



Joint Non-Lethal Weapons Program



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ADS ACTD Team Wins Prestigious Award



The Active Denial System (ADS) Advanced Concept Technology Demonstration (ACTD) team was recently named the 2005 ACTD Team of the Year. Ms. Sue Payton, Deputy Under Secretary of Defense, Advanced Systems and Concepts, presented the award to the ADS ACTD team on 15 September at the annual ACTD Management Conference held at Fort Belvoir, VA. The Office of the Secretary of Defense chose the winner from among the 64 ACTD programs currently underway by evaluating program complexity, how well the team meets ACTD objectives, how it manages its resources, whether the ACTD contributes to a meaningful assessment of military utility, and the technology's positioning for transition.

Shown from left: Sue Payton, Diana Loree, Dean Adler, Susan LeVine, Chuck Perkins, and Ted Barna.

The ADS ACTD team members include the Air Force Research Laboratory's (AFRL) Directed Energy and Human Effectiveness Directorates, Air Combat Command, and the Air Force Electronic Systems Center. Susan LeVine, Deputy Director, Policy and Strategy at the Joint Non-Lethal Weapons Directorate (JNLWD), emphasized that the ADS ACTD's success was truly a result of teamwork. "This award reflects the hard work that everyone has provided to get the ADS ACTD program to this stage," she said. "We have all focused on this newest non-lethal technology becoming available to the warfighter through this ACTD."

The ADS ACTD sponsors include the Office of the Under Secretary of Defense for Advanced Systems and Concepts, the Department of Defense Joint Non-Lethal Weapons Directorate, and U.S. Joint Forces Command. The AFRL's Directed Energy Directorate at Kirtland Air Force Base, NM is responsible for the ADS prototype development. The Human Effectiveness Directorate at Brooks City-Base, TX manages the human effects characterization research and testing. The Air Combat Command at Langley Air Force Base, VA is responsible for assessing the system's military utility. The Electronic Systems Center at Hanscom Air Force Base, MA manages the transition of the capability into the formal acquisition process.

ADS System 1 Successfully Completes MUAs



The ADS System 1 successfully completed Military Utility Assessments (MUAs) at Creech AFB, NV in August and at Fort Benning, GA in September. During these two MUAs, ADS System 1 logged more than 2,370 shots. Distinguished visitors included Sue Payton, Deputy Under Secretary of Defense, Advanced Systems and Concepts, and Dr. Ted Barna, Assistant Deputy Under Secretary, Advanced Systems and Concepts. A number of flag officers were also in attendance, and the overall reaction to the capability was positive.



More than 100 civilian and military volunteers participated in the evaluations, which were set up to test ADS in a variety of simulated operational scenarios. An evaluation of the results will provide the program's operational manager with insight into the ideal Tactics, Techniques, and Procedures (TTPs) for this new weapon. The MUAs will also help refine operator training and determine the military utility of ADS and Active Denial Technology in general.

Penn State Non-Lethal Weapons Course Goes Online



Penn State Fayette launched its Web-based non-lethal weapons education course in July 2005. The Center for Community and Public Safety at Penn State Fayette designed and developed the course on behalf of the Joint Non-Lethal Weapons Program (JNLWP) to provide an educational resource to those interested in increasing their knowledge of non-lethal technology.

Active duty personnel earn 6.2 education units and a certificate from Penn State upon completion of the course; other military, federal government, and government contractor personnel may enroll free of charge. The rolling registration allows anyone to commence the course at a convenient time, and students have six months to complete the 62 hours of required course work. Currently, students hail from as far away as Iraq and Japan, although the majority are scattered throughout the continental United States.

The course offers seven progressive modules, including the theory behind non-lethal weapons, kinetics, riot control agents, vehicle stoppers, advanced and emerging technologies, non-lethal applications, and the integration of non-lethal weapons. "The last module opened my eyes on how to tackle employment considerations," said SFC Thomas Burke (USA), one of the first students to complete the course.

Educating the potential non-lethal weapon user on the available capabilities is vital to their successful employment in the battlefield. "Students can get their minds wrapped around non-lethals through the Internet course and learn how they can be employed within the situational scenarios," said LTC

Raymond Smith (USA), JNLWD Deputy Director. "Today there's such a wide mix of combatants and noncombatants on the battlefield, we want to minimize as many unintended casualties as we can."

USPACOM NLW Summit and CAPEX 2005



Boat Trap being launched from a helicopter.

On 24-26 January 2005, MARFORPAC hosted a non-lethal weapons summit and capability exercise (CAPEX) at Marine Corps Base Hawaii. The summit's more than 100 attendees included representatives from Marine Corps Combat Development Command (MCCDC), United States Army, Pacific (USARPAC), Pacific Air Forces (PACAF), U.S. Pacific Command (USPACOM), the National Institute of Justice (NIJ), U.S. Coast Guard District 14, and Pacific Fleet (PACFLT), among others. Capabilities to be used at the CAPEX were brought in to MCB Hawaii from as far away as New Jersey and Pennsylvania. The Coast Guard also brought in a buoy tender, a helicopter, and small vessels to contribute to the maritime portion of the CAPEX.

The success of this CAPEX resulted in increased interest in non-lethals to such a degree that European Command is currently planning its own CAPEX based on the USPACOM CAPEX. Another similar event is being planned for all six of the Combatant Commands. In addition, the events resulted in the Air Force's

increased interest in non-lethal technology at the higher levels and the purchase of a number of additional Non-Lethal Capability Sets (NLCS), while the Coast Guard's participation resulted in increased requirements for the Boat Trap capability. Mr. Brian Fulks, Program Support Officer, USMC Non-Lethal Weapons Program, was instrumental in arranging the event, and was pleased with the results. "When the whole thing concluded, I knew this was the best non-lethal weapons demonstration to date since I have been involved with the program," he said.

The summit, which preceded the CAPEX, included a Capabilities-Based Assessment (CBA) in which the attendees performed capabilities mapping, defined mission tasks, and prioritized those tasks. The results of the summit indicated that the Services currently are not able to achieve a number of mission tasks with the non-lethal capabilities available. "The requirements are high, but the technology to answer the needs is not on the same playing field," said Mr. Ray Grundy, Deputy Director, Joint Capabilities Development and Experimentation, MCCDC. "We can't stop a vehicle, so why worry about an airplane? When we say clear a space or incapacitate, those are not materiel solutions. That is just what we have to do."

Following the summit, the Hawaii Police Department joined the Services and Coast Guard to participate in the capabilities exercise. The exercise featured the use of non-lethal capabilities in both maritime and land environments, and involved several scenarios. These included a ship unloading cargo in a marina with a series of aggressor boats approaching the vessel, an unknown vehicle approaching a convoy, and a humanitarian aid scenario in which the crowd became aggressive.



The Running Gear Entanglement System, fired from left to right.

During the maritime portion of the exercise, a Long Range Acoustic Device (LRAD) was initially used to

warn and deter a boat that was attempting to enter the exclusionary zone. The second boat, after failing to heed the LRAD warning, was met by warning shots of stingball and flash-bang grenades. A third boat was met with a Running Gear Entanglement System (RGES), which tangled the propellers and brought the boat to a stop.

The land exercise demonstrated a convoy of supplies being brought to a refugee camp. The convoy was followed closely by a potentially hostile vehicle, and after an unsuccessful warning with the LRAD, the participants fired on the vehicle using Vehicle Non-Lethal Munitions (VENOM) to force it to stop. The

Marines then demonstrated how the VLAD and the X-26 TASER® could be used to control access to a vehicle checkpoint by stopping vehicles and incapacitating aggressive drivers. Finally, two unmanned vehicles with non-lethal weapon capabilities were demonstrated.



VENOM prototype.

In all, 20 non-lethal capabilities were either displayed or demonstrated during the summit and CAPEX, including the TASER®, Sound Commander, the Tactical Unmanned Ground Vehicle, and the VLAD. The 40MM VENOM, a MCCDC prototype developed in support of a JNLWD-funded non-lethal payload munition program, drew the most interest from the joint Services, according to Mr. Grundy. This was in part due to its range, volume of fire, and adaptability to most

platforms. Mr. Grundy indicated that the perception is that this prototype would have immediate impact on today's operations in Iraq.

“Non-lethal weapons really show the full spectrum of force that can be provided by a national force,” said Brig Gen Doug Stone, Deputy Commander, MCCDC, who had minimal knowledge of non-lethal weapons before attending the CAPEX. “They give a tremendous amount of flexibility to commanders and policy makers as an alternative to deadly force.”

Vehicle-to-Vehicle Proof Of Principle



The LRAD and Maxa Beam mounted on a HMMWV.

On 7-8 and 10 December 2004, the JNLWD conducted a non-lethal capabilities Proof of Principle (POP) at the Tactical Emergency Vehicle Operations Center (TEVOC), FBI Academy, Quantico, VA. The POP was designed to determine the feasibility of employing NL capabilities from a vehicle for the purpose of determining another driver's intent, or dissuading or deterring the driver. Participants included personnel from the JNLWD; Combat Visual Information Center, MCB Quantico; TBS/CI Company, MCCDC; Naval Medical Clinic, MCB Quantico; TEVOC, FBI Academy; Advanced Research Laboratory, The Pennsylvania State University; and American Systems Corporation.

Three capabilities were tested in three distinct tactical scenarios. In each scenario, the friendly/shooter vehicle was an armored HMMWV with an LRAD, a Maxa Beam high intensity light, and a stand-alone FN303 launcher. The capabilities were tested on target vehicles approaching the shooter vehicle from the rear, head-on, and in flanking maneuvers.



FN303 rounds hitting the vehicle's windshield.

All three capabilities were shown to have some utility in vehicle-on-vehicle tactical scenarios, and their strengths and weaknesses were displayed and evaluated. The LRAD was shown to be effective when used as a hailing and warning device against the occupants of stationary vehicles, and the system's stability on a moving vehicle at high speeds was determined to be adequate. The Maxa Beam was proven to be useful as an attention gainer and as an aid in discriminating targets. The FN303 was determined to be effective in marking vehicles at certain ranges. Some of the limitations exposed by the POP included the directional nature of the LRAD and the Maxa Beam, as well as the payload volume of the FN303.

Recommendations that emerged from the POP exercise included the determination that regardless of nomenclature, vehicle-mounted non-lethal capabilities must be integrated with lethal systems to allow for efficient and effective employment against threat vehicles, and that other non-lethal capabilities should be evaluated for employment in similar scenarios.

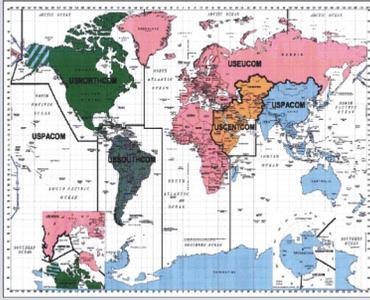
The POP was effective in displaying the potential uses of these non-lethal weapons, and as a result, the technologies have grown in popularity in the commercial sector as well as among the military. The LRAD, for example, has been adopted for use on cruise ships, and in one recent incident, an LRAD was used to protect a ship from pirates off the coast of Africa. The FN303 has also seen an increase in Service interest and is being used in current operational environments.

CEOs Bring NL Weapons Expertise to COCOMs



The effort to raise awareness of non-lethal weapons among the Combatant Commanders (COCOMs) has inspired the creation of a new position at the regional commands. COCOM Engagement Officers (CEOs) have been dispatched to several of the combatant commands with the mission of providing full-time non-lethal strategic planning expertise to their assigned command. Mr. Eric Damm is the CEO for USEUCOM, Mr. Nelson Spires is the CEO for USNORTHCOM, and Mr. Dorsey Roberts is the CEO for USPACOM.

This position was created because non-lethal weapons will likely be a vital part of any future military engagements. This position will create a direct link between the JNLWD and the COCOMs. The increased communication is designed to help both the JNLWD and the COCOMs to get the right non-



lethal weapons into the hands of those who need them. “The information coming back from the USEUCOM operations shows an increasing need for non-lethal capabilities,” said Mr. Damm. “That’s not to downplay to role of lethal weapons in any of these areas, but the forces are looking for more options than they currently have. Non-lethals give these Marines and soldiers options for controlling situations, but without the problem of making more enemies through unintended collateral damage.”

The CEOs assist in staff interaction in order to ensure that non-lethal weapons are fully integrated into the deliberate and crisis planning process, component training, familiarization events, and in support of missions. Their efforts include assisting in the establishment, execution, and management of the COCOM’s NLW program, acting as a direct liaison to the Joint Non-Lethal Weapons Directorate, and working to ensure that NLWs are incorporated into documents such as Concept of Operations (CONOPS), Concepts of Employment (COE), and Contingency Plans (CONPLAN).

What this boils down to, according to Mr. Damm, is that COCOM engagement officers are responsible for bringing non-lethal weapons to the forefront of military planning efforts. “I need to be involved in development and integration of non-lethals in all facets of USEUCOM operations,” he said. “I also need to keep USEUCOM aware of any non-lethal weapons issues that impact them. I see my role as equal parts educator, trainer, administrator, and analyst.”

This role can be particularly important when domestic situations arise. Mr. Spires feels that USNORTHCOM’s mission is unique in that is its responsible for the homeland, where options are even more limited for commanders responding to threats. “Within the USNORTHCOM area of responsibility, the avoidance of civilian casualties and damage to property or environment is imperative, particularly in densely populated areas. Non-lethal technologies hold great promise for neutralizing terrorist threats while avoiding casualties among the civilian population.” As the dedicated, full-time CEO, Spires focuses on these considerations and provides the necessary continuity to ensure that USNORTHCOM’s non-lethal requirements are developed and non-lethal capabilities are integrated into operational plans.

Thus far, Spires has made significant strides toward accomplishing these tasks, including standing up a non-lethal weapons working group, developing USNORTHCOM requirements for non-lethal capabilities, integrating non-lethal capabilities into CONPLANs, COEs, CONOPS and exercises, and providing non-lethal systems training for the COCOM’s staff. Still, there is much more left to do. Among other tasks, Spires is now working to incorporate use of non-lethal capabilities into concept of operations for the USNORTHCOM Civil Support Plan and normalize employment of non-lethal capabilities in support of USNORTHCOM homeland defense and civil support missions.

In his role as incoming CEO, Damm also faces several challenges that will make his job at least a little more difficult. Chief among those is getting the expectations levied upon non-lethals to correspond to their actual capabilities. “The current non-lethal weapons available are useful, but they have fairly limited capabilities in terms of range and effects. Operators need to understand that and learn how to use them to capitalize on their strengths and minimize their weaknesses.”

Damm’s main goal as CEO is to take non-lethals from being something “special” to simply being part of the way U.S. forces operate. “I would like to see non-lethals considered as another force option, like every other system we have, rather than a capability that is looked on as something unique.”

JNLWD-Hosted Famfire Brings Non-Lethals to Life for ICAF Students



An ICAF student fires a non-lethal round from an M203.

The JNLWD successfully continued its initiative to increase non-lethal educational outreach in 2005 when it hosted a familiarization fire demonstration for the Industrial College of the Armed Forces (ICAF) non-lethal course enrollees at Quantico Marine Corps Base. The elective course, conducted under the auspices of the National Defense University, is one of 150 courses offered in their elective program. Due to the school's request and student feedback, the elective will be offered twice in an academic year for the first time in 2006.

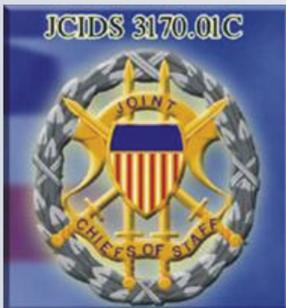
The JNLWD-supported hands-on demonstration complements the 17-student classroom session and is an example of the JNLWD's commitment to educational outreach at the higher levels of the government and military. Course enrollees included O6-level officers from the U.S. Marine Corps (USMC), the U.S. Navy (USN), the U.S. Air Force (USAF), and the U.S. Army (USA), senior executive service-level government employees, and the FBI. The students participated in the engagement of various non-lethal capabilities, including the M203 40mm stingball round, the FN303, and the MK-141 flashbang grenade. "The students loved the familiarization fire demonstration because it brought everything we taught in the first part of the course into perspective," said Lt Col Ron Madrid (USMC Ret.), a contract administrator at Penn State University and ICAF instructor. "They had first-hand experience to gain an appreciation for their capabilities and limitations in a tactical environment."



A demonstration of the MK-141 flashbang grenade.

Lt Col Mark Williams (USAF) chose to take this course rather than another elective because reconstruction and police duties are becoming a more prominent role for the military. "After we defeat the military forces of the enemy, what do you do then?" he said. "Securing the peace is becoming a bigger issue. We need to look into more procurement of more non-lethal weapons, so I wanted to learn what's out there now and what some of the challenges are."

JNLWP JCIDS Analysis Update



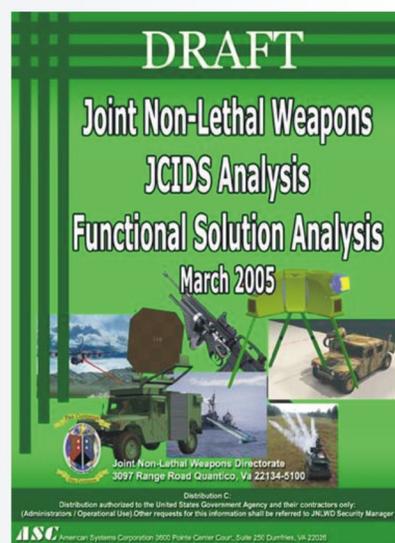
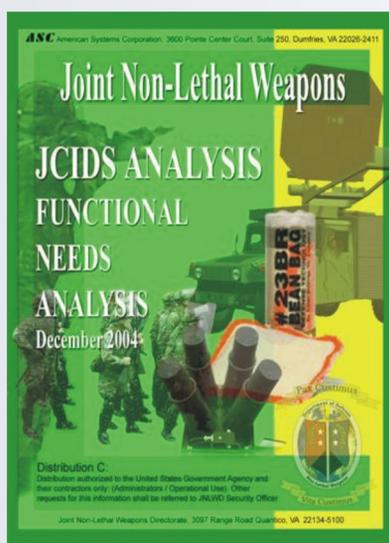
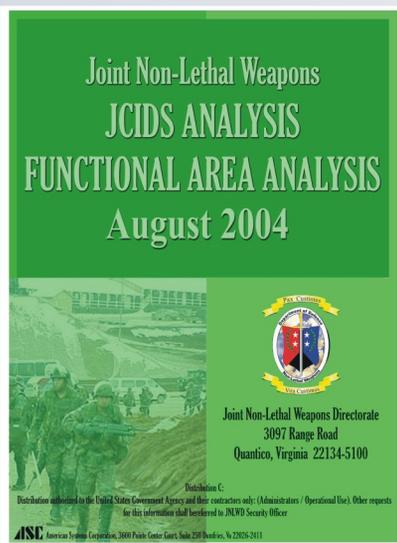
The JNLWP Joint Capabilities Integration and Development System (JCIDS) analysis is a collaborative assessment and analysis process performed collectively with all Services, Combatant Commanders, and DoD agencies. It endeavors to develop potential solutions that reflect joint force commanders' and warfighters' current and future requirements, lessons learned, and ongoing operations. The results, findings, and recommendations of these comprehensive analyses and assessments will be presented to the Joint Requirements Oversight Council (JROC).

The JCIDS assessment and analysis that was completed in March 2005

recommended the development of three distinct and separate Initial Capabilities Documents (ICDs) for each of the programs' functional core capabilities: counter-personnel, counter-materiel, and counter-capability. Working with the Joint Staff J8 and based on their recommendation, the JNLWP also developed a Joint Capability Document (JCD). The JCD was the baseline for the analyses and results from the Functional Area Analysis and Functional Needs Analysis, and it supports the development of the ICDs and Doctrine, Organization, Training, Materiel, Leadership Development, Personnel and Facilities Change Recommendations (DCR). The Joint Non-Lethal Weapons Directorate (JNLWD) submitted the JCD into the JROC Knowledge Management/Decision Support (KM/DS) tool. Since all changes and recommendations to the JCD were adjudicated, the JCD did not require flag officer review. It has been forwarded to the Force Application Working Group (FAWG) for review and eventual briefing to the FA Functional Capabilities Board (FCB) and the other senior panels, including the JROC.

Three separate and distinct ICDs were posted on to the KM/DS tool and have been reviewed at the O-6 level. The JNLWD completed adjudication of all comments throughout the DoD and held discussions and meetings to come to resolution to the recommended Joint Staff (JS) J8 Force Application Assessment Division (FAAD) changes. The JNLWD posted the ICDs back into KM/DS for flag officer review in December 2005. After adjudication, the ICDs will be briefed through the various JROC panels.

Adjudication and approval of the ICDs through the JROC panels and the completion of the CBA provides the Services with the analyses and documentation needed to pick and choose those capabilities that provide resolution and/or mitigation of current and emerging capability gaps. This allows the Services to focus their efforts on the fielding of specific capabilities against identified task-target combinations contained in the ICDs, without having to conduct their own CBAs.



Force Protection on Display at FPED 2005



The April 2005 Force Protection Equipment Demonstration (FPED), hosted by Marine Corps Base Quantico, VA was attended by more than 550 vendors and 11,000 exhibitors and attendees. Numerous organizations were represented, including the federal, state, and local organizations, defense agencies, first responders, and correction agencies.

The JNLWD participated in the success of the fifth FPED event by setting up a display booth, which received a steady stream of interested traffic throughout the event. Following the event, the JNLWD proposed to FPED event organizers that all non-lethal weapons and systems exhibitors be co-located in future shows. "This would increase our attempts to educate and raise awareness of non-lethal weapons," said Maj Fred Beata (USMC), JNLWD Capabilities and Requirements Division. In addition, by being co-located, exhibitors could engage in the advancement of non-lethal systems, and each would be interpreted as an extension of the others. In spite of the vendors being scattered throughout the large venue, the JNLWD was able to identify several items of interest. The FireCRAFT Trooper Special Intervention System (Trooper SIS), Non-Lethal Solutions' PepperBall technology, and the PRIAX Hydro-Force Series were determined to be technologies with merit, and they were all demonstrated at the Joint Integration Program (JIP) meeting in January 2006.

As these discoveries indicate, FPED is notable for its ability bring together defense representatives from around the world and put them in contact with manufacturers of equipment dedicated to force protection needs. "We come to FPED to find rapid solutions to those things that keep us up at night," said Colonel James Lowe (USMC), Commander of Marine Corps Base Quantico.

The Pentagon has invited hundreds of industry representatives to display their state-of-the-art technologies and products in this manner on a biennial basis since 1996. "FPED is a huge event and the only trade show of its type because it allows people to display their equipment as opposed to just using a video monitor," said Jim Suarez, FPED project leader. "We had a night demonstration, a spike demonstration, and an unmanned armored vehicle demonstration. I don't think you'll find that elsewhere in the industry."

The next FPED event will occur in 2007 at a site to be determined.

