

2010

JOINT IMPROVISED EXPLOSIVE DEVICE DEFEAT ORGANIZATION



ANNUAL
REPORT



ATTACK – DEFEAT – TRAIN

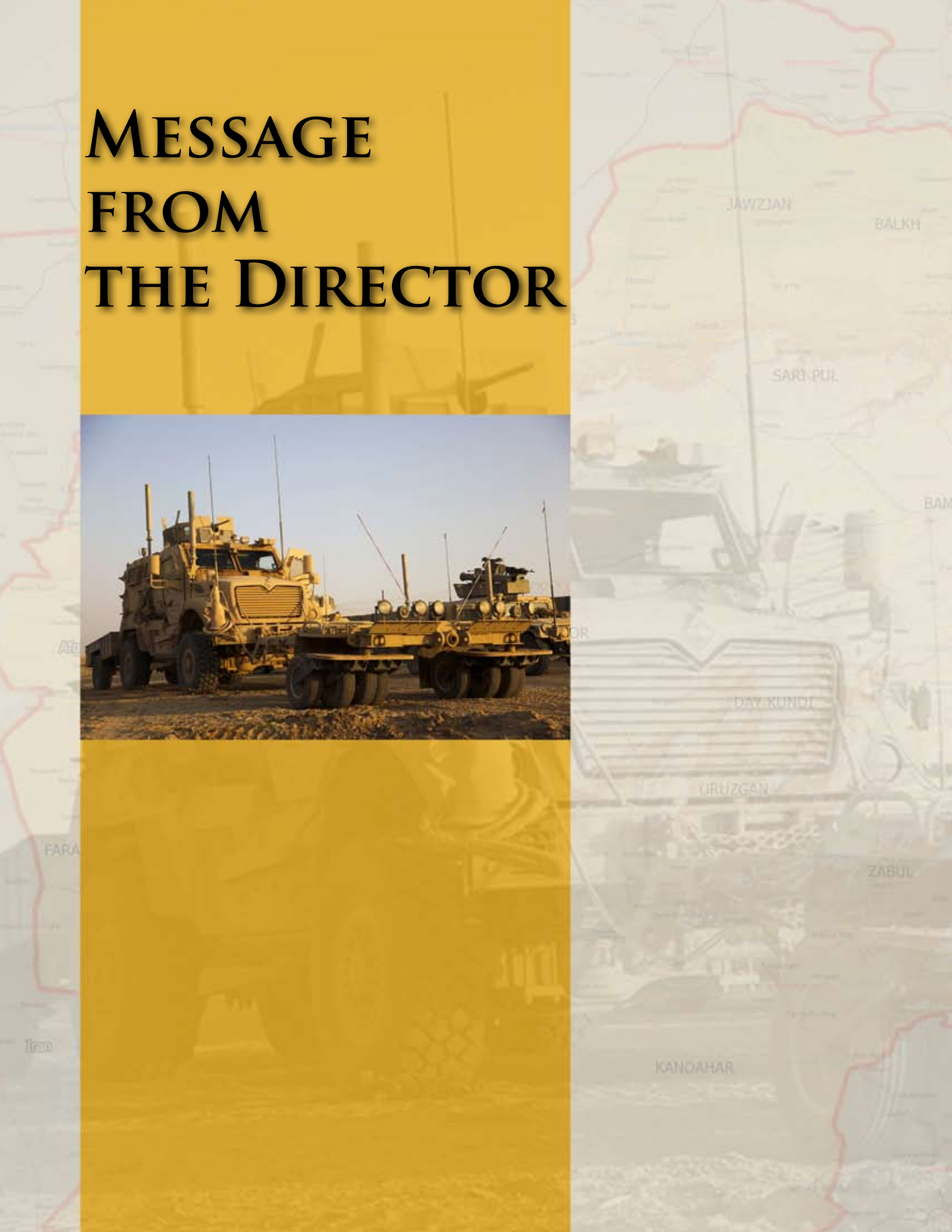
Front Cover Image:
U.S. Soldier uses a metal detector to search for possible improvised explosive devices during a security patrol in Afghanistan.
Photo: Cpl. Artur Shvartsberg

Message from the Director Image:
A U.S. Marine Corps mine-resistant, ambush-protected vehicle, equipped with a mine-roller, is parked at the Combined Anti-Armor Team 2's patrol base in Afghanistan.
Photo: Lance Cpl. James Purschwitz

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MESSAGE FROM THE DIRECTOR



For five years, the critical purpose of the Joint Improvised Explosive Device (IED) Defeat Organization (JIEDDO) has been to rapidly provide counter-IED (C-IED) capabilities to warfighters. JIEDDO has provided significant support along three lines of effort — Attack the Network, Defeat the Device, and Train the Force.

This annual report provides an accounting of JIEDDO's efforts and investments in fiscal year (FY) 2010. Highlights include:

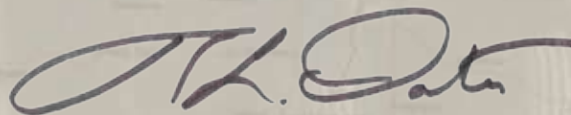
- Supporting increased Operation Enduring Freedom (OEF) C-IED requirements via rapid acquisition, reprogramming of funds, and repurposing of previous investments on the magnitude of \$1.2 billion from an overall \$2.7 billion effort
- Providing fused information tools for warfighters in the field to enable and enhance their capabilities to attack enemy IED networks
- Streamlining organizational processes to speed acquisition efforts

As 2010 closes, we have witnessed the return on our significant C-IED investments that reduced the volume, as well as lethality, of IEDs in Iraq. IED use has leveled off to the lowest in six years.

In Afghanistan, as we have witnessed escalated use of IEDs in response to the surge, we have accordingly shifted our resources to enable and enhance mission accomplishment for the warfighter.

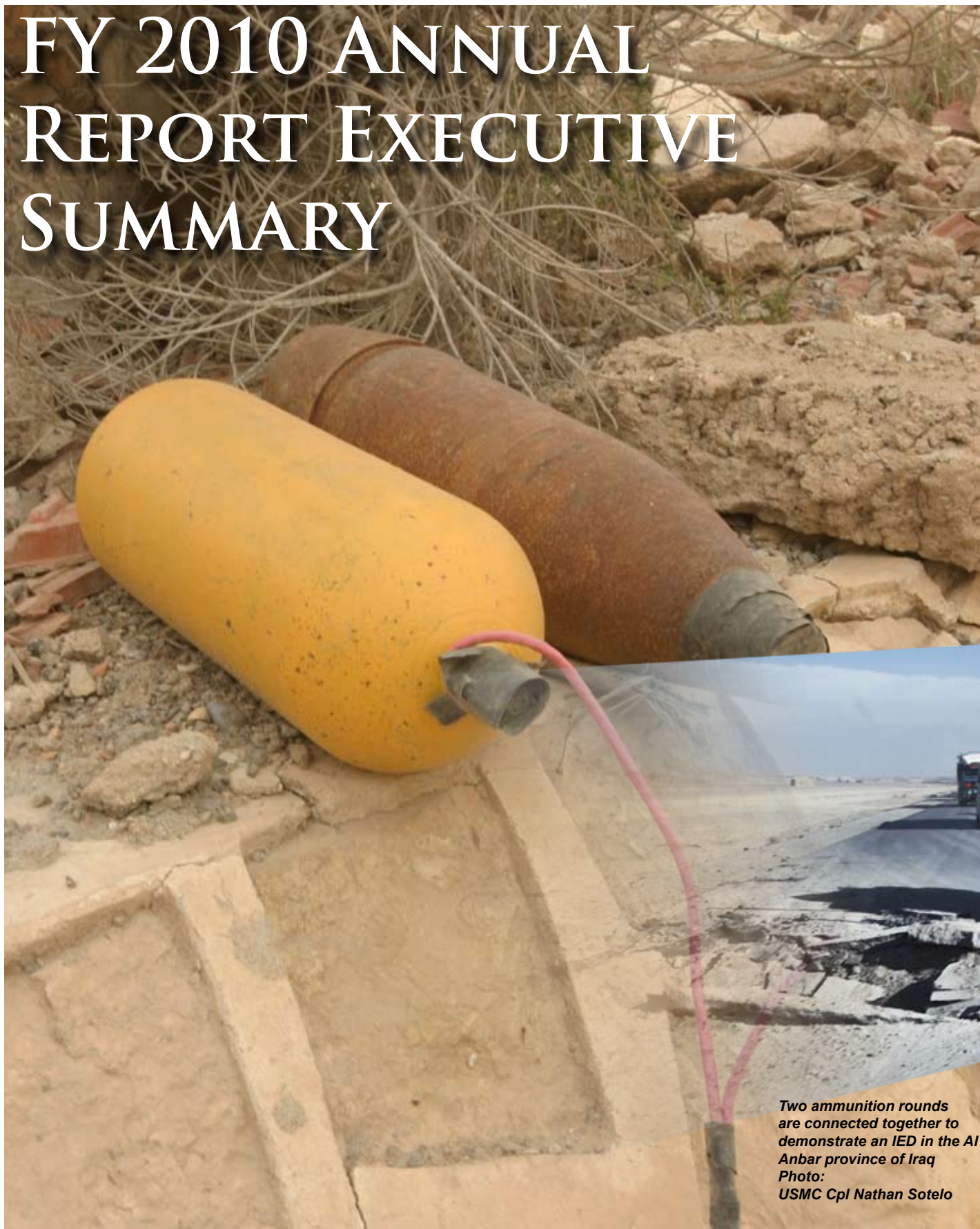
We are in an extended era of persistent conflict that spans the globe. On average, more than 260 IEDs are employed every month *outside* of Iraq and Afghanistan. Terrorist and criminal networks have continued to demonstrate remarkable skills in development and delivery of IEDs.

As we move forward into 2011 and previous years' investments and acquisitions come to useful fruition, JIEDDO will continue to seek the most responsible use of funding and programs to fulfill the needs of combatant commanders with improved capabilities wherever they serve.



Michael L. Oates
Lieutenant General, U.S. Army
Director

FY 2010 ANNUAL REPORT EXECUTIVE SUMMARY



*Two ammunition rounds are connected together to demonstrate an IED in the Al Anbar province of Iraq
Photo:
USMC Cpl Nathan Sotelo*

IEDs continued to be the main threat to coalition forces (CF) in both Afghanistan and Iraq. In Afghanistan, IED casualties continued at elevated seasonal cycles that began in May 2009. In Iraq, IED activity continued to decline.

IEDs increased as the weapon of choice for global insurgents and terrorists with an average of more than 260 IED incidents per month outside of Afghanistan and Iraq. Device effectiveness and lethality continued to improve in diverse regions around the world.

Supported by Government Accountability Office (GAO)

recommendations, JIEDDO critically reviewed its mission statement, existing structure, and processes with the objective of enhancing clarity and streamlining processes.

Early in FY 2010, the Secretary of Defense (SECDEF) established the C-IED Senior Integration Group (C-SIG), charged with the mission to integrate and prioritize C-IED efforts with the goal of ensuring the right capabilities are deployed to

the right theater at the right time. JIEDDO committed to rapidly field prioritized C-IED technologies in accordance with C-SIG instruction.

JIEDDO's Attack the Network (AtN) Line of Operation (LOO) enables offensive operations against complex networks of financiers, IED makers, trainers, and their supporting infrastructure by providing intelligence, surveillance, reconnaissance, information operations, counter-bomber targeting, biometrics, and weapons technical intelligence capabilities. Supporting the warfighter in this fiscal year, JIEDDO developed several AtN enablers.

JIEDDO's Defeat the Device (DtD) LOO enhanced freedom of maneuver and safe operations for CF, focusing on providing defensive technologies to detect IEDs, neutralizing them before they can be detonated, or mitigating the effects of detonations. Supporting the warfighter in FY 2010, JIEDDO developed multiple DtD enablers and initiatives.

JIEDDO's Train the Force (TtF) LOO assessed joint and service C-IED training requirements and supported the development and improvement of training

initiatives to enable warfighters to organize, plan, and conduct C-IED operations; properly employ C-IED equipment; and improve understanding of new IED threats.

JIEDDO's rapid technology development program focuses activities in a number of areas spanning the three lines of operation.

JIEDDO seeks to transition or transfer proven C-IED initiatives to the military services, combatant commands (COCOMs), or government agencies for lifecycle management and sustainment within two years. Similarly, JIEDDO seeks to terminate initiatives that met an urgent requirement and are no longer needed or have failed to deliver anticipated results. Timely initiative transition, transfer, or termination (T3) prevents long-term resource commitments residing within JIEDDO and enables the organization to apply limited resources to the most urgent C-IED requirements.

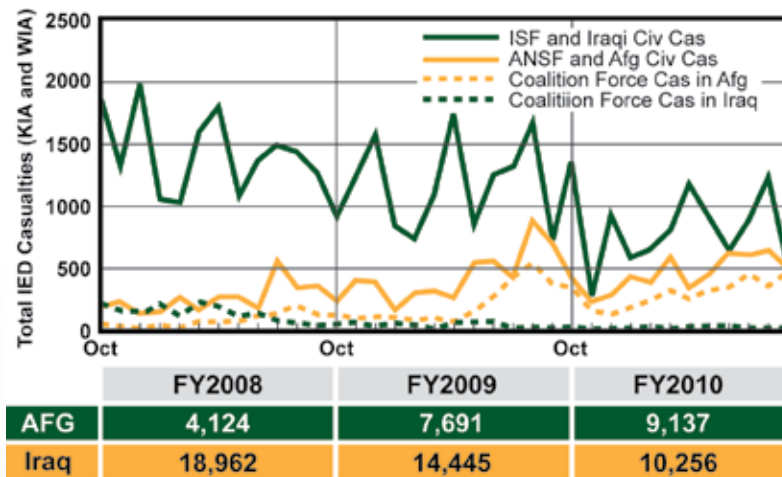


An improvised explosive device blast hole slows traffic near Nawa, Afghanistan.
Photo:
Sgt Justin Howe

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THREATS AND TRENDS

IED OVERVIEW FOR AFGHANISTAN AND IRAQ

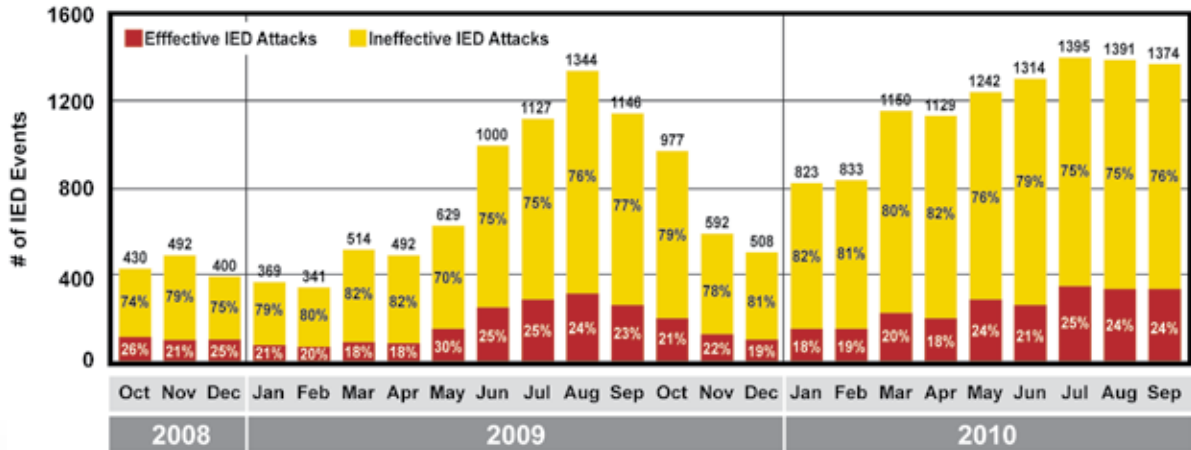


IEDs continue to pose the main threat to CF in both Afghanistan and Iraq as seen above. The number of IED-related casualties for CF, host nation security forces, and civilians in Afghanistan increased 19 percent during the previous year. In Iraq, the number of CF, host nation security force, and civilian IED casualties declined 29 percent.



*A Mine Roller is damaged by a roadside IED in Afghanistan.
Photo: USMC*

AFGHANISTAN IED EFFICACY TRENDS FY 2009-2010



Note: Effective IED attacks are those that caused coalition force and/or host nation casualties. Ineffective IED attacks caused no casualties and include detonations with no casualties, early detection, pre-detonations, and turn-ins.

AFGHANISTAN

Afghan insurgents used IEDs effectively to cause casualties, restrict CF freedom of maneuver, challenge legitimate government authority, and isolate CF from civilians. Widespread insecurity, intimidation of local populations, and readily available sources of homemade explosives (HME) enabled insurgents to elevate IED use rates. Insurgents leveraged external support and safe havens to sustain IED campaigns.

The volume of IED use increased significantly from FY 2009, alongside an increased CF operational tempo. Despite this increased volume of attacks, efficacy rates remained steady in the last half of FY 2010 as seen above. Decreased severity of IED events, combined with other operational factors led to a decreasing rate of U.S. personnel killed in action (KIA) per effective IED attack. Non-U.S. CF KIA per effective attack remained constant.

*A U.S. Soldier with a counter improvised explosive device team moves through an Afghan Village to ensure the roads are safe for travel.
Photo:
U.S. Army Spc. Theodore Schmidt*



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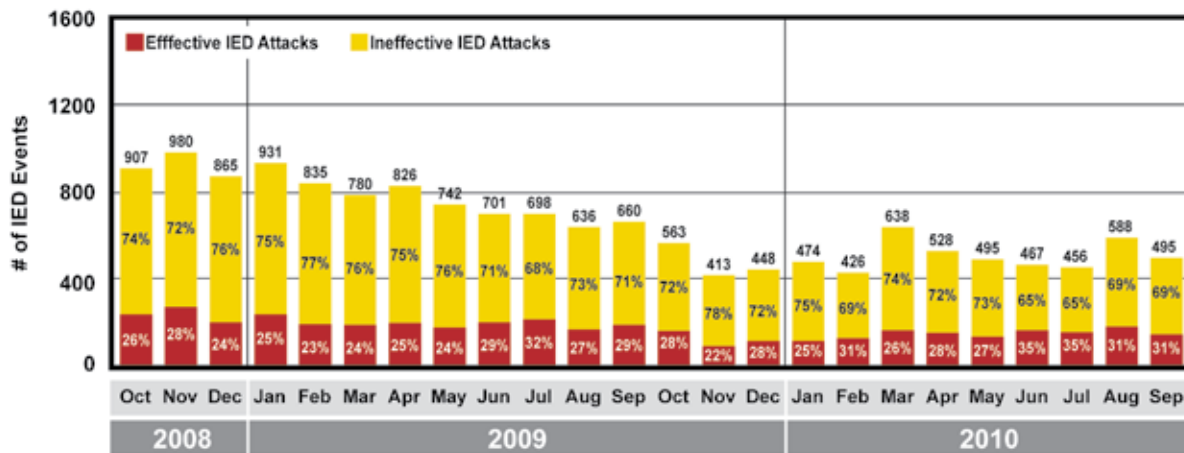
Afghan insurgents continue to rely predominantly on victim-operated IEDs (VOIEDs) and command wire IEDs employing simple, yet effective technologies and designs often used with large net explosive weight charges. The incorporation of HME and other block explosives into IEDs continued to be the most significant IED threat to CF in Afghanistan. Insurgents also continued elevated targeting rates of dismounted forces due to the increase of dismounted operations by CF forces in support of counterinsurgency (COIN) operations.

Afghanistan Outlook. Afghan insurgents will continue to use low-tech solutions and increased volume of IED emplacements to conduct their IED campaign. Most devices will be constructed with simple technologies and readily available materials.

IRAQ

In Iraq, the overall number of IED attacks occurred at consistently reduced levels not seen since August 2003. The overall effect of attacks remained generally stable through the year, as noted in the IED trend chart below.

IRAQ IED EFFICACY TRENDS, FY 2009 -2010

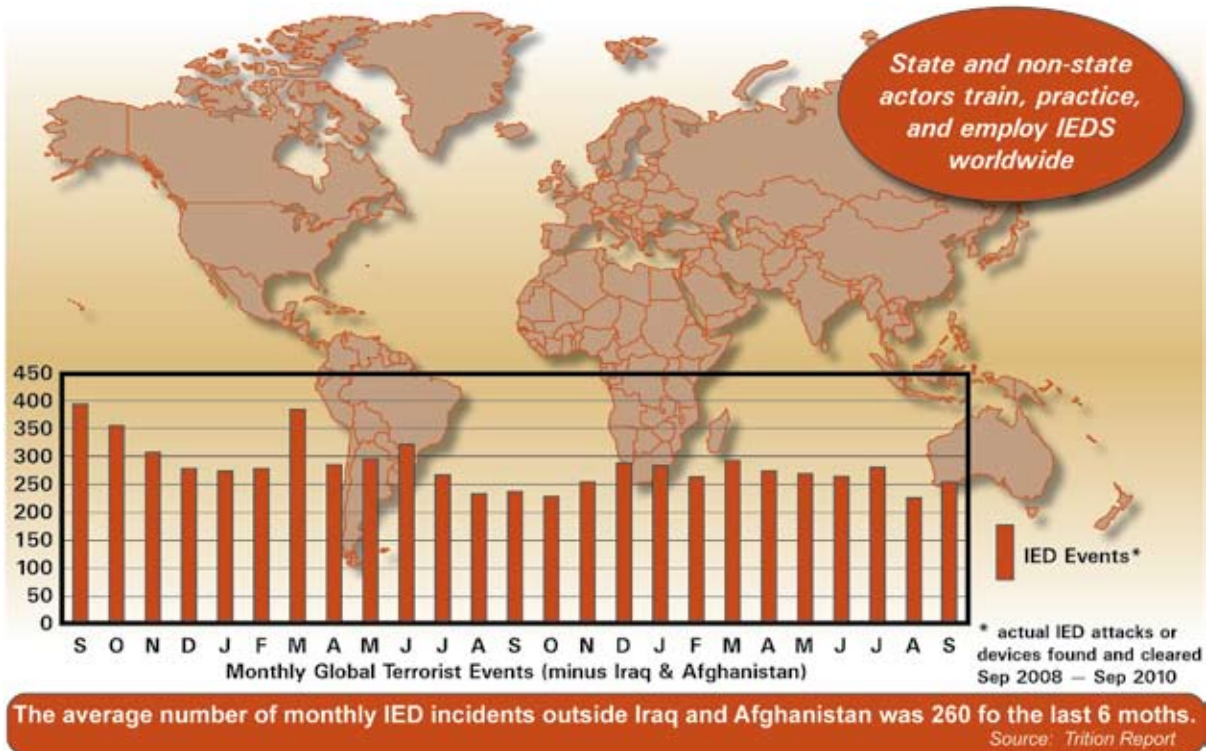


Note: Effective IED attacks are those that caused coalition force and/or host nation casualties. Ineffective IED attacks caused no casualties and include detonations with no casualties, early detection, pre-detonations, and turn-ins.

GLOBAL

Globally, IEDs increased as the insurgent and terrorist weapon of choice. The average number of IED incidents per month outside of Afghanistan and Iraq was 260, up from the previous year as noted below. JIEDDO's review of worldwide IED reporting showed device effectiveness and lethality. Complex suicide attacks in Pakistan and areas of U.S. Africa Command are notable IED events of FY 2010. Communications and coordination among threat groups has continued the proliferation of IED technology and techniques worldwide.

GLOBAL IED INCIDENTS



JIEDDO MISSION AND MISSION AREAS

During 2010, JIEDDO critically reviewed its mission statement, existing structure, and procedures with the objective of enhancing clarity and streamlining processes.

JIEDDO'S REVISED MISSION STATEMENT:

JIEDDO leads Department of Defense (DoD) actions to rapidly provide C-IED capabilities in support of the combatant commanders and to enable the defeat of the IED as a weapon of strategic influence.

ORGANIZATION STRUCTURE

The director determined that JIEDDO should be organized as a headquarters element with three operating arms to execute JIEDDO efforts across three lines of operation. A deputy director structure to provide the command group a single point of accountability for each mission area was implemented. A revised organizational chart is provided on page 10. Deputy director responsibilities are:

Deputy Director of Operations and Requirements (DDOR)

The DDOR serves as the lead

for JIEDDO in managing C-IED requirements, synchronizing JIEDDO operational activities, coordinating C-IED operational support to COCOMs, identifying C-IED gaps, and facilitating C-IED concepts of operations and doctrine.

Deputy Director of Training (DDT)

The DDT serves as the training lead for JIEDDO, maintaining and managing the distributed Joint Center of Excellence (JCOE) that facilitates individual, collective, and unit C-IED training; enabling the development and propagation of new operational techniques and tactical procedures; and providing a venue for training and support for the experimentation and testing of emerging C-IED equipment and concepts. The DDT also serves as the director of the JIEDDO JCOE.

Deputy Director of Rapid Acquisition and Technology (DDRA&T)

The DDRA&T serves as the lead for JIEDDO in rapidly developing, acquiring, integrating, assessing, and fielding proven materiel and non-materiel C-IED initiatives

to counter known, newly deployed, and emerging IED threats. The DDRA&T ensures the initiatives program includes required training, sustainment, an effective feedback loop, and product improvement spirals and provides lifecycle management oversight of JIEDDO-funded C-IED solutions. With the science advisor, the DDRA&T oversees science and technology (S&T) efforts on behalf of JIEDDO and works with the services to coordinate C-IED science and technology investments for the future. The DDRA&T also serves as the director of the Capabilities Acquisition Center (CAC).

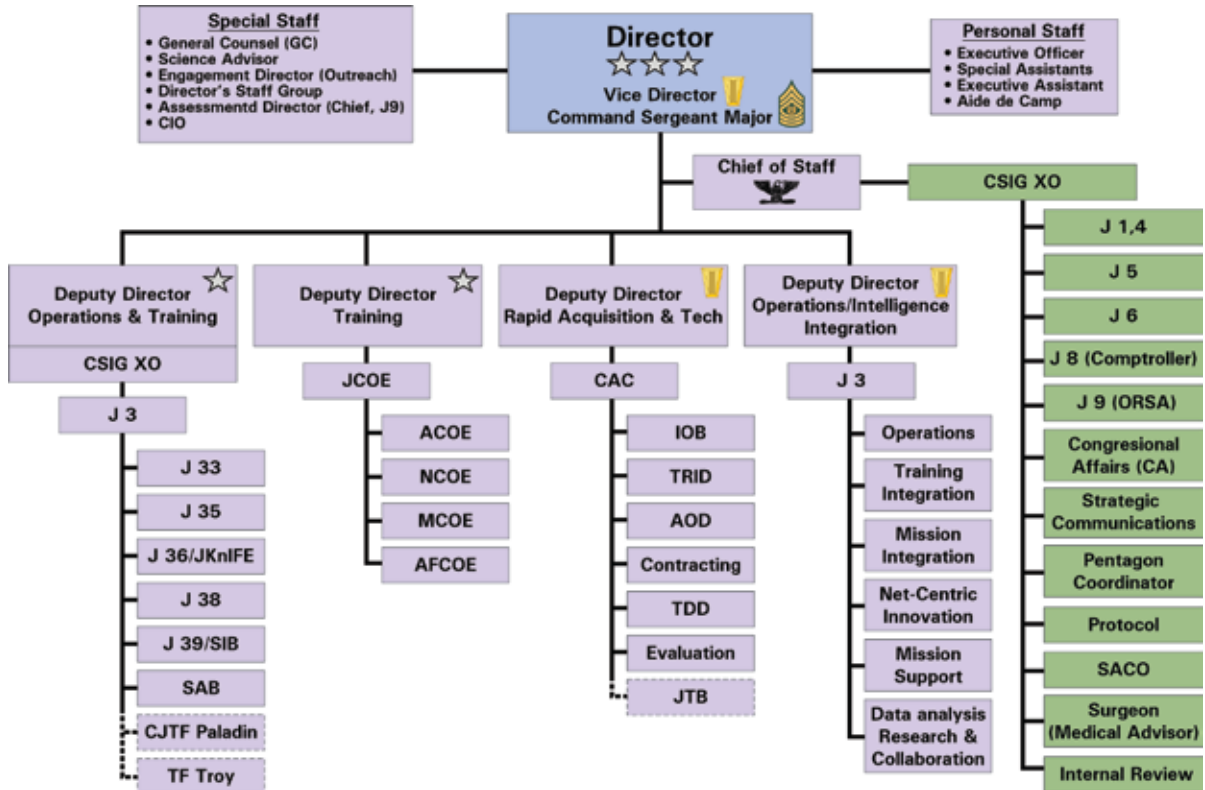
Deputy Director of Operations/Intelligence Integration (DDOI)

The DDOI serves as the lead for JIEDDO in supporting the C-IED mission through the supervision of relevant information collection, intelligence analysis, fusion, and dissemination to deliver rapid C-IED and network-attack capabilities in support of COCOMs. The DDOI also serves as the director of the Counter-IED Operations/Intelligence Integration Center (COIC).

Notable changes from the previous organizational design are:

- The Competitive Strategies Group was disbanded and its functions were realigned within the COIC and CAC.
- The Joint Training C-IED Operations Integration Center (JTCOIC) transferred to U.S. Army Training and Doctrine Center. DDT coordinates training support requirements provided by JTCOIC.

JIEDDO ORGANIZATION CHART



RESOURCES

FUNDING

Established by Congress in FY 2007 as a new appropriation, the Joint IED Defeat Fund (JIEDDF) provides flexible, three-year duration funds enabling JIEDDO to rapidly develop capabilities that counter constantly morphing IEDs and the highly adaptive networks employing them.

This annual report provides a snapshot of the \$2.7 billion drawn from the FYs 2008, 2009, and 2010 appropriations JIEDDO expended in FY 2010 (see JIEDDO Funding Highlights on pages 13-14). During FY 2007 through FY 2010, Congress provided more than \$13 billion for the JIEDDF, primarily through supplemental appropriations (see chart on page 11). For FY 2007 through FY 2008, JIEDDO's main effort was

countering the Iraq IED threat. In FY 2009, JIEDDO's focus shifted as national priorities changed and forces surged to Afghanistan.

Anticipating this shift, JIEDDO requested and received \$1.1 billion in funding planned for FY 2010 to provide C-IED resources essential to support the expected surge. Due to this early appropriation of multi-year funds in anticipation

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of the build-up of forces in Afghanistan, JIEDDO's FY 2010 execution included significant funding drawn from FY 2009 appropriations.

The FY 2010 DoD Appropriations Act provided both overseas contingency operations (OCO) supplemental and base budget funding to JIEDDO through the JIEDDF. Approximately 95 percent of the total budget authority was OCO supplemental funds, with the remaining 5 percent in the base budget.

JIEDDO's financial execution profile differs significantly from traditional DoD programs — and consequently leaves observers believing that JIEDDO is under-executing its resources. Commitments, rather than obligations, are a better reflection of JIEDDO meeting COCOMs'

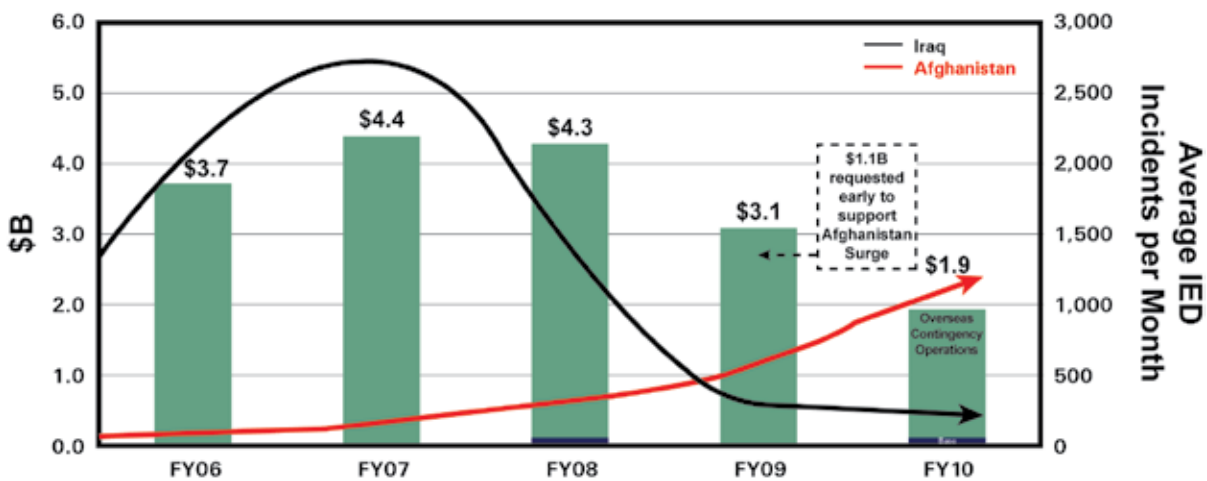
requirements. JIEDDO is not a contracting activity and consequently relies exclusively upon other organizations to obligate JIEDDF funds that deliver C-IED solutions.

Other factors contribute to JIEDDO's unique financial execution profile. First, a significant portion of JIEDDO's budget is dedicated to responding to joint urgent operational needs (JUONs). Each year when the budget is approved, neither specific nor aggregate JUON costs are known, making financial targets difficult to set and more difficult to achieve as JIEDDO shifts resources to meet IED threats that can surface or change in weeks.

Complex measures written into the Federal Acquisition Regulation (FAR) protect the government's interests but delay full obligation.

As an example, the FAR requires contracting officers to negotiate in good faith, meaning they must know with certainty funds are available when soliciting proposals for goods and services. Another example deals with letter contracts, where contracting officers are limited in the amount of committed funds they can obligate. Up to 49 percent of the funds can be obligated when a letter contract is awarded; the amount can increase to 75 percent if a qualified proposal is received within 120 days. JIEDDO closely tracks initial commitment to obligation rates, typically within 60 days. These are examples of many procurement requirements delaying obligations. Consequently, JIEDDO has little control over the typical six-month lag between fund commitment and obligation and its unique financial execution profile.

JIEDDO BUDGET IN HISTORICAL PERSPECTIVE



PERSONNEL AND STAFFING

An institutional review, reassessment, and revalidation of the organization's mission and functions, supported by repeated GAO recommendations, highlighted the urgent need to increase government oversight and direction. To address the noted concerns, 141 new government civilian billets were approved to provide an experienced, mid-level leadership team raising the percentage of JIEDDO military/government personnel from 10 to 14 percent. In FY 2010, JIEDDO filled 69 percent of its joint manning document personnel authorizations. While making great strides to fill the additional government civilian billets, JIEDDO continued to have challenges filling its military personnel billets.

To further reinforce government oversight and direction of its largely contractor-based workforce, JIEDDO also received approval to convert 192 contracted manpower equivalent authorizations to government civilian positions in FY 2012. Once the conversion is complete, JIEDDO will improve the percentage of military/

government personnel from 14 to 24 percent.

Recognizing the military services' difficulty in providing active duty military personnel, JIEDDO initiated an aggressive effort to develop and gain approval for reserve component augmentation. JIEDDO received approval for 119 Army Reserve, 13 Air Force Reserve, and 23 Marine Corps Reserve augmentation positions, with 30 requested Navy Reserve billets pending the Navy FY 2011 Program Objective Memorandum review.

JIEDDO continued to rely heavily on service contracts to quickly acquire the variety of skill sets not easily found in the services or through government civilian recruiting. To this end, JIEDDO implemented a comprehensive services support contract providing a flexible and enduring contracting vehicle, enabling JIEDDO to respond quickly to warfighters' needs.

COUNTER-IED SENIOR INTEGRATION GROUP

At the beginning of FY 2010, the SECDEF established the C-SIG to "harmonize resources organizationally across the Department and allocate them efficiently in

order to more effectively counter the IED threat in Afghanistan." The C-SIG's mission is to integrate and prioritize C-IED efforts with the goal of ensuring the right capabilities are deployed to the right theater at the right time. JIEDDO committed to rapidly field prioritized C-IED technologies in accordance with C-SIG instruction. Beginning in July 2010, JIEDDO began to perform secretariat roles for the C-SIG, providing relief for the Joint Chiefs of Staff, J-34. This handover was completed in August 2010.

\$2.7B

<p>Attack the Network</p> <p>\$1.0B</p>	<ul style="list-style-type: none"> • COIC: \$249.0M* • WTI: <ul style="list-style-type: none"> – Exploitation Laboratory Enhancements: \$14.5M* – National IED Exploitation Facility: \$6.0M – Torchlight: \$7.6M* – TEDAC: \$59.5M* • Special Programs: <ul style="list-style-type: none"> – Wolfhound: \$49.8M* – Zionbobcat: \$22.9M – Forgersnoop: \$8M* • Detect Air: <ul style="list-style-type: none"> – Desert Owl: \$27.4M* – Copperhead MiniSAR: \$31.8M* 	<ul style="list-style-type: none"> – Radiat – Blue D – Speck – Sand I • Addition – VADEF – Bistati • Predict a – Keyho – Route – Quiet – BCT C Analys
<p>Defeat the Device</p> <p>\$1.3B</p>	<ul style="list-style-type: none"> • C-IED Electronic Warfare: <ul style="list-style-type: none"> – CREW Fixed Site CVRJ: \$47.7M* – CREW Universal Test Sets: \$49.3M* – EWO Kits: \$12.5M • Detect Ground: <ul style="list-style-type: none"> – Persistent Threat Detection System: \$376.0M – Persistent Group Surveillance System: \$119.0M – Handheld Ground Penetrating Radar (Minehound): \$23.6M* – Goldie: \$19.5M* – Counter Bomber: \$7.2M – Beachcomber: \$21.7M* – PBIED/VBIED Defeat – Entry Control Point : \$134.3M • Neutralize: <ul style="list-style-type: none"> – Jackal: \$17.7M 	<ul style="list-style-type: none"> – Robot (RMD – Devil F – Sherlo – Max P – Gray F • Mitigate – USMC – IED R – Joint I – Hard I – Ghost – ARDE – Sentin
<p>Train the Force</p> <p>\$0.3B</p>	<ul style="list-style-type: none"> • Joint Center of Excellence: <ul style="list-style-type: none"> – C-IED Training Support Mission: \$26.9M* – Exportable Training Support JATAC: \$29.5M* – C-IED Support Element & C-IED Team Training: \$18.9M* – C-IED Mobile Assistance Training Teams: \$8.4M* – CJTF Paladin Training Support: \$10M* – C-IED Force on Force Environment: \$6.6M – C-IED Live Fire Environment: \$13.8M – Mobile C-IED Interactive Trainer: \$15.4M* – Home Made Explosives Training Program : \$1.0M* – Tactical Site Exploitation: \$3.5M 	<ul style="list-style-type: none"> • Systems (JT • JTCOIC Simulat • Syntheti Environ • Biometri • Infantry • Immersi • C-IED In
<p>S&I</p> <p>\$0.1B</p>	<ul style="list-style-type: none"> • Headquarters: \$121.5M* 	

FY10

R&D FUNDING HIGHLIGHTS

Night Falcon: \$24.1M
 Devil: \$61.9M
 Eagles: \$9.9M*
 Dragon: \$5.8M
 Global Detect Air:
 R: \$41.3M*
 Dynamics: \$13.0M
 Detect and Prevent:
 Eagle: \$74.6M
 Clearance Optics Suites: \$47.1M
 Storm: \$6.1M
 Operational Research and Systems
 Analysis (ORSA): \$19.1M*

- Integrated Signatures Program: \$12.1M
- Saturn Arch: \$43.7M*
- Person-Borne IED Counter Architecture: \$15M
- London Brook: \$4.9 M
- Tripwire Analytic Capability: \$22.4 M
- Other 77 R&D Investments and Remaining Programs: \$123.1M*

Vehicle Mounted Detection System
 (VMD) with LADAR: \$5.0M
 Pup EOD Mini Robot: \$32.8M
 Rock: \$4.7M*
 Tower: \$7.1M*
 Fox: \$6.3M*

- Joint Test Board: \$46.5M*
- Other 62 R&D Investments and Remaining Programs: \$106.7M*

Mine Roller System: \$13.8M
 Rollers (Sparks II): \$236.0M
 IED Neutralize Roller (JOLLER): \$11.9M
 Impact: \$12.6M
 Ship: \$1.3M
 C Objective Armor Protection: \$7.9M
 Hel Scout: \$2.4M

Systems Integration and Modeling and Simulation
 (SIM) Database: \$22.5M
 Systems Integration, Modeling and
 Simulations: \$4.7M
 Virtual Environment Core Common Virtual
 Environment: \$12.2M*
 Cyber & Forensics Virtual Training: \$4.2M
 Immersion Trainer: \$5.6M
 Immersive Training Environment: \$1.2M
 Integration Cell (CI2C): \$14.5M*

- Technical Collection: \$23.0M
- Joint Expeditionary Team (MTAT): \$13.3M*
- 1st Army Combat Training Center Leveling: \$9.4M
- Joint Knowledge Information Fusion Exchange: \$5.8M*
- Virtual Medical Training: \$22.6M*
- Tissue Stabilization Program: \$10.3M
- Lost Limb Mitigation: \$6.5M*
- Remaining 13 Programs: \$18.3M*

*Multi-year Funds: FY2008 - \$9.4M, FY2009 - \$1,064.0M, FY2010 - \$1,666.5M

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FY 2010 MAJOR ACCOMPLISHMENTS

This section describes new initiatives in FY 2010 on which JIEDDO expended budgetary resources from the JIEDDF. Descriptions of initiatives started in other years can be found in the JIEDDO annual report for that fiscal year. Descriptions of initiatives started and terminated within FY 2010 are listed in the table of T3 initiatives on pages 23-26.

ATTACK THE NETWORK

JIEDDO's AtN LOO enables offensive operations against a complex networks of financiers, IED makers, trainers, and their supporting infrastructure by providing intelligence, surveillance, reconnaissance, information operations, counter-bomber targeting, biometrics, and weapons technical intelligence capabilities.

COIC Technology Integration. The International Security Assistance Force (ISAF) commander established the Afghan Mission Network (AMN) as the principal command and control system to enable real-time collaboration and information sharing across the coalition. COIC provided hardware, software, and technical engineering support enabling JIEDDO COIC Analytic Support Team analysts to transition quickly to the AMN. The Joint Staff designated the COIC as the lead for establishing the AMN in the National Capital Region.

COIC Training Integration. COIC made 41 tool and process training modules available to classified computer users supporting pre-deployment and deployed unit needs. These modules included familiarization, tool integration, network analysis, and advanced integration and collaboration. COIC developed 13 interactive e-learning modules for tool familiarization and training.

Weapons Technical Intelligence (WTI). WTI is a process and a category of intelligence derived from the forensic and technical exploitation of IEDs, associated components, and improvised weapons. WTI uniquely combines service, intelligence community, federal law enforcement, and national laboratory capabilities to produce actionable intelligence not only enabling the identification and disruption of low-signature networks employing IEDs,



but also contributing to the development of time-sensitive countermeasures, targeting of enemy combatants, material sourcing efforts, and supporting the prosecution of those attributed to attacks on U.S. and CF.

Zionbobcat. Zionbobcat is a proof-of-concept passive integrated airborne tactical deployment sensors system for interrogation of communications devices.

Detect Air. Detect Air systems enable the warfighter to detect insurgent IED emplacement activity and all observables associated with IEDs and their emplacement.

Blue Devil. Blue Devil is a unique, developmental, integrated, multi-intelligence, auto-tipping, and cueing C-IED airborne intelligence, surveillance, and reconnaissance (ISR) capability. Blue Devil integrates the highest resolution wide field of view electro-optical (EO) sensor with high-definition cameras and signals intelligence geo-location sensors. The imagery is simultaneously sent to a tactical operations center and remote video terminals in real time.

Speckles. Speckles is a developmental 35-pound unmanned aerial vehicle with EO and short-wave or long-wave infrared (IR) sensors for route clearance patrol (RCP) operations. Runway independent, rail launched, and belly landed, Speckles is capable of eight-hour mission endurance and direct video downlink. This enables the RCP to rapidly investigate areas of interest and maintain immediate-area situational awareness.

moving target indicator (GMTI) radar providing high-detection probability, low false-alarm rate, and precise geo-location against moving targets. The system uses inexpensive radars to cue EO/IR sensors.

Predict and Prevent. Predict and Prevent efforts facilitate the rapid fielding of sensitive C-IED materiel and non-materiel technologies to give the warfighter collection, exploitation, and analytic



A developmental Speckles system takes off for a test route clearance patrol operation.

Photo: JIEDDO

Sand Dragon. Sand Dragon is a small, long-endurance, runway independent, unmanned aerial system asset suited for the detection of IED observables during RCP operations in OEF.

Bistatics Surveillance System (BSS). BSS is a tower-mounted ground

advantage in multiple intelligence disciplines.

Quiet Storm. Quiet Storm funds intelligence analysts focused on the IED supply chain. Leveraging federal law enforcement data made available to DoD, IED facilitators are identified and intelligence and law

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enforcement operations are synchronized against IED facilitation networks.

Brigade Combat Team/ Regimental Combat Team Operations Research Systems

Analysis (ORSA). This AtN C-IED capability provides operations research capability in immediate proximity to tactical problems, enabling real-time analysis of issues addressing Brigade/Regimental Combat Team Command's needs.

Person-borne IED (PBIED) Counter

Architecture. The PBIED counter architecture effort is a JIEDDO and Department of Homeland Security cooperative project. This detection system incorporates a

family of sensors, a software information backbone, and software that assists in prioritizing threats and allocating detection assets against those threats.

London Brook. This target audience analysis study examined how to best affect insurgent behaviors, including those involved in commission and execution of IED attacks. The complete report was delivered to ISAF.

Tripwire Analytic Capability (TAC).

TAC is a Web-based analytic and decision support system enabling real-time and collaborative analysis through persistent querying of streaming and stored data. TAC supports the JIEDDO mission by enhancing C-IED-related decision

making through quantitative analytics.

DEFEAT THE DEVICE

JIEDDO enhances freedom of maneuver and safe operations for CF through the DtD line of operation. DtD focuses on providing defensive technologies to detect IEDs, neutralize them before they can be detonated, or mitigate the effects of detonations.

Counter-IED Electronic Warfare (CIEW).

CIEW seeks to integrate counter radio-controlled IED electronic warfare (CREW) systems with other capabilities operating within the electro-magnetic spectrum to ensure compatibility and interoperability within U.S. DoD and coalition nations. CIEW broadens the aperture expanded from jamming to include C-IED sensor capabilities. JIEDDO funded the research, development, and procurement of man-portable, vehicle-mounted, and fixed-site jamming technologies.

CREW Universal Test Set (UTS).

CREW-UTS is a follow-on capability configured to give operators a go/no-go test capability to confirm CREW equipment



PBIED sensors must be able to conduct multimodal scans with a predetermined percentage of the crowd, accurately scan people approaching at differing angles, address crowd-blocking and proximity effects, and target people of interest within a wide field of view.

Photo: SPIE paper April 2010; Paper Number 7666-60

performance at the warfighter level.

Electronic Warfare Officer (EWO) Tool Kits.

EWO tool kits provide the next level of maintenance and diagnosis support for CREW systems complementing the CREW-UTS.

Detect Ground. Detect Ground systems seek to detect person-borne, vehicle-borne, and buried IEDs, as well as suspicious activity associated with IED emplacement.

Persistent Threat Detection System (PTDS).

The PTDS is a tethered aerostat (balloon) equipped with a suite of high-resolution EO/IR equipment.



An aerostat balloon is released to keep watch over and around a multinational base in Afghanistan. Photo: Cpl. Christopher Dickson

The PTDS provides a persistent surveillance and situational awareness capability.

Persistent Ground Surveillance System (PGSS).

The PGSS system is a suite of single- and dual-configurable sensors, mounted on a tethered aerostat (balloon). PGSS can operate at a higher altitude, has a larger balloon, and a greater payload option than the PTDS.

Handheld Ground Penetrating Radar (GPR) Minehound.

The Minehound GPR system is a lightweight, hand-held, ground penetrating radar enabling dismounted patrols to find IEDs with low- or no-metallic signature.

Goldie. The Goldie system is a lightweight, man-portable, handheld device for detecting IED components while conducting dismounted patrols. This initiative is a one-time commercial off-the-shelf (COTS) procurement.

Subtle Madness. Subtle Madness is a magnetometer-based system for detecting suicide bombers in unstructured crowds, at installation entry checkpoints, and traffic control points.

Robotic Mounted Detection System (RMDS) with Laser Detection and Ranging.

RMDS is a developmental effort designed to remotely operate the Husky Mounted Detection System. RMDS allows remote detection of IEDs from a trailing vehicle.

NEUTRALIZE

Neutralize systems seek to deny IED actuation at a time and place of the enemy's choosing.

Devil Pup Mini Robot.

Devil Pup is a man-packable, highly agile, miniature robot specifically designed for dismounted explosive ordnance disposal (EOD) operators.

Sherlock. Sherlock is a COTS trace detector for identifying suspicious solids and liquids. Sherlock provides portable trace detection of explosives.

Blue Fox. Blue Fox is an effort to characterize a COTS, man-portable, radiography system exceeding current EOD radiography penetration capabilities.

Gray Fox. Gray Fox is a backscatter X-ray imaging system. Gray Fox enables the EOD operator to remotely

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X-ray thick cased containers and munitions to determine the presence of an IED fusing system or hazardous liquids.

MITIGATE

Mitigate systems seek to minimize the effects of IED blasts on personnel, equipment, and facilities.

U.S. Marine Corps (USMC) Mine Roller System-Panama City (PC) Roller. PC rollers mitigate the effects of VOIEDs by standoff pre-detonation, reducing casualties and vehicle damage.

Hard Impact. Hard Impact is a device to deny the enemy the use of culverts for emplacing IEDs while still allowing water flow. The system is adaptable to different culvert sizes. This program is also creating tools and criteria to assist operators in assessing road

culverts and determining which options within the Hard Impact designs will be most effective.

Ghost Ship. Ghost Ship is a kit installed in High Mobility Multipurpose Wheeled Vehicles allowing complete remote operation of the vehicle by an operator in a trailing vehicle.

The U.S. Army Research, Development and Engineering Center (ARDEC) Objective Armor Protection. The ARDEC objective armor protection seeks to provide developmental armor technologies for protection against large explosively formed penetrators and rocket propelled grenades at a reduced weight compared to currently available armor solutions.

Sentinel Scout. This developmental appliqué kit

is installed on a vehicle to permit remote operation from a control panel in a trailing vehicle. The semi-autonomous vehicle control system is designed to enable remote detection and neutralization of IEDs using C-IED enablers such as rollers and ground penetrating radar on an unmanned vehicle.

Joint IED Defeat Test Board (JTB). The JTB validates that JIEDDO-funded C-IED initiatives are proven capabilities, and allows DoD leadership to confidently field new technologies. In FY 2010, JIEDDO funded 434 JTB test events, evaluating 317 C-IED efforts across the JIEDDO LOOs.

TRAIN THE FORCE

JIEDDO's TtF LOO assesses joint and service C-IED training requirements and supports the development and improvement of training initiatives to enable warfighters to organize, plan, and conduct C-IED operations; properly employ C-IED equipment; and improve understanding of new IED threats.

U.S. Soldiers install a Hard Impact device, a culvert denial system, designed to prevent insurgents from planting IEDs underneath roadways.

Photo: Sgt. Jon E. Dougherty



In response to the SECDEF's memo of March 18, 2010, JIEDDO has dramatically increased C-IED training support to ISAF troop contributing nation partners through support to U.S. European Command and in cooperation with North Atlantic Treaty Organization (NATO) Allied Command Transformation.

JIEDDO's major training investments were in filling Afghanistan surge operations and increased emphasis on live, virtual, constructive gaming (LVCG), formerly modeling and simulation.

JCOE launched several initiatives during this year:

JCOE C-IED Training Support Mission.

This initiative funded the development and propagation of new C-IED training capabilities based on emerging threats. Major types of support include: training, tactics, and procedures development; publication and distribution; and support to the Afghan training fusion cell.

C-IED Support Elements and C-IED Team

Training. This Battle Staff Training Team provided training that supported units' C-IED training for surge deployment to Afghanistan.



*U.S. soldiers examine evidence at an IED training site at the National Training Center at Fort Irwin, CA.
Photo: JIEDDO*

JCOE-Combined Joint Task Force (CJTF) Paladin Training Support Team.

This initiative provides forward-stationed instructors to conduct receipt, staging, onward movement, and integration training to incoming forces in Afghanistan such as, EOD, special forces/COIN, and search and site exploitation.

LVCG Training. To overcome the joint operational problem, JIEDDO partnered with the services to develop LVCG initiatives.

Synthetic Environment-Core Common Virtual Environment (SE-Core).

JIEDDO funded the acceleration of a proven training program to meet C-IED requirements. JIEDDO funded the procurement of hardware and software for the SE-Core program enabling

a significant increase of visual graphic and computer generated entity quality within virtual training systems.

Biometrics and Forensics Virtual Training.

This initiative provides virtual gaming interactive multimedia instruction on comprehensive and persistent biometrics and forensics training.

Tissue Stabilization.

This initiative will accelerate research in tissue repair and skin grafting. It accelerates (by three-to-eight years) additional surgical procedures to reduce infection, rapidly grow skin, and reduce/remove scar tissue caused by IED injuries.

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SCIENCE AND TECHNOLOGY DEVELOPMENT

JIEDDO invests in S&T to mature technology and accelerate a capability to theater. Some projects explore unknown phenomenology to gain better understanding to develop a component technology required for a larger system. JIEDDO programs are often worked in partnership and collaboration with experts from across the DoD S&T community. Efforts in these areas span all three lines of operation.

Sensor and Data

Exploitation. JIEDDO continues to explore new sensors and exploitation methods to demonstrate the ability to detect command wires, disturbed earth, signs of emplacement activity, and other observables associated with emplaced IEDs, to include integration and demonstration of these capabilities on both aerial and ground platforms.

PBIED Detection

Technology. JIEDDO is exploring new techniques for detecting explosives to include neutron-based detection, millimeter wave imaging, ultrasonic, and multi-modal detection.

Neutralization. JIEDDO's technology development program is exploring technologies to neutralize the IED. The use of high-power microwave as a technique to pre-detonate an IED remains a challenge.

Information Technology.

JIEDDO is working with information technology experts across industry, academia, and the services to advance the state of the art in a number of information technology areas to include fusion, knowledge management, natural language processing, and human computer.

Social Dynamic

Analysis. The JIEDDO social dynamic analysis program includes several programs that look at network analysis, cultural understanding, and metrics to gauge success in security operations and other COIN activities. These efforts promise to provide a set of integrated solutions for JIEDDO, DoD, and other agencies to consider as part of their philosophy of using social and cultural aspects of a network.

Cognitive Analysis.

JIEDDO successfully completed a cognitive analysis study providing

scientific evidence to understand why 60 percent of detected IEDs are discovered by the human eye. Understanding of critical skills is enabling the services to incorporate the cognitive, physical, and individual differences into live, virtual, and gaming systems to better train warfighters to detect IEDs.

Medical. In cooperation with the Army Surgeon General's office, JIEDDO focused a number of medical research initiatives and treatment capabilities intended to defeat IED wounding effects.

FISCAL YEAR 2010 TRANSITIONS, TRANSFERS, AND TERMINATIONS

Chartered by DoD to rapidly acquire C-IED capabilities, JIEDDO seeks to transition or transfer proven C-IED initiatives to the services, COCOMS, or government agencies for lifecycle management and sustainment within two years. Similarly, JIEDDO seeks to terminate initiatives that have met an urgent requirement and are no longer needed or have failed to deliver anticipated results. Timely initiative transition, transfer, or termination avoids JIEDDO being saddled with long-term resource commitments and enables JIEDDO to apply limited resources to the most urgent emerging C-IED requirements.

JIEDDO transitioned or transferred 76 C-IED capabilities and terminated four initiatives in FY 2010 (see charts on pages 23-26). JIEDDO transitions C-IED initiatives when those initiatives are judged to be integral to an existing and enduring capability for the joint force and are expected to become part of an existing program of record funded in the president's budget. JIEDDO transfers C-IED initiatives when the solution is not judged to be part of an existing approved capability, but will continue to be used in the current conflict and sustained through OCO supplemental funding requests.

Annually in the third quarter, JIEDDO formally briefs T3 recommendations to the Protection Functional Capabilities Board Working Group, Joint Capabilities Board, and Joint Requirements Oversight Council (JROC). Based upon JROC's endorsement, a JROC memorandum (JROCM) signed by the vice chairman of the Joint Chiefs of Staff, informs the services and agencies of the JROC action. The T3 list and JROCM are forwarded to the Deputy Secretary of Defense for T3 decision.



MRAP pushes a mine roller through the route ensuring the path is clear of IEDs during a 5-day convoy to FOB Edinburgh, Afghanistan.

Photo: Lance Cpl. Bruno J. Bego

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CIED Initiative Name	Description	Source Document
Army FY 2010 Transfers		
After Action Review (AAR) Video Feedback System	Two video capture systems and supporting AAR for existing sites (supports existing COTS strategy)	Deputy Secretary of Defense memo (DSDM) 2010
Additional Combined Vehicle Radio Jammer (CVRJ) Jammers	Follow-on procurement of CVRJ systems to bridge current fielding requirements and next generation system	DSDM Aug. 18, 2009
Additional Mobile Multi-band Jammer	Funding provides procurement of additional systems in support of active jammer JUONS	DSDM Aug. 18, 2009
Battlefield Forensics Mobile Training Team (MTT)	MTT for weapons technical intelligence	FY 2010 Congress
Biometrics MTT	MMT for biometrics	FY 2010 Congress
Biometrics Training Integration	Addition of biometrics exploitation into other C-IED training	FY 2010 Congress
Combined Information Data Network Exchange (CIDNE) Web-enabled Temporal Analysis System Data Management Sustainment	U.S. Central Command (USCENTCOM) mandated process-oriented data collection and correlation tool	DSDM June 13, 2008
C-IED Live Fire Environment	A complex and durable facility capable of integrating all critical C-IED enablers in a live-fire exercise (LFX) scenario	FY 2010 Congress
Combat Tracking Dogs	Detection and tracking of terrorists (program of record)	DSDM June 13, 2008
Combined Information Data Network Exchange	Improves dissemination of theater-derived CIED information	DSDM June 13, 2008
Company Intelligence Support Teams	Provides instructors, computers, pattern, and link-node analysis software to develop and train company intelligence support teams at the combat training centers (CTC)	FY 2010 Congress
CREW – Global System for Mobile (GSM) Risk Mitigator	Classified CREW project: Navy non-concurred and intended to end funding in FY 2010. GSM risk mitigator (Jukebox)	DSD action memo Jan. 14, 2010
CREW 2.1 Surrogate Training Devices	Surrogate device for training	DSDM 2010
DARWARS Ambush	Provide virtual representation and replication of CREW actions and effects in support of training for convoy defense operations as well as IED defeat mounted and dismounted maneuver training	DSDM 2010
First Army CTC Leveling	Enhanced home-station C-IED training	FY 2010 Congress
Galliant Dart	Classified C-IED effort	DSDM Aug. 18, 2009
Greendart	Classified C-IED effort	DSDM Aug. 18, 2009
Home Station C-IED Lane Training	Infrastructure improvements, personnel, surrogate training vehicles, and IED training aids to enhance C-IED lane training	DSDM June 13, 2008
Home Station C-IED Training Capabilities	Assist services to enable IED defeat training at home stations and improve readiness prior to CTC rotations	DSDM June 13, 2008
Home Station Training Lanes II	Congressional add	FY 2010 Congress
Husky Mounted Detection System	GPR for detection and marking of buried IEDs	DSDM Aug. 18, 2009

CIED Initiative Name	Description	Source Document
Army FY 2010 Transfers (continued)		
Insurgents on the Battlefield	Provides AtN training by using role players to perform as key characters in social, political, and religious groups	DSDM Aug. 18, 2009
Integrated Capability Development Team	Assists with rapid C-IED capabilities development, material solutions integration, training, and fielding using subject-matter experts (SMEs)	DSDM June 13, 2008
Joint CREW 3.1 Dismounted System	Develops higher performing man-portable systems	DSDM Jan. 14, 2010
Joint Electronic Warfare Course	Prepares EWOs from all services for electronic warfare duties at the electronic warfare control center	DSDM 2010
Joint Total Entity Tracking for the Instrumented Battlefield	Provides a means to track red/blue activities, down to the individual level – congressional add	FY 2010 Congress
Joint Readiness Training Center Simulated Radio Infrastructure Expansion	Congressional add	FY 2010 Congress
Joint Theater EW Operations Course	EW planning and coordination skills for employment at COCOM, joint task force, or corps-level	DSDM 2010
Multifunction, Agile, Remote-control Robot–Experimental Robot	A small, man-transportable, remotely controlled robotic platform for stand-off visual inspection of suspected IEDs	DSDM June 13, 2008
Night Eagle I & II	High-resolution ISR system at survivable	DSDM June 13, 2008
Opposing Forces Command and Control Network	Creation of cell phone and wireless local loop networks at four CTCs	DSDM June 13, 2008
Quick Reaction Dismount (QRD) (Guardian)	CREW Manportable version 1	DSDM Jan. 14, 2010
QRD Surrogate Devices	Training devices for QRD (Guardian)	DSDM 2010
Wire Neutralization System	Roller attachment to defeat command and tripwire IED initiators in the Operation Iraqi Freedom and OEF	DSDM June 13, 2008
Navy FY 2010 Transfers		
CREW 2.1 Surrogate Training Devices	Surrogate device for training	DSDM 2010
CREW Legacy Support	Funding to sustain legacy CREW systems in FY 2009 until replaced	DSDM June 13, 2008
Future Immersive Training Environment	Congressional add	FY 2010 Congress
Home Station C-IED Lane Training	Infrastructure improvements, personnel, surrogate training vehicles, and IED training aids to enhance C-IED lane training	DSDM June 13, 2008
Home Station C-IED Training Capabilities	Assist services to enable IED defeat training at home stations and improve readiness prior to CTC rotations	DSDM June 13, 2008
HME Detection	HME detection capability	DSDM June 13, 2008
JCREW 3.1 Dismounted System	Third-generation C-IED jammers	DSDM Jan. 14, 2010
JCREW 3.2 Mounted System	Third-generation C-IED jammers	DSDM Jan. 14, 2010
Joint Training COIC	Congressional add split with JIEDDO	FY 2010 Congress
QRD Surrogate Devices	Training devices for QRD (Guardian)	DSDM 2010

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CIED Initiative Name	Description	Source Document
Navy FY 2010 Transfers (continued)		
Tripleplay (Easy Farmer/Easy Actor/WOMP)	Classified C-IED effort	DSDM Aug. 18, 2009
Marine Corps FY 2010 Transfers		
AAR Video Feedback System	Two video capture systems and supporting AAR for existing sites (supports existing COTS strategy)	DSDM 2010
C-IED Live-fire Environment (Marine Corps)	A complex and durable facility capable of integrating all critical C-IED enablers in an LFX scenario	FY 2010 Congress
Company-Level Intelligence Cell (CLIC)	Provides instructors, computers, pattern, and link-node analysis software in the all-source intelligence targeting toolkit to support the requested CLIC and equipment integration	FY 2010 Congress
CREW 2.1 Surrogate Training Devices	Surrogate device for training	DSDM 2010
Home Station C-IED Lane Training	Infrastructure improvements, personnel, surrogate training vehicles, and IED training aids to enhance C-IED lane training	DSDM Aug. 18, 2009
Home Station C-IED Training Capabilities	Assist services to enable IED defeat training at home stations and improve readiness prior to CTC rotations	DSDM Aug. 18, 2009
Infantry Immersion Trainer	Small unit level immersive IED defeat training capability replicates sights, sounds, smells, chaos of battle with home station availability	FY 2010 Congress
Insurgents on the Battlefield (Marines): Deputy Secretary of Defense Action Memo, dated Dec. 2, 2008	Provides AtN training by using role players to perform as key characters in social, political and religious groups	DSDM Aug. 18, 2009
Integrated Capability Development Team	Assists with rapid C-IED capabilities development, material solutions integration, training and fielding using subject matter experts	DSDM Aug. 18, 2009
JCREW 3.1 Dismounted System	Third-generation C-IED jammers	DSDM Jan. 14, 2010
Joint Total Entity Tracking for the Instrumented Battlefield	Electronic training aids for field exercises	FY 2010 Congress
Opposing Force (OPFOR0 C2 Network	Creation of cell phone and wireless local loop networks at four CTCs	DSDM Aug. 18, 2009
Quid Reaction Dismount (QRD) Surrogate Devices	Training devices for QRD (Guardian)	DSDM 2010
QRD (Guardian)	CREW Man-portable version 1 being replaced by CREW 3.1	DSDM Jan. 14, 2010
Route Clearance Research, Development, Testing, and Evaluation	C-IED scrapper blade for Afghanistan	DSDM 2010
USMC OEF VOIED Roller	C-IED mine roller for Afghanistan	DSDM 2010
Air Force FY 2010 Transfers		
C-IED ISR Integration	Integration of command and control of airborne C-IED assets	FY 2010 Congress
Combat Tracking Dogs	Detection and tracking of terrorists (program of record)	DSDM June 13, 2009
CREW 2.1 Surrogate Training Devices	Surrogate device for training	DSDM 2010

CIED Initiative Name	Description	Source Document
Air Force FY 2010 Transfers (continued)		
Home Station C-IED Training Capabilities	Assist services to enable IED defeat training at home stations and improve readiness prior to CTC rotations	DSDM June 13, 2009
QRD Surrogate Devices	Training devices for QRD (Guardian)	DSDM 2010
U.S. Air Force Warfare Center Joint IND Team	Mobile C-IED team	DSDM 2010
USSOCOM FY 2010 Transfers		
EGON	Classified C-IED effort	DSDM Aug. 18, 2009
THOR/All-terrain Vehicle	THOR is a man-portable and vehicular-mountable CREW system	DSDM Aug. 18, 2009
Agency FY 2010 Transfers		
National Security Agency (NSA): C-IED Embeds	Classified C-IED effort	DSDM 2010
NSA: CSS Cryptologic Services Group (COIC)	Classified C-IED effort	DSDM 2010
NSA: Fusion Analysis Development Effect	Classified C-IED effort	Memorandum of understanding signed by Lt. Gen. Metz Sept. 13, 2009
NSA: Liquid Fire (Meta Data Denver)	Classified C-IED effort – memo for record (MFR)	Technology Requirements and Integration Division MFR to NSA Sep. 17, 2009

ACRONYMS

AAR	after action review	EW	electronic warfare
AMN	Afghanistan Mission Network	EO	electro-optical
ARDEC	Army Research, Developmental, and Engineering Center	EOD	explosive ordnance disposal
AtN	Attack the Network	EWO	electronic warfare officer
C2	command and control	FAR	Federal Acquisition Regulation
CAC	Capabilities Acquisition Center	FY	fiscal year
CF	coalition forces	GAO	Government Accountability Office
CIDNE	combined information data network exchange	GMTI	ground moving target indicator
C-IED	counter-improvised explosive device	GPR	ground penetrating radar
CIEW	counter-IED electronic warfare	GSM	global system for mobile
CIZC	counter-IED integration cell	HME	homemade explosive(s)
CLIC	company-level intelligence cell	IED	improvised explosive device
CJTF	combined joint task force	IR	infrared
COCOM	combatant command	ISAF	International Security Assistance Force
COIC	Counter-IED Operations/ Intelligence Integration Center	ISR	intelligence, surveillance, and reconnaissance
COIN	counterintelligence	JATAC	Joint Asymmetric Treat Awareness C-IED training
COTS	commercial off-the-shelf	JCOE	Joint Center of Excellence
CREW	counter radio-controlled IED electronic warfare	JIEDD	Joint Improvised Explosive Device Defeat Fund
C-SIG	Counter-IED Senior Integration Group	JIEDDF	Joint IED Defeat Fund
CTC	combat training center	JIEDDO	Joint IED Defeat Organization
CVRJ	combined vehicle radio jammer	JOLLER	Joint IED Neutralize Roller
DDOI	Deputy Director of Operations Integration	JROC	Joint Requirements Oversight Council
DDOR	Deputy Director of Operations and Requirements	JROCM	JROC memorandum
DDRA&T	Deputy Director of Rapid Acquisition and Technology	JTB	JIEDDO Test Board
DDT	Deputy Director of Training	JTCOIC	Joint Training Center IED Operations Integration Center
DoD	Department of Defense	JUON	joint urgent operational need
DSDM	Deputy Secretary of Defense memo	KIA	killed in action
DtD	Defeat the Device	LFX	live-fire exercise
		LOO	line of operation
		LVCG	live, virtual, constructive gaming
		MFR	memo for record
		MTAT	Marine Training Advisory Team

ACRONYMS

NATO	North Atlantic Treaty Organization	S&T	science and technology
NSA	National Security Agency	SE	synthetic environment
OEF	Operation Enduring Freedom	SECDEF	Secretary of Defense
OCO	overseas contingency operations	T3	transitions, transfers, and terminations
OPFOR	opposing forces		
ORSA	operations research systems analysis	TAC	tripwire analytic capability
		TEDAC	Terrorist Explosive Device Analytical Center
PBIED	Person-borne IED	TtF	Train the Force
PC	Panama City	USCENTCOM	U.S. Central Command
PGSS	persistent ground surveillance system	USMC	U.S. Marine Corps
PTDS	persistent threat detection system	UTS	universal test set
QRD	quick reaction dismount	VBIED	Vehicle-borne IED
RCP	route clearance patrols	VOIED	victim-operated IED
RMDS	robotic-mounted detection system	WTI	weapons technical intelligence



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