



NBC CONTAMINATION AVOIDANCE

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Advanced Planning Briefing to Industry

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Overarching Goals



- **Improve current capabilities:**
 - **Effectiveness**
 - Increase capability for traditional & non-traditional threat agents
 - Increase selectivity and reduce interference
 - **Supportability**
 - Reduce logistics foot print
 - Reduce operations and support costs
- **Develop future capabilities:**
 - **Science & Technology**
 - Understand and Counter threat agent science and dissemination
 - Improve sensor performance and capability



S&T Mission & Vision



S&T Mission:

Research, develop, and demonstrate innovative technologies and capabilities to mitigate the threat and/or effects of chemical and biological events.

S&T Vision:

Make the use of chemical and biological Weapons of Mass Destruction irrelevant through superior Science and Technology.



Program Mission and Vision



JPM NBC CA Mission:

Develop, produce, test, and fielding of NBC detection, obscuration, and reconnaissance systems. Ensure that system developments focus on the customer's needs within cost, schedule, and performance parameters.

JPM NBC CA Vision:

Equip and sustain the world's most capable, powerful, and respected Joint Forces with world class chemical, biological, and radiological contamination avoidance products, capabilities, and services.

Products of Interest:

- **Joint NBC Reconnaissance System (JNBCRS 2)**
- **Improved Point Detection System (IPDS) – Replacement**
- **Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)**
- **Chemical Biological Mass Spectrometer II (CBMS II)**
- **Joint Chemical Surface Detector (JCSD)**
- **Test Infrastructure**
 - **Individual Protection Ensemble (IPE) Mannequin**
 - **Backgrounds and Interferents**
 - **Biological Standoff Facility**



Outline



- **Overview**
- **S&T and Warfighter Needs**
- **Technical Challenges**
- **Acquisition Strategy/ Funding/ Schedule**
- **Upcoming Business Opportunities**
- **Contacts**



S&T Overview



Joint NBC Reconnaissance System (JNBCRS 2)

- **Next generation detection/identification systems**
 - Handheld configurations
 - Ultra high sensitivity (1 ACPLA or low parts per trillion)
 - Low false alarm rates (1 per month or 1 per year)
 - Include TICs/TIMs
 - Include Bio



S&T Overview



Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- Next generation detection/identification algorithms
- Extended databases on backgrounds and interferences



S&T Overview



Joint Chemical Surface Detector JCSD

- **Pre and Post Decontamination Screening**
- **Single shot large area scanning**
- **Wide dynamic range, gross contamination to clearance decontamination levels**
- **Imaging**
- **Includes TICs/TIMs**



S&T Overview



Backgrounds and Interferents

- **Standardization of collection/characterization methodology**



S&T Overview



Biological Standoff Facility

- **Ground truth/referee instrumentation**
- **Standardized backgrounds and interferents**
- **Standardized dissemination methodology**
- **Methodology to contain/control disseminated materials without the use of traditional windows**

Joint Product Manager Reconnaissance Systems & Platform Integration

JOINT PROJECT MANAGER, NBC CONTAMINATION AVOIDANCE



Joint Product Manager Reconnaissance Systems & Platform Integration



Mission Statement

The Joint Product Manager for Reconnaissance Systems and Platform Integration develops, produces, integrates, tests and fields NBC reconnaissance and obscuration systems. We ensure our efforts for system development, integration and services focus on the Joint Warfighters' needs within the parameters of cost, schedule, performance and risk.

M55P1 Coyote



Legacy

NBC Reconnaissance Vehicle Sensor Suite



Future Acquisition

Joint NBC Reconnaissance Vehicle Increment II



M93 Fox Reconnaissance Vehicle



Program Overview

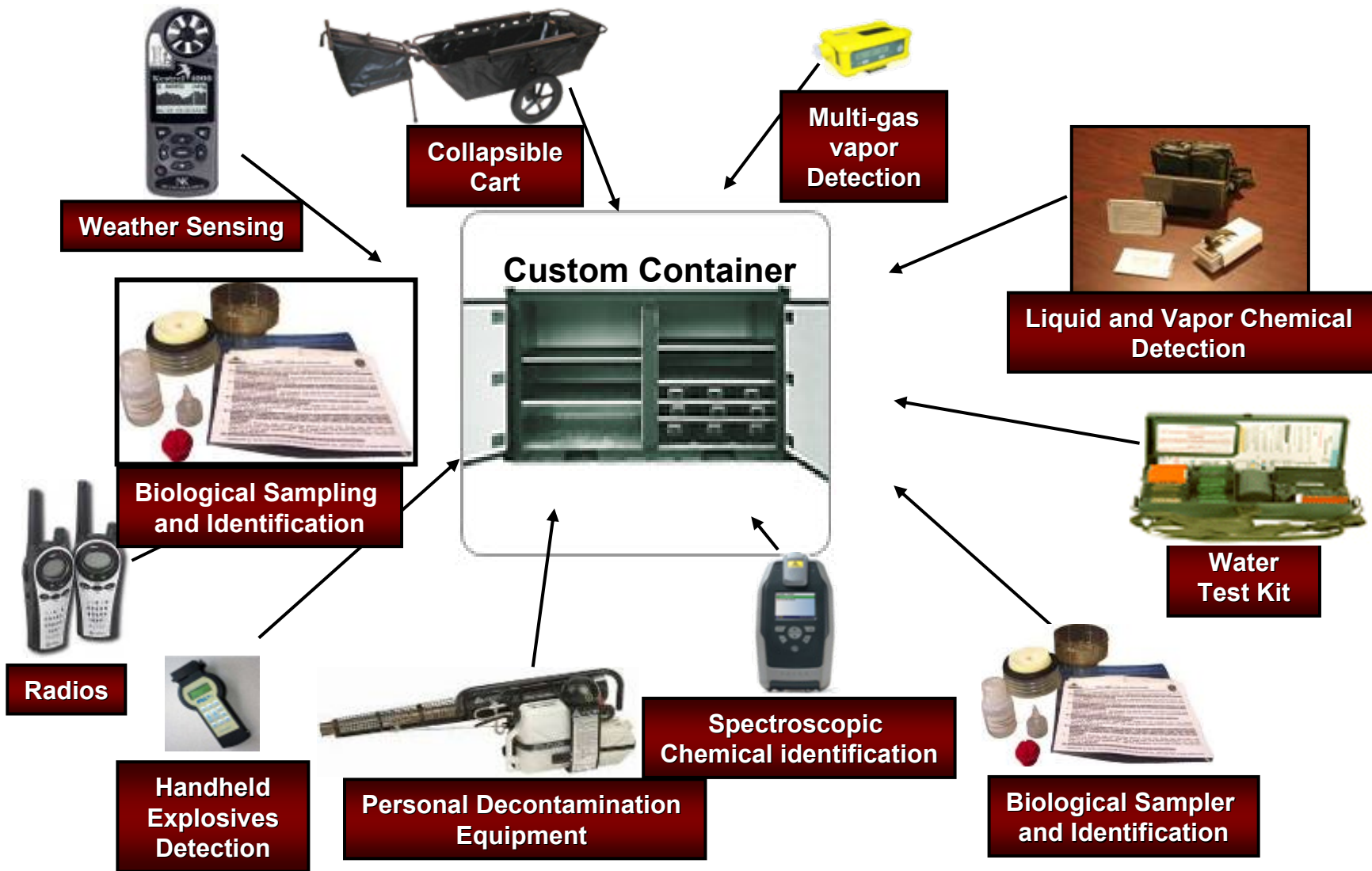


Joint NBC Reconnaissance System (JNBCRS 2)

- **Set of mission specific Kits:**
 - **Handheld Detection and Identification Equipment**
 - **Hazardous materials (HAZMAT)/Toxic Industrial Chemical (TIC) detection and identification capability**
 - **Individual Protective Equipment (IPE)**
 - **Self Decontamination Equipment**
 - **Marking, Sampling and Sample Preservation Equipment**
- **Dismounted CBRN Site Assessments and support**
- **Transport – Stowed on a vehicle/aircraft/ship or towed**
- **Standardizes the capability to detect and identify substances during CBRN dismounted reconnaissance and Sensitive Site CBRN Assessment missions**
 - **Detection/identification of toxic industrial materials (TIM)**
 - **One common CBRN equipment set for the Services**
 - **Full spectrum CBRN support operations in support of strategic, operational, and tactical objectives in all environments including confined spaces**

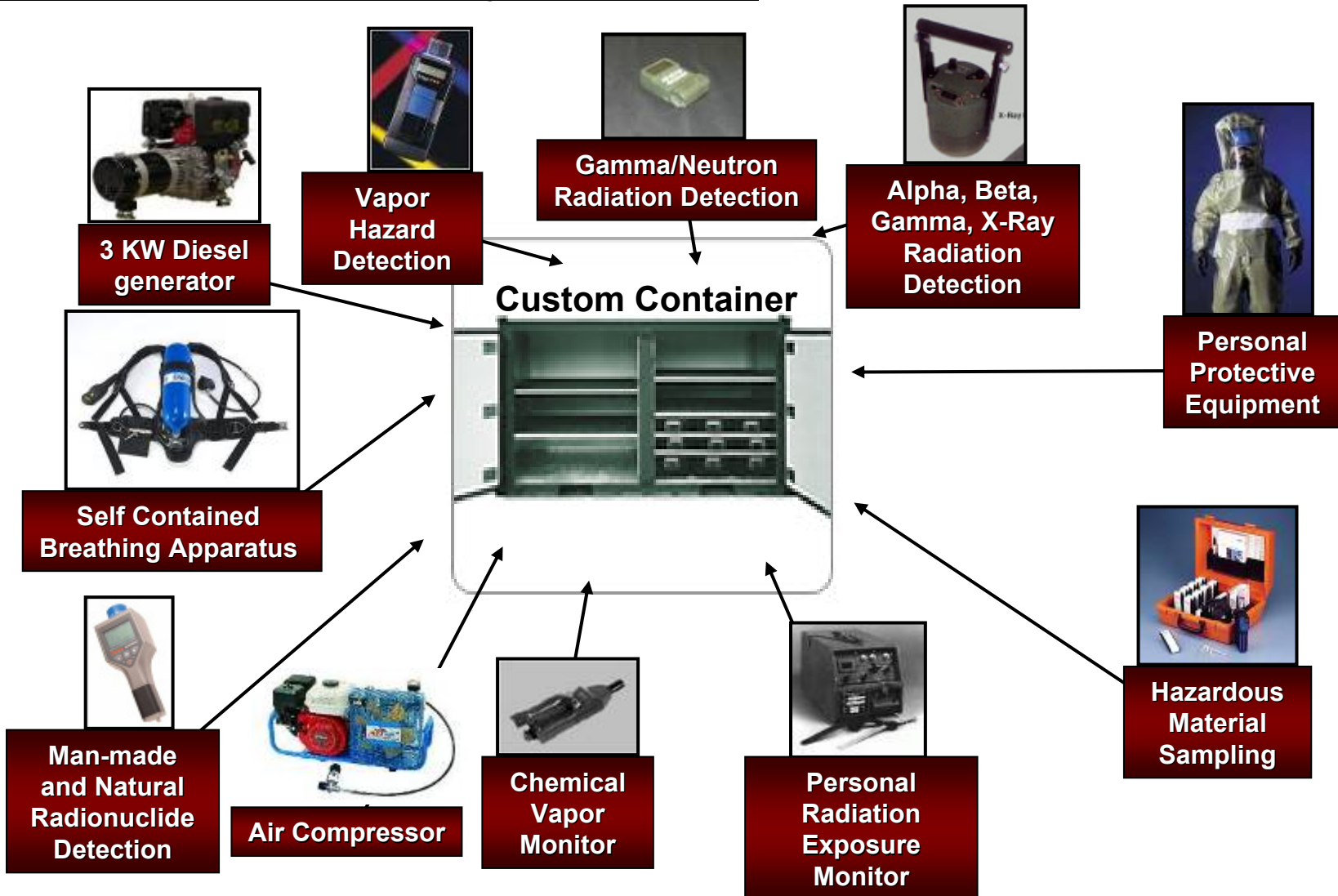
Program Overview

Joint NBC Reconnaissance System 2



Program Overview

Joint NBC Reconnaissance System 2 (Cont'd)





Product Director Chemical and Nuclear Point Detection

JOINT PROJECT MANAGER, NBC CONTAMINATION AVOIDANCE



Product Director Chemical and Nuclear Point Detection

Mission Statement

The Product Director for Chemical and Nuclear Point Detection develops, produces, integrates, tests and fields chemical and nuclear point detection systems. We ensure our efforts for system development, integration and services focus on the Joint Warfighters' needs within the parameters of cost, schedule, performance and risk.

Chemical Point Detectors



CBRN Water Detectors



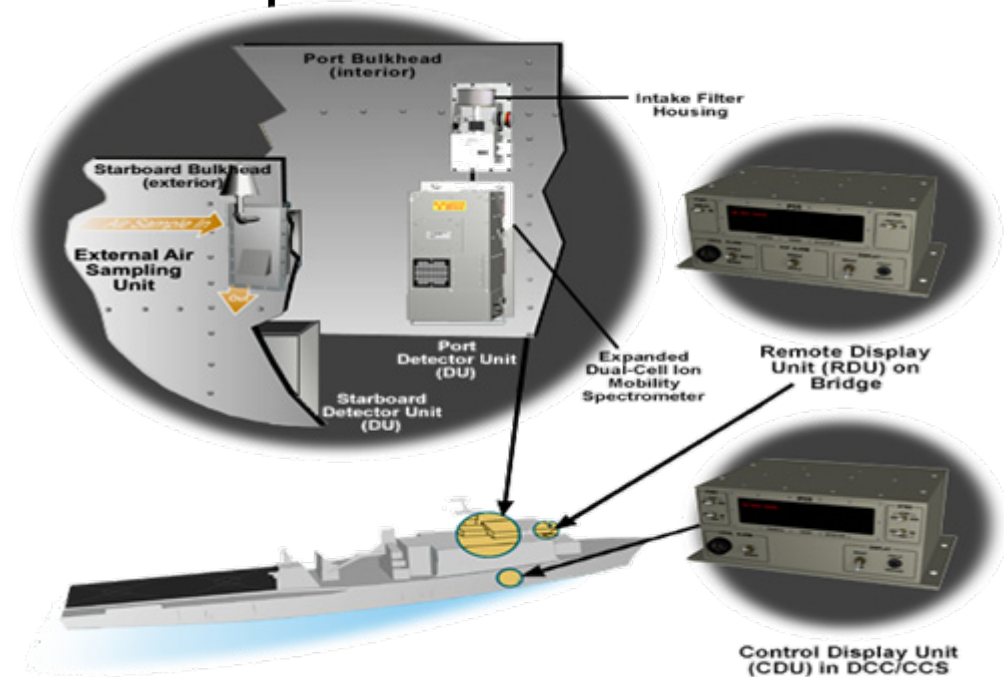
Radiological / Nuclear Detectors



Program Overview

Improved Point Detection System - Replacement

- **Replace Existing MK26 Detector System – Minimum change to existing support equipment**
- **Originally procured under Urgent Need**
- **Mission: Provide automatic point detection, warning, and classification when there are chemical warfare vapors external to the ship to minimize casualties and reduce the need for decon operations**
- **Fully integrated on Navy ships**
 - **Current system uses Ion Mobility Spectroscopy (IMS)**
 - **Current IPDS consists of:**
 - **Two external air sampling and detection units**
 - Port
 - Starboard
 - **Two Control Display Units**
 - One in Damage Control
 - One on the Bridge





Product Director Standoff Detection and Systems Engineering

JOINT PROJECT MANAGER, NBC CONTAMINATION AVOIDANCE

Product Director Standoff Detection and Systems Engineering



Mission Statement

The Product Director for Standoff Detection develops, produces, integrates, tests and fields chemical standoff detection systems and provides Systems Engineering expertise and support to JPM NBC CA. We ensure our efforts for system development, integration and services focus on the Joint Warfighters' needs within the parameters of cost, schedule, performance and risk.

M21 Remote Standoff
Chemical Agent Alarm
(RSCAAL)



1994



Recon Platform

Process
Input

2007

Joint Service Lightweight
Chemical Agent Detector
(JSLSCAD)



System Analysis
And Control

Requirements Analysis

Requirements Loop

Functional Analysis/Allocation

Design Loop

Synthesis

Systems Engineering

- Trade Off Studies
- Effectiveness Analysis
- Risk Management
- Configuration Management
- Interface Management
- Data Management
- Performance Management

Verification

Process
Output

Chemical Biological
Mass Spectrometer
(CBMS)



Double Wheel
Sampling System
(DWSS)



2006

Chemical Biological Networked
Early Warning System (CBNEWS)

Joint Contaminated
Surface Detector
(JCSD)



2011



Joint Service Lightweight Standoff

Chemical Agent Detector (JSLSCAD)

Effort Description:

- Procure Increment 1 systems to integrate on NBCRV
 - LRIP quantity 35
 - FRP quantity 240 - 420
- Develop product improvements based on battlefield information available and a System of Systems approach
- Schedule: FY07-FY13
- Acquisition Approach:
 - Exercise contract options for production: 4QFY07
 - Stryker NBCRV fully funded for sensor suite
 - System of Systems contracting: TBD based on analysis to be completed 1QFY08

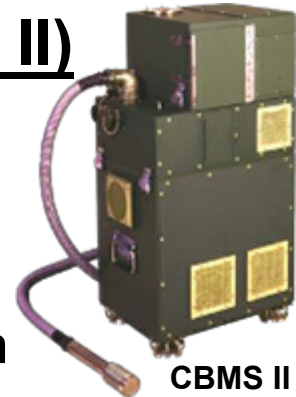


Program Overview

Chemical Biological Mass Spectrometer II (CBMS II)

Effort Description:

- Surface chemical detector
 - Procure chemical systems to support NBCRV program
 - Complete development/evaluation of Bio capability
- **Schedule: FY07-FY13**
 - **Acquisition Approach:**
 - Initial contract for first 35 systems (chemical only)
 - Stryker NBCRV fully funded for sensor suite
 - Remaining contracting approach TBD based on technology readiness of Bio detection capability



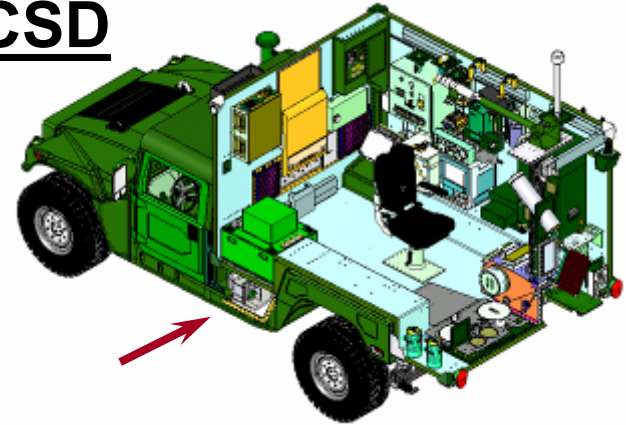
CBMS II



SDU

Joint Chemical Surface Detector JCSD

- Laser based surface detector, using Raman spectroscopy



Effort Description:

- Support development/evaluation of JCSD as part of CUGR ACTD in FY07-FY08
- Procure systems to support NBCRV Block II in FY08-09
- **Schedule: FY07-FY13**
- **Acquisition Approach:**
 - Stryker NBCRV fully funded for sensor suite
 - LRIP RFP is expected in FY09





Product Director Test Equipment, Strategy, and Support

JOINT PROJECT MANAGER, NBC CONTAMINATION AVOIDANCE



Product Director Test Equipment, Strategy, and Support



Mission Statement

The Product Director for Test Equipment, Strategy, and Support provides the Milestone Decision Authority, Joint Warfighter, Joint Project Managers, and the Test and Evaluation Community relevant and timely infrastructure resources for the test and evaluation of Chemical, Biological, and Radiological Defense Systems throughout the life cycle acquisition process.

Sense Field



Spectroradiometer



Test Grid



Joint Ambient Breeze Tunnel

Active Standoff Chamber

Sense Lab (Bio)

Whole System Live Agent Test Chamber



Biological Spectral Instrument

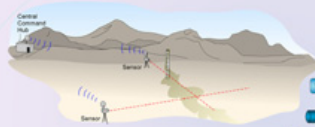


Biological Standoff Facility



Standard Unit of Measure

6.3 Threat Simulant



Vapor Cloud Referee System



Overarching Test and Evaluation Models

Sense Lab (Chem)



Dynamic Test Chamber



Non Traditional Agent Facility

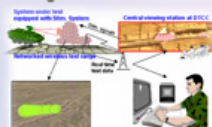


Dugway Proving Ground Chem Lab Upgrade

Shape



Background Interferents



Stimulants/Stimulators

Shield Sustain

Chemical Biological Agent Resistance Test



Liquid Chromatograph / Gas Chromatograph



ColPro Facility Upgrades



Man In Simulant Test Upgrade



Protection Ensemble Test Mannequin

Individual Protective Equipment XYZ Test Grid

Program Overview

Test & Evaluation Infrastructure

Individual Protection Ensemble (IPE) Mannequin

- **Effort Description:**
 - Design and procure sweating articulated robotic mannequins that simulate Soldier activity for use in agent test facilities, including Dugway Proving Ground (DPG) and Edgewood Chemical and Biological Center (ECBC). Develop standardized Test Operation Procedures.
- **Schedule: FY08-FY10**
- **Acquisition Approach: Contract**
 - Request for Proposal: 1QFY08



Program Overview

Test & Evaluation Infrastructure

Backgrounds and Interferents (Continuation)

- **Effort Description:**
 - Develop a library of real world environmental and interferent physical characteristics for Chemical Biological detector programs.
- **Schedule: FY12-FY13**
- **Acquisition Approach: Contract**
 - Request for Proposal: 1QFY12

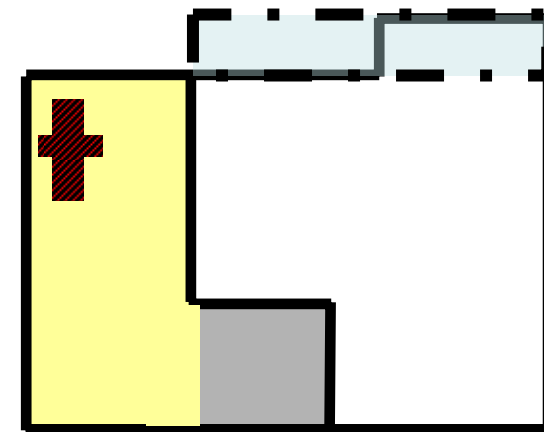


Program Overview

Test & Evaluation Infrastructure

Biological Standoff Facility

- **Effort Description:**
 - Design and build a BL3 facility to conduct live agent testing of biological standoff detection systems.
- **Schedule: FY09-13**
- **Acquisition Approach: Contract**
 - Request for Proposal: 1QFY09



Proposed Location For
Bio-Standoff Facility – DPG Life Science
Laboratory



S&T Needs



Overarching

- First principle models on technologies linked with engineering principles to provide a virtual system
- High performance, low power, mass produced components

Joint NBC Reconnaissance System (JNBCRS 2)

- Hybridization of technologies
 - Assessment on the critical number of orthogonal technologies
 - Data fusion

Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- Automatic background compensation



S&T Needs



Joint Chemical Surface Detector JCSD

- Appropriate excitation sources
- Concepts for active imaging

Biological Standoff Facility

- Replacement for air curtains
- Near real-time ground truth instrumentation



Warfighter Needs



Joint NBC Reconnaissance System (JNBCRS 2)

- **Capability Document being developed**
 - **Integrated Concept Team (IT) met 8 MAR 07**
 - **Acquisition Strategy and Schedule briefed to JPEO CBD on 22 MAR 07**
 - **ICT meeting planned to address comments to the capability document MAY 07**

Improved Point Detection System - Replacement

- **Detect and identify low level concentrations of chemical agents**
- **Reduced false alarm rate**
- **Reduced interferent response**
- **Reduced maintenance and logistics time and costs**
- **Expandability to detect future chemical threats**



Warfighter Needs



Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- Broader chemical standoff detection capability (System of Systems approach)

Chemical Biological Mass Spectrometer II (CBMS II)

- Bio detection on the move
- Smaller footprint (size, weight, and power)

Joint Chemical Surface Detector JCSD

- Performance at platform speed and varied operational environments



Warfighter Needs



Test Infrastructure:

Individual Protection Ensemble (IPE) Mannequin

- More reliable IPE

Backgrounds and Interferents

- More reliable CB detection systems

Biological Standoff Facility

- More reliable biological standoff detection system
(System of Systems approach)



S&T Technical Challenges



Overarching

- Mass production of components
- Constant evolutionary improvements in technology; how to decide when to continue or terminate

Joint NBC Reconnaissance System (JNBCRS 2)

- Availability of MEMS based technology
- Algorithmic measure on 'Goodness of data'

Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- On-the-move capability in algorithm development



S&T Technical Challenges



Joint Chemical Surface Detector JCSD

- Ability to scan a large area at one time
- Ability to scan from longer distance
- Increase in sensitivity

Biological Standoff Facility

- Replacement for air curtains
- Near real-time ground truth instrumentation



Program Technical Challenges



Joint NBC Reconnaissance System (JNBCRS 2)

- Meeting user capability needs while defining Tactics, Techniques and Procedures.
- Integrating the capabilities into a carrier.
- Characterizing commercially available equipment's effectiveness, suitability, and survivability in a tactical environment.

Improved Point Detection System - Replacement

- Detect and identify low level concentrations of chemical agents
- Low false alarm rate
- Low interferent response
- Integration into confined shipboard space
- Short purge time



Program Technical Challenges



Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- System of systems integration for standoff

Chemical Biological Mass Spectrometer II (CBMS II)

- Bio detection on the move
- Integrated Chem Bio detection

Joint Chemical Surface Detector JCSD

- Ruggedization of laser-based system



Program Technical Challenges



Individual Protection Ensemble (IPE) Mannequin

- Design and build of a fully articulated mannequin that sweats, breathes, and maintains body temperature

Backgrounds and Interferents

- Definition of required background and interferent collection instrumentation and environments

Biological Standoff Facility

- Design and build of a Bio standoff test facility in compliance with environmental requirements and Bio standoff system technologies



S&T Capability Strategy



Overarching

- Virtual models based on first principles linked with system engineering concepts
- Assess limitation of currently mass produced component for use

Joint NBC Reconnaissance System (JNBCRS 2)

- Mix macro technology with MEMS technology
- Data fusion, equal weights

Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- Standard background collect and subtraction algorithms



S&T Capability Strategy



Joint Chemical Surface Detector JCSD

- Raster scan area
- Evolutionary improvement over gross contamination

Biological Standoff Facility

- Integrated sampling in ground truth instrumentation
- Air curtains within double containment



Program Acquisition Strategy



Joint NBC Reconnaissance System (JNBCRS 2)

- **Phase I: Deliver capability in 4Q08**
 - Urgent Needs Statement
 - Commercially Available Equipment by partnering with other Gov't Agencies or Competitive Contract to a Lead Systems Integrator (LSI) in December 2007

- **Phase II: Deliver capability in FY10**
 - Capability Production Document
 - Contract Option to the LSI
 - Production Verification Test and Operational Test

- **Phase III: Additional capability (Spiral development) is provided in FY13**
 - Capability Development Document
 - Contract Option to LSI or Competitive Contract
 - Integrated Detection and Identification Equipment
 - “Holster Concept” Development and Testing; Modular; Open systems design (adaptable)
 - Common Software/Hardware Operating interfaces
 - Rugged; Plug & Play; Net-Centric
 - CBRN Unmanned Ground Vehicle (CUGV) and Unmanned Aerial Vehicle (UAV)
 - Adds send/receive “Reach-back” capability
 - Joint Chemical Surface and Stand-off Detection capability
 - Integrated into Future Combat System or possible new platform



Program Acquisition Strategy



Improved Point Detection System - Replacement

- **Acquisition Approach: Procure non-developmental system to replace existing systems**
- **Total Procurement: Approximately 300 Systems**
 - All IPDS detection units (DU) currently fielded will be replaced with new DUs
 - Other components will be replaced when technically and economically warranted
- **Contract Strategy**
 - RFP release in late May 07 to procure COTS systems to conduct testing
 - Competitive contract geared toward non-developmental systems
 - Industry Day to be held within two weeks of RFP release
 - At Naval facilities (Crane, IN) – hands-on access to IPDS
 - Info brief and Q&A
 - Contract award Aug 07
 - One down-select following Developmental and Operational testing to award final production contract
- **Ship Production Integration date of 3QFY09 is key schedule driver**



Program Acquisition Strategy



Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- **Develop product improvements based on battlefield information available and a System of Systems approach**
 - **System of Systems contracting: TBD based on analysis to be completed 1QFY08**

Chemical Biological Mass Spectrometer II (CBMS II)

- **Contracting approach TBD based on technology readiness of Bio detection capability FY08 assessment**

Joint Chemical Surface Detector JCSD

- **TBD**



Program Acquisition Strategy



Individual Protection Ensemble (IPE) Mannequin

- **Contract Strategy**
 - CECOM R2
 - Request for Task Execution Plan: 1QFY08

Backgrounds and Interferents

- **Contract Strategy**
 - CECOM R2
 - Request for Task Execution Plan: 1QFY12

Biological Standoff Facility

- **Contract Strategy**
 - CECOM R2
 - Request for Task Execution Plan: 1QFY09



S&T Funding



Projected Available Funding (\$M)								
BA	FY07	FY08	FY09	FY10	FY11	FY12	FY13	TOTAL
6.2	0.0	2.0	10.0	10.0	6.0	7.0	7.0	42.0
6.3	0.0	1.0	6.0	6.0	4.0	4.0	4.0	25.0
TOTAL	0.0	3.0	16.0	16.0	10.0	11.0	11.0	67.0

Notes:

1. Funding represents only Unobligated dollars planned for “programs of interest” (does not include entire S&T Detection POM)



Program Funding

Program Funding (\$M)									
BA	PY	FY07	FY08	FY09	FY10	FY11	FY12	FY13	TOTAL
6.4	0.5	1.2	-	-	6.9	-	-	-	7.4
6.5	1.0	22.5	13.9	12.6	14.9	19.8	13.9	23.5	122.1
PROC	-	19.5	25.3	18.2	18.7	35.3	30.6	-	147.6
TOTAL	1.5	40.8	39.2	30.8	40.5	55.1	44.5	23.5	277.1

Notes:

1. Funding represents only Unobligated dollars planned for “programs of interest” (does not include entire JPM NBC CA POM)
2. PM Stryker buys Sensor Suite for Stryker NBCRV FY08 – FY13
3. All weapon platforms are procured by the Services FY10 – FY13



S&T Schedule



Fiscal Year	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Joint NBC Reconnaissance Vehicle Increment 2, Phase III									
Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)									
Joint Contaminated Surface Detector (JCSD)									
Backgrounds and Interferents									
Biological Standoff Facility									



Program Schedules

Fiscal Year	FY06	FY07	FY08	FY09	FY10	FY11	FY12	FY13	FY14
Joint NBC Reconnaissance Vehicle Increment 2, Phase I / II			MS	PROC	PROC	PROC	PROC	PROC	PROC
Joint NBC Reconnaissance Vehicle Increment 2, Phase III						MS	PROC	PROC	PROC
Improved Point Detection System (IPDS)			MS	PROC	PROC	PROC	PROC	PROC	
Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)		MS	PROC	PROC	PROC	PROC	PROC	PROC	
Chemical Biological Mass Spectrometer Increment II (CBMS II)		MS	PROC	PROC	PROC				
Joint Contaminated Surface Detector (JCSD)					MS	PROC	PROC	PROC	PROC
Individual Protective Equipment (IPE) Mannequin				PROC	PROC				
Backgrounds and Interferents							PROC	PROC	
Biological Standoff Facility				PROC	PROC	PROC	PROC	PROC	PROC

RDTE
 PROC
 MS



Upcoming Business Opportunities



S&T Opportunity

Time-Frame

CB Defense Physical Science and Technology (annual) BAA

– For New Start Projects (FY09-13)

December

CB Defense Small Business Innovation Research (SBIR)

– <http://www.acq.osd.mil/sadbu/sbir/homepg.htm>

– For New Start Projects (FY08-13)

Mid-Nov

Chem-Bio Defense Initiative Fund (CBDIF)

– BAA for New Start Projects (FY08-13)

December



Upcoming Business Opportunities



JPM NBC CA Program Opportunities

Joint NBC Reconnaissance System (JNBCRS 2)

- Competitive Lead Systems Integrator (LSI) contract RFP Sep 07

Improved Point Detection System (IPDS) – Replacement

- Competitive contract of non-developmental systems RFP May 07

Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD)

- System of Systems integration for standoff RFP is Tentative Mar 08

Chemical Biological Mass Spectrometer II (CBMS II)

- Bio detection on the move
- Integrated Chem Bio detection RFP is Tentative

Joint Chemical Surface Detector JCSD

- None RFP 2nd Qtr FY 09

Test Infrastructure:

Individual Protection Ensemble (IPE) Mannequin

- CECOM Rapid Response (R2) Competition RFP 1st Qtr FY 08

Backgrounds and Interferents

- CECOM Rapid Response (R2) Competition RFP 1st Qtr FY 12

Biological Standoff Facility

- CECOM Rapid Response (R2) Competition RFP 1st Qtr FY 09



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