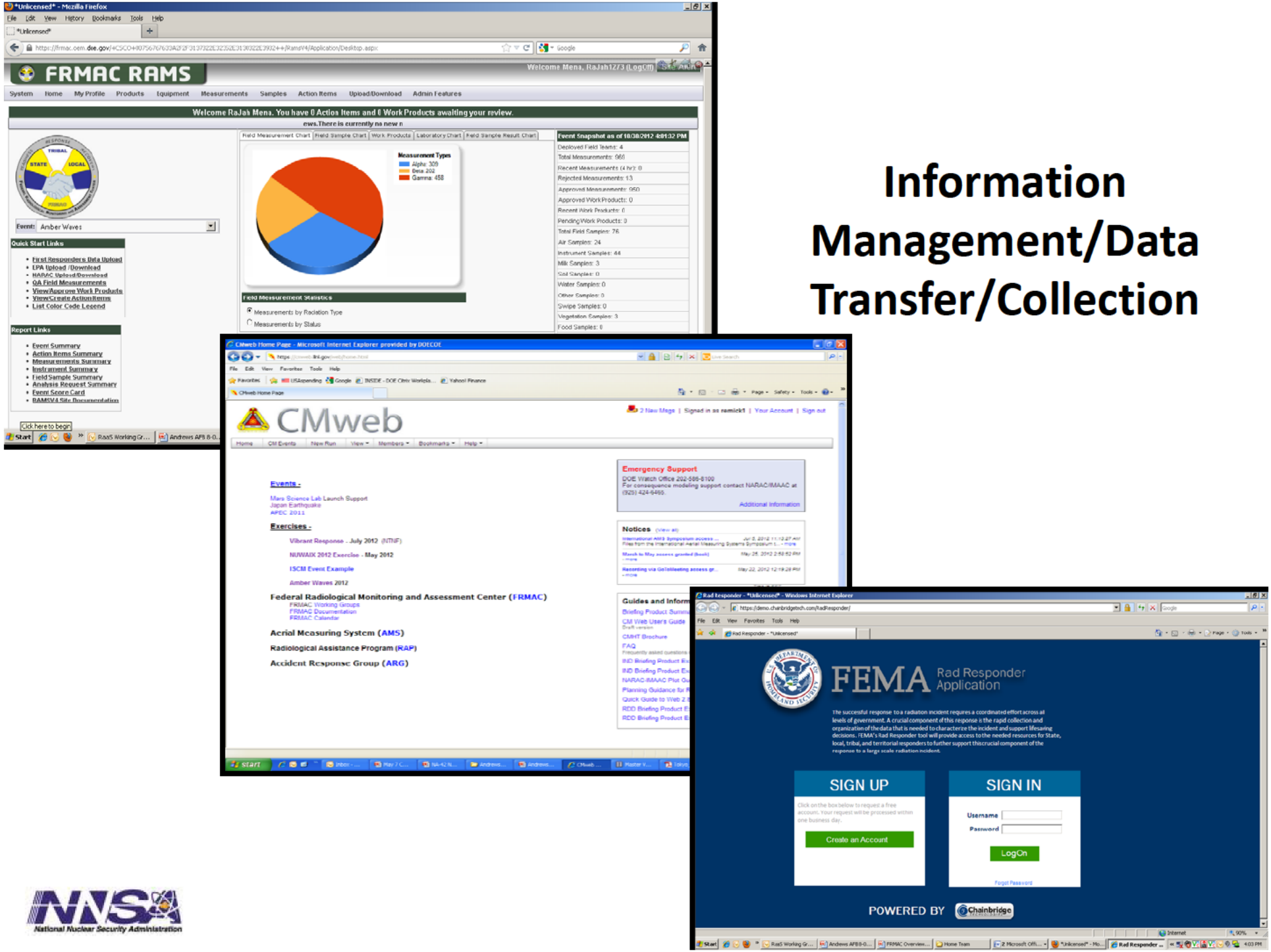
Critical to explain for each Data Product

- What decisions or actions are being addressed
- Key points to note
- Actions that should be considered
- Assumptions and limitations of Data Product
- How each Data Product fits into the overall situation

0-6	6-12	12-24	24-48

National Nuclear Security Administration

Information Management/Data Transfer/Collection



National Nuclear Security Administration

In it for the long haul

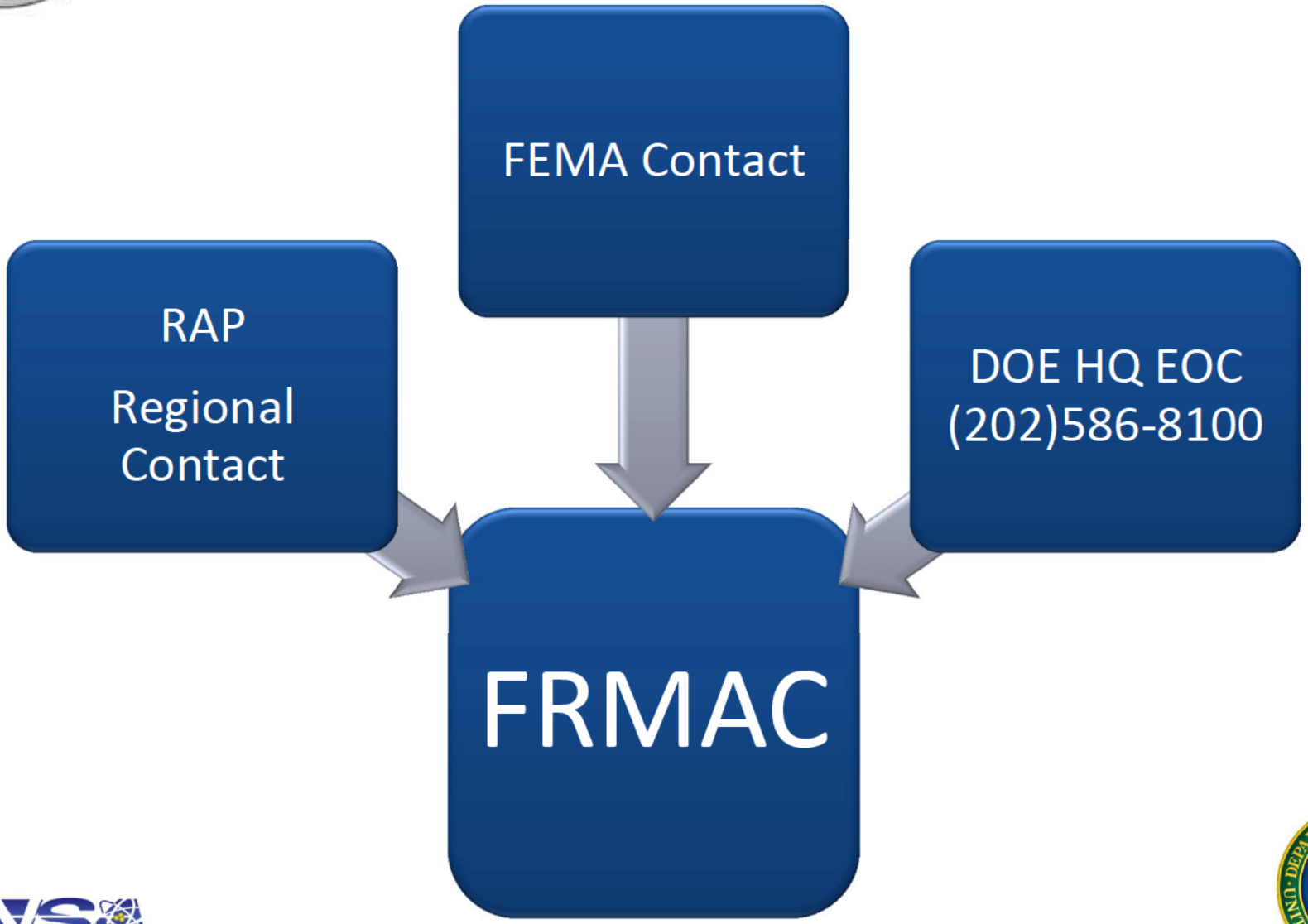
- Long term monitoring plans begin
- Transition to EPA begins
  - Resources required to support identified
  - Transition key points addressed with the state
- Demobilization of DOE emergency response assets
- Mobilization of DOE Environment Management Assets

Days - Weeks

FRMAC Frequently Asked Questions

- How do we call you?
- Who pays for your services?
- Where would you locate?
- How many people are you sending to our EOC?
- What happens when the plume crosses political boundaries?
- How do we send you data?
- How will products be distributed?

How to Activate FRMAC Assets



Who Pays for FRMAC Services?

- The state/local/tribal jurisdiction may not be responsible

- Costs are generally absorbed by the Department of Homeland Security

FRMAC Location Considerations

- Indoor space of 10,000 – 20,000 sq. ft
- Access to major highways/roadways
- Close proximity to airports
- Standard electrical power outlets (15 or more)
- Space for parking mobile labs and numerous vehicles
- Options
  - Schools
  - Hockey rinks
  - Farm centers
  - Armories

FRMAC and the EOC

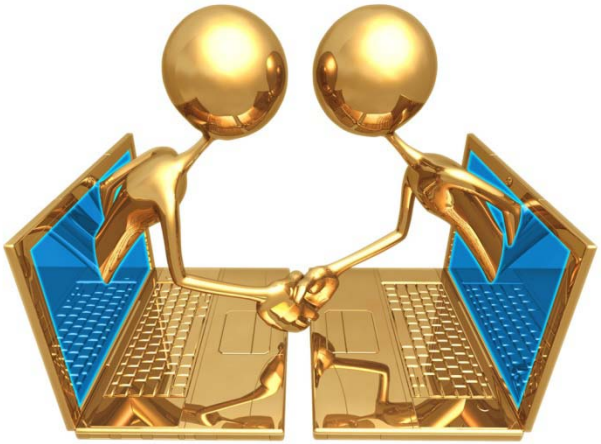
- It is understood that seating may be limited
- Personnel deployed
  - 1 Liaison and/or
  - 1 Scientific advisor
- Each EOC will be provided with assistance
- Travel with
  - Laptop
  - Aircard
  - Phone
  - Reference materials

Sending Data to the FRMAC

- Fax into CMHT at 702-794-1039
- Email into CMHT at cmht@nnsa.doe.gov
- Use bulk upload utility in FRMAC database which can be found at ***frmac.oem.doe.gov***
- Call in data on CMHT bridge line
- Use RadResponder

Distribution of Products

- Data ownership
- Sharing of data and products
- Markings and classification



For More Information

FRMAC Program Information and Manuals
http://www.nv.doe.gov/nationalsecurity/homelandsecurity/frmac/default.htm

Alvin Morris
NNSA / NSO - 702-295-4944
Alvin.morris@nnsa.doe.gov