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# ABERDEEN PROVING GROUND ADVANCED PLANNING BRIEFING TO INDUSTRY

Joint Project Management Office for Radiological and Nuclear  
Defense

Presented by: Mr. Valentin Novikov

5 Nov 2015

*The forecast data is for planning purposes, does not represent a pre-solicitation synopsis, does not constitute an invitation for bid or request for proposal, and is not a commitment by the government to purchase the desired products and services*



# JPM-RND MISSION, VISION, & FUNDING

Mission: The Joint Project Manager for Radiological and Nuclear Defense is responsible for research, development, acquisition, fielding and life-cycle support of joint radiological and nuclear defense systems supporting the National Military Strategy.

Vision: Collaboratively develop and deliver Radiological and Nuclear Defense capabilities to support our warfighters, our nation, and our allies.

Joint Funding: Office of the Asst. Secretary Defense (Nuclear Chemical Biological) Nuclear Matters funds RDT&E and a small amount of Procurement Services' POMs augment the joint procurement to cover the majority of the total system requirement.

Army-specific programs (i.e. Man-portable Radiological Detection System): Army G8



## JPM RND Objectives

- Upgrade & Modernize capabilities
- Data transmission to provide Situational Awareness (SA) & enable reach-back
- Inform future programs through ATDs
  - Speeds up development
  - Reduces acquisition risks

## CURRENT PROGRAMS

### Contamination Monitoring



NOTIONAL DIAGRAM

Radiological Detection System



Joint Personal Dosimeter - Individual

## FUTURE FUNDED PROGRAMS

Medium Res 1-3% Palm-sized  
Low Res > 3%



### RIID Family of Systems

- FY18 Start
- FY19 Contracting
- One variant at a time
- CDD to be developed



Vehicle Ship Aerial Installation

### Platform Mounted Detection Systems

- FY21 Start
- FY22 Contracting
- One variant at a time
- CDD to be developed

Backpack Detector

HPGe

Situational Awareness



### Man-portable Radiological Detection System

- FY17 Start
- FY18 Contracting
- CPD approved by AROC

PHOTOS FOR ILLUSTRATION PURPOSES ONLY



# JPM-RND UNFUNDED FUTURE PORTFOLIO

## Advanced RN Detection Family of Systems



- Airborne & Vehicle Search, ID, & Forensics for special materials
- Capability Production Document World Wide Staffing 2Q FY16

## Joint Personal Dosimeter - Squad



- FY21 Program Start being requested in the Army POM
- FY26 Procurement scheduled in Army long-range plan
  - Dose of record capable
  - Provides Dose Rate
  - Data transmission for situational awareness

## Stryker NBCRV RN Sensor Upgrade



- Replace and upgrade aging RN detection capabilities
  - Isotope detection?
  - Limited remote detection?
- FY16 Analytical Study on solution alternatives based on size, weight, and power constraints
- Funding will be requested in FY19-23 Army POM

PHOTOS FOR ILLUSTRATION PURPOSES ONLY



# RN SENSE VISION

## Current

STAND ALONE DETECTORS



Navy



Air Force



Army



PDR-75

PDR-75A



BATTLEFIELD DOSIMETRY

LOW-LEVEL DOSIMETRY



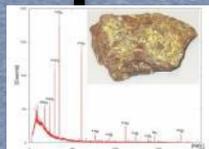
## Mid-Term



SEARCH FOR THREAT SOURCES



Single RADIAC for DOD (Example)



Isotope Identification



Search for Threat sources



RadCam

DATA ACQUISITION  
Machine language or single sensor information



INFORMATION DEVELOPMENT  
Connections or visualization to provide insight



ACTIONABLE INTELLIGENCE  
Intentions or actions



OCCUPATIONAL AND BATTLEFIELD DOSIMETRY

## Dosimetry



REALTIME INTEGRATED DOSIMETRY

## Far-Term

## Detection

TAG, TRACK, AND LOCATE

FORENSICS

IMAGING

BUILT IN SENSOR TECHNOLOGY

STANDOFF DETECTION FOR THREAT SOURCES

FORENSICS AUTONOMOUS ROBOTICS

Self Detecting Materials

Immediate Threat Detection

Multi-sensor analysis

Ensemble and Material Integrated Sensors

SELF DETECTING TECHNOLOGIES



Albatross-class fast sea-lift ship



MQ-8B Fire Scout



Helicopter hovering at sea



"Photos for illustration purposes only"

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# ABERDEEN PROVING GROUND ADVANCED PLANNING BRIEFING TO INDUSTRY

Defense Threat Reduction Agency  
DTRA-CB-J9

Presented by: Lt.Col. Steven Webber  
5 Nov 2015

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# NUCLEAR DETECTION R&D ACROSS THE U.S. GOVERNMENT



Department of Defense (DoD)  
Defense Threat Reduction Agency: DoD Combat Support Agency, OCONUS, Permissive and Non-Permissive Environments, "Nuclear Threat Detection"

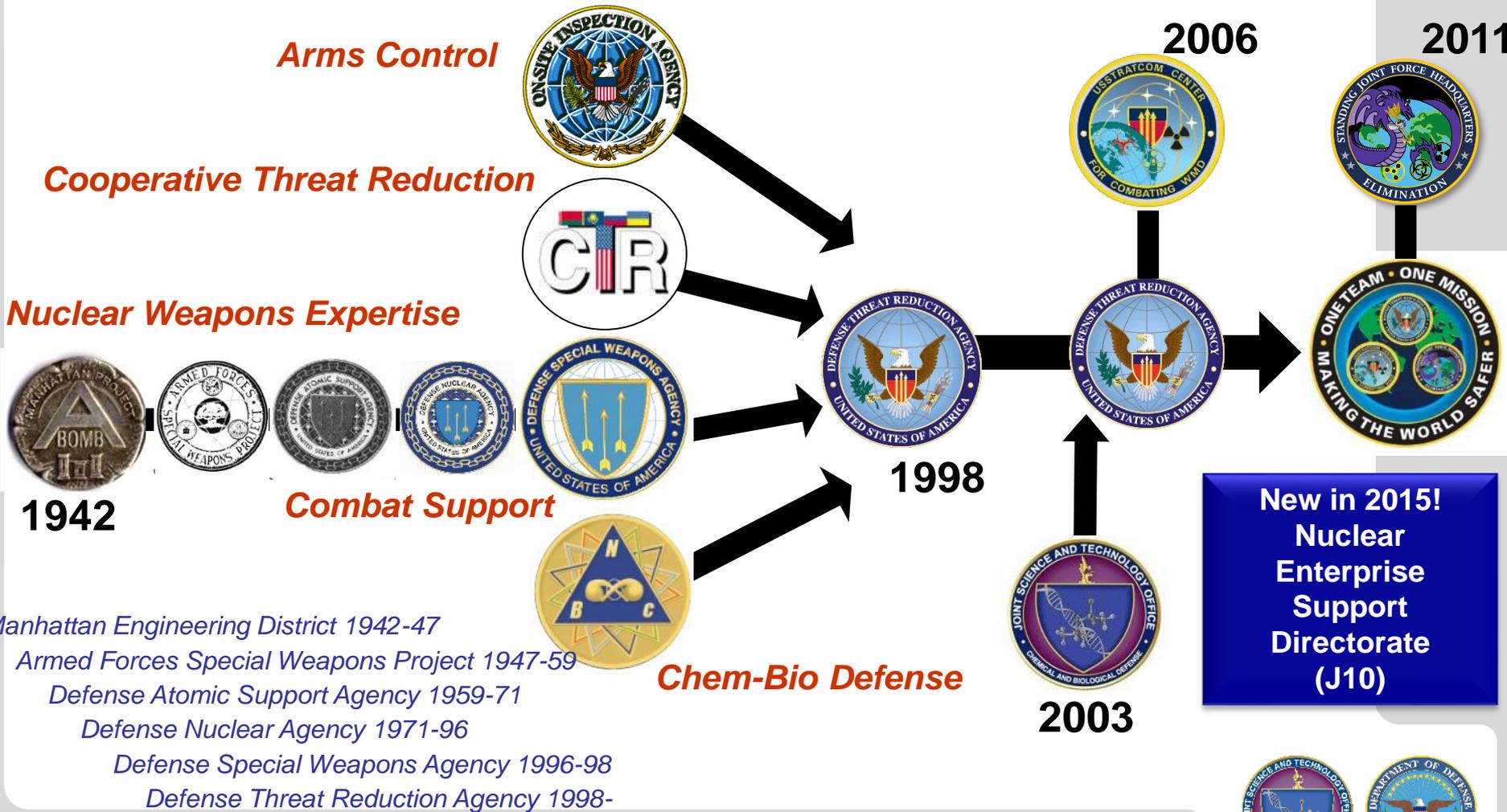
Department of Homeland Security  
Domestic Nuclear Detection Office (DNDO): CONUS, Permissive Environments, Law Enforcement through Customs and Border Protection



Department of Energy, National Nuclear Security Administration (NNSA): CONUS and OCONUS, Permissive Environments, Stockpile Stewardship, Emergency Response, and Nuclear Nonproliferation



# DTRA Historical Lineage



- Manhattan Engineering District 1942-47
- Armed Forces Special Weapons Project 1947-59
- Defense Atomic Support Agency 1959-71
- Defense Nuclear Agency 1971-96
- Defense Special Weapons Agency 1996-98
- Defense Threat Reduction Agency 1998-

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# DTRA AND SCC-WMD MISSIONS

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**DTRA** safeguards the United States and its allies from global Weapons of Mass Destruction (WMD) threats by integrating, synchronizing and providing expertise, technologies and capabilities.

**Strategic Command Center for Combating WMD (SCC-WMD)** supports the Commander of USSTRATCOM by synchronizing DoD Combating WMD (CWMD) planning and integration activities with those of the United States Government (USG), identifying CWMD capability needs and advocating for CWMD capabilities.



# DTRA AND J9 ORGANIZATION

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## DTRA

J0 – Office of the Director  
J1 – Human Resources Directorate  
J2/5/8R – Intelligence, Plans & Resource Integration Directorate  
J3/7 – Operations, Readiness, and Exercises Directorate  
J4/8C – Acquisition, Finance, and Logistics Directorate  
J6 – Information Operations Directorate  
**J9 – Research and Development Directorate**  
J10 – Nuclear Enterprise Support Directorate

## J9

J9 – Director, Research & Development Directorate  
J9BA – Basic and Applied Sciences Department  
J9CB – Chemical / Biological Technologies Department  
J9CX – Counter WMD Technologies Department  
**J9NT – Nuclear Technologies Department**  
J9IS – Information Sciences & Applications Department



# Nuclear Technologies Missions

- **Locate and identify nuclear and radiological threats**
- **Rapidly and reliably conduct post-detonation nuclear forensics**
- **Characterize the full range of nuclear weapons effects to support targeting, consequences of execution, and survivability**
- **Ensure critical DoD systems can accomplish their designated missions when exposed to a nuclear weapons effects environment**
- **Assurance and transparency technologies and methods for current and future WMD treaties**



# NUCLEAR DETECTION OVERVIEW: MISSION & OBJECTIVES

## Nuclear Detection Mission

Provide DoD with the technology to locate, identify, and track special nuclear material (SNM) to prevent attacks against the US and its allies.

**Radiation Detection Strategy:** Provide cutting edge search, localization, imaging, and characterization equipment that utilizes successful enabling technology for enhanced radiation detection capabilities that meet and exceed end-user needs.



**Nuclear Threats Strategy:** Develop and exploit relevant non-radiation signatures, via collaboration or research and development, to support the identification and localization of nuclear threats.

How do we transition from search across a county-sized area to ...



## Detection Mission Space



An area where passive radiation detection can be employed?



# RADIATION DETECTION STRATEGY

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**Warfighter customer is required to conduct render-safe operations and low-profile search for SNM. Detection equipment used by general purpose forces is aging.**

**Current technology is ripe for significant improvement: counting time, efficiency, directionality, size, weight, power, compatibility, cost, background mitigation, and spatial resolution.**

**Customer focus enables rapid transition of prototypes for operator evaluation and real-world use across various mission sets.**

**Fulfilling customer requirements provides improved radiation detection systems to the larger DoD community and promotes interagency and international collaboration.**

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# LINEAR RADIATION MONITOR (LRM)

- Legacy LRM is a gross-count rate only detector system intended primarily for container stack searches for radiation sources.
- Initial efforts underway to develop modernized replacements with additional capability while retaining current, favorable characteristics.



**Legacy LRM System**



**Legacy LRM Display**

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# FUTURE FOR DTRA RADIATION DETECTION

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- Radiation Detection portfolio will move away from low technology-readiness-level projects, towards mature, system-focused projects, with aim to deliver viable prototypes directly to Warfighter and other users.
- Future areas of interest for Radiation Detection portfolio include:
  - Low-visibility, wearable-detectors
  - High-resolution radiation imagers (gamma and neutron)
  - Realistic test devices and radiation sources
  - System integration with best-in-class isotope ID algorithms, situational awareness software, communication architectures
- Enhance capabilities of DTRA's Testing Evaluation Assessment and Monitoring Site (TEAMS) to facilitate in-field device testing and validation, and realistic user training campaigns.



# QUESTIONS?

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