Nuclear Power Plants that Impact Missouri and Planning for their Unlikely Disasters

Jason Davenport
Jason.Davenport@sema.dps.mo.gov
573-526-9245
History

- 3 Mile island
- Londonery Township, PA
- March 28, 1979
- Created one of the safest industries in operation today!
- Possibility of this occurring again is very low
Responsibilities

**FEMA**

- Ensures State, local, and tribal governments can adequately protect the health and safety of the public living in the vicinity of Nuclear Power Plants
- Provides reasonable assurance to the NRC that offsite response capabilities are adequate
Responsibilities

- **State of Missouri**
  - Establishing State level Unified Command
  - Maintaining State Level response capabilities
  - Maintenance of State level plans
  - Assistance with local plans as requested
  - Providing training for local emergency response personnel
Responsibilities

- County Emergency Managers and Commissioners
  - Ultimate responsibility to make decisions for their jurisdictions regarding the safety of their constituents
  - Work closely with State agencies to manage the disaster
  - Maintain a 24/7 communication line with state, local and federal responders
  - Maintain county response plans
Nuclear Power Plant Planning, Training, Exercises and Response

- Callaway Energy Center, Callaway County, MO
- Cooper Nuclear Station, Brownsville, NE
Emergency Planning Zones (EPZ) Plume Exposure Pathway
Radiological Instrument Maintenance and Calibration (RIMC)

- Provides radiation detection equipment to local partners
- Maintains and calibrates approximately 3,000 pieces of radiation detection equipment each year
What Constitutes an Emergency?

- 3 Barriers of radiation Leakage:
  - Fuel rod cladding
What Constitutes an Emergency?

- 3 Barriers of radiation Leakage:
- 2- Reactor Vessel
What Constitutes an Emergency?

- 3 Barriers of radiation Leakage:
- 3- Containment
How do Power Plants Work?

- Need to create steam
- Steam spins a turbine
- Turbine powers a generator
- How much steam is generated is controlled through the use of control rods.
Emergency Classification Levels

- Notice of Unusual Event/Unusual Event
- Alert
- Site Area Emergency
- General Emergency
Unusual Event

- Events are in progress or have occurred which indicate a potential degradation of the level of safety of the plant or indicate a security threat to facility protection has been initiated. No release of radioactive material requiring offsite response or monitoring is expected unless further degradation of safety systems occur.

- SEOC Activation: Not required, at Director’s discretion

- Make appropriate notifications

- Begin discussions with risk counties.
Events are in progress or have occurred which involve an actual or potential substantial degradation of the level of the safety of the plant, or a security event that involves probable life-threatening risk to site personnel or damage to site equipment because of malicious or dedicated efforts of a hostile action. Any releases are expected to be limited to small fractions of the EPA Protective Action Guideline exposure levels.

SEOC Activation: Min. Level 4 (enhanced monitoring), can be elevated at Directors discretion.

Make appropriate notifications

May take multiple actions at State level depending on the situation

DHSS/DNR and SEMA may send liaisons to the plant

DHSS may prepare and/or pre-stage their Field Monitoring teams
Site Area Emergency

- Events are in progress or have occurred which involve actual or likely major failures of plant malfunctions needed for protection of the public, or security events that result in intentional damage or malicious acts. Any radioactive release are not expected exceed the EPA Protective Action Guideline exposure levels beyond the site boundary.

- SEOC Activation: Min. Level 3, can be elevated at Directors/Governors discretion
  - Level 3- Select ESF’s called to the SEOC per plan and Directors discretion

- Make appropriate notifications
- May take multiple actions at State level depending on the situation
- DHSS/DNR Field Monitoring Teams Deployed (if not already done so)
- Local response agencies may begin responding (Fire/EMS) under the direction of County leadership
Events are in progress or have occurred which involve actual or imminent core degradation or melting with potential for loss of containment integrity or significant security threats. A release, if any, can be reasonably expected to exceed EPA Protective Action Guideline exposure levels offsite.

SEOC Activation: Level 2
- Level 2- All ESF partners present/fully staffed SEOC
- Make appropriate notifications
- May take multiple actions at State level depending on the situation
- Local response agencies may begin responding (Fire/EMS) under the direction of County Leadership
Planning

- Planning is Ongoing and Extensive
- Involves multiple agencies
  - Federal: FEMA, USCG, EPA, NRC
  - State: SEMA, DHSS, DNR, DSS, Dept. of Ag., MDC
  - Multiple ESF Partners
- Local Risk Counties
  - Atchison
  - Callaway
  - Gasconade
  - Montgomery
  - Osage
Planning (contd.)

- Schools
- Daycare facilities
- Hospitals/Ambulance services
- Reception Centers
- National Weather Service
- Nebraska
- US Coast Guard
- US EPA
- Local Fire Departments
- University of Missouri