



# RAPID EQUIPPING FORCE

United States Army



**EQUIP | INSERT | ASSESS**

*Rapid-Response Equipment Solutions for  
Globally Deployed Forces*

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**U.S. ARMY**

## OVERVIEW

### **REF MISSION**

The Rapid Equipping Force harnesses current and emerging technologies to provide rapid solutions to the urgently required capabilities of U.S. Army forces deployed globally.

The Rapid Equipping Force (REF) began as a challenge. In 2002, Vice Chief of Staff of the Army, General (GEN) John Keane charged Colonel (COL) Bruce Jette with identifying, procuring and inserting then-groundbreaking, field-ready, robotic technologies into Afghanistan in less than 90 days to aid Soldiers in clearing local caves. Remarkably, COL Jette established a team, partnered with government agencies and industry, and procured the PackBot in less than 30 days.

Following this success, COL Jette recommended that the Army retain the rapid equipping capability proven in theater. For the past 12 years, the REF has been a direct report to the Vice Chief of Staff of the Army, nested under the Army G-3/5/7. Its charter gives the organization the unique combination of requirement validation and acquisition authorities, enabling REF to procure government- and commercial-off-the-shelf solutions for Soldiers. The Army declared the REF an enduring capability in 2014. With this decision, it retains a mechanism for rapid acquisition, adaptation in unpredictable operational environments and technological advantage over our adversaries.

### **CALL TO ACTION:**

*Want to learn more about the Rapid Equipping Force?*

*Check us out at*

**[WWW.REF.ARMY.MIL](http://WWW.REF.ARMY.MIL)**

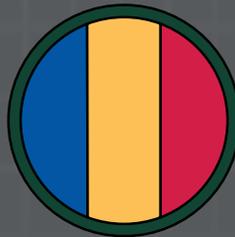
The organization is slated to transition to the U.S. Army Training and Doctrine Command (TRADOC) as a direct report to the Commanding General. Its scope and mission will not change and the REF will continue to provide Soldiers with non-standard, materiel solutions.

The following effort vignettes illustrate the diversity of tactical challenges submitted to the organization and its unique impact on the warfighter.



# REF LEADERSHIP

The REF is a subordinate of the U.S. Army Training and Doctrine Command (TRADOC), and the REF Director holds the authority to generate requirements for near-term solutions. The Army Acquisition Executive provides Program Management Office REF and designated PEO Soldier as its Milestone Decision Authority. The Project Manger is embedded at REF Headquarters and serves as oversight for all procurement actions.



COL Steven A. Sliwa  
Director



SGM Jose Quinones Jr.  
Sergeant Major



John R. Porter  
Business Manager



Kurt A. Frulla  
Deputy Director /  
Chief of Solutions



Todd R. Wendt  
Project Manager

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# TACTICAL CHALLENGE FOCUS AREAS

THE REF INTEGRATED PRIORITY LIST IDENTIFIES THE TACTICAL CHALLENGE AREAS THE REF CAN SUPPORT. ADDITIONALLY, IT PROVIDES A FRAMEWORK FOR ASSESSING AND VALIDATING REQUIREMENTS.

**SOLDIER - FOCUSED**

## DISMOUNTED OPERATIONS

- SOLDIER LOAD
- IED DEFEAT
- COMMUNICATIONS

## SMALL COMBAT OUTPOST PATROL BASE

- SUSTAINMENT
- FORCE PROTECTION

## MISSION COMMAND

- INTELLIGENCE
- SURVEILLANCE AND RECONNAISSANCE
- BLUE FORCE TRACKING

### CALL TO ACTION:

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WITH A CAPABILITY GAP?  
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## THE FIVE KEY STEPS TO REF RAPID ACQUISITION

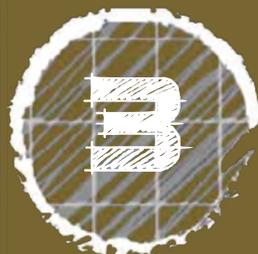


### REQUIREMENT VALIDATION

When the REF receives a 10-Liner, acquisition teams conduct a mission analysis, assess the problem statement and provide recommendations to the director. Valid requirements can be met with existing REF technologies, a credit card purchase, or in some cases, by formally contracting with industry partners.

### CSP APPROVAL

**Once approved, each requirement gets an assigned Project Officer** who researches possible technology solutions and then develops the Cost, Schedule, Performance plan for the project. This plan is presented to REF leadership and must be approved to begin execution.



### EQUIPPING APPROVAL

At this milestone, the solution is ready to be shipped to the requesting unit. It goes through one more approval process by the REF Director of Operations before the logistics team sends it downrange.

### ASSESSMENTS

REF receives operational feedback from the requesting unit about **how well the solution is filling the identified capability gap.**



### TRANSITION DECISION

Typical REF projects do not exceed 12 months for execution. When a project is nearing completion, the REF reviews assessment data and makes a recommendation for its future disposition. Projects can be terminated, transferred or transitioned.

## THE REF FAST TRACK

The REF mantra is to deliver technology solutions in days and weeks, and not months and years. What does that mean exactly? Sometimes, the REF can repurpose solutions from previous REF efforts. A requirement can also be met with mature, government- or commercial-off-the-shelf (GOTS/COTS) technologies purchased with a government credit card. The REF considers these "fast track" efforts. These decisions are for nonstandard equipment and are not standard Army supply requisitions.

### PROJECT SOUTHPAW

Requirement Dates: 3 - 25 April 2013

REF provided left-eye dominant Soldiers with chin straps for the Advanced Combat Helmet. This gives troops the option of buckling the strap on the right side of their face, increasing comfort.



### PROJECT MANTIS

Requirement Dates: 1 - 29 April 2013

For this project REF procured a body-worn Tactical Vest Antenna System that is optimized at 30-88 MHz for a longer radio range for intra-squad communications.

### PROJECT BERAL

Requirement Dates: 10 May - 14 June 2013

These U-tube, battery powered lanterns safely illuminate low-light areas at Forward Operating Bases without the risk of spilled fuel.



### PROJECT SANDPIPER

Requirement Dates: 10 May - 11 September 2013

REF equipped scout and sniper teams with a high-powered spotting scope linked to a digital camera so spotters can capture **imagery at a significant distance.**



## PROJECT CHAMELEON

Requirement Dates: 5 April - 27 May 2013

REF procured the Tactical Command Industries Modular Antenna **System to reduce Soldiers' antenna silhouette without the loss of line-of-sight or a reduction of radio reception.**



## PROJECT COHO

Requirement Dates: 8 March - 2 May 2013

**To assist Soldiers in providing cover fire and neutralizing enemy threats** at a distance, the REF procured the Eliminator III Laser Scope - a compensating weapons spotting scope with a pinpoint laser range finder and precision trajectory compensation.

## PROJECT LEATHERBACK

Requirement Dates: 29 April - 28 June 2013

Mortarmen need to carry large loads, so to provide them with an **efficient and comfortable means to carry 60mm mortar systems**, REF procured the London Bridge mortar pack. This tactical rucksack is designed to carry loads in excess of 100 pounds.



## PROJECT TAPIR

Requirement Dates: 28 May - 27 July 2013

Project Tapir equips the Soldier with a lightweight tactical battle belt **to lower the profile of a Soldier's kit. The battle belts distribute the load onto the Soldier's hips and feature MOLLE loops.**

Sometimes Soldiers downrange need a more complex solution that requires in-depth analysis and additional time. The REF partners with other Army organizations, industry and academia to fill these requirements. The following pages describe a variety of initiatives that demonstrate the breadth of REF's ability to serve the Soldier.

# EQUIP

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United States Army



*Soldiers must get up close and personal when investigating terrain for route clearance purposes.*

## COUNTER IED INTERROGATION KNIVES

### REQUIREMENT ORIGIN:

10 LINER  
10 MAY 2011

### FIRST EQUIPPED:

13 OCTOBER 2011

### NUMBER EQUIPPED:

2,200

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## IED INTERROGATION KNIVES

Improvised Explosive Devices (IEDs) pose a constant threat to coalition forces in Afghanistan. Soldiers receive training to identify the telltale signs of a recently buried munition, such as displaced dirt or wires, and Soldiers often use a knife to brush away topsoil while investigating a suspicious site. However, using standard issue knives for this purpose can be unsafe; the metal can potentially complete the circuit components, causing the IED to detonate.

REF partnered with the Army Research Laboratory (ARL) to develop a fiberglass knife to investigate suspected IEDs in a safer manner. Though a simple solution, these knives enable limited ordnance interrogation and prevent casualties.

Update: Second Gen. Knives Ship to OEF  
In December 2013, REF and ARL designed the second generation of interrogation knives, changing the design to a probe shape for the investigation of denser terrain. The iteration of the newly designed tools shipped to Operation Enduring Freedom (OEF) in February 2014.



# LETHAL MINIATURE AERIAL MUNITIONS SYSTEMS

Engaging the enemy effectively, without clear line-of-sight, is a unique challenge. The need to mitigate collateral damage can delay response times and restrict the use of standard weapons. To address this challenge REF, PM Close Combat Weapon Systems (CCWS) and the Asymmetric Warfare Group (AWG) partnered to introduce the Lethal Miniature Aerial Munitions Systems (LMAMS), a revolutionary non-line-of-sight, direct-fire munition for the small unit. The munitions transmit video back to the operator in real time. This technology allows Soldiers to identify and eliminate specific targets with little collateral damage. Its unique operating system can be waved off or can be reprogrammed to reengage the target from another angle. Soldiers carry the entire system in a backpack and can deploy within two minutes.

## Update: Project Transition

This system expands small unit capability and has proven successful in Afghanistan. LMAMS is completing a transition to PM CCWS and Maneuver Center of Excellence (MCoE) for further requirement and product development.



## LMAMS

**REQUIREMENT ORIGIN:**  
10 LINER  
2010

**FIRST EQUIPPED:**  
2010

**NUMBER EQUIPPED:**  
158

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*The LMAMS can be easily carried in a Soldier's backpack and deployed within minutes, making it a valuable asset for smaller units.*

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## EX LAB

**REQUIREMENT ORIGIN:**  
DIRECTOR'S INITIATIVE  
17 MARCH 2011

**FIRST EQUIPPED:**  
MAY 2012

**NUMBER EQUIPPED:**  
3

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## EXPEDITIONARY LAB

The Expeditionary Lab (Ex Lab) is a containerized engineering hub that can be transported anywhere in the world. The REF currently owns three Ex Labs, each equipped with 3D printers, a Computer Numerical Control milling machine and a variety of tools. The lab communications suite enables REF engineers and Soldiers in Afghanistan to collaborate with reach-back support in the U.S. to rapidly prototype and engineer solutions.

Though REF has maintained forward workshops on large bases in Afghanistan since 2004, these mobile containers were inserted in 2012 and move around theater supporting missions on smaller Forward Operating Bases (FOBs).

Update: REF Acquires Third Ex Lab

In August 2013, REF accepted its third lab, which is the first lab to come with a second 3D printer contained in a separate 10x10x10 container. The new lab also includes two upgraded portable kiosks, each housing a subset of tools, and can accompany units to the tactical edge.

Lab 3 currently provides support to Afghanistan from its location at REF headquarters. For example, in late 2013 REF forward received a requirement to mount tactical flashlights onto handheld IED detectors to support nighttime patrols. Lab 3 printed more than 100 light mounts in a matter of weeks. This incremental printing and shipping plan expands the capabilities of the labs downrange, increasing the number of solutions REF can provide in a limited amount of time.

In 2013, Lab 3 also supported, Army CoCreate, a REF proof-of-concept effort to test the applicability of crowdsourcing techniques for the Army. The lab relocated to Fort Benning, Ga., in November 2013. It served as the workshop for MCoE Soldiers as they developed a mobile command post prototype based on a modified Kawasaki Teryx 750cc.

The REF is currently working with theater commanders to determine how the labs will continue to support Soldiers downrange during the OEF transition. These containerized workshops are available to deploy anywhere in the world based on urgent requirements.

### CALL TO ACTION:

DO YOU KNOW A UNIT THAT IS INTERESTED IN LEARNING MORE ABOUT THE LAB CAPABILITY? VISIT THE REF WEBSITE TODAY AT [WWW.REF.ARMY.MIL](http://WWW.REF.ARMY.MIL)



### LAB SOLUTION

**Base Defense Weapons Bracket**  
To prevent green-on-blue incidents, the lab prototyped and produced a weapons bracket that restricts excessive turning or removal of machine guns from perimeter towers.

The mechanism operates with a standard military lock and allows for the appropriate amount of range to cover the operational area. Each mechanism cost less than \$40. The final version was manufactured from steel and over 40 mounts have been delivered since February 2014.

### LAB SOLUTION

**USB Port Charger**  
One of the lab's most requested items in 2013 was a converter that allows Soldiers to charge USB-capable devices with a standard BA 5590 Army-issued battery.

Ex Lab engineers designed and prototyped the first version of the charger in less than one week. After two months of user testing and improved iterations, a final product emerged. To date, REF has equipped more than 2,200 converters and has shared this simple tactical solution with partner organizations like PEO Soldier for future consideration.

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*The new REF Ex Lab boasts a second 3D printer housed in an ISU 90.*

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*The small gray sensors shown here, will capture vital data if this Soldier ever experiences a blast.*



## IBESS

**REQUIREMENT ORIGIN:**  
VICE CHIEF OF  
STAFF OF THE ARMY  
APRIL 2011

**FIRST EQUIPPED:**  
AUGUST 2011

**NUMBER EQUIPPED:**  
1,048

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## INTEGRATED BLAST EFFECTS SENSOR SUITE (IBESS)

Throughout the conflicts in Iraq and Afghanistan, IEDs have proven to be the adversary's weapon of choice, resulting in long-lasting, and sometimes unseen, effects on Soldiers. In 2011, former Vice Chief of Staff of the Army, GEN Peter Chiarelli, tasked the REF to develop, insert and assess a way to document blast effects. The REF solution, IBESS, captures blast data for analysis as well as Soldier electronic health records. REF equipped the first Soldier-worn systems in less than six months.

In support of this Army-wide priority, REF united the efforts of multiple Army organizations specializing in Soldier systems, vehicles and health. REF continues to support the further development and assessment of the integrated suite, as well as the dedicated efforts by PEO Soldier on the Soldier-worn system.

Update: Integration of Vehicle-mounted Sensors  
In 2013, REF equipped the first systems to integrate Soldier-worn blast effects sensors with additional sensors mounted onto Army vehicles. This combination allows analysts to recreate the event by capturing blast overpressure and acceleration data from multiple source locations. The suite is currently installed on military vehicles and more than 1,000 Soldiers received the body units.



## CROSSHAIRS 4G LTE

ENHANCED NETWORKING & SHOT DETECTION

In 2010, REF partnered with the Defense Advanced Research Projects Agency (DARPA) to develop Counter Rocket Shooter System with Highly Accurate Immediate Response (CROSSHAIRS).

The system integrates direct fire detection and direction finding with a slew-to-cue capability, using the Common Remotely Operated Weapon System (CROWS), and a command and control display that can be mounted on any vehicle. This system-of-systems solution gives convoys the situational awareness required to make critical operational decisions, such as to engage an enemy or not based on positive identification of a combatant.

Update: 4th Generation (4G) Long Term Evolution  
The REF integrated a 4G LTE system onto the Mine-Resistant Ambush Protected (MRAP) vehicles, creating a networked bubble that provides dismounted Soldiers the same situational awareness the convoy receives, via Nett Warrior applications on smart phones. The feeds provide Soldiers with maps, reports, friendly dismount locations and video from several sources. This integration effort supports a much larger networking effort called the Joint Operational Long Term Evolution Deployable Tactical Cellular System (JOLTED Tactics).

The 4G suite connects Soldiers to the original CROSSHAIRS system and is supported by 4G antennas, Unmanned Aerial System (UAS) signal processors, networking equipment and the necessary power supply and air conditioning units.

The REF and its partners demonstrated the CROSSHAIRS Enhanced at several exercises in 2013 prior to equipping units. These exercises showed the value of “on-the-go” connectivity for Soldiers conducting dismounted operations.

### CALL TO ACTION:

ARE YOU AWARE OF A COMMERCIAL TECHNOLOGY THAT COULD ENABLE TACTICAL COMMUNICATIONS? VISIT THE REF WEBSITE TODAY AT

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## CROSSHAIRS 4G LTE

### REQUIREMENT ORIGIN:

10 LINER  
3 JULY 2013

### FIRST EQUIPPED:

DECEMBER 2013

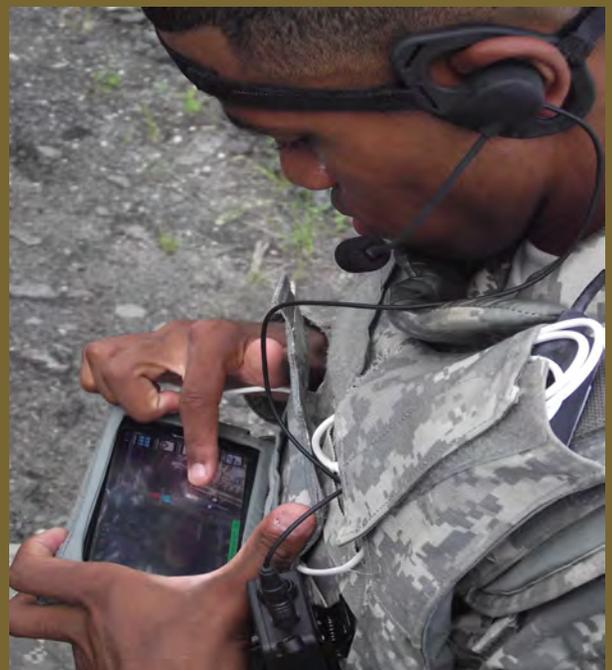
### NUMBER EQUIPPED:

4 SYSTEMS WITH 40 PHONES

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A Soldier uses the CROSSHAIRS Enhanced handheld receiver to access live-feeds during a technology demonstration at Fort Dix, N.J.

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## LAIL

### REQUIREMENT ORIGIN:

10-LINER  
26 AUGUST 2011

### FIRST EQUIPPED:

JUNE 2012

### NUMBER EQUIPPED:

4

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## LIVE AERIAL ISR LINK

The Live Aerial Intelligence Surveillance and Reconnaissance (ISR) Link (LAIL) is a COTS handheld radio receiver that allows dismounted Soldiers in remote locations to receive communications feeds from multiple UASs. The system provides information, previously only available to units at Tactical Operations Centers, directly to units in the field. REF identified this emerging capability through its partnership with the Special Operations Command (USSOCOM) and is now providing systems to conventional forces.

Update: Enhanced Capability & Reduced Load  
After the first LAIL system debuted in Afghanistan in June 2012, REF started working with a large number of DoD partners to develop the second iteration. LAIL 2.0 is downsized but more robust with improved range and capabilities. The new system also allows Soldiers to access feeds from UASs and fixed-wing aircraft. This technology not only provides Soldiers with the invaluable ISR data, but it uses a split screen to place the feed in context on a map.

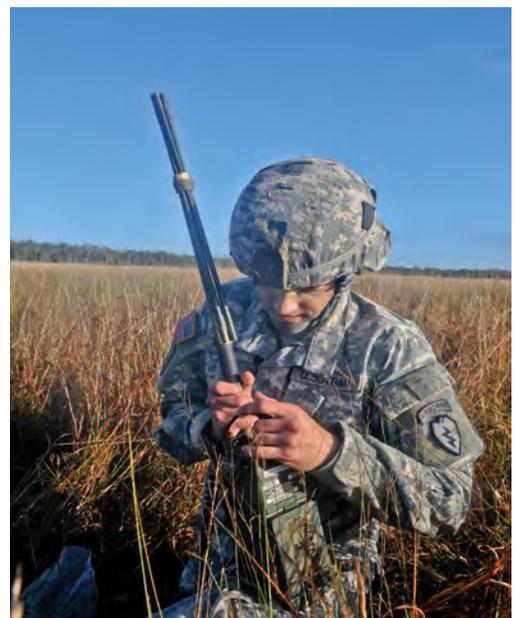
In 2013, REF provided the LAIL system to units participating in Exercise Talisman Saber, a joint exercise between the U.S. Pacific Command and Australia. Based on positive performance during this event, REF received requests for additional systems from the battalion commanders involved in the exercise.

### CALL TO ACTION:

ARE YOU AN ADVOCATE FOR AN  
EMERGING TECHNOLOGY SOLUTION?  
VISIT THE REF WEBSITE TODAY AT  
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*U.S. Army Spc.  
Nicholas Frey, 1st  
Battalion, 501st  
Parachute Infantry  
Regiment, 4th  
Brigade Combat  
Team (Airborne),  
25th Infantry Division,  
participates in  
Exercise Talisman  
Saber, where LAIL  
was first put into use.*





*Sgt. Michael Tacket, Headquarters and Headquarters Company, 3rd Brigade Combat Team, 25th Infantry Division launches Puma during training, Schofield Barracks. Photo by Sgt. Hillary Rustine*

## ENHANCED PUMA

REF regularly partners with PMs to bridge gaps during incremental upgrades to Programs of Record (PORs). REF first equipped conventional forces with the Puma systems in 2009. Recently, it partnered with PM UAS to support upgrades to the systems in theater. The three-phase upgrade includes an extended battery capability for three hours of operation, a 9DB antenna to extend range, micro-laser markers for improved targeting and a communications relay for an organic, beyond line-of-site capability, and a tactical launcher. This launcher has proven to be a great asset and is now being used by USSOCOM and the Marine Corps.

REF's flexible acquisition authorities allowed the PM to quickly insert enhancements to this technology to support Soldiers in Afghanistan.

### PUMA

**REQUIREMENT ORIGIN:**  
PM UAS  
22 JANUARY 2012

**FIRST EQUIPPED:**  
8 APRIL 2013

**NUMBER PROCURED:**  
809 BATTERIES; 801 ANTENNAS;  
57 LAUNCHERS; 5 RELAYS;  
4 LASER MARKERS

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*Aerostat platforms provide Soldiers downrange with invaluable ISR capabilities, increasing their security.*



## AEROSTATS

Since the earliest days of the REF, the organization has consistently received and fulfilled requirements for aerostat platforms. These commercially available balloons serve as universal platforms for ISR technologies, communications relay packages and other sensor systems.

Update: Equipping Units

As bases close and realign in support of Afghanistan retrograde operations, REF has seen an increased number of requirements for modular and portable aerostat platforms. The reduced force structure creates a demand for a smaller, more mobile system that can be easily transported, launched and recovered by a limited number of Soldiers.

In 2013, REF received requirements for 13 systems. The existing POR aerostat systems are large and complex, and did not meet the requirements of small, tactical units.

### EQUIP

**REQUIREMENT ORIGIN:**

10 - LINER  
30 OCTOBER 2013

**FIRST EQUIPPED:**

15 NOVEMBER 2013

**NUMBER EQUIPPED:**

13 SYSTEMS

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REF canvassed industry, reviewed capabilities and equipped the first systems to units within one month. Ultimately, the requirement was met by procuring a combination of previously fielded REF systems, in addition to a never-before-seen model. The new generation of small, tactical aerostats are more mobile, primarily due to their reliance on battery-operated power sources rather than generator-produced power.

Update: Inserting & Assessing New Technology  
After equipping the initial systems, the REF began assessing new, Soldier-packable aerostats. These systems, which can be transported by as few as two Soldiers, were demonstrated at Fort Dix, N.J., in November 2013. Following the demo, REF inserted 15 systems into Afghanistan for end-user feedback.

REF has received additional requests for these platforms, and the organization is forecasting continuing aerostat requirements for the duration of the OEF mission. The REF forward team receives the aerostat packages and then works closely with commanders to oversee the distribution and sustainment of these capabilities across the area of responsibility.

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**REQUIREMENT ORIGIN:**  
DIRECTOR'S INITIATIVE  
6 SEPTEMBER 2013

**FIRST INSERTED:**  
DECEMBER 2013

**NUMBER INSERTED:**  
15 SYSTEMS

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*Small aerostats enhance Soldiers' communication capabilities in addition to supporting ISR needs.*

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*In 2013, REF identified E2E equipment no longer needed in OEF and repurposed it for JTF-B.*



**E2E**

**REQUIREMENT ORIGIN:**  
DIRECTOR'S INITIATIVE  
9 JUNE 2011

**FIRST EQUIPPED:**  
15 NOVEMBER 2011

**NUMBER EQUIPPED:**  
300 SOLDIER-WORN SYSTEMS;  
40 HYBRID ENERGY SYSTEMS;  
100 1KW GENERATORS;  
9 LIGHT-WEIGHT 50-MAN CAMPS;  
1 RIGID-WALL 100-MAN CAMP

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## ENERGY TO THE EDGE (E2E)

The sustainment of units operating in austere locations is a REF priority, and operational energy is a top concern for Army senior leadership. To increase operational effectiveness, optimize logistics and improve power surety, REF initiated the E2E program. It assesses, equips and advises units on existing standard equipment, emerging energy efficient technologies and their employment methods. Realizing water and waste-remediation operations distracts from a unit's primary mission, the program evolved into the current "Net-Zero to the Edge" initiative adding water production and recycling capability to its portfolio. In 2013, REF E2E teams expanded their efforts to support units in Africa and Central America. To date, REF advisors have assessed more than 50 sites in Afghanistan and 60 sites globally.

A key element to the program's overall success is the collaboration and synchronization with the Army and DoD operational energy communities. Partner organizations include the Assistant Secretary of Defense for Operational Energy Plans and Programs, Assistant Secretary of the Army (Installation, Energy & Environment), Army G-4 Operational Energy Office and Project Manager Mobile Electric Power.



## AFGHANISTAN

### WEATHER STATIONS

REF installed 3-kilowatt (kW), 5kW and 10kW hybrid power solutions to provide tailored, reliable power for weather stations at a very active airfield. Regular servicing of these locations would have hindered aircraft movement and reduced the number of missions. This effort ensured continuous operation of the mission-critical systems.

### AEROSTAT IMPROVEMENTS

The REAP aerostat systems in theater were experiencing frequent power outages and surges that damaged the tethers and camera packages. This resulted in a reduced operating rate for the REAP, degrading the Combat Outpost's force protection posture. Prior to the E2E advisor team assessment, the REAP was down approximately two to three days a week due to power-related issues. E2E advisors installed a 3kW hybrid solution providing clean reliable power to the REAP. The system included a Tactical Quiet Generator (TQG) with auto start, solar panels for renewable capability and battery storage. Operators were trained on installation and preventative maintenance techniques. In the four months since the installation of the hybrid system to support the REAP, no power-related issues have been reported.

### FIXED-SITE ISR CAMERA SYSTEM

The camera system at a small outpost required 24-hour power generation, and the generator required 10 gallons of fuel daily. E2E advisors installed a 3kW hybrid power solution, including a TQG with auto start and solar panels for renewable capability and battery storage. This saved fuel, reduced system sustainment logistics burden and freed manpower for primary mission support.

## CENTRAL AMERICA

REF delivered four soft-shelter expeditionary camps to Joint Task Force-Bravo (JTF-B), Honduras, and provided on-site training to the receiving unit. Each camp includes four billeting shelters to sleep up to 50 Soldiers, one tactical operations shelter, one communications system shelter and one readiness system equipped with shower units and latrines. Expeditionary elements also included trailer-mounted fossil fuel and hybrid power generation systems. These systems reduce dependence upon ground resupply and improve efficiency.

## AFRICA

REF advisors assessed several sites in West Africa in early 2013, recommending materiel and non-materiel improvements to commanders at Joint Special Operations Task Force Trans Sahara in four separate countries. These solutions began delivering in April 2013, primarily small Soldier-oriented systems, with the large platoon and company-sized hybrid and camp systems being delivered in November 2013. Hybrid power, efficient soft and rigid walled shelters and water management will have major impact in the immature African environment.



*E2E solutions improved power surety at an airfield in Afghanistan.*

# REF

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**CAPABILITY GAPS OR SOLUTIONS?**

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