Radiological Threats and Emergencies: The Radiological Operations Support Specialist (ROSS)
Is radiological & nuclear emergency preparedness at a tipping point?

Nuclear power plants have funded radiological & nuclear preparedness since Three Mile Island. Can we depend on that?

Increasing tensions with North Korea, Pakistan and in the Middle East. Is it possible that a tactical nuclear weapon might be used?

Terrorism. Is it just a matter of time before radiological or nuclear materials are used?
The times call for innovation, new collaboration and new radiological/nuclear emergency professionals

• All are embodied in the Radiological Operations Support Specialist (ROSS).

• The Federal Emergency Management Agency (FEMA), Department of Energy (DOE), Department of Homeland Security (DHS) & the Conference of Radiation Control Program Directors (CRCPD) have collaborated to build the ROSS.

• The collaboration is building and testing tools to keep ROSS abreast of the latest developments, to help them better plan, train & prepare States & locals for any radiological or nuclear emergency.
ROSS can meet the rad/nuc challenges of the worst kind.
Nuclear power plant emergencies

It took an extraordinary tsunami to cause an extended power outage, but multiple nuclear and multiple spent fuel pools suffered catastrophic damage.

The environmental, economic and psychosocial impacts have been immense and recovery may take many, many years and billions of dollars.
The results of Fukushima and Chernobyl are extreme, but real.

For Fukushima, it is primarily gross environmental contamination, massive amounts of radioactive waste, and wide-spread social upheaval (concerns about the safety of land, foods, homes and businesses).

Fukushima accident from AFP, the French Press Agency: https://www.youtube.com/watch?v=q2qQ9Rt8.

Chernobyl resulted in horrible deaths for dozens of firefighters who tried to extinguish the burning graphite reactor pile, world-wide contamination, and increased thyroid cancers in children all across the former Soviet Republics and Eastern Europe.
ROSS are trained to handle the worst nuclear power plant emergencies.

They understand nuclear reactors, the wide range of radionuclides released as gases, vapors & particulates and how the release disperses.

They know all the agencies that can help & the specialized tools that can be employed to effectively manage the consequences.

They know how States & locals use incident command and incident management, so they fit right into the right place to engage in the most important response and recovery work.
Radiological dispersal device (RDD)

• This is any device that releases radiological materials into the environment exposing members of the public.

• One particular RDD is called a dirty bomb - conventional explosives combined with radiological materials.
A radiological dispersal device (RDD)

One of the more likely incidents, the RDD is one for which most responders must be well-prepared.

ROSS can train responders using videos like the one which follows and lives may be saved and recovery may be dramatically hastened.
Tactic 6: Initiate Lifesaving Rescue Operations

This is one of ten videos by Lawrence Livermore National Laboratory soon available for responder training.
Impacts of an RDD

• Fatalities and injuries are the result of the blast, but the radioactive contamination may cause widespread fear and social disruption, especially in the impacted areas, as well as extensive cleanup and recovery costs.

• Some people may suffer radiation injury, too. Many may have concerns about later health effects.
ROSS are trained to manage response & recovery from an RDD

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<tr>
<th>Guide</th>
<th>A ROSS will employ the latest guidance promptly to avoid wasted resources.</th>
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<tr>
<td>Provide focus</td>
<td>The focus will be properly placed on the RDD as a contamination incident with little to no immediate physical health consequences.</td>
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<td>Message</td>
<td>Work will aid in better communications with the public and responders and a more efficient recovery.</td>
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An improvised nuclear device (IND)

In a heavily populated area, there will be many thousands of deaths and greater numbers of people with radiation, trauma and combined radiation and trauma injuries.

The National Planning Scenario is for a 10 kiloton device, but larger and smaller devices are possible.

All lead to the release of incredible amounts of thermal and ionizing radiation energy as well as an extremely destructive blast pressure wave.
Video Simulations of an IND

This data product was requested by a ROSS during Vibrant Response 14 as a means to inform everyone who needed help the most and who needed to stay home and not overwhelm the medical care system.

It required dozens of agencies’ deliberation and approval, along with federal, state and local experts working together to develop supporting documents and tools.

[Video Simulations of an IND](https://www.youtube.com/watch?v=gxb9rg4MQgk)
While the effects are truly catastrophic, strike teams of ROSS are being trained to help everyone everywhere from response through recovery.

Every Incident Command Post as they arise across multiple jurisdictions will need a ROSS to help protect first responders and to point responders to zones where the most lives can be saved.

Every Emergency Support Function in the State, County and local EOCs will need a ROSS to help them do their job, but in a dangerous multi-hazard environment where radiation dose can kill, too.
ROSS can help keep

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<tr>
<th>Responders</th>
<th>Messages</th>
<th>Health Care</th>
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<td><strong>On focus:</strong></td>
<td><strong>On point:</strong></td>
<td><strong>On target:</strong></td>
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<tr>
<td>Minimize dose which can kill</td>
<td>Get inside &amp; stay inside</td>
<td>• Who needs no help</td>
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<tr>
<td>Contamination brushes off</td>
<td>Delay evacuation until fallout decays</td>
<td>Who is beyond help</td>
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<td></td>
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<td>Who will die without immediate help</td>
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Nuclear weapons

- The effects of a nation-state nuclear weapon are catastrophic.

- There are orders of magnitude differences in geographic area impacts of an IND versus cold war era and thermonuclear weapons.

- An invasion somewhere might lead to the limited use of strategic weapons designed for the battlefield.
Every ROSS would be needed to help

- Responder safety
- Public messaging
- Assistance to the medical community
- Restoration of critical infrastructure
Recent developments: Training

- Sixty-four people have been trained as ROSS. Six are interim Type 1, 17 are interim Type 2, 24 are interim Type 3 and 17 are to be typed shortly according to interim guidance.

- Three Type 1 ROSS are working with the Counter Terrorism Operations Support National Nuclear Training Center to prepare training and teach more ROSS with sponsored travel for State responders.

- Two other classes are scheduled for August and October 2018 preparing perhaps another 50 ROSS. Our goal: 200 - 300 ROSS trained afterward.
Recent developments: First RDD exercise

Vigilant Guardian 2017

- For California Bay Area first responders; local, state and Federal agencies

- Test the region’s radiological/nuclear detection, interdiction and consequence management concept of operations plans (Con Ops), standard operating procedures (SOP’s), personnel and equipment capabilities.
Recent developments: NPP exercises

February to May 2018 ROSS in multiple NPP exercises in Connecticut and Iowa.

Developing a model for using ROSS in more, if not all, NPP exercises of the future.
New ROSS training and responder support roles

- ROSS are participating in a series of new tabletop exercises.
  - High intensity source transportation accidents,
  - High intensity source protection and loss consequence management scenarios, and
  - Providing radiological fundamentals training as a companion piece.
- ROSS are testing deployments as strike teams.
  - This was tested at the IND Gotham Shield 17 exercise near New York City.
  - Cobalt Magnet 19 this coming February deals with the consequences of a plutonium-powered spacecraft crash landing.
NIMS Typing

- Subject matter experts are working with the National Integration Center to finish a FEMA 509 National Incident Management System (NIMS) Typing.

- A Position Task Book will follow with the educational, experiential, training and exercise requirements to advance from entry level to Type 1 ROSS.
- Contact fema-ross@fema.dhs.gov for prepareness and emergency activities.

- FEMA will deploy ROSS to your jurisdiction to assist in a radiological/nuclear emergency incident.

- FEMA will help with the deployment of ROSS for prepareness activities such as exercises and trainings on an individual basis.

Request a ROSS and Updated Program Information
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Join the ROSS Community:
ROSS LinkedIn Community