Radiological Emergency Response from the U.S. Department of Energy National Nuclear Security Administration

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NNSA

• Unique scientific and technical expertise capable of dealing with nuclear/radioactive events and materials.

• Trained, exercised, specially-equipped teams with pre-packaged equipment to conduct search, render safe, recovery and consequence management operations.
Emergency Response

Pre-Crisis/Pre-Consequence Preparations

Crisis Intervention

Consequence Management
Pre-Crisis/Pre-CM Phase

- Baseline radiological measurements of at-risk facilities.
- Baseline measurements of New York City completed.
Pre-Crisis / Pre-CM Phase

- Intelligence
- Readiness preparations
  - Training
  - Deployment status
  - Equipment maintenance and packaging
  - Established Plans & Procedures
  - Local coordination
Flow of Nuclear Counter-Terrorist Activities

Securing of Sources In Foreign Countries → Portals In Foreign Port Facilities → Portals in US Ports and on Border Crossings (Detection/Survey) → Distributed Detectors (Detection/Survey)

Checkpoint / Way station
Detectors (Detection/Survey) → Search
RAP
SRT
Triage → Render Safe – Technical Analysis
LGAT
JTOT

Render Safe – Device Disassembly And Disposition
JTOT
Disposition

Attribution of Device to Responsible Parties

Consequence Management
FRMAC
AMS
REAC/TS
NARAC

Bechtel Nevada
Strengthening national security through engineering and operational excellence
Emergency Response

- Pre-Crisis/Pre-Consequence Preparations
- Crisis Intervention
- Consequence Management
Crisis

- First Responders
  - Police, Hazardous Material Units, Coast Guard, Customs
- State and Regional Teams (Suspicious Package)
- Radiological Assistance Program (RAP) Teams
- National Search Teams
- Home Teams
Crisis Intervention

- National Search Team
  Locate and Identify Nuclear and Radiological Materials in Support of the designated Coordinating Agency

- Utilize low-profile techniques to locate
  - Nuclear or radiological materials
  - Dispersal Devices
  - Nuclear Weapons

- Different platforms
  - Hand held
  - Vehicle mounted
  - Aerial
  - Marine
Aerial Measuring System - Search

- Beechcraft B200 Fixed Wing Aircraft and Bell 412 Helicopter
- Nellis Air Force Base
- Andrews Air Force Base
- On-duty Team
  - Pilots
  - Scientist
  - Data Technician
  - Radiation Technician
Predictive Plume Modeling

World-wide Coverage
- Terrain and land-surface
- Vector and raster maps
- Real-time weather data
- Real-time hazard advisories available within minutes
- Distributed electronically

- Natural, chemical, biological, and natural resources
- Generic and specific sources
- Advanced modeling system
- Health effects and action levels
NARAC Product for 4-Day TEDE

- **> 25 Rem**
  - EPA emergency worker limit for lifesaving activities. Increased cancer risk.
  - Population: 5,032

- **> 5.0 Rem**
  - EPA early phase upper limit PAG for evacuation.
  - Population: 8,424

- **> 1.0 Rem**
  - EPA early phase PAG for considering evacuation.
  - Population: 10,512
NARAC Product for 1st-Year EPA Relocation Area

- >2,000 mRem

EPA relocation PAG for first year
Population: 24,006
National Response Plan

- December 2004
- Nuclear / Radiological Incident Annex
- Establishes Coordinating Agency, Advisory Team, and a Federal Monitoring and Assessment Center (FRMAC).
- Assigns the coordination of the FRMAC during the initial phase to the U.S. Department of Energy (DOE) National Nuclear Security Administration.
Consequence Management

The DOE National Nuclear Security Administration (NNSA) has the role to coordinate the FRMAC and assist the states in their mission to PROTECT THE HEALTH AND WELL BEING OF THEIR CITIZENS with:

– Verified radiation measurements
– Interpretations of radiation distributions based on EPA, FDA or local Protective Action Guidelines
– Characterizations of overall radiological conditions
CMRT Time Line

- Conduct Advance Party meeting upon arrival.
- Begin monitoring and sampling plan.
- Upload predictive models and begin assessment of first responder data.
- Ensure Health and Safety of responders
- Begin producing maps and compiling data utilizing the Geographic Information System (GIS).
- Upload GIS to FRMAC Web.
- Set up secure communications.
- Begin logistics planning for follow on response.
CM Products: Monitoring and Sampling Data

- Direct monitoring measurements
- Isotopic mix (*in situ* spectroscopy)
- Sampling
  - Control (hotline to lab)
  - Prep
  - Analysis
- QA & QC
- Standardized data forms
Mission – Provides radiological detection capability mounted on helicopters and fixed wing aircraft to measure ground disposition of radiation in radiological emergencies

- Aircraft located at Nellis and Andrews Air Force Base
- Responds in 4 to 6-hours
- 40 team members
Laboratory Analysis

- Sample Hotline
- Sample Preparation
  - Documentation
  - database entry
  - chain-of-custody (sample tracking)
  - laboratory database
  - QA/QC process
- Sample Analysis
  - Laboratory Information Management System
Assessment

• Provides interpretations of radiological conditions in terms of recognized Federal or State PAGs.
• Characterizes radiological environment to address re-entry, return, and recovery issues.
• Geographic Information System (GIS)
Consequence Management – Radiation Emergency Assistance Center / Training Site (REAC/TS)

Mission – Provide medical response, advice, and consultation for rapid assessment and treatment of high-dose radiation cases
- 24/7 capability
- Staffing – 14
- Assistance to Federal, state, local government governments as well as the IAEA, foreign governments and private physicians
- Provides training programs for health professionals
- Maintains “Radiation Accident Registry System”
FRMAC

- Multi-agency response.
- Large scale/long-term operations.
- Photo/video capability.
- Additional communications (voice, data, video).
- Data networks.
- Mechanical and electrical support for extended operations.
- Additional logistics and administrative support.

Digit Pace Exercise
Transfer from DOE to EPA

- At a mutually agreeable time AND after consultation with DHS and State, local, and tribal officials.
- The following conditions are to be met before transfer:
  - Immediate emergency condition is stabilized.
  - Offsite release of radioactive material has ceased.
  - Offsite radiological conditions have been characterized.
  - Initial long-range monitoring plan has been developed.
  - Other Federal agencies will commit required resources.
Questions?

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