ESFRS Service Training Centre, Battsbridge Road, Maresfield

Training Accident

25th June 2015.

Lessons Learned Report

Chief Fire Officer's Foreword

Every fire and rescue service has a legal and moral duty to protect its staff from harm. This is challenging when the role of the firefighter is inherently risk based, however the Fire Authority will ensure that the Service is resourced with the right equipment, personal protection and training to prepare staff to deal with risk when they are called to respond to emergencies.

In June 2015, one of our firefighters was seriously injured during a training event at our Service Training Centre. This was an incredibly difficult time for the firefighter and his family and we sincerely apologise for the distress this accident caused. We are thankful that the firefighter concerned has made a good recovery.

The joint investigation carried out with the Fire Brigades Union was complex and thorough and I would like to thank those who took part in this process. The main outcome of the investigation was that the accident was avoidable.

As a result of the accident and investigation we have produced a Lessons Learned report. We have already taken a number of actions including those to invest in improvements to safety features and changes to procedures. We are committed to further improvements to firefighter safety in the future.

The recommendations from the report will be monitored by our Health, Safety and Wellbeing Committee to ensure that we maintain momentum across the whole firefighter safety and well-being agenda and deliver on our agreed actions.

We are determined that our staff and the public can be confident that East Sussex Fire and Rescue Service takes firefighter safety seriously. As Chief Fire Officer I will make a personal commitment to prioritise this and continue to deliver improvements wherever and whenever I am able.

Gary Walsh
Chief Fire Officer

Executive Summary

This report sets out the key lessons from the accident that occurred at the Service Training Centre, East Sussex Fire and Rescue Service on the 25th June 2015, and from the subsequent investigation process into the incident where a firefighter was seriously injured.

The report is broken down into 3 main areas. Part 1 focuses on the incident itself and provides some context around the training scenario that led to the incident. Part 2 covers the investigation findings following on from the incident and Part 3 summarises the causal factors and the identified action for each of the recommendations.

Part 1

Section 1 - Introduction and Context

The report concerns the identification of the causation factors that led to an incident occurring during a training event held at the ESFRS Service Training Centre on 25th June 2015, resulting in a Firefighter (FF) becoming seriously injured.

Commonly known as the Breathing Apparatus (BA) Basic Course, but now re-named as the Structural Firefighting Basic Course, this course consists of two weeks of practical and theoretical input followed by an assessment at a later date. All activities are conducted at the Service Training Centre.

The injured Firefighter along with 10 other retained duty system (RDS) FFs started the two week structural firefighting course on Monday 22nd June. All course attendees were 'in development' and had been employed by the Service for between 12-18 months. Although they would have undertaken a range of training activities, as well as attending operational incidents, they would not have worn BA before attendance on the course.

The incident occurred on 25 June 2015, day 4 of the Structural Firefighting Basic Course whilst the trainees were undertaking a practical element titled "heat and humidity exercise" within the BA Chamber. This followed technical classroom input on the subject. This was the fourth occasion that the individuals attending this course had worn BA and all practical exercises, including heat and humidity were conducted within the BA Chamber, which is a purpose-built premises.

During the "heat and humidity" exercise a FF collapsed. First Aid was administered at the Service Training Centre by the Instructors and, on arrival of the ambulance, the FF was taken to the nearest Accident and Emergency Hospital, whereupon the individual's condition became critical and subsequently was placed in a medically induced coma. 72 hours later the decision was taken to transfer the individual to a specialist hospital in London for further treatment for organ failure. The individual has made a steady recovery over a period of months and was released back under the care of their own doctor in August 2015.

Section 2 - Timeline of the exercise that led to the incident

Two teams of two FFs wearing BA were committed for this exercise, team 1 consisting of the injured Firefighter (Firefighter X) and Firefighter Y.

Each BA set incorporates a “Bodyguard” electronic monitoring unit which automatically records various details, including time of going ‘under air’. ‘Under air’ is the term used for the wearer starting to consume air from the cylinder.

Time	Descriptor	Duration
11:40:02	FF X went under air	
11:40:51	FF Y went under air	+ 1 min
12.07	FF X’s Bodyguard low air pressure warning & the manual low air warning whistle activated	+ 27 min
12.17	Instructor advised FF X they were going to remove Lung Demand Valve from the BA face mask	+ 37 mins
12.21	FF Y’s Bodyguard low air pressure warning & the manual low air warning whistle activated	+ 41 mins
12.31	FF X’s BA cylinder registers as empty	+ 51 mins
12.31	FF Y shuts down BA set	+ 51 mins
12:34 (approx.)	FF X observed by an Instructor to be in difficulty and was assisted from the crawl-way and BA Chamber	+ 54 mins
12.35 (approx.)	FF X’s likely exit from BA Chamber	+ 55 mins
12:38	Time of call to the Ambulance Service	+ 58 mins

Section 3 – Causal Factors and Recommendations

The investigation identified the following ten causal factors that were directly linked to the accident occurring. Additionally, there were a number of other organisational learning opportunities that were identified which have been incorporated into the wider organisational action plan.

The causal factors were:

1. **The inability at the time of the occurrence to monitor and or maintain the safety of the firefighters undertaking the exercise despite it being in a 'controlled environment';**
2. **The duration for which the injured Firefighter was required to wear BA during the exercise;**
3. **The failure to adhere to relevant BA safety procedures;**
4. **The thermal effect of wearing the current Personal Protective equipment (PPE) whilst undertaking firefighting operations albeit, in this instance, a training scenario;**
5. **The impact of both internal and external environmental conditions on Firefighters during such training events and the ability to effectively monitor these conditions;**
6. **The failure to recognise the signs and symptoms of physiological stress including heat exhaustion;**
7. **The lack of understanding of the exercise objectives for the Structural Firefighting Basic Course;**
8. **The lack of satisfactory risk assessments for the relevant scenario;**
9. **A failure to have an adequate maintenance programme for the Service Training Centre;**
10. **The removal of the Lung Demand Valve from the Firefighter's Breathing Apparatus set during the exercise.**

Each of these ten issues are covered in greater detail within the full investigation report however the headlines behind each point, and recommended actions, are as set out as follows.

CAUSAL FACTORS

1. **The inability at the time of the occurrence to monitor and or maintain the safety of the firefighters undertaking the exercise despite it being in a 'controlled environment';**
2. **The duration of exposure that Ff X was subjected to during the exercise;**
3. **The failure to adhere to relevant BA safety procedures;**
8. **The lack of satisfactory risk assessments for the relevant scenario.**

As evidenced within the timeline (Appendix A) within this document FF X wore BA for a period of time outside that which would normally be deemed a maximum for the environmental and working conditions present during the exercise.

Recommendation 1:
The national Fire and Rescue Service 'Training Manual Volume 4 - Guidance on the Management of the Risk of Heat Stress during Training' provides detailed information on risk control. The document is still considered extant and is referred to in National Operational Training Guidance – Breathing Apparatus.

Risk assessments for all training activities that are carried out in hot environments, should be reviewed and where necessary amended to reflect the guidance given in this document, in particular to the requirement to carry out calculations of Time Weighted Average's (TWA) and to provide maximum exposure limits based on these TWA's.

This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.

(*Now the Health, Safety and Wellbeing Committee).

Recommendation 2: When completing risk assessments for training exercises involving firefighters in development, the risk assessor should not consider an un-trained or not yet competent individual as an effective control measure. The decision to combine risk assessments for both development and competent firefighters should be reviewed by the Learning & Organisational Development department (L&OD)**. This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.
Recommendation 3: In the majority of the ESFRS risk assessments considered by this investigation, it was found that they consistently use a severity rating of 3 for heatstroke. In some cases this rating is reduced after control measures to 2. As a result of this investigation and to align with national guidance, it should now be considered that heatstroke is a potentially fatal occurrence and should be associated with a higher severity rating. It is recommended that all relevant risk assessments now reflect this higher level of severity. This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.
Recommendation 4: No evidence of a peer review has been found that specifically covers the Structural Firefighting Basic Course. ESFRS should be able to provide third party assurance that the current course is suitable and sufficient. L&OD should consider the external evaluation of the course as soon as is practical. This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.
Recommendation 6: All personnel attending training courses must meet the requirements of the Service's fitness assessment (ESFRS manual note Fitness Monitoring).

(*Now the Health, Safety and Wellbeing Committee).
(** Now the Training and Assurance department),

CAUSAL FACTORS

4. The thermal effect of wearing the current Personal Protective Equipment (PPE) whilst undertaking firefighting operations albeit, in this instance, a training scenario. Current issue fire kit conforms to all relevant legal standards and provides a high level of thermal protection. High work rates whilst wearing the PPE may result in heat induced illness. There is however, British Standard BS 8469:2007 that covers PPE for firefighters – Assessment of Ergonomic Performance and Compatibility.

BS 8469 lays out requirements and testing methods covering the full PPE ensemble, including selected under garments that enables an employer to select the most appropriate PPE for a specific employee type, based upon the environments and activities anticipated to be encountered in their roles. The tests include specific ones related to heat strain. Current PPE issued to ESFRS staff has not been assessed against BS 8469 which provides guidance only and is not a legislative or mandatory requirement.

Self-Contained Breathing Apparatus (SCBA) provides air to the wearer through a full piece facemask. The air supplied may provide some cooling effect but conversations between Dräger, manufacturers of ESFRS BA sets, and the Accident Investigation (AI) Team suggests that further research needs to be conducted to advise future national guidance on the effects of heat stress whilst wearing the full PPE ensemble and SCBA.

Recommendation 7:
The current PPE manual note and guidance given to operational personnel in regards to the wearing of under garments below fire kit, should be reviewed to reflect the findings of;

a) The report provided by Dr Jim House;
b) Relevant national guidance such as Fire Service Manual Volume 4 Fire Service training – Guidance on the management of the risk of heat stress during training; and
c) Operational Physiological Capabilities of Firefighters: Literature Review and Research Recommendations - Fire Research Technical Report 1/2005

Recommendation 8: The ESFRS risk assessment for the current fire kit needs to be reviewed and updated to fully reflect the findings of this report and the relevant national guidance identified, including generic risk assessments. Once updated, the risk assessments for PPE need to be fully considered and reflected in all other risk assessments that involve the use of firefighting PPE ensemble. This work to be coordinated and reported through the ESFRS health, safety and welfare committee.
Recommendation 9: ESFRS is currently planning for the procurement of the next generation of firefighting PPE. BS 8469:2007 should be considered by the procurement team in addition to BS 469:2005 (Protective clothing for firefighters — Performance requirements for protective clothing for firefighting) to ensure that Thermal Strain performance is fully considered. The information provided by completing further testing of PPE ensembles would inform and improve the quality of PPE risk assessments in regard to Thermal Strain.

CAUSAL FACTORS

5. The impact of both internal and external environmental conditions on Firefighters during such training events and the ability to effectively monitor these conditions;
9. A failure to have an adequate maintenance programme for the Service Training Centre.

A number of issues with the design and current operation of the plant within the BA complex at STC were identified by the AIT. The issues included; defective equipment with regard to extraction systems; lack of routine maintenance inspections and poor maintenance of the systems and equipment; inadequate temperature and humidity monitoring equipment in place; inadequate ability to enable internal space temperature; and relative humidity to be regulated dependant on the exercise being conducted.

From the data supplied by the Met Office's weather recording stations, the temperature readings from the 3 nearest weather stations were noted and an average worked which showed the outside temperature at the time of the accident would have been in the region of 23.4c. Further to this humidity records were also captured and an average reading of 55.7

was calculated from the nearest 3 readings to the Maresfield site. The prevailing conditions should be taken account of and feature as part of the determination on the day of training / exercise.

Recommendation 10:

The areas identified by BLR Associates must be fully considered by ESFRS and an action plan put into place to complete these works.

As part of this same recommendation it is proposed that any subsequent modifications of the training facility should only be completed once the advice contained in National Fire & Rescue Service Manual Volume 4 Fire Service training – Guidance and compliance framework for compartment fire behaviour training is considered by the responsible manager.

It is considered that areas such as risk assessments, routine inspection and test routines, instructions for staff and training of operators must, at the minimum, be reviewed and revised after modifications to any existing training facilities are made. Further, it is expected that suitable servicing and maintenance contracts are initiated in conjunction with the ESFRS Estates function.

This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.

Recommendation 11:

To ensure the Instructors consider the prevailing conditions prior to the commencement of training and identify and record any measures that address the issue through awareness, such as on hot days dressing down, fluid intake, cold weather debriefing procedures.

(*Now the Health, Safety and Wellbeing Committee).

CAUSAL FACTORS

6. The failure to recognise the signs and symptoms of physiological stress including heat exhaustion;

7. The lack of understanding of the exercise objectives for the Structural Firefighting Basic Course.

Evidence gathered during the investigation identifies inconsistent timetable changes being made with no audit trail to detail why and no impact assessment carried out for these changes.

There is also inconsistency with regard to provision of appropriate documentation for students and instructors. The Structural Firefighting Course appears to be evolving over each course and, again, there is no audit trail of changes being authorised. This has resulted in different instructors having different understanding of the required outcomes for an exercise.

The activities within the exercise that FF X was completing did not reflect the exercise learning outcomes. For example, the use of guidelines, Access Safety Kit equipment (Working at Height) and the rescue of a casualty bears little relationship to the central objective which is 'recognise the signs and symptoms of heat stress and exit if necessary', and to ensure they understand the effects on their physiology.

Recommendation 12: Review all learning objectives for the Structural Firefighting Basic Course against National Fire & Rescue Service Operational Training Guidance- Breathing Apparatus – (OTGBA) and ensure that they are clear, communicated and understood by all instructors and delegates. Ensure all course documentation is complete, version controlled and monitored.
Recommendation 13: Although the Breathing Apparatus Instructors (BAI's) were able to clearly list the signs and symptoms of heat stress, the level of knowledge of key national documents such as National Fire and Rescue Service Volume 4 Fire Service training – Guidance on the management of the risk of heat stress during training is not consistent. Whilst the BAI's have demonstrated that they can identify the main signs and symptoms of heat stress, it is unclear how some of these signs can be identified by safety staff on a BA wearer wearing full personal protective equipment.

It is recommended that the current BAI's receive refresher training that incorporates these national documents. In addition all instructors must have a common understanding of the learning outcomes and key objectives prior to an exercise being run.
Recommendation 14: It should be considered if the workplace inspection form is suitable and sufficient for continued use at STC. L&OD** managers should ensure there is full compliance with Active Monitoring Workplace Inspections in accordance with the Active Monitoring Workplace Inspections ESFRS manual note. This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.
Recommendation 15: The current process of managing external information as it comes into ESFRS has been recently reviewed and further changes are expected to be implemented. However, a clear audit trail is needed as this would ensure what decisions and actions have been completed. This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.
Recommendation 16: The role of the lead BAI is referenced in the Breathing Apparatus Competency Management Policy manual note OPS(P)03_02_V1 (paragraph 3.8.6). However the role is not clearly recognisable in the current Command & Operational Training (L&OD**) structure for STC. Furthermore, its responsibilities do not appear to be set out within the job description for any of the current roles at STC. If this role is to be effective, it needs to be clearly assigned to an individual or post.

(*Now the Health, Safety and Wellbeing Committee).
(**Now Training and Assurance).

CAUSAL FACTORS

10.The removal of the Lung Demand Valve from FF X's Breathing Apparatus set during the exercise.

Recommendation 5:

A Lung Demand Valve (LDV) was removed on at least one occasion and firefighters were not expected to report to the BA Entry Control Officer (BAECO) by the time of whistle. This practice conflicts with safe operational practice and the principles set out within the current Breathing Apparatus operational guidance.

An audit of all Breathing Apparatus exercises conducted at the Service Training Centre should be carried out to ensure they all follow good operational practices, and to assure the Service that there are no practices that would be deemed to be unsafe or dangerous on the incident ground.

This work to be coordinated and reported through the ESFRS Health, Safety and Welfare Committee*.

(*Now the Health, Safety and Wellbeing Committee).

Part 2

Section 1 – The Investigation

In accordance with Service procedures the accident investigation process, impounding of equipment and recording of information commenced immediately.

Due to the FF's condition worsening in the hours following the event, on Monday 29th June 2015 the investigation was escalated to the highest form of investigation in accordance with Service procedures. As part of the investigation the event was reported under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 A8EA698A61 (RIDDOR) to the Health and Safety Executive (HSE).

The Service set up a dedicated accident investigation team comprising of ESFRS officers, Fire Brigades Union representatives and officers from Hampshire Fire and Rescue Service supported by an external consultant. Together, they undertook a comprehensive investigation which concluded with a full and detailed report. The purpose of the report was for East Sussex Fire and Rescue Service (ESFRS) to detail the findings of the accident investigation, identify the causal factors that led to the incident, to ensure that lessons are learnt and any changes required to prevent a recurrence suitably implemented. Through doing this the Service continues to discharge all of the statutory duties under the Health and Safety at Work Act 1974.

Section 2- Pre investigation start up.

Early discussions between ESFRS Principal Officers and Fire Brigades Union (FBU) representatives resulted in the agreement that a joint investigation in accordance with the Safety Representatives and Safety Committee's Regulations 1977 would take place. Subsequently a service level agreement (SLA) was developed between ESFRS and the FBU which set out information sharing protocols etc.

All evidence collected was logged and recorded to provide continuity. Interviews of staff were recorded and processed according to best practice Police and Criminal Evidence Act (PACE).

During the course of investigation, any matters that required the Service to take immediate action to prevent any possible reoccurrence were noted using an issues log and raised directly with the Assistant Chief Fire Officer (ACFO) leading the investigation for action. Progress on raised issues were reported back to the ACFO (until 18th January 2016) and subsequently to the Health, Safety and Welfare Committee under the stewardship of the Deputy Chief Fire Officer.

Section 3 - Phase 1 of the Investigation

Phase 1 was carried out in two stages. The first was the information gathering stage, which included recording copying and logging of all information relating to the incident followed by interviewing of staff considered to be 'key' witnesses.

The second stage of Phase 1 was the use of the Sequence Time Event Plotting (STEP) process, to record on a grid the event as it unfolded minute by minute and to detail the actions of all ESFRS personnel involved in the exercise. The STEP process identifies soft or hard evidence, soft being events that the person said they did, saw or heard, with no direct indication of the exact time, and hard where the exact time for the action was known or could be corroborated.

Section 4 - Phase 2 of the Investigation

This phase ran concurrently with Phase 1, and involved the investigation team building a picture of what the causal factors around the accident were and how it happened, using the evidence available to the team. This approach being in line with Health and Safety Guidance (HSG) 245.

Section 5 - Third Party Notifications

The following external bodies were notified of the incident;

Sussex Police – they advised that no further action would be taken unless the condition of the injured firefighter deteriorated.

Health and Safety Executive – local inspector notified for RIDDOR reporting and subsequently frequent updates were provided throughout the investigation.

Zurich Municipal – an e-claim form was submitted to the Authority's insurer for Employer's Liability.

Dräger – the Service's supplier of Breathing Apparatus sets.

Section 6 - STEP Incident Timeline

As detailed previously, the STEP process to establish what happened at what time was used for this investigation and was populated by evidence from downloaded Bodyguard data logs, statements, interview records and BA Entry Control records. This enabled the Service to plot events against estimated time. The STEP process was used to look at the events from the start of the exercise, at the point of when the first BA team started up their BA sets and went under air, to the time of the 999 call to the Ambulance Service.

Section 7 - The report structure

The accident investigation team followed the methodology detailed within the Successful Health and Safety Management HSG 65 2nd edition 1997 guidance document. The structure of this document was followed throughout the accident investigation.

The main areas covered were:

- premises, plant and substances,
- procedures, people, planning, assessing risks,
- organisation: control,
- organisation: co-operation,
- organisation: communication,
- organisation: competence, monitoring and review.

Part 3 - Recommendations and Actions

Set out below are the key recommendations that have been identified from the investigation and the actions ESFRS has already taken or is in the process of taking.

Recommendation 1:

The national Fire and Rescue Service 'Training Manual Volume 4 - Guidance on the Management of the Risk of Heat Stress during Training' provides detailed information on risk control. The document is still considered relevant and is referred to in National Operational Training Guidance – Breathing Apparatus.

Risk assessments for all training activities that are carried out in hot environments should reflect the guidance given in this document, in particular to the requirement to carry out calculations of Time Weighted Average's (TWA) and to provide maximum exposure limits based on these TWA's.

ESFRS Action:

1. Review the current national guidance on Time Weighted Average's (TWA) and the requirement for this process to be applied to all BA exercises conducted at STC.
2. To consider the implications on BA training carried out at fire station training facilities.
3. Paper to Corporate Management Team with recommendations

Recommendation 2:

When completing risk assessments for training exercises involving firefighters in development, the risk assessor should not consider an un-trained or not yet competent individual as an effective control measure.

The decision to combine risk assessments for both development and competent firefighters should be reviewed by the Service.

ESFRS Action:

1. All STC risk assessments will be reviewed

2. This review will identify whether there is merit in conducting separate risk assessments for competent firefighters and firefighters in development or just to have different control measures identified for each of these roles.

Recommendation 3:

In the majority of the ESFRS risk assessments considered by this investigation, it was found that they consistently use a severity rating of 3 for heatstroke. In some cases this rating is reduced after control measures to 2.

As a result of this investigation and to align with national guidance, it should now be considered that heatstroke is a potentially fatal occurrence and should be associated with a higher severity rating.

It is recommended that all relevant risk assessments now reflect this higher level of severity.

ESFRS Action:

1. All relevant and related risk assessments will be reviewed and where necessary amended to reflect this higher level of severity.
2. Once 1 is complete, a further review of the RAs will be undertaken to consider the recommendations and guidance contained within Dr Jim House's report on heat stress and the impacts of PPE.

Recommendation 4:

No evidence of a peer review has been found that specifically covers the Structural Firefighting Basic Course. ESFRS should be able to provide third party assurance that the current course is suitable and sufficient. The Service should consider the external evaluation of the course as soon as is practical.

ESFRS Action:

1. All BA exercises conducted at the Service Training Centre will be reviewed and amended to reflect any national guidance and to reflect operational practices.
2. Once 1 is complete and the exercises have had the opportunity to bed in the Assistant Director of Training and Assurance will commission an external Peer Review.

Recommendation 5:

A Lung Demand Valve (LDV) was removed on at least one occasion and firefighters were not expected to report to the BA Entry Control Officer (BAECO) by the time of whistle. This practice conflicts with safe operational practice and the principles set out within the current Breathing Apparatus operational guidance.

An audit of all Breathing Apparatus exercises conducted at the Service Training Centre should be carried out to ensure they all follow good operational practices, and to assure the Service that there are no practices that would be deemed to be unsafe or dangerous on the incident ground.

ESFRS Action:

1. Removal of the LDV will be ceased with immediate effect.
2. Where there is a training imperative to move outside of national operational guidance a suitable risk assessment should be undertaken and agreed as a policy of the Service.

Recommendation 6:

All personnel attending training courses must meet the requirements of the Service's fitness assessment (ESFRS manual note Fitness Monitoring).

ESFRS Action:

The Service will implement a robust monitoring process within Service Policy with regards to fitness monitoring to ensure those attending courses have the necessary fitness standards.

Recommendation 7:

The current PPE manual note and guidance given to operational personnel in regards to the wearing of under garments below fire kit should be reviewed to reflect the findings of:

1. The report provided by Dr Jim House, Reader in Environmental Physiology and Lead of the Extreme Environmental Medicine and Science Group at the University of Portsmouth;
2. Relevant national guidance such as Fire Service Manual Volume 4 Fire Service training – Guidance on the management of the risk of heat stress during training; and
3. Operational Physiological Capabilities of Firefighters: Literature Review and Research Recommendations - Fire Research Technical Report 1/2005.

ESFRS Action:

1. The Assistant Director - Operational Support & Resilience will consider the need for further research to be conducted to advise future national guidance on the effects of heat stress whilst wearing the full PPE ensemble and SCBA.
2. The current PPE manual note and guidance in regards to the wearing of under garments below fire kit will be amended to reflect the findings of:

    1) The report provided by Dr Jim House;
    2) Relevant national guidance such as Fire Service Manual Volume 4 Fire Service training – Guidance on the management of the risk of heat stress during training;
    3) Operational Physiological Capabilities of Firefighters: Literature Review and Research Recommendations - Fire Research Technical Report 1/2005.5

Recommendation 8:

The ESFRS risk assessment for the current fire kit needs to be reviewed and updated to fully reflect the findings of this report and the relevant national guidance identified, including generic risk assessments.

Once updated, the risk assessments for PPE need to be fully considered and reflected in all other risk assessments that involve the use of firefighting PPE ensemble.

ESFRS Action:

The ESFRS risk assessment for the current fire kit will be reviewed and updated to fully reflect the findings of this report and the relevant national guidance.

Recommendation 9:

ESFRS is currently planning for the procurement of the next generation of firefighting PPE. BS 8469:2007 should be considered by the procurement team in addition to BS 469:2005 (Protective clothing for firefighters — Performance requirements for protective clothing for firefighting) to ensure that Thermal Strain performance is fully considered. The information provided by completing further testing of PPE ensembles would inform and improve the quality of PPE risk assessments in regard to Thermal Strain.

ESFRS Action:

1. ESFRS is currently undertaking the procurement process of the next generation of firefighting PPE. BS 8469:2007 will be considered by the procurement team in addition to BS 469:2005 (Protective clothing for firefighters — Performance requirements for protective clothing for firefighting) to ensure that Thermal Strain performance is fully considered.

The information provided by completing further testing of PPE ensembles will inform and improve the quality of PPE risk assessments in regard to Thermal Strain. See recommendation 7 requirement 1 for further detail.

2. The Risk Assessment will be further reviewed following this research.

Recommendation 10:

The areas identified by BLR Associates Consulting and Building Services Engineers, in relation to the BA Chamber and the works required must be fully considered by ESFRS and an action plan put into place to complete these works.

As part of this same recommendation it is proposed that any subsequent modifications of the training facility should only be completed once the advice contained in National Fire and Rescue Service Manual Volume 4 Fire Service training – Guidance and compliance framework for compartment fire behaviour training is considered by the responsible manager.

It is considered that areas such as risk assessments, routine inspection and test routines, instructions for staff and training of operators must, at the minimum, be reviewed and revised after modifications to any existing training facilities are made. Further, it is expected that suitable servicing and maintenance contracts are initiated in conjunction with the ESFRS Estates function.

ESFRS Action:

1. To engage an external company to advise ESFRS on the requirements for the BA Chamber.
2. The areas identified by the specialist company will be fully considered by the Corporate Management Team.
3. A system will be put in place to ensure any subsequent modifications of the training facility should only be completed once the advice contained in National Fire and Rescue Service Manual Volume 4 Fire Service training – Guidance and compliance framework for compartment fire behaviour training is considered by the responsible manager.

Recommendation 11:

To ensure the Instructors consider the prevailing conditions prior to the commencement of training and identify and record any measures that address the issue through awareness, such as on hot days dressing down, fluid intake, cold weather debriefing procedures.

ESFRS Action:

1. ESFRS will put a process in place where prevailing conditions will be considered prior to the commencement of each 'hot wear' and, where required, measures are put in place to support both the Instructors and delegates which are then appropriately recorded.

Recommendation 12:

Review all learning objectives for the Structural Firefighting Basic Course against National Fire and Rescue Service Operational Training Guidance- Breathing Apparatus –

(OTGBA) and ensure that they are clear, communicated and understood by all instructors and delegates. Ensure all course documentation is complete, version controlled and monitored.

ESFRS Action:

1. ESFRS will undertake a review of all learning objectives for the Structural Firefighting Basic Course against National Fire and Rescue Service Operational Training Guidance- Breathing Apparatus – (OTGBA) and ensure that they are clear, communicated and understood by all instructors and delegates.

2. A process will be put in place to ensure all course documentation is complete, version controlled and monitored

Number 1 of this recommendation will be undertaken at the same time as the required action for Recommendation 4.

Recommendation 13:

Although the Breathing Apparatus Instructors (BAIs) were able to clearly list the signs and symptoms of heat stress, the level of knowledge of key national documents such as National Fire and Rescue Service Volume 4 Fire Service training – Guidance on the management of the risk of heat stress during training is not consistent.

Whilst the BAIs have demonstrated that they can identify the main signs and symptoms of heat stress, it is unclear how some of these signs can be identified by safety staff on a BA wearer wearing full personal protective equipment.

It is recommended that the current BAIs receive refresher training that incorporates these national documents. In addition all instructors must have a common understanding of the learning outcomes and key objectives prior to an exercise being run.

ESFRS Action:

1. Refresher training on heat stress, signs and symptoms and working in heated conditions will be provided to all STC instructors and Assistant / Borough based instructors.
2. Review the delivery of refresher training to BAIs to ensure that future input incorporates national guidance. To include a compliance and understanding test.

Recommendation 14:

It should be considered if the workplace inspection form is suitable and sufficient for continued use at STC.

Service managers should ensure there is full compliance with Active Monitoring Workplace Inspections in accordance with the Active Monitoring Workplace Inspections ESFRS manual note.

ESFRS Action:

1. Review the process of Active Workplace Monitoring.
2. Introduce a site specific inspection form for use at complex sites such as the Service Training Centre.
3. Introduce a monitoring of the completion of Active Monitoring Workplace Inspections in accordance with the ESFRS manual note.

Recommendation 15:

The current process of managing external information as it comes into ESFRS has been recently reviewed and further changes are expected to be implemented. However, a clear audit trail is needed as this would ensure what decisions and actions have been completed.

ESFRS Action:

The Assistant Director Performance and Improvement will review the process to determine the sources of information flow into and through ESFRS and the tracking of actions taken as a result.

Recommendation 16:

The role of the lead BAI is referenced in the Breathing Apparatus Competency Management Policy manual note OPS(P)03_02_V1 (paragraph 3.8.6). However the role is not clearly recognisable in the current Command & Operational Training (L&OD) structure for STC. Furthermore, its responsibilities do not appear to be set out within the job description for any of the current roles at STC. If this role is to be effective, it needs to be clearly assigned to an individual or post.

ESFRS Action:

1. ESFRS will review the Instructor JDs and the Lead BAI role will be identifiable within the JD.

As stated within the Chief Fire Officer's introduction, given the period of time between the incident on the 25th June 2015 and the release of this report, the causal factors and the recommendations were not wholly unexpected by ESFRS. As a result, progress has already been made on many of the recommendations identified within this report.

The recommendations that are approved from this report will require to be monitored and progressed. A suitable and sufficient governance arrangement has been identified through the Health, Safety and Wellbeing Committee, chaired by the Deputy Chief Fire Officer, to track progress and if necessary provide the impetus to retain momentum.

To support the governance process ESFRS has allocated ownership for monitoring delivery of the recommendations to the Assistant Director - Training and Assurance. The Assistant Director is responsible for collating progress updates and reporting delivery to the ESFRS Health, Safety & Wellbeing Committee on a quarterly basis.

The Service is fully committed to ensuring an incident of this nature does not occur again.