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The management of major flood emergencies: Taking positive action

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IN 1953 A MAJOR STORM

to the north of the British Isles coincided with a number of other environmental conditions to cause a sea surge event that resulted in the death of 307 people along the east coast of the country and over 2,000 in mainland Europe.

Although early warning systems are now much improved, the current population density and distribution has changed considerably since 1953 with hundreds of thousands of people now living in the known flood risk areas.

It is inevitable that surge events equal to or exceeding the 1953 disaster will occur again. Equally inevitable, is that the UK will face a repeat of major flood events occurring inland due to significant rainfall. Examples include the floods impacting much of North Wales and Central England on Good Friday 1998 and recent events in Bostcastle and Carlisle.

Far from being an alarmist assessment of flood risk in the UK, it is of course entirely possible that future events could be of an even greater magnitude than previous ones, or that both a coastal and inland event could occur simultaneously. Currently some 1.8m homes and 185,000 businesses are at risk of flooding in England and Wales. The asset value sitting in the floodplains is estimated at £200 billion, and both coastal and inland flood events have the potential for humanitarian and financial disaster.

In the fire and rescue world the likelihood element of any risk assessment is the most difficult and often the most controversial issue to quantify. Scientific predictions for flood frequency and significance are no different, with differences of opinion over whether we are experiencing changes in climatic events, or simply seeing a natural

cycle. Regardless of opinions on causation, it would be fair to say that a broad trend analysis of recent events would suggest that significant flood events are more likely than were previously believed.

Accepting therefore, that there is an increased level of risk from flooding, what then is the emergency services community doing to meet the need? The Chief Fire Officers Association has commissioned a project in 2005 to develop a standardised response to such disasters. The Management of Major Flood Emergencies (MMFE) project has been set up under the stewardship of Chief Fire Officer Paul Hayden from Hereford and Worcester Fire and Rescue Service.

The project is being run through the Inland Water Strategy Group (IWSG), which is an arm of the CFOA Operations Committee. The project quickly identified the need for an

integrated and structured response from front line responders to tactical and strategic command. Equally important are the inter-agency aspects of managing flood emergencies. The MMFE project will deliver guidance aimed at helping individual fire and rescue services respond to these incidents more effectively, as well as providing a template for regional and national flood emergency management that can be used by other response partners.

Much work has been done already with contributions from both the FRS and the wider emergency planning community. Recent case studies have been examined with the help of colleagues from Cornwall and Cumbria, and the State of North Carolina and the Charlotte Fire Department in the USA.

In 2005 a delegation visited North Carolina to look at all aspects of their

response to flooding, from the training and equipment provided to frontline crews through to flood and weather prediction and State emergency management facilities.

The system in North Carolina is based upon the following basic principles:

- A thorough appreciation of the risk and well developed multi-agency plans;
- State of the art flood mapping and prediction tools to provide the "real time" data that allows resources to be pushed into position before they are called upon;
- Operational staff trained and equipped to operate in all predicted conditions;
- Integration with local air support (usually National Guard);
- Effective service and multi-agency communications;
- Effective integrated emergency management and incident command, including clear lines of responsibility and significant logistical support;
- Practice, practice, practice.

These lessons have been learnt through hard practical experience and past mistakes. Although not all States within the USA have heeded the lessons learnt in North Carolina, we have been given unprecedented access to their planning and operations so that we can build a UK response system with the benefit of their long experience, but without having to go through the same painful lessons.

Tactical Preparations

In June 2006 Area Manager Paul Amos took 12 experienced members of the Hereford and Worcester Fire and Rescue Service Swift Water Rescue Team to train with Charlotte Fire Department special rescue teams. The team was made up of station based specialists and the prime objective was to further improve their individual operator skills and to evaluate the suitability of US systems of work for UK operations.

In recognition of the advances made in UK swift water operations, Charlotte's Chief Officer, Luther Fincher, extended an invitation to the team to come back and gain practical experience "embedded" with his own response teams during a hurricane event should one occur later this year. The opportunity was therefore taken to prepare and select individuals for deployment alongside their American colleagues.



The most striking difference noted was the widespread use of air support. The flooding incident in Boscastle in 2004 demonstrated the importance of helicopter operations as well as the difficulties of co-ordinating airborne rescue of a number of people in a close confined area.

The American system is based upon 'Short Haul'; here the rescuer is suspended beneath the helicopter, rather than winched down. The casualty is 'collected' and transported a short distance to safety before the crew return for other casualties. This reduces air hover time and can be carried out by trained rescuers that are not necessarily members of the air crew. In the UK such an activity might be carried out by non-rescue type helicopters in areas where normal SAR facilities are not readily available.

The MMFE project has been in contact with the Maritime and Coastguard agency and with ARCC at Kinloss as a first step to developing procedures for inland deployment, similar to that seen at Boscastle and Carlisle.

It is interesting to note that the PPE and rescue equipment in the USA is broadly similar to the UK. Certain rescue techniques are also different having been developed as a result of many 'real time' rescues. The use of short lengths of inflated hose to provide tethered booms for rescuing casualties in fast flowing deep water was particularly effective. Coupled with a technique for using two throw lines connected together this technique is safe and effective for use by non-specialist crews making it less likely for such crews to enter the water unnecessarily.

The IWSC is also considering an American style "team typing" system. This system classifies teams according to capability, taking into account their equipment, competence, logistical and command support and ability to be self-sufficient. This approach is important for both tactical and strategic level managers at major flood emergencies as it simplifies mutual aid requests and ensures that crews deployed are safe and competent for the task they have been given. Team typing will be a key part of the final MMFE report due to be announced at this year's Fire Show in Telford.

The American approach to boat use is robust. The craft must be the right one for the conditions faced, it must have sufficient power for the job and most importantly the staff must be trained to use the boat in all reasonably expected conditions. Whereas this sounds like common sense, the feedback from services within the UK is that this approach is not as widespread as it should be. The Americans ensure that there are at least two people within the boat at all times that can operate that craft under all circumstances; that are qualified to both swim rescue technician and rescue power boat operator. The IWSC is currently considering a national UK standard in line with this system.

The Americans face similar problems to the UK when it comes to identifying suitable training venues and releasing teams to train on a regular basis. However, there is no shortcut to safe operations, and there is no simple or cost free way to address this problem. Services

thinking of establishing specialist teams need to be clear about the commitments involved before doing so. They should also consider alternate options such as entering into partnership or mutual aid arrangements with others. This approach could be assisted in the future by the use of predictive and real time flood data and pre-deployment tactics found in the US, allowing valuable specialist teams to deploy ahead of the incident.

There were many other learning and discussion points emerging from the visit.

- Crew sizes and composition;
- Vehicles;
- Boats design;
- Engine size;
- Rescue equipment;
- Training and maintaining competence;
- Deployment;
- Welfare during protracted incidents;
- Incident Command System;

Of course, many of these issues are part of the ongoing development of water rescue provision that is not wholly linked to the management of flood incidents. A chapter for the *Fire Service Manual* on mud, ice and unstable ground is due out soon and a revision of Chapter 5 Training, will be available for consultation in the very near future.

At the time of writing CFO Paul Hayden has accepted an invitation to visit the Department of Homeland Security and Federal Emergency Management Agency in Washington DC as well as strategic level institutions in North Carolina and neighbouring States.

The initial findings of the MMFE project will be available at the Fire Show in Telford in November, and it is hoped that speakers from North Carolina will be in attendance to share their experiences with the UK FRS community. Firefighters from Hereford and Worcester's swift water rescue team who recently trained in the US will also be available throughout the demonstration at the Disaster City Stand and would be glad to share their personal experiences with colleagues.

The aim of the MMFE project is to stitch together the experiences of the UK and US emergency services to provide a first class flood management strategy. This is essential if the UK emergency service community is to respond effectively the next time the floods come. Are we ready yet for this disaster? Probably not, but we will be.