



# CROSSING OVER

Resurrecting legacy equipment to  
help Soldiers overcome nature's fury

*by Rafik A. Quteibi*

Soldiers cross the Helmand River in Afghanistan by fording their vehicles throughout the year. But when seasonal floods start, they are no longer able to ford their vehicles safely and continue their missions.

## BRIDGING THE HELMAND

Soldiers of the 814th Multi-Role Bridge Company (MRBC) connect sections of the Improved Ribbon Bridge (IRB) to achieve a full closure of the Helmand River, providing military personnel with a main supply route. (U.S. Army photo by CPT Daren Wajdak, 814th MRBC.)



**D**uring the rainy months of February, March, and April, the Helmand River's normal crossing width of 330 feet can more than double to 836 feet; the depth and current also increase dramatically.

When fording is unsafe, Soldiers have relied on an Improved Ribbon Bridge (IRB) to raft vehicles and personnel safely across the river. Why raft a few vehicles at a time when the IRB could be connected to span the entire width (full closure) of the Helmand River?

A great idea, except that some type of anchorage is needed to hold the IRB in place so it does not float down the river.

The Bridge Erection Boat (BEB) serves two purposes: it positions the IRB bays to make a continuous float bridge and provides propulsion when IRB bays are used as a ferry, the latter of which was implemented at the Helmand River Crossing. The BEB can also anchor the IRB in place, with one BEB for every six IRB bays.

The problem with this scenario is that the 814th Multi-Role Bridge Company

(MRBC) did not have enough BEBs. Furthermore, it did not have enough manpower to keep the BEBs in the water the entire time the IRB was needed.

Fortunately, an urgent request from the U.S. Army Corps of Engineers (USACE) Reachback Operations Center (UROC) found its way to the right mailbox.

### GATHERING THE EXPERTS

When the Soldiers realized that their missions would be compromised because of raging waters, they contacted UROC for assistance. UROC in turn contacted the U.S. Army Tank Automotive Research, Development, and Engineering Center (TARDEC) Bridging Team (BT) in November. TARDEC BT members began working with the Soldiers, setting up weekly teleconferences that included:

- TARDEC
- Product Manager (PM) Bridging, within Program Executive Office Combat Support and Combat Service Support
- Materiel Fielding and Training (MFT) New Equipment Training (NET), within the U.S. Army TACOM Life Cycle Management Command (LCMC)

- U.S. Army Maneuver Support Center of Excellence (MSCoE)
- USACE Engineer Research and Development Center (ERDC)
- 864th Engineer Battalion
- 814th MRBC
- U.S. Navy 3rd Naval Construction Regiment

In brainstorming, TARDEC BT members discussed the pros and cons for several methods of anchoring the IRB and, after careful deliberation, determined that the legacy Overhead Cable System (OCS) was the best option due to the river's width, current velocity, bank heights on both shores, and depth.

### IMPERFECT BUT WORKABLE

Several issues were understood when dealing with the OCS:

- Numerous system components were obsolete.
- Not all Soldiers were well-trained for the legacy OCS.
- Seasonal floods were nearing.

The TARDEC IRB Lead Engineer designed an OCS for the worst-case scenario, in light of the Helmand River's potentially unforgiving power.

Upon completing the design, the calculations were sent to the units in Afghanistan for their review, and to former bridge operators in MFT NET and MSCoE. Concerns were discussed regarding the river encroachment where the OCS towers were to be erected. With ERDC's assistance, an embankment platform was designed, putting the towers up and out of the way of the ever-widening river. TARDEC BT engineers suggested using all possible resources to keep the embankment dry by channeling the water away. When the design was finalized and agreed upon by all parties, it was time to move on to the next hurdle: resurrecting the OCS.

### STAYING ABOVE WATER

814th MRBC Soldiers ready the tower of the OCS to be erected by the Bridging Team. The towers of the Overhead Cable System (OCS) help keep the main cables above the Helmand River. (U.S. Army photo by 1LT Dylan Benfield, 814th MRBC.)





### PULLING TOGETHER

Soldiers of the 814th MRBC tighten the cables that help keep the OCS tower standing. (U.S. Army photo by 1LT Dylan Benfield, 814th MRBC.)

### LEGACY EQUIPMENT

Discussions in December revealed that the Bridge Supplementary Set (BSS) that includes the OCS was missing some components critical to its installation and sustainment. Thus began a frenzied rush to locate components in the military system and to identify specifications for purchasing commercial-off-the-shelf parts for the missing and obsolete OCS components.

MFT NET made contact with all MRBCs in an attempt to locate missing components, but were able to locate only bridle connectors, which were found on a shelf in the Defense Supply Center Columbus, OH. Given the urgency, MFT NET in Troy, MI, immediately arranged to drive to Ohio and secure these crucial items. Most of the other components were either missing, damaged, or not in acceptable working condition.

While identifying specifications, the TARDEC IRB Lead Engineer noted that the BSS accommodated wire rope up to 1 inch in diameter. The agreed-upon design using 1¼-inch wire rope, which was recommended for this particular scenario by Military Float Bridging Equipment Training Circular No. 5-210,

dated December 1988, had to change quickly. The TARDEC IRB Lead Engineer conducted market research to locate a 1-inch diameter wire rope with the same or greater breaking strength than the 1¼-inch wire rope. A local company met this need and provided most of the other needed components with a quick turnaround.

With the missing components located, PM Bridging provided the funds to purchase them in an expedited manner, with delivery planned for February. OCS components left TACOM LCMC in Warren, MI, on Jan. 19, and were received in theater on Jan. 27, several days ahead of schedule.

### TRAINED AND READY

The next issue to be addressed was training. MFT NET provided a detailed instructional presentation on erecting the OCS, along with lessons learned from their experience as enlisted Soldiers.

The embankments were skillfully constructed by the Soldiers based on ERDC's recommendation. The detailed design and instruction enabled the Soldiers to measure, build, and assemble the components needed for a complete IRB full closure of the Helmand River.

After the OCS was constructed, it was time to await Mother Nature. Seasonal flooding caused the river current to spike at 15 feet per second (fps) on Feb. 15-16, whereas the OCS was designed to hold up to 11 fps. The velocity dropped back down to an average of 7-8 fps for the next several weeks. The embankments stayed dry. The OCS had passed its first test of nature's power.

Then, on March 4, the OCS design endured its hardest test. The Helmand River was a merciless torrent of fast-moving water with the current reaching a record velocity of 18 fps. The OCS held all 29 IRB bays in place with the assistance of 10 BEBs and four vehicular anchor points.

With the OCS holding, Soldiers continue to use the IRB to safely cross the Helmand River, allowing missions to be completed year-round. While the OCS had long been dismissed and was hardly ever used by Soldiers, its performance and strength on the Helmand proved its utility once again.

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*RAFIKA. QUTEIBI is the TARDEC Lead Engineer for the IRB, Bridge Adapter Pallet, and Light Assault Gap Crossing Capability programs at TACOM LCMC in Warren, MI. He holds a B.A. in mechanical engineering from Kettering University (formerly General Motors Institute) and an M.S. in biomedical engineering from Wayne State University. Quteibi is Level III certified in systems planning, research, development, and engineering, and is a U.S. Army Acquisition Corps member.*

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