Presented at the
Armed Forces Radiobiology Research Institute
Scientific Medical Effects of Ionizing Radiation Course
July 28 through August 1, 2008
Bethesda, Maryland

Distributed via the AFRRI Web site
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The Scientific Medical Effects of Ionizing Radiation Course, conducted once a year, focuses on the latest research about the medical effects of ionizing radiation to help clinicians, health physicists, and medical planners preserve troop health in the face of radiological/nuclear terrorism or warfare.

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Purpose

- Provide an overview of Joint Task Force Civil Support (JTF-CS)
- Discuss the role of JTF-CS in response to a nuclear or radiological emergency
- Discuss the JTF-CS medical concept of operations
- Discuss operational risk management
What is JTF-CS?

- A USNORTHCOM standing Joint Task Force HQ of Joint military, DOD civilian and contractor personnel at Fort Monroe, Virginia.
- Originally established under USJFCOM (pre-9/11) to address national level concerns for planning and integration of DOD CBRNE Consequence Management (CM) support to civil authorities.
- A deployable Command and Control headquarters for DOD units and personnel executing CM operations in response to one or more CBRNE incidents.
USNORTHCOM anticipates and conducts Homeland Defense and Civil Support operations within the assigned area of responsibility to defend, protect, and secure the United States and its interests.
US JOINT FORCE LAND COMPONENT COMMANDER Mission Statement

• US Army North (USARNORTH), as the Joint Force Land Component Command (JFLCC) and the Army Service Component Command (ASCC) to US Northern Command, conducts Homeland Defense (HD), Civil Support (CS) operations and Theater Security Cooperation (TSC) activities in order to protect the American people and our way of life.
JTF-CS anticipates, plans and integrates USNORTHCOM Chemical, Biological, Radiological, Nuclear, and high-yield Explosive (CBRNE) Consequence Management operations and when directed, establishes command and control of DoD forces for a CBRNE incident to assist local authorities in saving lives, preventing injury, and providing temporary critical life support.
USNORTHCOM Missions

Unique Area of Responsibility
Specialized Capabilities

Extraordinary Circumstances
Emergency Circumstances
Temporary Circumstances

Civil Support

DoD’s #1 Priority
Execute OPLANS
Air Patrols

Special Events
Border Patrol Spt
Transnational Threats
Disaster Relief
Civil Disturbance
CBRNE Incident Mgmt
Maritime Security
Missile Defense

Unclassified
USNORTHCOM CBRNE CM

Tiered Response Options

**Tier I**
- Defense Coordinating Officer or other O-6 Commander
- DCO with DCE and EPLOs in National Response Plan role
- JPAC from JTF-CS

**Tier II**
- JTF-CS
  - with technical augmentation
- JTF-CM (X2 if required)
  - Command and Control Headquarters 2 HQ(-)(ARNORTH)
  - Joint Planning Augmentation Cell (JTF-CS)
  - Joint Manning Document augmentation required

**Tier III**
- USNORTHCOM Assigned O-9 level JTF Headquarters
- Complex regional problem with multiple subordinate C2 elements
  - JTF-CS
  - JTF-CM
  - MACDIS or Other JTFs

Formed from:
- Standing Joint Force Headquarters- North (SJFHQ-N)
- ARNORTH (with joint augmentation from SJFHQ-N)
- Force Provider resources

DCO, DCE and EPLOs continue National Response Plan role

Command and Control
Deliberate Planning

CBRNE CM Guidance, Policy and Plans

Contingency Planning and Playbooks

Nuclear
Radiological
Contagious & Non-Contagious Biological
High-Yield Explosive
Persistent & Non-Persistent Chemical

DOD Capabilities

Mission Analysis and Assessment

CBRNE Assessments, Modeling and Analysis

Local / State / Federal Capabilities

National Response Framework
Local and State Emergency Plans

Unclassified
Capability Requirements Analysis

15 PLANNING SCENARIOS
Created for Use in National, Federal, State, and Local Homeland Security Preparedness Activities
The Homeland Security Council
February 2006

CBRNE CM Scenarios
1: Nuclear Detonation – 10-Kiloton Improvised Nuclear Device
2: Biological Attack – Aerosol Anthrax
3: Biological Disease Outbreak – Pandemic Influenza
4: Biological Attack – Plague
5: Chemical Attack – Blister Agent
6: Chemical Attack – Toxic Industrial Chemicals
7: Chemical Attack – Nerve Agent
8: Chemical Attack – Chlorine Tank Explosion
11: Radiological Attack – Radiological Dispersal Devices

Scenarios highlight the scope, range, and complexity of catastrophic incidents

Tasks
The Universal Task List (UTL) is a menu of tasks that may be performed in major events such as those detailed in the National Planning Scenarios.

Capabilities
The Target Capabilities List (TCL) describes specific capabilities (and levels of capability) that federal, State, local, and tribal entities are expected to develop and maintain.

Playbooks quantify the DOD support estimates

UTL and TCL link tasks to capability requirements

Playbooks are scenario-based

Bridge the NRP specified and implied support tasks to DOD capabilities
Analyze CBRNE CM resource requirements based on anticipated tasks

• NRP identifies DOD support functions.
• Mission analysis determines specified and implied tasks.
Focus of CBRNE Playbooks

Components

- Combatant Commander
- President / SECDEF
- JTF-CS
- Tactical
- Operational
- Strategic Theater
- Strategic National

Setting the *conditions* for subordinate success.
### Playbook Status

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<thead>
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<th>B</th>
<th>R</th>
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<td>RDD</td>
<td>NUKE Det</td>
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<td>PI</td>
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<td>Non-Persistent</td>
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</table>

**GREEN:** Playbook constructed; exercised internally (PLANEX); exercised externally. Viable planning tool.

**AMBER:** Requires further refinement. Not fully exercised.

**RED:** Not developed.
Operational Phases

Phases overlap or at times are concurrent

**Begin/End**

**Shaping**
- Gain Situational Awareness
- Alert DCO
- Identify Units
- Nominate Base
- Support Installation
- Conduct Training & Rehearsals
- Develop Common Operational Picture (COP)

**Staging**
- Deploy DCO/DCE/CAE/EPLOs
- Position forces to facilitate response
- Identify C2, LOG, MED
- Establish BSI
- Request For Forces (RFF)

**Deployment**
- Activate & Deploy C2
- Establish Rules For the Use of Force (RUF)
- Establish LNOs
- Movement of forces
- Joint Reception, Staging, Onward Movement, and Integration

**Consequence Management Operations**
- Maintain COP
- Conduct CBRNE CM
- Assess Mission
- Report Commander’s Critical Information Requirements (CCIR)
- Report Costs
- Transition Planning
- Implement Transition
- C2 scaled down
- Measures of Effectiveness and Performance met
- Report Costs
- Maintain Awareness
- Capture Lessons Learned

**Transition**
- Transition Begins
- Forces Redeploy Incrementally
- Transfer of OPCON
- Civil authorities assume responsibility
- Response forces begin redeployment and OPCON is transferred
- Civil authorities assume responsibility to their respective commands

**Unclassified**
**Disaster Response Phases**

**Pre-Incident**
- State/City Emergency Plans
- National Response Plan
- Catastrophic Incident Annex
- EMS Programs Training Equipment
- CONPLAN/OPLAN
- Playbooks

**Local Incident Response 0-48 hours**
- Local Response: Fire/Rescue HAZMAT Police
- Tactical DECON
- State/NG Response: CERFP ANG EMEDS EMAC CBIRF

**Triage and Field Care 48-72 hours**
- Mass Triage
- Definitive DECON
- Life/Limb Saving Surgery
- Strained Casualty to Care Provider Ratio

**National Response 72-96 hours**
- Destroyed Medical Infrastructure
- Mass Care
- Degraded Standard of Care
- Casualty to Provider Ratio
- Logistics

**Disposition & Transport >> 96 hours**
- Mass Care
- Limited En Route Care
- Patient Tracking
- Family & Pet Issues

**Standard of Care Undefined** - measured in hours to days

**Scope of Disaster**
- Degraded Standard of Care

Unclassified
HSS Response Timelines
Based upon NRP Catastrophic Incident Supplement

**Total Deployed Non-DoD Force:**
- 14 DMATs w/ equipment sets
- NMRT
- 2 VMATs
- 2 DMORTs
- USPHS Deployable Teams

**Total Deployed DoD Force:**
- EMEDS +25
- 2 ASMC
- NSAT LNOs

**Follow-on Force Packages**
- CCMRF Closure
- JTF-CS HQ (+)
- CCMRF (-)
- +96 hrs - Pre-scripted RFF Follow-on Forces
- +72 hrs - Initiate deployment for USPHS
- +48 hrs - Initiate NVRT teams.
- +36 hrs - Initiate pt evacuation. Begin backfill of medical support packages from SNS
- +24 hrs - Initiate actions to deploy 2 DMORTs, 11 DMATs and equipment caches
- +18 hrs - NDMS hospitals prepared to receive evacuated patients.
- +12 hrs - Activate USPHS. Initiate deployment for 2 NVRTs
- +6 hrs - Initiate deployment for 3 DMAT’s with equipment
- +4 hrs - Initiate deployment for NMRT. Alert JTF-HQ or designated IEF. BPT deploy NSAT.
- +3 hrs - Convene NDMS interagency planning group and MIACG
- +2 hrs - Activate Red Cross and Supply Distribution plans.
- +1 hr - Activate NDMS
- +10 min - Activate EMS

**INCIDENT**

(COLD START)

DOD LEANS FORWARD IN READINESS PREP FOR POTENTIAL SUPPORT RQMT

UNCLASSIFIED
SUDDEN RESPONSE 05

- 10kt IND Charleston, SC
SUDDEN RESPONSE 05

- 10kt IND Charleston, SC
- 80,000 Casualties
- 20,000 Fatalities
- 100,000 Worried/Displaced
Combined Prompt Effects

- **Prompt Radiation Effects**
  - >800 Rad (1,275 m)
  - 300-800 Rad (1,460 m)
  - 150-300 Rad (1,600 m)

- **Prompt Thermal Effects**
  - >12.5 cal/cm² (1,550 m)
  - 6.2-12.5 cal/cm² (2,220 m)
  - 4.0-6.2 cal/cm² (2,700 m)

- **Prompt Blast Effects**
  - >92 psi (270 m)
  - 62-92 psi (300 m)

Source: AFRRI / AS07, Sedlak, May 07
Integrated Dose 12, 24, 36, 48 hrs, 3, 4, 5 days
**HOW DO WE ACHIEVE SUCCESS?**

**Medical Support Box**

**CSR #1**
- Initial treatment, decontamination, and extraction of personnel in the hot zone

**CSR #2**
- Medical assets postured to treat and sustain life until evac can occur
  - Mortuary operations established

**CSR #3**
- Rapid evacuation of the theater via maximum use of air and ground assets

**CSR #4**
- Medical response community integrated, assets coordinated for maximum efficiency

---

**21,000 Fatalities**

**>27,375 Casualties**

**50,000 to Decon**

---

**THE “BIG 6”**

- Collection/TX/Decon system established to support hot zone
- TX facilities established for continuing care and stabilization
- Civilian hospitals evacuated, focused on treating critically ill
- Evacuation staging areas operational
- Airhead operating at maximum output
- Maximum evacuation occurring via ground routes

---

*CSR=Critical Support Requirement
Clinical Practice Guidelines (CPG):

- Damage Control Resuscitation
- Use of Recombinant Factor VIIa (rFVIIa)
- Blunt Abdominal Trauma
- Urologic Trauma
- Deep Venous Thrombosis
- EMT Thoracotomy
- Trauma Airway Management
- Traumatic Brain Injury (TBI) and Military Acute Concussion Evaluation (MACE)

Guideline Only – not a substitute for clinical judgment and subject to overriding operational considerations

Unclassified

✓ Need Modification for Radiation Incident
JTF-CS Operational Risk Assessment

Medium

Minimal Risk Assessment   Low
<10 cGy Risk Assessment   Low
<25 cGy Risk Assessment   Medium

Unclassified
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<th>Hazard</th>
<th>Risk</th>
<th>Control</th>
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<td>L</td>
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<td>≤10 cGy</td>
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<td>E</td>
<td>IDENTIFIED &amp; IMPLEMENTED</td>
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<th>Acute Death (w/treatment)</th>
<th>Acute Symptoms (within 4 hours)</th>
<th>Excess Lifetime Cancer Risk</th>
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<td>100</td>
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<td>5 - 30%</td>
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<td>150</td>
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### JTF-CS Operational Risk Assessment

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<th>Mission Importance</th>
<th>Critical</th>
<th>Priority</th>
<th>Routine</th>
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<tr>
<td>Extremely High</td>
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<td>75</td>
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<tr>
<td>High</td>
<td>75</td>
<td>25</td>
<td>5</td>
</tr>
<tr>
<td>Moderate</td>
<td>25</td>
<td>5</td>
<td>0.5</td>
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<tr>
<td>Low</td>
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<td>0.5</td>
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**High?**
### JTF-CS Operational Risk Assessment

**Personal Radiological Monitoring Program**

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<tr>
<th>Cumulative dose</th>
<th>RES Category</th>
<th>Risk Levels</th>
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<td>0 to 0.05 cGy</td>
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<td>No Risk</td>
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<tr>
<td>0.05 to 0.5 cGy</td>
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<td>Normal</td>
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<tr>
<td>0.5 TO 5 cGy</td>
<td>1B</td>
<td>Minimal</td>
</tr>
<tr>
<td>5 to 10 cGy</td>
<td>1C</td>
<td>Limited</td>
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<tr>
<td>10 to 25 cGy</td>
<td>1D</td>
<td>Increased</td>
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<tr>
<td>25 to 75 cGy</td>
<td>1E</td>
<td>Significant</td>
</tr>
<tr>
<td>75 or more cGy</td>
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<td>N/A</td>
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<table>
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<th>Acceptable Risk level</th>
<th>Critical</th>
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## Proposed Revision to First Draft JP 3-11

### JTF-CS Operational Risk Assessment

**Medium**

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**Unclassified**
The Day After
Action in the 24 Hours Following a Nuclear Blast in an American City

Ashton B. Carter, Michael M. May, and William J. Perry

A Report Based on a Workshop Hosted by The Preventive Defense Project Harvard and Stanford Universities Ashton B. Carter and William J. Perry, Co-Directors

Alternative Plume Shape: Ten-kiloton groundburst

This butterfly pattern, rather than an ovoid pattern, would arise from wind shear (different wind speed and direction at different altitudes).

Source: Lawrence Livermore National Laboratory
PREVENTION VERSUS RESPONSE
✓ Prevention remains by far the best protection against nuclear terrorism

FEDERAL GOVERNMENT PLANNING
✓ The federal government should stop pretending that state and local officials will be able to control the situation on the Day After

SHORT-TERM SHELTERING VERSUS PROMPT EVACUATION.
✓ Fallout shelters deserve a comeback

LONG-TERM RADIATION EXPOSURE
✓ A sensible approach to response, recovery, rebuilding, and decontamination after a nuclear detonation will require emergency responders and some citizens in the affected area to accept a greater exposure to radiation than is permitted by normal day-to-day occupational guidelines.
FOLLOW-ON ATTACK

- If one nuclear weapon goes off, there are likely to be more to follow: the response plan for the Day After should assume follow-on attacks

RETAIATION AND DETERRENCE

- The source of the weapon or material detonated by a non-governmental terrorist group will eventually be traced back to a government – Russia, Pakistan, another foreign source, or even the United States

CONTINUITY OF THE AMERICAN FORM OF GOVERNMENT.
QUESTIONS

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