Firefighters with guns: training for the front line

*Industrial Fire Journal* visits the UK’s Royal Air Force Fire Service at the Defence Fire Training and Development Centre (DFTDC) Manston in Kent, to find out first hand what it takes to be a firefighter in some of the most challenging environments in the world – including battlefields.

Professional firefighters that carry weapons’ is how they describe themselves, and as firefighting goes it is difficult to imagine a more extreme branch of the profession. The UK’s Defence Fire Risk Management Organisation (DFRMO) comprises 2,500 full time firefighters with operational stations in places as far afield as Ascension Island, Afghanistan, Cyprus, Gibraltar, Germany, and even the Falkland Islands. The RAF element of DFRMO comprises approx 550 personnel and it is this element that normally deploys into operational areas. DFRMO’s firefighting force may be the size of a large municipal brigade, but its responsibilities are at defence locations world wide, whether it be in naval dockyards, weapons storage facilities, military offices, airports, and of course, theatres of war.

**Training**

On a bright and sunny day Warrant Officer and Course Manager Ian Baker and Warrant Officer Martin Trafford, Overseas Operations Manager for DFRMO explain the training that is to take place. Today is a big day, with corporal to sergeant promotion incident command assessment exercises taking place for a student from RAF Waddington in charge of the training, and looking relaxed in spite of having two senior training officers, a journalist and photographer as an audience. “No pressure then,” says Ian, with half a smile.

Then the radios come to life. A Lockheed C-130 Hercules military transport aircraft has collided with another aircraft on landing. Two engineers were working on the back of the grounded aircraft, and there are four personnel in the C-130.

Woosh, the aviation fuel on the simulator catches fire and an impressive fire engulfs the simulator, woosh goes the flames on a separate bund, placed around 20 metres away from the aircraft sim and which is designed to act as a diversion. “It’s a visual thing, and like a ‘rabbit-in-headlights’ it causes the student to consider their options,” says Ian.

Within two minutes the fire crews arrive in their Carmichael MFV (major foam vehicle) and RIV (rapid intervention vehicle) crash tenders, and the scene is set. Standing about 35 metres away from the fire and the heat is palpable – even if only approximately 25% of it is being radiated outwards, the rest going up to the sky.

The DFRMO standard target response time is two minutes to the incident (in line with ICAO standards), and an additional minute to make survivable conditions – and it appears that that target is being met today.

The crew are directing their roof mounted monitors onto the fuselage in a bid to extinguish the fire followed by cooling jets to make an entry and begin the rescue operation. Training foam is used for all training operations, which not only has the benefit of being environmentally friendly, but “makes the guys work harder to put the fire out”.

Under the experienced eyes of Ian and Martin, eyebrows soon go up. “We don’t know why they’ve decided to make the entry to the fuselage on this side.” It will all come out at the debrief later, which even at this senior level is all about positive training. “We look to the incident commander to justify their decisions and any
Most DFRMO fire stations have their own simulators, based on the types of aircraft that are used at that unit. Most sims are smaller than Manston’s, and in most a 200 litre fuel tank will last for six or seven fires. “Nowadays we only use what we need,” explains Ian.

RAF firefighters receive basic recruit training over 17 weeks covering core competencies, which is then developed further to an operational standard that is dictated by the role they undertake when posted on assignment. “We don’t over train, and we don’t give skills that are not going to be used where they are posted.”

Military firefighters are called to incidents on a regular basis, many of which are – like their municipal counterparts – down to false alarms. And just as community fire safety plays a big part in local authorities, the same goes for military property – all military staff receive fire training annually on using fire extinguishers, general fire safety awareness and location-specific training.

At DFTDC Manston a wide variety of courses are taught, from structural and aircraft (armed and unarmed), to compartment fire behaviour training, BA instructor courses, trauma, and first aid. Many years ago a virtual reality fire simulator once even lived there, before it was relinquished as being too inflexible and costly. Today, facilities include underground bunkers and a hospital wing, where “it is a case of getting recruits used to working off guidelines etc.” says Ian.

One week’s first aid is also taught as part of the 17 weeks basic training, and currently there are discussions to also carry out “first person on scene” training.

DFTDC Manston takes its environmental responsibilities seriously, explains Ian, and staff go out of their way to fall in line with requirements. “We are on top of an aquifer for the county, so you can imagine the environmental questions we face.”

Today’s training, impressive as it is, is a far cry from the “good old days” when explosive charges would be set off under a D-wing Vulcan, followed by pouring fuel on the plane and setting it alight. “Then a half-hour exercise might turn into a three-hour one. One day, someone could face a burning inferno, another, a fire that could be put out with a powder extinguisher. Today all students face the identical exercise. Whatever the log for this incident, say it is a number 15 fire, that is what it will be during the assessment phase. The only variation will be weather conditions,” says Ian.

Firefighting in Afghanistan

Currently UK forces are deployed in Afghanistan in support of the UN authorised, NATO led International Security Assistance Force mission and as part of the US-led Operation Enduring Freedom. UK forces operations are being conducted under the name Operation Herrick, and there are two RAF firefighting stations at Camp Bastion.

Sergeant Tim Feast, a 44-year-old instructor at DFTDC Manston, returned from Camp Bastion in November ’09 following a four-month stint as a Watch Commander. He was part of a RAF crew of 12, plus four attached US Marine firefighters.

Camp Bastion, the largest British overseas military camp built since World War II, is located northwest of Lashkar Gah, the capital of Helmand Province. It is situated in a remote desert area, far from populated areas and includes a field hospital. Aircraft movements can be as many as 13,000 per month.

What is it like firefighting in a place like that? “It’s alright – I really enjoyed it and it is very busy. Most of what we are doing is not our bread and butter, as we are doing lots of casualty handling. We just get on with it” Casualty handling is one of the many tasks that has been taken up by firefighters. As the Afghan National Army and Coalition troops continue to face the dangers of IEDs (improvised explosive devices) and other attacks on the ground, all casualties in the province arrive at the Camp for treatment. In effect the Chinook is a flying ambulance containing fire fighting foams by professionals

![Fire-fighting foams by professionals](image-url)
Solberg offers products of high quality and within the highest technology standards to the international fire protection market.

Solberg - Olsvollstranda - N-5938 Saebøvågen +47 56349700 - solscand@solbergfoams.com - www.solbergfoams.com

Fluorine free foam
Lastfire tested with sea and fresh water
specialist medical equipment to provide the best care possible for the wounded. Once landed the firefighters take off the helicopters and onto the ambulances to be transported to the hospital a few hundred metres away. It is a task that has been carried out by the firefighters because they have the necessary skills to support the medical teams and the quicker they can get the wounded onto the ambulances, the quicker they can receive medical aid and survive. Tim remembers difficult, upsetting and challenging days with his team working flat out to support the medical teams. It is at times like these that the closeness and trust of the team comes into effect and firefighters are able to discuss their experiences within team and with their colleagues. “You don’t always want to talk to someone outside of the team because they have not really seen or experienced it.”

As a result of post traumatic stress, the RAF have adopted TRiM – trauma risk management. Evolved from the Royal Marines’ Stress Trauma Project, TRiM is based on the principles of education, risk assessment and mentoring. Crucially, the stress practitioners involved are fellow firefighters, and usually members of the same watch that have undertaken specific training. “TRiM is regarded as peer-based best practice, and we have various individuals that are trained practitioners who have had similar experiences. It is a first stepping stone to the healing process, by being able to talk about their experiences and try to overcome them,” explains Ian.

In Afghanistan, the firefighters stick together at all times. “You work as a crew together, you’ll eat your meals together, and you go out together and that’s pretty much 24/7.” On a four-month stint, working 24 hours on, 24 hours off (with nothing but a pool table, soft drinks, and a cafe between 9,000 people), in 40 degree heat in the shade, it is intense. And that does not include the stresses of every day operations.

Apart from casualty handling, community fire safety, and normal “soldiering” such as guard duty, the fire team is also called upon to carry out extraction duties on armoured vehicles. More often than not this involves a ride in a helicopter, which means each firefighter has to carry all their kit in backpacks. “Typically you have a number of rucksacks with hydraulic rescue equipment, mechanical saws, low pressure air bags etc. But they also wear the stuff that an ordinary soldier has to wear. So they wear the helmet, body armour, ammunition – and carry a rifle,” explains Martin.

To make things even more interesting, firefighters can be dropped off some distance from the incident (helicopters make desirable targets), which means they then have to walk to the scene. Once a firefighter has rescued a victim(s) and handed them over to a helicopter, there may be no space for the firefighter which means they have to join a patrol and make their own way back to base.

Such experiences have not put Tim off, and he’s keen to return to the front line in the next 15 months.

**Lessons learned: equipment**

The biggest lesson learned happened at the start of Operation HERRICK, when firefighters had been deployed with standard fire kit. After a couple of “shouts” it became quite clear that as 95 per cent of vehicles in theatre were armoured, the standard hydraulic rescue equipment was ineffective – like using a “knife and fork.” “Some came back and said whilst this kit is great for a Vauxhall Corsa, when it comes to a 15-tonne armoured vehicle on its side, it is not up to the job,” recalls Martin.
ARFF TRAINING IN THE MILITARY

Under the experienced eyes of Course Manager Ian Baker and Warrant Officer Martin Trafford, eyebrows are immediately raised: “We don’t know why they’ve decided to make the entry to the fuselage on this side.”

The solution partly came from an open day held by Hampshire Fire and Rescue Service (UK), where Ian saw some oxy-petro cutters in use to cut through steel. “We asked them if the thermal lance would cut through a tank, and they said that they’d cut up a tank as part of one of their training courses.”

Martin admits that buying equipment for RAF firefighters is not straightforward. “It is all about compromises. We don’t have the luxury of two pumps or a rescue tender, or turning up with 15 guys and all the kit you would want. You need the smallest amount of kit that does the maximum amount of tasks and which weighs the minimum – and which cuts through armour.”

Each time an incident occurs at Camp Bastion a hot debrief takes place to ensure that any lessons are identified explains Martin. “It’s not just kit; it’s techniques. Gaining access to an armoured vehicle requires certain techniques and specialised equipment. Any learning points are passed between the crews out there, and then a report goes back to DFRMO HQ for it to be logged and looked at. That’s how our training progresses.”

Just because a firefighter is on the front line doesn’t mean the training stops. Firefighters are expected to become acquainted with all the aircraft that come through the Camp – and in Camp Bastion this includes a wide range of fixed wing and rotary aircraft from UK and coalition forces... So how do they do it? “A lot of these aircraft moving in might only be on the ground for a 20-minute window, so even if its midday you have to go in and get training on it. If not, you have failed your crew by not providing them with that opportunity at some point,” says Tim.

So how do firefighters relax on the front line? “Sleep, watch DVDs, go to the gym, send emails home. It is all hard work and a lot of it is not pleasant. But it is so rewarding you see why people go. Although we are just a tiny part of that chain, we are still part of it. The guys see the difference they make.”

“There is a huge appreciation out there as to what the fire crews do, especially from the army, who haven’t had much experience with the Air Force.”

New ICAO foam standard passes full-scale testing in Florida

A new generation of firefighting foam has successfully passed full scale tests in Florida and paves the way for increased aircraft firefighting capability.

Foam fire standards were developed in the 1970s, however recent chemistry developments now permit more effective foams and result in a more successful firefighting system and allow improved post-accident survivability.

The UK Civil Aviation Authority (CAA) working with Transport Canada and other International Civil Aviation Organisation (ICAO) partners has completed a project to develop improved aircraft firefighting foams.

Following a major aircraft accident, foams are used to extinguish and suppress fuel fires. The physical and chemical behaviour of the foam is crucial in fire management.

The project challenged the foam manufacturers to improve on the existing effectiveness and allow manufacturers to supply to an improved international regulatory standard.

In September 2008, a series of small scale fire tests were carried out at the CNPP Laboratories in Vernon, France. The tests identified one product manufactured by Solberg Foams that was capable of meeting the 60-second extinguishment of the 7m² size fire pan.

The next stage was for the Solberg foam to be subjected to a full scale test of 500m² of fire to replicate the footprint of a medium sized aircraft. After investigating a number of testing facilities the Federal Aviation Agency of the USA offered to host the tests at their extensive site at Tyndal Air Force Base in Florida.

The test protocol set out a requirement for three tests of at least 500m² of fully involved fire using 3,375 litres of aviation fuel. Rosenbauer USA provided a Panther vehicle for the testing and the tests used both its High Reach Extendable Turret and Elkhart bumper monitor. The monitors delivered foam at 2,027 and 2,217 l/min respectively. Two different pits were used one containing a New Large Aircraft (NLA) rig, the other a medium sized aircraft rig. The objective was to achieve 90% control of the fire within 60 seconds.

In the event total extinguishment was achieved in 43, 29 and 51 seconds in the three tests. The tests therefore were a success for the foam, the Level C standard and proving the development of foams in the knowledge that both the existing and new tests are credible and effective.

Simon Webb, the CAA’s airport fire specialist said: “We are delighted that we have a new test that takes all the industry forward. This project has been an excellent example of cooperation of countries and industry.”

Solberg Foams commented, “We are very pleased to have been involved in the process of designing and testing a new product. We consider ourselves the ‘foam experts’ and are constantly striving to find new ‘state of the art’ technologies and take on new challenges. We are especially pleased with the outcome of this test protocol.”

The final stage in the project is for the standard to be submitted to ICAO for approval and publication in their standards document “Annex 14”.

Under the experienced eyes of Course Manager Ian Baker and Warrant Officer Martin Trafford, eyebrows are immediately raised: “We don’t know why they’ve decided to make the entry to the fuselage on this side.”
Visit Falck at Interschutz

AT STAND H27 – HALL 3!

- International Fire Services
- Emergency Medical Services
- Industrial Safety Training & Assessment
- Airport Services
- Crisis Management
- Emergency Response Team 24/7
- Safety Consultancy
- Interim Safety Management

www.falck.com