ARDEC’s Role In Countering the IED Threat

Mr. Ray Carr,
ARDEC Counter Terrorism Technology Team
• Mission, Approach, Introduction
• Some Specific Areas of Influence
  – Explosive Detection
  – Armor
  – EOD tools
  – Training
MISSION: Act as the ARDEC Program Manager to:

- **RAPIDLY DEVELOP AND FIELD** appropriate technologies to assist the warfighter in countering the Asymmetric threat.
- Develop strategy that leads to C-IED & C-Sniper system acquisitions, **TRANSITIONS TO PMS**, and create Programs of Record.
- To every extent possible, **DEVELOP DUAL USE TECHNOLOGIES**

RESOURCES:

- $10M investment over the past 4 years
- $35M annually customer funded C-IED efforts.
- Over 80 engineers and scientists currently work on 20 C-IED and Counter Sniper projects, partnered with academia and industry.
Enemy IED Activities
(Simplified Schematic)

Funding, Recruiting, Training, Planning

Strategic

Leadership, Planning, Training

Tactical

Supplies

Engineering, Manufacture

Predict/Prevent
Detect
Neutralize
Mitigate

Greatest effect is realized by disrupting early life cycle activities
**Battle Rhythm...**

- **Monday** – RDECOM Counter IED Task Force
- **Tuesday**
  - CG AMC Operations Brief (AFSB Updates)
  - JIEDDO Line of Operation
  - STAT Team Bi-Weekly Teleconference
- **Wednesday**
  - RDECOM Current Operations IPT
- **Thursday**
  - ARDEC GWOT Project Review
- **Friday**
  - NSA Counter IED IPT
  - MNF-I Tech Solutions

**MNC-I STACA**

**CJTF-82 STACA**

**AMC- STAT 18**

**TF-TROY & TF-PALADIN**

**402 AFSB**

**PEO-AMMO, PM IEDD/PF**

**JIEDDO, REF**

**TRADOC**

Visit units prior to deployment 29 Palms, NTC & JMTC

“Dusty Boots Council”
ARDEC Efforts within JIEDDO Lines of Operation (LOO)

Defeat the Device
- EOD Tools
- Directed Energy Systems
- Armor
- Buried IED Detection
- Base Defense

Attack the Network
- Surveillance Sensors
- Cache Detection
- Explosive Detection
- TTL

Train the Force
- Pyrotechnic Training Devices
- Virtual Training
- Surrogates & Simulators
Example ARDEC Laboratories For C-IED System Experimentation

- Rapid Prototyping Facility
- Explosives Detection Laboratory
- Davidson Advanced Warhead Development Facility
- Acoustics Technology Laboratory
- Fuze, S&A, Telemetry
- Armament Software Engineering Center
ARDEC Capabilities for Explosives Detection

- Newly completed explosive test bed facility for trace or bulk detection
  - Conductive floors, explosion proof electrical
  - Clean room, laboratory
- Access to military, foreign, commercial and improvised explosives
- High capacity storage bunkers
- Analytical lab for manufacture and identification of explosives
- Qualified personnel with many years of explosives experience
  - Trace & bulk detection
  - Foreign sample analysis
  - Formulations, manufacturing
  - Testing & analysis, handling and storage
- EOD/ Foreign material exploitation experience
- K9 Proficiency program
Evaluate & Validate

- System performance
- Sensitivity / Selectivity
- Analysis time
- Ease of use
- Covertness
- Real-time analysis
- Maximum Throughput
- Minimize peripherals
  - e.g. PDA size display
- Durability & High Temp operation
- Key background materials
  - Clothing, Building, Vehicle
- Standoff potential
Explosive Detection System Architecture

Hardware / Software
Bldg 92, 31, 95

Excitation Source
Bldg 95, 407, 329
- Laser
- Acoustic
- Mechanical

Interrogation Target
Bldg 3028, 3029, 1029
- Military
- Commercial
- HME

Collector
Bldg 95, 407

Signal Processor
Bldg 407

Detector / Spectrometer
Bldg 3022
- Optical
- Vibrometer

Propellant Surveillance Laboratory
Objectives:

Develop Armor Recipes

Defeat multiple threats

Qualify a Lightweight Armor Solution (2 Designs) at ATC

Using IMG as Baseline Vehicle for Integration

Partnerships with ARL and Industry
• Enhance IED detection through TALON control, video and power upgrades

• Enhance IED Neutralization by extending TALON life and control
- Access and Disrupt VBIED’s
- Designed for ease of use in field
- Use fielded ammunition items
Training Applications

• Training
  • Situational training
    • Adaptive Thinking and Leadership
    • Future Soldier Trainer
    • Installation Force Protection
    • IED Virtual Trainer
  • Robot and equipment trainers
    • NBC Dismounted Equipment Trainer
    • EOD TALON Trainer
    • SWORDS Trainer
    • PackBot Trainer: EOD and CBRN
  • Shoulder launched weapons
    • Javelin Basic Skills Trainer
- Provide a realistic training environment to enable soldiers to fine tune their operating skills without the use of an actual robot.
- Provide virtual operation of the PACBOT MTRS and TALON MTRS robot platforms.
- Able to add additional robot platforms as needed by the EOD community.
- Virtual Joystick must utilize the same type controls as the actual robot.
IED Virtual Trainer

- Scenario Training & replay recent events
- Equipment Training (e.g. TALON)
- Reinforce TTPs
- Installation Security, Emergency Response, Threat Recognition
- Interact as spectator or active participant
SUMMARY

- ARDEC Has a Diverse Talent Pool and facility infrastructure that can rapidly concept and prototype solutions to mitigate an ever changing threat.
- ARDEC Civilians & Military provide invaluable in-theater New Equipment Training (NET), System Technical Support, Staff AMC FAST.

...Focused on our Ultimate Customer - the Warfighter
Questions?

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