

LANCASHIRE COMBINED FIRE AUTHORITY

Meeting to be held on 20 February 2017

TECHNICAL RESCUE (MULTI-FUNCTION) JACKETS

Contact for further information:

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Executive Summary

Over the past two years the Service has been researching and evaluating a range of options for improving operational efficiency and enhancing firefighter health and safety as part of its future fighting strategy.

The concept of Technical Rescue Jackets is to provide firefighters with an alternative level of PPE (Personal Protective Equipment) which would provide an increased level of personal safety and improve the performance of firefighters in the varied tasks undertaken during modern operational activities.

Recommendation

The Authority is requested to note the contents of this report and support the introduction of Technical Rescue (Multi-Function) Jackets to enhance the current PPE provision and safety of staff.

Information

The first UK specifications for fire fighter clothing were only introduced in the early 1980s. During the early years of manmade fire retardant fibres such as Nomex® firefighter tunics, leg protection continued to be met by the use of PVC coated fabric trousers, known as PVC wetlegs, which were chosen for their superior water resistance. However, their major weakness, their flammability, was seriously exposed in the major London Underground disaster in 1987 when many people and firefighters died in a major fire at the capital's Kings Cross station in which the PVC wetlegs were found to have contributed to the death toll amongst firefighters. The first Home Office specification for firefighter PPE, the A26, was developed and became the first national standard in 1988. The first European Standard, EN469:1995, was developed from a working group set up in 1992 with the BSI representing the UK. Development of European firefighter PPE standards in the intervening 20 years led to the latest EN469 standard published later in 2014.

The development of new fibres and fabrics by PBI, DuPont and Kermel, and the use of new fibres from these manufacturers for the development of new specialised fabrics enabled the design of firefighter clothing which not only provides enhanced personal protection but has led to the introduction of new generations of more ergonomically efficient clothing.

The use of physiological assessments through wearer trials were used to determine the impact of firefighter PPE on both the ease of movement and the stress levels of internally generated heat during active deployment. This was the first time that the overall health and safety of firefighters had been researched by looking closely at internal factors. The results clearly showed that the weight and construction of firefighter clothing were significant factors in the physiological responses of firefighters. This led to the introduction of lighter weight and layered PPE constructions, which offers enhanced levels of wearer comfort and mobility and which has become the platform on which the latest technical rescue (multi-function) protective garments have been designed and produced.

Given the increasingly technical nature of firefighting and rescue activities that protective clothing for firefighters are required to provide protection under, the characteristics of the garments need to include flame and water protection, breathability, pathogen and hydrocarbon resistance, tear, puncture and abrasion resistance coupled with the ability to deliver good wear resistance and to withstand regular maintenance. Minimising the lifetime cost of ownership of high performance technical clothing relies considerably on its longevity which, in turn, requires build quality to allow frequent washing and decontamination (where required) without impairing the integrity and performance of the garments involved.

Agility and comfort do have some aspects in common but, as far as the wearer is concerned, are different features. Agility focuses on the desirability of having firefighters capable of being able to move easily and swiftly away from danger when working on the incident-ground, which requires clothing to be flexible and light enough to effectively carry out rapid escapes, where necessary. Comfort, on the other hand, is achieved by providing tunics that fit well, are shaped effectively to body contours, equally well for males and females, and the wearing of which provides the minimum of fatigue when worn for long periods.

The Technical Rescue Jacket is designed to be used in situations where full structural PPE isn't necessary and it is advantageous to have a greater freedom of movement afforded by a lighter garment. These activities include road traffic collision extrications, technical rescues such as assisting other agencies with casualty rescues, moorland firefighting, external firefighting such as bin fires, skip fires, car fires etc.

During the process of researching and trialling the different Technical Rescue Jackets available on the market, it has also been identified that there is the potential for them to be used for external firefighting activities. It has also been found that the introduction of a Technical Rescue Jacket could negate the need to wear the existing conspicuity coats currently in service due to the jackets meeting the relevant European standard.

Provision of Technical Rescue Jackets

As mentioned previously the concept of the Technical rescue (Multi-Function) jacket has been around for some time. GMFRS purchased a layered approach version approximately 18 Months ago. This has proved problematic with wearers particularly when utilising the garment for structural Firefighting suffering from retained heat issues due to the extra layers. They have also had issues with the Multi-Function inner layer (Orange) jacket due to the textiles used in manufacture.

Therefore LFRS, Cumbria FRS and Cheshire FRS have looked at an alternative approach of having separate Multi-function and structural Jackets.

Advantages

1. The technical Rescue (Multi-function) jackets are also less bulky and therefore provide greater comfort and dexterity for rescue type incidents, providing greater freedom of movement due to the garments ergonomic performance and reducing the effects of heat stress during warm weather and whilst worn under strenuous working conditions, such as at road traffic collisions when operating heavy rescue cutting equipment. The specification written for the jackets is for them to meet the relevant Hi-Viz standard; this enables the jackets to be worn on Highways without the need for the current conspicuity coats which are issued to each appliance. The current conspicuity coats are issued per appliance and not per individual so there are currently fit issues and maintaining the Hi-Viz standard, as when the coats get to a certain degree of discolouration they no longer meet the standard. The Jackets would be issued on the pool system so this would be part of the cleaning and maintenance contract ensuring LFRS meet our obligations under the Health and Safety At Work Act and that LFRS staff are safe when operating on the roads.
2. The lighter weight garment offers heat protection making it suitable for Moorland firefighting. Moorland Firefighting has historically caused issues for Firefighters becoming too hot wearing structural PPE. This is due to a number of factors, being the weather (usually warm weather related fires), the terrain to get to the fire (generally involves a long trek over undulating ground) and the physical exertion of the Firefighting and close proximity to the fire involved with certain extinguishment techniques. This has led to Firefighters removing their structural tunics to prevent themselves overheating. However this practice then causes a serious health and safety issue, due to Moorland fires having the potential to spread faster than a person can run, thus putting Firefighters in a dangerous position of not having the correct personal protection. The Lighter Jacket would enable Firefighters to undertake the Moorland Firefighting duties much more safely with full personal protection.
3. The above would also have a knock on effect of staff being able to undertake Moorland firefighting duties not only safely with full PPE, but will also be able to undertake these duties for longer periods without the need to be relieved by

alternative staff due to heat stress. Therefore less staff would be required to be deployed to these incidents, reducing mobilising costs and also enabling efficient emergency response cover to be maintained for other incidents.

Feedback from wearer trials

Trials of the jackets have taken place at Fulwood, Cumbria FRS and Cheshire FRS and feedback has been very positive with crews particularly liking the freedom of movement and the reduced thermal stress afforded by a lighter jacket.

The only observation from the wearers during the trial was that due to the jacket not having a liner, during colder weather this could be an issue. This is alleviated by LFRS, Cumbria FRS and Cheshire FRS as all 3 services already issue a personal fleece jacket for staff to wear during cold weather that can be worn underneath the jacket. During the recent cold spell the crews taking part in the trial in LFRS attended a road traffic collision on the M6 with the temperature at minus 3 degrees. They stated that with the fleece underneath they were warm enough during the incident.

The technical rescue (multifunction) jacket has been trialled at Fulwood for over 6 months and during this time has been utilised for a number of incidents and has stood up extremely well to the challenge, the garments have only been laundered a few times and have retained their condition and as well as still meeting the relevant Hi Viz standard they still look aesthetically pleasing.

Collaboration

As mentioned the wearer trials have been conducted in 3 different Services in the North West with close contact being maintained between the three. All 3 Services are keen to move forward with the project and LFRS have been chosen as the lead organisation for a tender process. LFRS have written a specification for a jacket which would enable the jacket to be worn for most incidents apart from structural firefighting where the full protection of the current jacket would be required by firefighters.

The specification written improves on the current offerings of the manufacturers to offer greater heat protection for staff and also protection against blood borne pathogens for technical rescue work. This will improve the safety for the firefighters and would enable the technical rescue (Multi-Function) jacket to be the primary worn garment for non-structural incidents.

Financial Implications

The indicative cost would be in the region of £0.5m which will be met from the approved 2016/17 capital budget for future firefighting equipment.

Sustainability or Environmental Impact

The introduction of an additional garment for use in specific circumstances will increase the number of garments in circulation within the service however as the new garment would be utilised instead of the current garment for incidents other than structural incidents the impact on the environment caused by the laundering of these garments should not alter.

Equality and Diversity Implications

The specification produced ensures that the needs of all groups of individuals likely to use the Technical Rescue Jackets are taken into consideration. The design of the garments will provide improved ergonomics over current tunics issued and will be available in both Male and Female gender specific fit. The new jacket would alleviate the need for the current conspicuity coats which due to them not being personal issue do not meet the needs of all staff for sizing.

Human Resource Implications

N/A

Business Risk Implications

There is potential risk to the organisation of not taking the opportunity of issuing PPE that provides greater technological advancements, ergonomic gender specific and improves health and safety and effectiveness of the wearer. The possibility exists, although numerous measures will be put in place to prevent this occurring, for the lighter garment to be used inappropriately when structural PPE should be used. The two garments are completely different colours however so this can be easily identified.

Local Government (Access to Information) Act 1985

List of Background Papers

Paper	Date	Contact
None		
Reason for inclusion in Part II, if appropriate:		