Directed Energy Views from Lt Gen Bradley Heithold & COL (R) John Haithcock

Lt Gen Bradley Heithold
Principal Deputy Director, Cost Assessment
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COL (R) John Haithcock
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Ahead of this year's **3rd Integrated Air and Missile Defense** event we take a look into how **Lt Gen Bradley Heithold** envisions the Department of Defense's Directed Energy Roadmap coming together, if there will be a single program executive, or committee comprised of multiple offices providing oversight of this plan, and his perspective on directed energy as current Principal Deputy Director of Cost Assessment and Program Evaluation.

We also get perspectives from **COL (R) John Haithcock** on the development of the Army Counter UAS Strategy and what FCoE's plans are for integrating Directed Energy into that plan. Also how the Fires Battle Lab and FCoE are testing and determining what unit level SHORAD capabilities will look like for the current and future fight.

The Integrated Air and Missile Defense Summit will take place on September 27-29, 2017 in Washington, D.C.

Lt Gen Bradley Heithold
Principal Deputy Director, Cost Assessment and Program Evaluation
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"The recommendations developed in the [Directed Energy Roadmap] will be brought to the DMAG for incorporation into a Department wide plan of action."

Can you give us a general outline of how you envision the Department of Defense's Directed Energy Roadmap coming together? Will this effort combine the various service specific efforts or act as a framework for future developments?

"The Roadmap will identify and compile those areas within the Department that lasers are envisioned to play a role.

This will include looking at threats, development plans, and CONOPS. The study will evaluate the current state of the art in laser technology and assess the advancements that are required to meet service and warfighter needs.

The study will identify those areas of development that could be consolidated as well those that need to be expanded.

Finally, for the various mission areas it will identify the technical maturity levels at which transition to the acquisition process is appropriate.

The recommendations developed in the Roadmap will be brought to the DMAG for incorporation into a Department wide plan of action."

Explain some of the potential benefits of Directed Energy based on your operational experience, and also provide some insight as to your approach regarding these programs in your current role at CAPE?

"Directed Energy has the potential of providing the Department with capability advancements in several areas. These include the potential of engaging targets more rapidly than conventional techniques, at greater ranges, and with a lower cost per shot. Directed Energy offers the potential for silent, precision attack options with reduced signature and the potential to minimize collateral damage. They also offer the potential of scaling effects from target destruction to disruption providing the warfighters with greater flexibility to adapt to their situation.

The potential to field operational Directed Energy weapons is exciting *and the Department plans continue to making investments in this area. CAPE's mission is to evaluate development efforts and acquisition programs with an eye towards overall all utility and cost within the greater Department need. DE systems are not special in this sense and will be evaluated and considered in the same fashion as other Department investments."*

Will there be a single program executive, or committee comprised of multiple offices providing oversight of this plan? If you can, please give your interpretation of what the authority and or oversight that position/committee will be afforded.

"The overall programmatic organization of the Department's laser development is still TBD. The options range from continuing without change to the current process to the creation of a single centralized effort.

The final decision will be made after the Department has reviewed the Roadmap and its recommendations."

Where do you see DE in the next 2-5 years? Will we begin to see these systems in the hands of the warfighter or continue to refine and develop in the laboratory setting?

"Laser development for military purposes, while showing great promise, has suffered somewhat from a Star Wars syndrome.

We are a fair way from seeing soldiers carrying laser rifles into combat or aircraft destroying missiles at distances of thousands of miles. Significant work must still be done to reduce the size and weight of lasers while at the same time increasing their power.

The Department will continue to invest in DE efforts for potential use across all mission areas. DE systems will be transition to the warfighter when the technology is mature and provides an effective capability.

Once the Laser Roadmap effort concludes, we will be in a better position to define an overall development plan and timeline."

"I'm looking forward to hearing from Industry as to where they think the technology is headed."

- What Lt Gen Bradley Heithold looks forward to at the event

COL (R) John Haithcock
Director, Fires Battle Lab
US Army Fires Center of Excellence (FCOE)

"We have the Indirect Fire Protection Capability (IFPC) program that is looking at higher power lasers that will increase our protection against all enemy threats."

Could you tell us about the development of the Army Counter UAS Strategy and what FCoE's plans are for integrating Directed Energy into that plan?

"Analysis of the future operational environment and recent military operations around the globe, clearly illustrates the seriousness of the UAS threat.

The Fires Center of Excellence was assigned by the Army as the C-UAS proponent and through a series of experimentation and studies, developed the Army Strategy for C-UAS published 5 Oct 2016.

There is no single, comprehensive materiel solution and success in the C-UAS mission requires a combined arms approach integrating numerous capabilities that stretch across all seven warfighting functions.

Directed energy is a solution being studied with developing tactics, techniques and procedures.

The plan is to continue live fire experimentation and put it in soldier's hands during an upcoming Joint Warfighting Experiment."

How is the Fires Battle Lab and FCoE testing and determining what unit level SHORAD capabilities will look like for the current and future fight?

"FCOE has an experimentation campaign that includes live, virtual, and constructive events. The Maneuver and Fires Integration Experiment (MFIX) is Fires' premier live, demonstration event.

MFIX 17 had 33 systems participating across Brigade, Battalion, and two companies. This experiment is informing doctrine, requirements, and concepts.

ARCIC has the Unified Challenge series-

-of experiments consisting of GAMEX and SIMEX event. FOCE's TRADOC Capability Manager for Air Defense Artillery is developing SHORAD strategy and looking at dedicated and non-dedicated air defense capabilities."

How do you picture the use of DE systems benefiting commanders, and how are teamed maneuver exercises helping in the development of those strategies and capabilities?

"DE systems can be placed anywhere on the battlefield. DE does not have to be the primary weapon system for a combat vehicle.

You could place the laser on a Stryker without replacing its current onboard weapon system. The Stryker can engage direct fire targets with its primary weapon system and has an alternative system for Air Defense.

Additionally, lasers can be employed forward because they have no distinctive signature and work very quickly. You don't give your position away.

FCOE is teamed with the Maneuver Center of Excellence (MCOE) supporting their Army Expeditionary Warfighting Experiment (AEWE). We are sharing lessons learned during the MFIX and AEWE experiments."

This Mobile High-Energy Laser-equipped Stryker was evaluated, April 12, during the 2017 Maneuver Fires Integrated Experiment at Fort Sill, Oklahoma. The MEHEL can shoot a drone out of the sky using a 5kW laser. (Photo Credit: C. Todd Lopez)

Where do you see DE in the next 2-5 years within the U.S. Army?

"Without a doubt, 30-50 kw lasers at the tactical edge, the maneuver company.

We will be employing those to defend against the full suite of air threats to include indirect fire threats. We also have the Indirect Fire Protection Capability (IFPC) program that is looking at higher power lasers that will increase our protection against all enemy threats."

"I look forward to meeting these knowledgeable and hard working individuals from all services and industry and seek to integrate and share our ongoing efforts."

- What COL (R) John Haithcock looks forward to at the event

Relevant Topics at 3rd Integrated Air & Missile Defense

Utilizing Directed Energy to Enable GBAD and C-UAS Capability at the Tactical Level

After successful testing of HEL demonstrators at MFIX 16 and 17 the Army and USMC are expanding their DE development plans to larger GBAD and C-UAS capabilities. Future plans include employing these assets against the full suite of air threats and indirect fire threats.

Brigadier General Randy McIntire
Commandant
Air Defense Artillery School

Operational Advantages of Airborne Directed Energy Platforms for IAMD

As MDA, the U.S. Navy and Air Force continues to refine their next generation manned and unmanned aircraft to maintain dominance in the air domain, Directed Energy Systems provide both an offensive and defensive enabler. Airborne DES will enable defeat of air to air threats as well as provide a silent capability to engage threats in the left of launch and boost phases.

Mr. Gregory Gross
Deputy Chief Engineer, Directed Energy Directorate
Air Force Research Lab

Tailoring Training and Doctrine for C-UAS and SHORAD Mission Set

Small threats to maneuver units will include slow, low-flying targets that most traditional sensors may not pick up. This challenge will require unit level ADA soldiers and leaders to have the authority and the training to open fire on their own initiative, requiring detailed integration and understanding of the airborne environment to prevent fratricide and enable success.

Brigadier General Christopher Spillman
Commanding General
32nd AAMDC

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