# Modernizing Logistics:
# The Case for Fuel Blivets Over M978 Heavy Expanded Mobility Tactical Trucks

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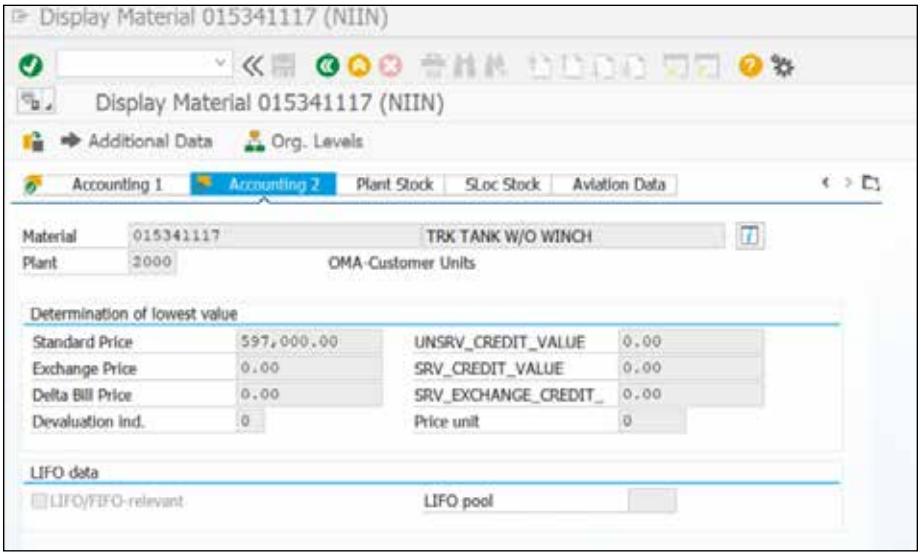
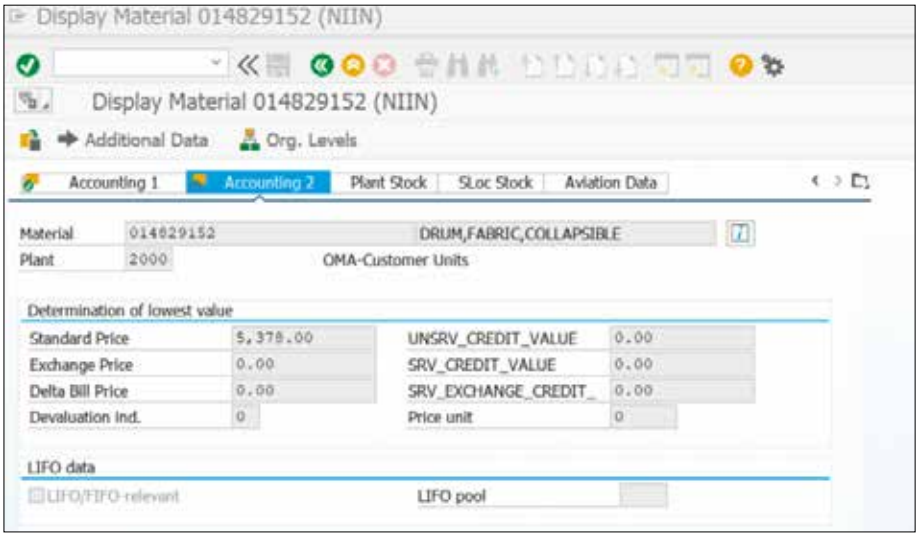
Army Aviation is undergoing a massive overhaul and transformation. A key challenge that persists is the strategy for sustaining forward refueling operations during Large-Scale Combat (LSC) in close areas. To address this challenge, Army Aviation should leverage the potential of fuel blivets. Unlike M978 Heavy Expanded Mobility Tactical Trucks (HEMTTs), fuel blivets are cost-effective, easily serviced, and flexible assets that have been largely overlooked.

Heavy Expanded Mobility Tactical Trucks are high-value targets for adversaries, often vulnerable due to their stationary mission set, and they require a higher degree of maintenance compared to fuel blivets. Unlike Advanced Aviation Forward Area Refueling Systems (AAFARS), fuel blivets offer similar capability at a lower cost. Heavy Expanded Mobility Tactical Trucks should remain in the rear area for greater protection and sustained logistical support. In contrast, fuel blivets should be exploited in close areas due to their lower cost and comparable operational effectiveness. By leveraging fuel blivets in these high-risk zones, we can enhance operational flexibility and reduce the vulnerability of critical supply assets.




M978A4 HEMTT cost in GCSS. Photo provided by the author.




500-gallon fuel blivet cost in GCSS. Photo provided by the author.

## The Case for Cost-Effectiveness

Cost wise, a single M978A4 HEMTT costs $597,000.00, according to the Global Combat Support System (GCSS)-Army (GCSS-Army, 2025). In contrast, one 500-gallon fuel blivet variant, which is mostly commonly used with aviation assets, costs $5,378.00 (GCSS-Army, 2025). M978 HEMTTs are capable of carrying up to 2,500 gallons of fuel (Bolon, 2014), and aviation units typically operate with 500-gallon fuel blivets (Bolon, 2014). Although M978 HEMTTs can transport more fuel, without factoring in depreciation, it costs an average of $238.00 to hold a single gallon of fuel in an M978 HEMTT compared to $10.76 per gallon in a 500-gallon blivet (GCSS-Army, 2025; Bolon, 2014). Army Aviation saves

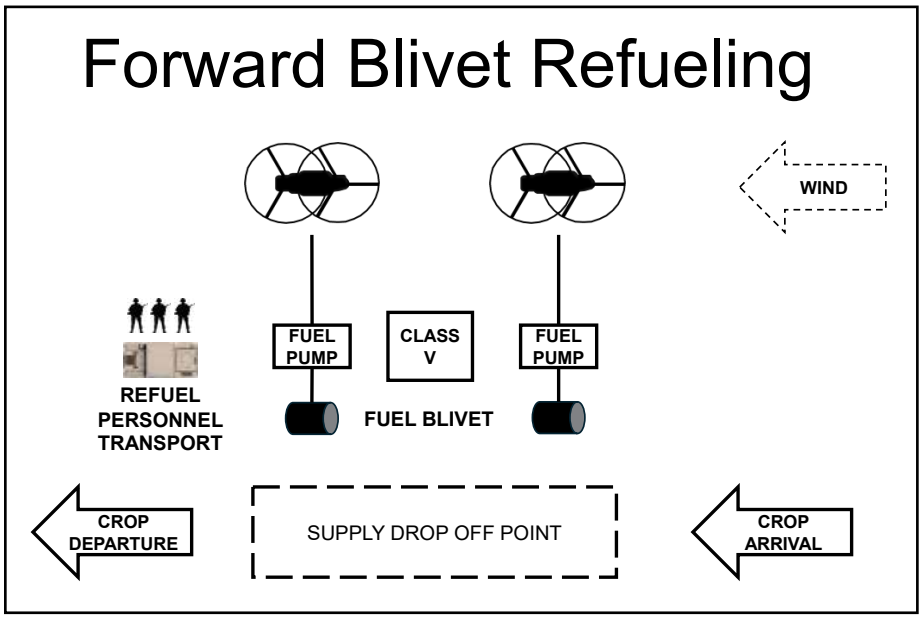
approximately 95 percent (%) per gallon of fuel storage with fuel blivets compared to M978 HEMTTs.

Not factoring in depreciation, the result of an indirect fire (IDF) attack on an AAFAR site with the loss of two M978 HEMTTs filled with fuel at an average cost of $6.22 per gallon would amount to $1,225,100 (GlobalAir.com, 2025). In contrast, if struck by effective IDF, a forward blivet refueling (FBR) site with 10 fuel blivets—each filled with fuel at the same price—would incur a loss of approximately $84,880. In this scenario, Army Aviation would save up to 93% if an IDF attack destroyed an FBR site with 10 blivets, as opposed to an AAFAR site with two HEMTTs. While both the AAFAR and FBR provide the same amount of fuel, the latter offers significant cost savings in the event of a catastrophic loss.

Army Aviation is leveraging industry assistance to address challenges in LSC sustainment. The current Army acquisition process is arduous, costly, and lengthy. Meanwhile, as the Army continues to procure more survivable sustainment equipment, it should utilize existing sustainment inventory, such as fuel blivets, to bridge the gap. Fuel blivets present a viable solution for sustaining aviation in close areas, as the Army is already proficient in its operational integration and servicing requirements. Increasing the use of fuel blivets and incorporating them into training will enhance the familiarity and preparedness of our Soldiers, ensuring that fuel blivets are effectively integrated into aviation sustainment planning and operations. This approach will make Army Aviation sustainment more survivable and cost-effective in a LSC environment today, rather than waiting for the acquisition process to be complete in the coming years.

## The Case for Easier Servicing

M978 HEMMT servicing requirements can be demanding and often unpredictable. These HEMTTs require strict adherence to safety regulations and routine maintenance. Their engine, electrical, transmission, and other associated systems may have numerous problems that could compound over time. A failure in just one system can result in a lack of mission capability for the owning unit. On the other hand, fuel blivets typically require minimal servicing including inspection, cleaning, and storage. Compared to HEMTTs, blivets are much less labor-intensive, which is ideal for operations in close areas where routine maintenance may go unaddressed for days or weeks. Furthermore, considering the routine maintenance and the increased likelihood of unforecasted maintenance in a LSC environment, fuel blivets require minimal maintenance and attention, making them ideal for sustainment in the close area.




Forward blivet refueling example. Created and provided by the author.

M978 HEMTTs are susceptible to poor terrain and the probability of rollovers on unimproved roads or off-road terrain, making their loss more likely in the close area. M978 recovery in the close area is a significantly more demanding event compared to the recovery or loss of a fuel blivet in the same location. Leaving HEMTTs primarily in the rear area ensures they receive the servicing and attention they deserve, while deploying blivets to the close area reduces the labor requirement on forward operators and allows them to maintain lethality and remain focused on their mission set.

## The Case for Improved Flexibility

Fuel blivets are flexible and maneuverable. They can be transported via trailers or Containerized Roll-In/Roll-Out Platform (CROP) flatbeds and deployed quickly at designated locations in close areas. This enables the CROP to proceed on its route without the prolonged stationary periods required by HEMTTs during forward arming and refueling point (FARP) operations. Once blivets are dropped off and their fuel is consumed by the aviation assets, they can be easily recovered for future use.

There are various forms of deployment for fuel blivets. Recently, fuel blivets have been modified to be transported to the standardized 463L pallet, allowing CH-47Fs to quickly relocate much-needed Class III (petroleum, oils, and lubricants) supplies. This modification has the potential to supplement the popular CH-47 Fat Cow (rapidly deployed FARP) operation. Instead of a Fat Cow CH-47 remaining stationary for a substantial period of time at a forward refueling point, this blivet modification enables the CH-47 to quickly offload several fuel blivets with a refueling crew and continue its route of flight. The refueling crew is then able to conduct the refuel operation and be recovered later by aircraft or ground convoy. Fat Cow operations could be risky due to its stationary requirement at a forward location, but

fuel blivets have the potential to mitigate risk for high-value assets.

The 82D Airborne Division previously conducted a "low-cost low-altitude" operation using modified 400-gallon fuel blivets (MacLeod, 2011). The 82D's operation demonstrated the ability to quickly deliver blivets and supply fuel to an austere environment. The modified blivets, when collapsed, can be handled and stacked by a single person, allowing for ease of storage and transportation. Fuel blivets can be delivered by ground, sling load, or airdrop, offering a more flexible option than M978 HEMTTs alone. This adaptability highlights their potential to be the ideal solution for sustaining operations in high-risk zones.

## AAFAR vs. FBR

This discussion will not fully delve into the details of the FBR process, as it would necessitate a separate conversation. However, there are a few highlights worth addressing between AAFAR and FBR. Advanced Aviation Forward Area Refueling System operations require HEMTTs to remain stationary in wooded or dense terrain to increase survivability; however, HEMTTs are likely to suffer in these environments since they are intended for improved and unimproved roads and not continuous traversing of hills, ditches, and dense forest. Fuel blivets are likewise stationary unless secured to a vehicle or trailer for maneuverability. Fuel blivets may also require a larger footprint when compared to M978 HEMTTs for the same fuel amount. However, if fuel blivets are stationary, stacked, and/or concealed in a trench or covered in camouflage netting, their vulnerability to detection may decrease. Additionally, by extending the fuel hoses, blivets can be kept in wood lines similar to HEMTTs, with the hoses concealed and extended to reach aircraft for refueling operations. Extended hoses may reduce pressure in the refuel system, resulting in a slower refuel rate. However, this issue could be mitigated by implementing industry solutions, such as an improved pump system or introducing innovative techniques.

M978 HEMTTs have the unique capability of self-recovery and self-refuel operations, whereas fuel blivets depend on external assets for sustaining refueling operations. To address this issue, Army Aviation should proliferate the supply of blivets within combat aviation brigades (CABs). Operations can be conducted where blivets are recovered and replaced by filled blivets on flat racks or, in rare cases, refueled by HEMTTs. While having M978 HEMTTs refuel forward blivets may seem to defeat the purpose of an FBR, this process would cut HEMTT stationary time in half compared to an AAFAR operation and maintain the survivability value for HEMTTs. Instead of remaining stationary at an AAFAR site for prolonged periods, a HEMTT would refuel the blivets and then continue its movement to maintain survivability, returning to the safety of a tactical assembly area in the rear. This approach minimizes the exposure of HEMTTs compared to AAFAR operations in the close area, ultimately reducing the risk and improving operational efficiency.

SPC Prentis Ficklin inspects fuel blivets to ensure they are ready to be sling loaded. U.S. Army photo by SPC Rochelle Krueger.

## Personal Experience

Both FBR and AAFAR are exposed to the inherent risk of an effective IDF attack in the close area, therefore making safety of refueling personnel a chief concern. The AAFAR is intended to allow refueling personnel to quickly disconnect and conduct a scatter plan for survivability. Forward blivet refueling is expected to require a minimum of three personnel to conduct refueling. It takes one person to open the fuel valve at the blivet, another to hook up the hose to the aircraft, and a third person armed with a fire extinguisher to monitor and respond to fires. It is recommended that personnel be supplemented with a High Mobility Multipurpose Wheeled Vehicle to allow for quick escape in the event of IDF. While personnel safety is not significantly enhanced with FBR compared to AAFAR, the risk of losing a high-value HEMTT is mitigated.

One reason fuel blivets may been previously overlooked as a viable option in Army Aviation LSC operations is the lack of training and experience within CABs. For instance, during my service in the 3D CAB (3 CAB) from October 2021 to August 2024, we never utilized fuel blivets for refueling. This was not due to the unavailability of fuel blivets, but rather because the training conditions did not necessitate their use. This example highlights how a CAB and its personnel might be unfamiliar with fuel blivets and their benefit to an operation.

During my tour in Honduras with the 1-228th Aviation Regiment, we frequently relied on fuel blivets. In response to Hurri-


A U.S. Army SGT pulls a fuel line to a Black Hawk helicopter during a "fat cow" refueling exercise at Aibano Training Area, Japan. U.S. Army Reserve photo by SGT Jacob Lockhart.

canes Eta and Iota in 2020, we utilized fuel blivets for refueling in various scenarios while conducting humanitarian aid operations. Our unit staged at El Aguacate, Honduras, a civilian airfield serving as a hub for aircraft refueling and humanitarian supply distribution. Given the austere environment and limited refueling options in central Honduras, we depended on fuel blivets to sustain life-saving operations. We deployed our CH-47s to perform a Fat Cow operation, filling the fuel blivets on El Aguacate's barren tarmac. This enabled UH-60s to continue their humanitarian supply delivery and medical evacuation operations. We conducted this Fat Cow operation until HEMTTs could arrive. Such experiences demonstrate the practicality and flexibility of fuel blivets in austere environments.

## Conclusion

The implementation of fuel blivets for close area forward refueling operations in LSC scenarios provides significant advantages to Army Aviation. The cost-effectiveness, flexibility, and reduced maintenance requirements of fuel blivets make them a practicable solution for the close area where routine maintenance can be challenging, and high-value assets are at greater risk. Overall, M978 HEMTTs should not be entirely replaced in the close area. Instead, their role should be greatly reduced and their mission augmented with a more cost-effective adaptation. Fuel blivets can bridge this gap until industry can produce a more survivable method of refuel in the close area. By utilizing fuel blivets, Army Aviation can enhance operational flexibility, ensure continuous fuel supply, and reduce the vulnerability of critical supply assets.

Biography:

CPT David Toguchi commissioned into Army Aviation in 2019 after graduating from East Carolina University. He is a CH-47F Chinook pilot-in-command and air mission commander. He served in Central America with the 1-228th Aviation Regiment as an Assistant S3 and with the 2-3 Aviation Regiment at Hunter Army Airfield, Savannah, Georgia. Additionally, he served in Europe as a heavy lift Platoon Leader and Assistant S3.

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