

# Improving the Composite Supply Company's Water Operations

The water purification platoon's water storage capacity is limited by the safety restrictions of its vehicles. Changing the modified table of organization and equipment would enable the unit to operate at maximum capacity.

■ By 1st Lt. Connor N. Cook

Water is essential to warfighters who are training and engaging adversaries on the battlefield. Without water, the Army cannot function and operations cease. Because of the growing complexity of the operational environment, Soldiers must be able to sustain themselves and cannot rely on bottled water deliveries. Soldiers can deploy at a moment's notice, but supply chains cannot be established as rapidly. In an expeditionary environment, water purification operations are critical to sustaining Soldiers.

The composite supply company (CSC) is an essential combat sustainment support battalion unit that provides water to Soldiers on the battlefield. CSCs also provide bulk and packaged class III (petroleum, oils, and lubricants), class IV (construction and barrier materials), class VII (major end items), class IX (repair parts), and shower, laundry, and clothing repair services to supported units.

The CSC transports supplies to the brigade support area (BSA), where the brigade support battalion receives and distributes the supplies to the forward support companies (FSCs). The FSCs, in turn, distribute the supplies to the forward line of troops (FLOT).

While a CSC can provide a wide array of supplies, its water purification platoon does not have the proper vehicles to optimally store and transport water. The unit's modified table of organization and equipment (MTOE) mans and equips the platoon to purify

and transport water, but vehicle safety restrictions create a shortfall in water storage and transportation capacity. The Army must reevaluate the vehicle assets authorized to the CSC water purification platoon to allow the platoon to operate at maximum capacity.

## CSC Water Operations

The CSC water purification platoon is critical to ensuring that the brigade support battalion, the FSC, and the FLOT always receive fresh, potable water. Water is a basic requirement, but the process to purify, store, and transport water is complex. Within the water purification platoon, a water production section and a water storage section ensure Soldiers have drinking water.

The water production section can produce 150,000 gallons of potable water a day from a freshwater source and 100,000 gallons per day from a saltwater source. The section's tactical water purification system can even pump water from a muddy swamp and purify it into clean drinking water.

After purification, the water is transferred to the water storage section. The water storage section uses M105 load handling system (LHS) compatible water tank racks (hippos) to store and transport water to the BSA, where the FSCs will receive the water and push it to the FLOT.

The water storage section is authorized four M1120A4 LHS to move the hippos. For expanded capabilities,

the LHS can pull a palletized load system (PLS) trailer to transport a hippo. The section is authorized three trailers.

With its highly capable tactical water purification system and 30 hippos to transport water, the water purification platoon should be able to supply enough clean, potable water on the battlefield.

## A Hidden Issue

By MTOE authorization, the LHS is the prime mover for the hippo, but the LHS does not have the payload capacity to move a full hippo. The maximum capacity for the hippo is 2,000 gallons of water. According to its technical manual, a full hippo weighs 25,942 pounds.

The technical manual for the LHS says that the payload capacity for the hydraulic hook, the component that loads and unloads the hippo onto the truck, is 26,000 pounds. According to this specification, the LHS has the capability to move a full hippo with no equipment issues. However, the LHS technical manual has been updated to warn operators not to exceed 24,000 pounds when loading the LHS.

When a load on the LHS's hydraulic hook exceeds the 24,000-pound capacity, the LHS overload indicator illuminates to indicate that the LHS hook is at capacity. This often happens when Soldiers load hippos. The LHS cannot meet its intended purpose to move a full hippo of water.

The LHS can safely transport a hippo filled with only 1,750 gallons of

water. If a Soldier fills a hippo with more than that, there is a much greater chance that the LHS hydraulic hook will break, which would deadline the vehicle or, even worse, place Soldiers in danger. The Army must swap the LHS with a different vehicle to allow water platoons' to achieve maximize efficiency and safety.

## The Risks

The inability to optimally transport water presents risks. Either Soldiers will not be provided with enough water or the section will have to make more trips to deliver the commodity.

When hippos are not filled to maximum capacity, leaders must put more vehicles in each convoy. For example, if the mission requires 10,000 gallons of water, the unit will have to use six hippos instead of five to complete the mission. Another truck and trailer are required, but their availability is unlikely.

When more vehicles are on the road, more Soldiers are too. An increase of Soldiers in a hostile environment automatically multiplies the tactical risk, but a lack of proper rest is another significant consequence for the Soldiers. Even the most qualified driver will begin to experience diminished skills over the duration of the mission due to fatigue and added stress of an austere environment. From this, leaders assume additional risk of accidents.

The greatest risk is the possibility of a lethal attack. Small-arms attacks, indirect fire, and improvised explosive devices are strong possibilities in deployed environments. On the surface, only one more LHS is being added to the convoy. However, each additional vehicle increases the convoy's risk of a breakdown. Additionally, the chance of enduring a lethal attack on the route increases with the size of the convoy. Second- and third-order effects may include the addition of more gun trucks and personnel to provide security for the larger convoy.

## A Practical Example

During a 2017 rotation at the National Training Center at Fort Irwin,



*Soldiers prepare to load an M105 load handling system (LHS) compatible water tank rack onto an M1120 LHS during a 2017 National Training Center rotation at Fort Irwin, Calif.*

California, the 226th CSC's water purification platoon received the mission to provide water support to an armored brigade combat team. During this rotation, the platoon operated 12 hippos with the capability to transport 24,000 gallons of water to the BSA. However, with LHSs as the prime movers of the hippos, the platoon was only able to transport approximately 20,000 gallons of water.

The second-order effect of this restriction was that the platoon had to place more LHSs on convoys to meet BSA requirements. This increased the number of Soldiers and vehicles on the road.

Because more Soldiers were out on convoys, their counterparts had to spend more hours securing the perimeter. With longer security shifts and constant 10- to 12-hour convoys, Soldiers could not achieve proper rest cycles. This increased the accidental and tactical risks for the rotation.

The stress and fatigue of Soldiers will only increase in an actual hostile environment. Leaders should not have to assume unnecessary risks to their Soldiers and equipment because they are not authorized the proper equipment to meet their missions. However, until there is a change to the authorized equipment for the water

purification platoon in a CSC, leaders must continue to assume extra tactical and operational risks because operations will halt without water.

The M1075A1 PLS should replace the LHS on the CSC MTOE for the water storage section. The PLS has a payload capacity of 33,000 pounds, which exceeds the weight of a full hippo. The PLS will alleviate the tactical and accidental risks leaders must assume and allow Soldiers to rest and recover.

In an expeditionary environment where bottled water is unavailable, the CSC is essential to providing water to Soldiers. With such a mission-critical task, the CSC's MTOE must be adjusted to maximize efficiency to store and transport water, which will reduce the tactical and accidental risks of the operation.

First Lt. Connor N. Cook is the water platoon leader for the 226th CSC, 87th Combat Sustainment Support Battalion, 3rd Infantry Division Sustainment Brigade. He holds a bachelor's degree in systems design and management from the United States Military Academy. He is a graduate of the Quartermaster Basic Officer Leader Course.