



Bulk water tank (left) and tanked pump unit (right). A SANATOR has been loaded on top of the bulk water tank.

Bulk Water Tank

—simple in design, but versatile

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A new water tank has been fabricated as a result of a design submitted to the Training Devices Branch of the US Army Ordnance Missile and Munitions Center and School (USAOMMCS) at Redstone Arsenal, Alabama.

This tank could solve many of the problems encountered with the tanked pump unit (TPU) currently in the inventory and used to supply

water for decon operations.

The TPU, although ideal for hauling and discharging diesel and MOGAS, presents several problems when hauling water.

TPU

Let's look at some of those shortcomings of the TPU when used for decon water replenishment.

First, its high profile has two disadvantages—when full, it's top heavy and the truck cannot be covered with a canvas cover.

Second, it can haul only 1,200 gallons of liquid when totally filled. This is very important when

one considers the large amounts of water necessary to sustain the M12A1 decon apparatus.

Third, no adaptation exists for the TPU to allow it to interface with the M12A1 or SANATOR systems. Also, with the modular decon system (MDS) on the horizon, this disadvantage will remain for some time.

Lastly, let's look at how the TPU stacks up in the TOEs. By nomenclature the TPU is a liquid dispensing unit; the same system is used to haul fuel as well as transport water. A TPU used just for carrying water deprives the maneuver commander of a much-needed piece of equipment.

I experienced this as a decon platoon leader, when one of only three of my TPUs was always gone in order to transport fuel for the headquarters. This meant that I would always be at a 66 percent readiness rate for water logistics capabilities.

I've heard that it's recognized that the TPU is not the right piece of equipment for chemical unit needs.

If this is so, it's perplexing to realize that we are fast approaching 1990 without adequate resupply capabilities in the ever-present hot spot of the Middle East. Moving water from the coast deep into the interior poses a problem.

The 1,600-gallon capacity bulk water tank offers a possible solution. I call this tank the "bulk water tank" or "BWT" because of its ability to haul lots of water (1,600 gallons) with ease. The tank is constructed of stainless sheet steel and is cargo boom modified.

I designed the BWT as a result of the problems I experienced as a decon platoon leader.

BWT

The BWT offers the following advantages:

- Its entire 1,600-gallon capacity tank can be carried on the bed of the standard 5-ton truck. Also, its dimensions encompass the entire length and width of the truck bed and provides a tank that has a low center of gravity yet exceeds the capacity of the TPU by 400 gallons.
- The BWT carries 400 more gallons of water per trip than the TPU. This means that for each mile traveled and gallons of diesel used to transport water, the BWT yields more. More importantly, if the standard 3,000 gallon collapsible water tank is to be filled, the BWT can do it in two trips with 200 gallons to spare. The TPU requires three trips.
- Its rectangular, flat construction provides a working surface on top that measures $12\frac{1}{2} \times 6\frac{1}{2}$ feet, providing over 80 square feet of working surface for decon operations or cargo storage (you can't store any cargo on the top of a TPU).
- A cargo boom stowed on top of the tank can be easily erected for loading or unloading heavy equipment, such as the SANATOR decon device or other heavy items.

Remember—although the SANATOR is considered light and portable, it weighs 360 pounds.

For loading and unloading from heights above shoulder level, a cargo boom is very useful. Photo (below) shows an adapter built to make the SANATOR liftable by cargo hook.

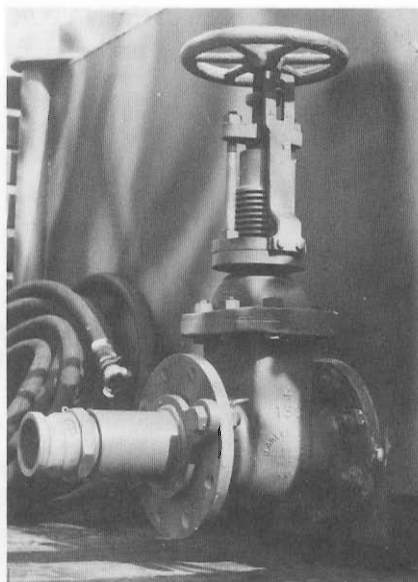
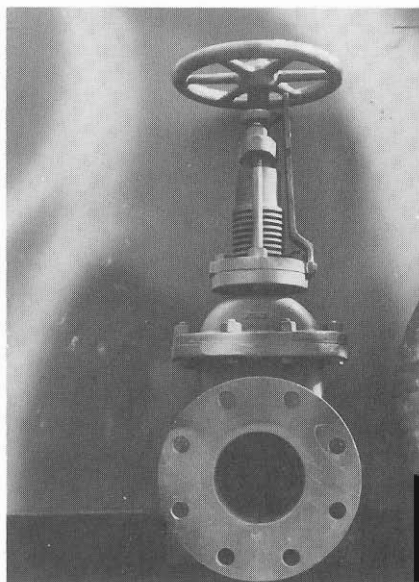
- The BWT's low height allows the cargo canvas to be used to cover the top of the truck bed, protecting any cargo stored on top of the vehicle and helping deceive enemy observers as to the true purpose of the vehicle. On the other hand, every TPU possesses that tell-tale signature that tips off every artillery observer and aircraft pilot that a juicy target is at hand. The BWT is easier to camouflage and clears overhead obstacles much easier. Also, the

low height gives the BWT a lower center of gravity as compared to the TPU.

- The BWT discharges its entire 1,600 gallons of water through a four-inch gate valve in just a little over 10 minutes. To dump the water from the discharge hoses of the TPU requires more time. If this isn't fast enough, additional 4-inch gate valves can be easily installed. If one valve can dump 1,600 gallons in 10 minutes, how about 3 valves? As you can see, the potential for adaptation is unlimited.
- The BWT has a hose adapter that allows for the conversion of the four-inch gate valve discharge to be constricted to the standard

SANATOR is hoisted atop the BWT's flat top (below). The SANATOR in place (bottom). Note adapter hook on top of SANATOR.





The four-inch gate valve (top left) easily fits the M12A1 adapter (top right). Over 1,600 gallons of water discharge in about ten minutes (above).

2¼-inch valve of the M12A1. This allows a direct hookup to the M12A1, if necessary, as a means to offload water in any a number of directions from the rear of the BWT by using the 15-foot discharge hose. This standardizes the BWT to the current inventory of items in the system for decon operation.

- The BWT is cost effective. I designed the BWT. No engineering costs were expended for the prototype shown in the photos. Also, because it was fabricated by DA civilians at the Training Devices Branch at the US Army Ordnance

Missile and Munitions Center and School, the only cost was for materials. In other words, the design and fabrication of the 1,600 gallon BWT costs approximately \$1,800. We needed a water carrier, and by building the BWT at a cost less than \$1,800, we saved over \$5,000 compared to the TPU. (The current cost of the TPU is \$7,152.)

Other Applications

The BWT is clearly a step in the right direction toward solving the current problem of moving water to support decon operations. But can it do more? It's possible that with a minimum of changes the

BWT could be used as a fog oil carrier for smoke units. If so, the BWT could clearly become a standard item for support of all types of chemical operations. Also, it may be necessary to move large volumes of potable water across the battlefield. The BWT, constructed of stainless steel, could easily be sanitized and be used for this purpose.

Summary

Simple in design, versatile in function, and adapted to support standard chemical equipment, the BWT shows much potential in solving the myriad of logistical problems facing the many chemical units. If you share my enthusiasm, perhaps we have a reason to energize the R&D side to get this item into the hands of chemical soldiers immediately.

I have submitted this idea to the Army Suggestion Program. If the idea is successful, it could take years for it to become a reality. This thought haunts me, for as a former decon platoon leader, I would have done anything to obtain the BWT if it had only been available. If you doubt that it works, come to Redstone Arsenal and see it for yourself. ☼

CPT Johnny R. Mathews served as an enlisted soldier prior to his commissioning in August 1982. His enlisted experience includes serving as an infantry mortarman and, subsequently, fire support direction NCO and squad leader with 1st Battalion, 503d Infantry; as a fire support team leader with the 3d Battalion, 319th Field Artillery; and as the battalion NBC NCO for the 156th AR Battalion. Upon being commissioned, he served as the battalion NBC officer for the 1st Battalion, 16th Infantry; decon platoon leader, 1st Infantry Division (Forward); and chief, Technical Escort Training Center at Redstone Arsenal, Alabama. CPT Mathews graduated from Louisiana State University in Shreveport with a degree in general studies.