The Deployment and Use of Tactical Military Bridging in Emergency and Disaster Relief Operations

by
Christophe Moehle
International Sales Manager
WFEL Ltd, Stockport, England

INTRODUCTION

1. Increasingly, civil emergency and disaster relief agencies are turning to their respective armed forces for help and assistance in the aftermath of a natural or man-made disaster. With their organisation, discipline and equipment the military is becoming the default option for these relief operations.

2. Indeed, as the financial recession continues to bite, forcing nations into hard, cost cutting decisions across government departments the idea of merging budgets between the military, homeland defence and emergency and disaster relief agencies is fast gaining a traction that was not the case only a decade ago.

3. Those responsible for co-ordinating relief operations are now beginning to appreciate the utility of tactical military bridges. Not only do they provide the overwhelming advantage of speed of deployment but they are seen as a more cost effective method of moving large quantities of aid across both wet and dry gaps than by helicopter.

4. When aid is required it is needed immediately. Sadly, many of the most destructive disasters occur in the less well developed areas of the world and the assistance required is proportionally greater than in more developed countries. Getting this aid to the point of requirement in the quantities needed in the time required before the local infrastructure can be rebuilt is key: the use of tactical military bridges to overcome these problems is the way forward.

AIM

5. The aim of this short paper is to highlight the capability and characteristics of the tactical military bridges currently in production with WFEL Ltd available for use in emergency and disaster relief scenarios.

INTRODUCTION TO WFEL LTD

6. WFEL is the established world leader in the design and manufacture of tactical military bridges supplying 39 armed forces across the world for over four decades.

7. Its expertise, built on nearly a century of engineering excellence and innovation, includes concept design, prototype manufacture and full scale production of a range of rapidly-deployable, modern bridging systems for use in military and emergency and disaster relief scenarios. The WFEL factory, in Heaton Chapel, Stockport is in operation 24 hours a day, 7 days a week.

8. WFEL also provides a full package of value-added support services, including training, inspection, maintenance, repairs and spares both in the field and at its UK-based engineering site in Stockport where it employs a team of 250 highly-skilled engineers and support staff.

9. An in-house research and development capability enables WFEL to provide additional military-grade engineering solutions across the complete spectrum of the defence sector.

10. In addition to being a prime contractor to both the UK Ministry of Defence and U.S Department of Defense, WFEL operates a global sales network through its overseas representatives as well as working directly with foreign governments and Non-Governmental Organisations.

11. The company manufactures three types of bridge suitable for use in both military and emergency and disaster relief operations. These are:-

a. **The Dry Support Bridge (DSB).** The DSB provides a gap crossing capability of up to 46m at MLC 120 tonnes. (MLC is the Military Load Classification and represents the load the bridge can carry) and can be built by a crew of 8 in less than 90 minutes. It has been in-service since 2003 and in use in the USA, South Korea, Germany and Iraq.

The DSB spanning the gap on a main highway in northern Iraq

b. **The Medium Girder Bridge (MGB).** The MGB is in service with 38 countries around the globe in all types of terrain and climatic conditions. Over 500 MGB systems with gap crossing capabilities ranging from 9.8m to 76m as well as ferry options have been supplied and this man portable and easily built system is used to cross all types of wet and dry gaps. This bridge is already in use in emergency and disaster relief situations worldwide. A 31 metre bridge can be deployed in under an hour by a trained team of 24 personnel and would be capable of carrying loads up to MLC 70.

MGB in use in the Far East

c. **The Air Portable Ferry Bridge (APFB).** The APFB provides what is**,** in essence, a 'golf bag' of equipment with a range of deployment options from bridging gaps up to 29.2 metres at MLC 35 to acting as a ferry at the same MLC rating. All the components for the shorter version of the bridge, providing a 14.5 metre gap crossing capability, can be carried on 6 trailers towable by a range of different 4 x 4 vehicles. The APFB was originally designed for use by British Army expeditionary and fly-forward forces. It entered service in 2006 and has since been used on military operations in Afghanistan. It is a system that can be easily adopted for use by NGOs with minimal training.

The APFB Ferry

8. All three bridge systems have been designed for rapid deployment in various environments and meet international regulations for transportation by land, sea and air. Each system has been used in emergency and disaster relief roles but it is the new APFB, with its flexibility of use and deployment, which is currently creating considerable interest in those countries suffering from flooding as a result of global warming. Each system would be an asset to countries prone to suffering the effects of natural disasters but would need to be held in stock, ready for deployment.

RECENT NATUAL DISASTERS

9. Recent years have seen an extended series of large scale natural disasters: for example, the Indian Ocean tsunami , major flooding in Africa, hurricanes Katrina and Rita in the Caribbean/USA, mudslides in Central America and the earthquakes in Pakistan and Haiti.

10. **Pakistan Earthquake.** The Pakistan earthquake killed between 70,000 and 90,000 people with 60,000 injured and over 3 million homeless. At least another 1,400 people died in Indian-administered Kashmir. Pakistan has said that the earthquake will cost it US$ 5 billion in infrastructure losses. The area that was devastated was extensive and the rough and mountainous conditions made relief operations extremely difficult. With routes to the area mostly impassable due to damaged/destroyed bridges and limited means to cross these gaps, most of the supplies and aid had to be flown in by helicopter in limited quantities and at enormous cost. Rapidly deployed tactical military bridges might well have allowed greater quantities of aid to be moved to the area by vehicle.

11. **The Indian Ocean Tsunami.**

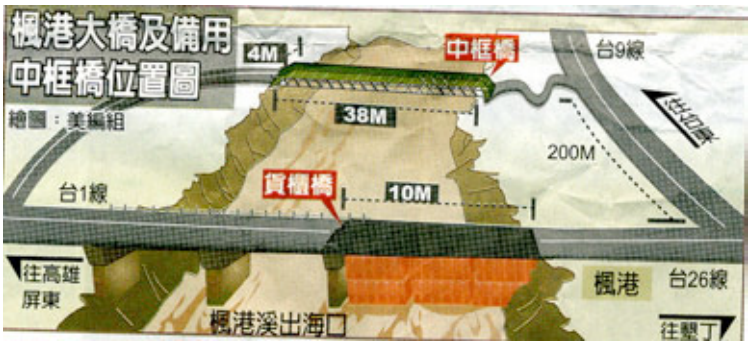
a. The Indian Ocean tsunami resulted from the fourth largest earthquake in the world since 1900 and the largest since the Alaskan earthquake of 1964. In total, more than 230,000 people died and 1.7 million were displaced in 10 countries in South Asia and East Africa.

b. The UN responded quickly to this disaster by sending in five United Nations Disaster Assessment and Coordination (UNDAC) teams that were soon followed by more than 15 UN agencies and nearly 160 international NGOs. The United Nations Joint Logistics Centre (UNJLC) established coordination centres in Indonesia to optimise logistics capabilities and to assist in the coordination and use of military assets. The UN also moved quickly in January 2005 to issue a Flash Appeal requesting US $977 million in humanitarian and recovery assistance for the first six months following the tsunami.

c. In the days and weeks which followed, as the scale of the destruction became clear, the world mounted an unprecedented relief and reconstruction effort. Donors pledged a total of more that £7.5 billion. Subsequently, in April 2005 there was a formal handover of 565 metres worth of military bridges donated by NATO to the Indonesian authorities. Many bridges in Aceh and North Sumatra were damaged or destroyed and, recognising the utility of tactical military bridges in this situation, the Netherlands government facilitated the delivery and hand-over of 800 meters of NATO held bridges.

12. **Taiwan.** In July 2005 typhoon Hai Tang crossed the island of Taiwan causing severe damage and the ensuing swollen rivers led to bridge collapse. The following photographs show the WFEL Medium Girder Bridge (MGB) being used as a temporary bypass.

1. 

2. 

Taiwan: 1. Damaged bridge being repaired 2. Schematic drawing. 3. Bridge nearing completion

3. 

HOLDINGS OF TACTICAL MILITARY BRIDGES IN ANTICIPATION OF NATURAL DISASTERS

13. Whilst it is true that in most countries it will be the armed forces that hold and deploy tactical military bridges it is clear that emergency and disaster relief planners need to have an input when considering how many bridges need to be held in national inventories beyond those required for purely military purposes. It is too late after the disaster to ask for bridges from elsewhere or from the manufacturer. The three examples of natural disasters mentioned above highlight the numbers of people affected and the importance of being able to get to a devastated area quickly and with large quantities of supplies.

14. To put some of the numbers into context; approximately 254 million people were affected by natural hazards in 2004. Disasters including earthquakes, volcanoes, floods, droughts, storms, fires and landslides killed approximately 83,000 people in 2003 when there were 337 natural disasters reported.

15. The 6.5 billion population of the planet is forecast to rise to 9 billion by 2050. The effect of natural disasters is likely to be exacerbated as the general social trend is for people to live in highly concentrated urban areas often in housing built to poor and lax housing standards. Typically, the poorest of the poor, are to be found in housing in areas most at risk from the effects of natural disaster.

16. Many countries are still, for a variety of reasons, ill-equipped to deal with major earthquakes and tend to under-spend on emergency preparedness. As it appears that global warming might potentially lead to an increase in the number, seriousness and regularity of such disasters this puts increasing pressure on all agencies of government to ensure that a robust, rapidly deployable gap crossing capability is readily available.

TEMPORARY BRIDGING SOLUTION

17. WFEL can offer a range of solutions to meet the requirements such as that outlined in an article taken from the UK Daily Telegraph newspaper a year after the tsunami in the Far East when Sebastien Berger, reporting from the Aceh coast, wrote that "……*the road stops at the Teumareum river. Its placid waters are a little over 100 yards wide and could be bridged by a competent military engineering unit in a matter of hours. No one has done so and a year after the disaster, if aid is to go further along the coast overland, Mr Ali's services are required....the ferryman at Teumareum….It is a job he would rather lose. "It's very important to build a bridge," he said. "People could cross the river and bring help faster.*"

18. The permanent rebuilding of an infrastructure is a time consuming process. In the interim period, if aid is to get to the towns and villages along routes now badly damaged and impassable in their current state, then a WFEL tactical military bridge, that can easily be moved from site to site as the infrastructure improves, is the short term answer to providing the gap crossing capability required to take the amount and weight of relief supplies required.

19. A significant benefit of using the WFEL APFB in particular to open up access to devastated areas is that it is easily transported by road or air to the point of need. Once in place the cost benefit of the APFB in comparison to using helicopters to fly in aid is immediate.

20. A simplistic examination of the costs involved with hiring heavy lift helicopters for disaster relief at approx US $20 to 30,000 per flying hour shows that over a protracted period of time the bill will run into the millions of dollars. Not only can APFBs be bought for a fraction of these amounts but they have the capability to take heavier loads and are not subject to intemperate weather conditions.

30. The APFB is a flexible system with a low environmental impact. It is easily transported and rapidly built by either military or civilian personnel with no requirement for special tools or equipment.

MGB used in a disaster relief operation (with handrail).

CONCLUSION

31. Natural disasters appear to be increasing in number and severity.

32. International financial constraints will inevitably lead to a rationalization of the way preparedness planning across government departments is conducted. Dual purpose enabling equipment in the form of WFEL tactical military bridges to support the delivery of vital medical and relief supplies provides added value and is a cost effective alternative to special to task equipment. A gap crossing capability that can be deployed within minutes with the capacity to traffic heavily laden relief vehicles is vital to the success of any relief operation.

33. Enabling equipment, as well as relief supplies, needs to be held in anticipation of a disaster when the immediate provision of support is required by victims. The manufacture of tactical military bridges takes time and asking for support after the event will be too late and lead to unnecessary suffering.

34. WFEL, with its range of rapidly deployable, state of the art, tactical military bridges is well placed to meet the procurement needs of emergency planners wherever in the world they may be.