

Operational Energy In Afghanistan: Culture Change In Action



U.S. Army/SSG Shane Hamann

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Developing effective energy solutions is among Secretary of the Army John M. McHugh's top 10 priorities. The most important question we have been asking is: How do commanders incorporate operational energy into their intent? Part of the solution is to transform the Army's culture into an energy-informed culture. Commanders and soldiers must incorporate energy changes into their daily training, operations, doctrine and education.

We took a giant leap forward in achieving energy-informed operations this past year by assigning—for the first time—a uniformed operational energy (OE) advisor to the 173rd Airborne Brigade Combat Team (ABCT) in Afghanistan. The challenges, risks and costs of delivering fuel to remote and austere combat outposts (COP), forward operating bases (FOB) and village stability platforms (VSP) are enormous. Many sites in Afghanistan depend solely on weather-dependent, air-

Soldiers from Task Force Currahee, 4th Brigade, 101st Airborne Division, recover drums of fuel airdropped to Forward Operating Base (FOB) Waza K'wah in eastern Afghanistan's Paktika Province. Air delivery is the only means of resupply at the FOB.



U.S. Air Force/MSgt. Adrian Cadiz

dropped fuel resupply, placing soldiers in harm's way when they recover deliveries. A well-planned and well-executed OE plan, however, can help reduce fuel deliveries and improve operational capability by returning combat power to commanders. Soldiers who do not have to recover air-dropped fuel can focus on higher priority combat missions.

The OE advisor plays a critical role in creating an energy-informed culture. OE culture change is not a slogan; it is developing professional habits and expertise to plan and use energy smartly and efficiently. Change of this magnitude requires hard work that starts with solutions derived from the joint capabilities integration and development system process. Effective culture change also requires providing commanders with the tools to integrate OE into the combined arms fight. Conserving energy is not the end state of culture change. Our experience with the 173rd ABCT clearly demonstrated that commanders will take action to conserve energy when the resultant capability benefits are clearly articulated by the OE advisor.

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The Problem

When considering our operations in Afghanistan, it could be said that we did not actually fight an 11-year war—instead, we have fought 11 one-year wars. Unit rotations and the lack of focus on tactical electric power systems exacerbated problems during the course of those 11 years. Many remote bases had boneyards of broken power generation equipment that often exceeded the density of operational power equipment.

There were large quantities of commercial generators on these austere sites. Most company-level and below units deployed with few military standard generators because they were not authorized generators or generator mechanics on their modified table of organization and equipment (MTOE). This fact was further compounded by the reality that many of these sites were so isolated and located in areas too dangerous to receive direct contractor support. Consequently, soldiers at those locations were left to their own devices.

Commercial generators were often the only option for commanders or combat outpost mayors on these sites. Contingency contracting officers purchased commercial generators but received little or no follow-on maintenance support. This resulted in many different types and sizes of commercial generators, which had no repair parts on hand and were not supported by the Army supply system. Furthermore, soldiers were not trained to operate or maintain commercial generators. Typically, there is little ownership associated with leased equipment; the well-populated generator boneyards were a visible reminder.

The Solution: Operation Dynamo

Operation Dynamo was planned to specifically address the power challenges facing the most austere sites in the

173rd ABCT's area of operations. The OE advisor was partnered with an OE solutions team led by the project manager for mobile electric power (PM MEP). The team developed site-specific optimized power solutions consisting of military standard and sustainable equipment, including advanced medium mobile power sources generators (AMMPS), the power distribution illumination system and improved environmental control units. The team fielded that equipment and provided units with concurrent on-site training. Results were immediate and dramatic. Units gained significant operational capability through increased power reliability, improved quality of life, safer conditions and decreased requirements for fuel. For example, one site saved 101 gallons of fuel per day (approximately two 55-gallon drums). This was a major impact on a combat outpost supplied completely by airdrop.

Based on the success of the 173rd ABCT, U.S. Forces-Afghanistan asked for additional OE solutions support by submitting two more operational needs statements (ONS). The new ONS expanded the OE solution team's support to multiple remote special operations sites and VSPs with emphasis on supporting U.S. Marine Corps forces in the southwest region of Afghanistan.

Operation Dynamo is an example of how the Army can address pressing OE problems. An OE advisor providing technical expertise and a trained team with military standard equipment became a major combat multiplier for the operational commander.

Soldiers Saving Fuel

When FOB Shank's 10-megawatt (MW) centralized power plant and its associated 13.8-kilovolt electrical distribution system were commissioned in October 2012, no facilities were connected to the grid. Shockingly enough, grid connections were not included in the power plant contract. The 173rd ABCT received contract proposals for \$300,000 and \$600,000 to connect two of FOB Shank's 47 subcamps to the power plant and grid. This would have resulted in addi-

tional millions of dollars to connect all the subcamps. As a rotational tenant, the 173rd was understandably reluctant to pay the additional cost for the grid connections because they would not be on station long enough to see a justifiable return on investment. The OE advisor recommended the power grid be made operational and soldiers make many of the grid connections with the advisors' training and oversight. Based on the estimated fuel savings, much of the cost could be offset.

Using locally assigned soldiers and materials readily available through the Army supply system, an OE advisor-led team made the connections. They connected 20 of FOB Shank's subcamps to the centralized power system with no labor cost. The approximately \$5 million in savings to the Army was immediate. The team connected multiple facilities to the grid: three dining facilities and their refrigerated storage units; the FOB Shank medical and forward surgical team facilities; the mild traumatic brain injury clinic; 1st Engineer and 173rd Brigade Support Battalion tactical operations centers; supply support activity and maintenance facilities; four contract vehicle repair facilities; unmanned aerial vehicle flight operations; several shower and latrine facilities; and multiple soldier living areas.

These connections placed a 3.2-MW peak load on the centralized power plant and eliminated 70 individual spot generators; the combined power capacity of the displaced generators was more than 10.4 MW. As a result, the power plant was running four to five large generators during the day and two to three generators at night at much higher loads (80 to 90 percent of capacity) in order to maximize efficiency. Connecting the subcamps proved to be much more efficient than running 70 individual spot generators. The connections resulted in an annual fuel cost avoidance of approximately 2.5 million gallons. At \$4 per gallon, this is \$10 million of annual cost avoidance without considering the fully burdened cost of fuel. When one considers the hundreds of fuel convoys both wholesale (contracted) and retail (U.S. units) that did not have to travel the dangerous roads

in Afghanistan, it is strikingly clear how important OE is to the mission.

FOB Shank is just one example of how savings and efficiencies could potentially accrue when OE is a well-planned and well-executed part of combined arms operations. The base clearly demonstrates that a uniformed OE advisor can work with other experts on the staff to provide efficient OE that will enhance combat operations.

Bundles of fuel, part of the fuel airdrop at FOB Waza K'wah, drift downward. One month's fuel supply for the base is 120 pallets, each containing four 55-gallon drums of fuel. It takes about 1,200 gallons a day to run the base.



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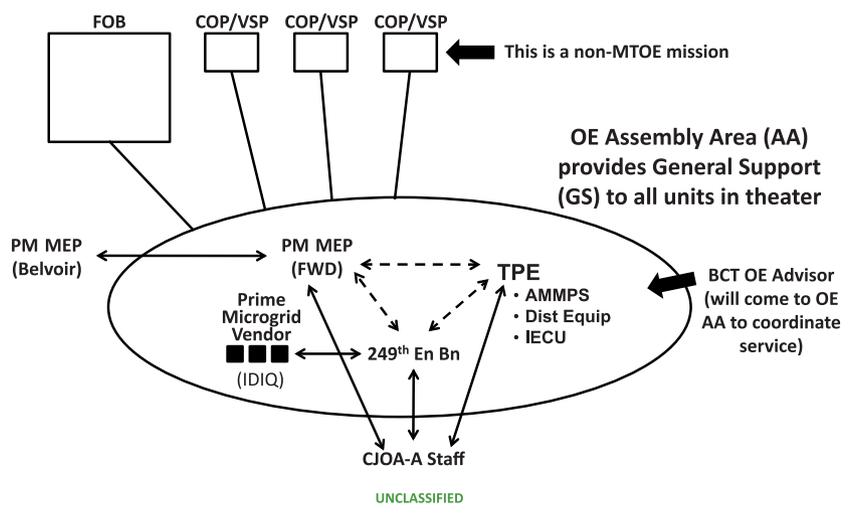
Broken generators line the boneyard at FOB Shank in Logar Province of eastern Afghanistan. Commercial generators were the only option for many small units, and posts were so isolated and located in areas so dangerous that contractor support was nonexistent.



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General Support (GS) OE CONOPS

BCT OE Advisor is Key to Success (Non-Materiel Solution)
Puts OE Equipment where needed (if not on unit MTOE)
Proven by PM MEP OE Solutions Team in Operation Dynamo



tactical mission that the unit MTOE does not support. The most common example we see in Afghanistan is the mission to establish COPs, FOBs or VSPs. Before the arrival of the OE advisor and PM MEP OE solutions team, the default response to the power requirement of these missions was tasking the contingency contracting officer to locally purchase commercial generators. This GS concept delivers the right equipment to the right place on the battlefield at the right time.

The Way Ahead

The three tenets of DoD's operational energy strategy, published in May 2011, are: more fight, less fuel; more options, less risk; and more capability, less cost. FOB Shank's case study delivers on all three of these tenets. Initiatives like Operation Dynamo show the Army is beginning to embrace an OE culture

An Emerging OE General Support Concept

The OE general support (GS) concept demonstrates that right-sizing the power generation at remote and austere FOBs, COPs and VSPs is no longer just a theory. When Army units put boots on the ground and need military operational energy equipment, their OE advisors can get the right OE equipment for units as theater-provided equipment.

Deploying units still require "go-to-war" power generation equipment on their MTOE that allows for dispersed, mobile operations. The GS OE support concept provides operational flexibility by making equipment adjustments once the unit is on the ground and adjusting them after the mission is better defined. A power capability gap occurs when units like an airborne infantry company, which have no generators and/or mechanics by MTOE, are given a nonstandard

change. When there is reliable power, commanders tend not to focus on where their energy comes from. We need to change the culture so that energy-informed decisions are part of the commander's mission analysis and operations plans. More effective energy use means fewer convoys on the roads, fewer airdrops and lighter loads for soldiers, all of which help the fight and reduce risks to our troops.

Together we will continue to transform the Army into an energy-informed culture in which we embrace energy changes in our daily training, operations, doctrine and education. When commanders and individual soldiers routinely ask how they can use energy smarter, we know we are on our way to executing energy-informed operations and therefore becoming an even more effective warfighting force.

