

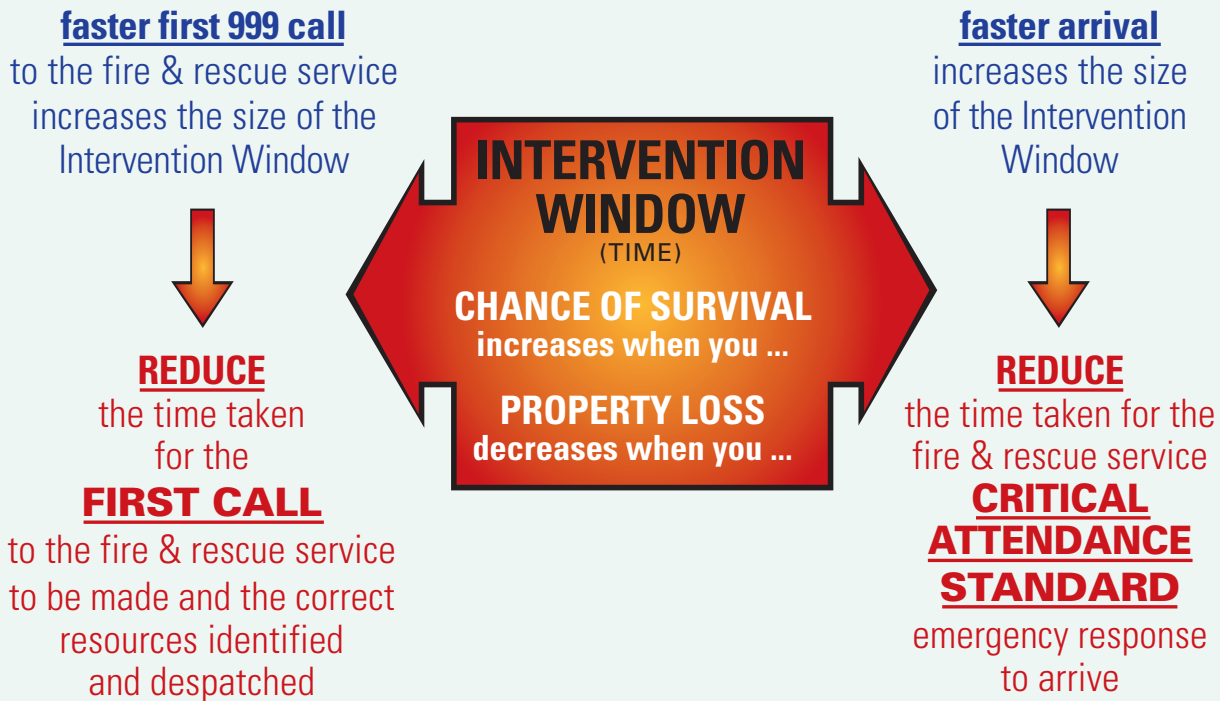
Picture courtesy of Northern Ireland Fire & Rescue Service

Effective integrated risk management planning is potentially a detailed and complex process. A large number of apparently conflicting factors have to be taken into account. However as the IRMP process (as any risk management process) is essentially about reducing risk, there is a simple test that can be applied to each and every proposal in a local IRMP which will measure whether the proposed strategy increases risk or decreases risk – the INTERVENTION WINDOW.

The Intervention Window model allows a very simple assessment to be made of the effect of each and every integrated risk management planning proposal on both public and Firefighter safety at fires and other emergency incidents. It also assesses the potential effect of these proposals on property loss and the environment.

The Intervention Window formula is grounded in both **Qualitative Assessment** (expert judgement – the experience of front-line workers) and **Quantitative Assessment** (numerical assessment using data). This combination of qualitative and quantitative assessment is critical to the outcome of a complex risk assessment such as an integrated risk management plan.

The Philosophical Approach to fire risk management (**Section 2**) adopts prevention as the starting point. This approach has much to commend it – it is clearly better to prevent the fire starting in the first place rather than having to deal with the consequences of a fire that has already occurred. The Intervention Window takes a more pragmatic approach to the problem of fire deaths, fire injuries and fire property loss and environmental damage. It assumes that efforts to prevent fires occurring in the first place will not be completely successful, and that for the foreseeable future fires will continue to occur and so pose a risk. This assumption is based on current statistical evidence of fire occurrence and fire trends. The fact remains that people do not die in the fires that we manage to prevent; they die in the fires that still occur. The Intervention Window highlights the risk-control measures necessary to minimise the effect of these continuing events.



The Intervention Window model assists in making outcome-based predictions of the effect of wider preventative and emergency intervention strategies. Prevention is not considered in the context of preventing the fire (or other emergency) occurring, but rather on minimising the effect of the event when it does occur i.e. reducing the likelihood of the event causing fire deaths and injuries and also reducing the likelihood of extensive property and other losses.

Former Standards and the Intervention Window

The inclusion of the Critical Attendance Standard methodology in the Intervention Window model assists in overcoming many of the shortcomings of earlier emergency response standards. Former National Standards of Fire Cover set output-based targets which measured the level of emergency response planned by fire & rescue authorities for different risk areas (A-risk, B-risk, etc.) in the authority's overall area (**Section 3 page 27**). However the 1985 Standards of Fire Cover report also recognised that there was a clear link between **output** (*how many fire appliances were sent and how fast they got to fires*) and **outcome** (*how good or how bad things would be when the emergency response arrived*). The full 1985 report stated:

“... the longer travelling times in the lower risk category areas generally implied that fires in these areas would be more fully developed by the time the first attendance appliance(s) arrived.”

The ‘lower’ risk category areas referred to above were areas categorised as C-risk, D-risk and Remote-Rural-risk. The outcomes of fires in these areas (in terms of life and property loss) were anticipated as being worse than the outcomes of fires in former risk areas which had been set larger and faster emergency response standards.

Interestingly the full 1985 Standards of Fire Cover report recommended that fire & rescue authorities should review attendance policies for areas categorised as C-risk to determine whether, and if so to what extent, parts of the C-risk area should attract an ‘enhanced’ attendance of two fire appliances with the second fire appliance aiming to arrive as soon as realistically possible after the first. This recommendation did not however extend to D-risk or Remote-Rural-risk areas.

The single fire appliance emergency response level and minimum attendance times set for former C-risk, D-risk and Remote-Rural-risk areas have always been of concern to fire & rescue crews, particularly those crews who are routinely on the first fire appliance to arrive at fires in these areas. In simple terms the Firefighters covering these areas were provided with less resources to fight potentially more fully developed fires, and in the knowledge that ‘reinforcements’ would generally take far longer to arrive than at fires in former A-risk and B-risk areas.

The contradiction which such a system of emergency response planning throws up is best illustrated by considering the risks posed by two identical industrial cutting machines. The machine that is used daily is provided with a guard to prevent entrapment; however the other machine is not provided with a guard as it is used less frequently. Both machines have the potential to maim or kill, but based on frequency of use, one machine has a lower standard of risk-control measures. Such a health & safety planning system would clearly not protect all employees adequately; however this is exactly what the 1985 Standards of Fire Cover required in terms of emergency response control measures in former C-risk, D-risk and Remote-Rural risk areas. Of equal concern to Firefighters has been the fact that the 1985 Standards only required planning of emergency responses capable of dealing with one call – the first call a fire & rescue service received, irrespective of evidence that brigades routinely attend more than one call or emergency incident at any one time.

Picture courtesy of Merseyside Fire & Rescue Service / Chris Phillips



The Critical Attendance Standard & the Intervention Window

Whilst the Critical Attendance Standard (**Section 4**) may initially appear to focus on Firefighter safety, it is a simple fact that if you get the right resources to the emergency incident in time, you will not only increase Firefighter safety you will also increase the likelihood of effective intervention. The likelihood that Firefighters will then be compelled to act outside SOPs as a result of a planning decision which does not take into account the real world situation they are faced with will in turn be reduced. This will also increase the chances of effective intervention which will save lives and property. In essence the Intervention Window model deals effectively with two sides of the same coin.

Every operational person within the UK fire service should be fully conversant with Breathing Apparatus procedures. If asked whether BA teams ever split up at incidents the formal answer will be “no – it is against procedures”. If asked if BA Entry Control Officer duties are always carried out by a dedicated Firefighter as per procedures you will be told that this is what the procedure says. The reality however is often very different to the answer given.

EMERGENCY INTERVENTION HOUSE FIRE

Firefighters (Control) received a call from a child. The child and her sibling were in an upstairs bedroom and stated that there was a fire downstairs in the kitchen. The children wanted to climb out of the window onto a small porch roof, however the Firefighter (Control), having ascertained that the fire was in the kitchen and that the children were in an upstairs room with the door closed, advised them to remain in the room as the arrival of fire & rescue crews was imminent. All relevant information as to the location of the children in the house was passed to the responding fire & rescue crews to assist in rescue. On arrival both children were rescued from the bedroom by Firefighters using a ladder. The fire, which involved a chip pan, was extinguished by two Firefighters wearing breathing apparatus and using a CO2 extinguisher.

2002

The simple truth is that corners are cut at emergency incidents; Standard Operating Procedures are temporarily ‘suspended’; risks over and above those planned for under SOPs are taken. That is, quite simply, what happens because all too often the necessary resources mobilised to incidents, or available at incidents when needed, have not arrived due to deficiencies in fire & rescue authority planning decisions. Whilst the ‘Safe Person Concept’ requires Firefighters to act in accordance with Standard Operating Procedures, it also requires the fire & rescue authority to provide the resources to allow this to happen. For the potential within the ‘Safe-Person’ system to be realised, the responsibility must be shared, and not simply off-loaded onto fire & rescue crews.

The inclusion of the Critical Attendance Standard methodology within the Intervention Window model aims to ensure that the necessary resources are sent as part of the initial fire & rescue service emergency response. This increases the chance of successful intervention and aims to maintain Firefighter safety. However it must be recognised that the CAST methodology only applies to the more routine incidents that fire & rescue authorities can expect to encounter in their areas. Development of CAST Planning Scenarios for more complex incidents must also be undertaken.

FBU Policy – Annual Conference 1999 Resolution 35 STANDARD SPENDING ASSESSMENT

This Conference condemns the method of calculating the Standard Spending Assessment and Grant Aided Expenditure for Fire Authorities. The inclusion of the “perverse incentive”, which penalises Brigades who conduct effective fire safety campaigns, should be the subject of an urgent meeting with the Secretary of State in order to negotiate a fairer funding policy for the Fire Service. **CHESHIRE As amended by FIFE**

Quantitative Assessment & the Intervention Window

Published research carried out to inform the recent Review of Standards of Emergency Cover (Pathfinder) established a statistical link between fire & rescue service attendance times at fires and fatality rates at those fires. The primary data used in the research was taken from historical Fire Damage Reports (FDR1s) produced by fire & rescue authorities for fire incidents.

The research was only able to predict the effect on fire fatality rates of faster or slower attendance times for the first fire appliance to arrive as part of an emergency response. This was due to the lack of data in FDR1s on arrival times of subsequent fire appliances. Nonetheless a statistical (**quantitative**) relationship was derived, and the research has been considered robust enough to merit its inclusion in the FSEC Toolkit (**Section 6**). This ‘**emergency response arrival time Vs fatality rate**’ relationship has been factored into the FSEC Computer Model to assist fire & rescue authorities in predicting the likely effect of different first fire appliance attendance times on fire death rates. Put simply



EMERGENCY INTERVENTION HOUSE FIRE

Firefighters responded to an emergency call to a house fire. When fire & rescue crews arrived they found that smoke was issuing from the property and that two men were trapped in the front bedroom. Firefighters rescued one unconscious casualty through the window by ladder and a further casualty was led out of the house by Firefighters wearing breathing apparatus.

The house was not fitted with smoke alarms. Both casualties survived. 2004

it is a statistically proven fact that faster fire & rescue service emergency response times will reduce fire deaths. The research also found a similar relationship between survival rates at Road Traffic Accidents and fire & rescue service attendance times.

The research attempted to establish if there was a statistical relationship between fire & rescue service first appliance attendance times and fire casualty rates, however no relationship was found. This is not surprising. No matter how fast the emergency response is, it is impossible to prevent a person from being affected by a fire merely as a result of the speed of that emergency response. Immediately a person breathes smoke, they potentially become a casualty. The emergency response can (and very often does) prevent that casualty becoming a fatality, but response time alone cannot prevent the fire or the products of the fire from affecting a person's health in some way.

Qualitative Assessment & the Intervention Window

The results of the quantitative research will be of no surprise to personnel in the front-line of fire & rescue operations. Firefighters and Firefighters (Control) have always known that there are two interdependent factors in their ability to save life at a fire or other emergency incident:

1. *The time between the start of the fire or the emergency occurring and the first call the fire & rescue service receives for the incident;*
2. *The time of arrival of sufficient fire & rescue service resources at the incident to undertake emergency operations effectively.*

It is these factors which dictate the size of the available 'Intervention Window'. The length of time that this window is open ultimately dictates the ability of the fire & rescue service to save life with an emergency response. The fact is borne out by the direct experience of the front-line personnel who deal with emergency incidents where lives are lost. If asked what would have made a difference at fires (or other emergencies) where people die Firefighters and Firefighters (Control) will usually give one of two answers; "if we'd had the call earlier" or "if the other fire appliances had arrived sooner...we could have made a difference."

EMERGENCY INTERVENTION FLAT FIRE

Firefighters (Control) received an emergency call from a woman trapped in a smoke filled flat. The caller was unable to see to find her way out of the building and could not open the window to her room. The woman described dense smoke pouring through the door to the room she was in. Two fire appliances were mobilised to the incident. Firefighters (Control) advised the woman to stay low on the floor, away from the smoke and breathe slowly. They also secured information on the layout of the building and the location of the casualty and passed this to the fire & rescue en-route to the incident. The casualty was rescued by Firefighters and was taken to hospital suffering from smoke inhalation. 2004

In recent years, Firefighters (Control) have added a further dimension to the ability of the service to save lives at fires, by giving what is termed 'Fire Survival Guidance' to callers who are trapped in burning buildings. This guidance is given via telephone by Fire & Rescue Control to persons who are trapped and in deteriorating fire conditions. Very often these persons are in a condition of extreme panic and distress. The guidance given relates to the most effective actions that trapped persons should take in order to maximise their chances of staying alive until fire & rescue crews get to the incident to affect their rescue. It has saved numerous lives, and is a further example of the team approach necessary in the fire & rescue service for effective life-saving emergency intervention.

FBU Policy – Annual Conference 2002 Resolution 45 COMMUNITY FIRE SAFETY

This Conference demands that the Executive Council enter into negotiations at the earliest opportunity with our employers and the Government, with the aim of making community fire safety a statutory duty for the Fire Service. The extra funding needed by Fire Brigades should reflect the overall resources that are required to deliver community fire safety to their communities and should not punish Brigades for a reduction in calls by the perverse funding mechanisms. **NORTHUMBERLAND As amended by WEST YORKSHIRE**

Emergency Response Planning & the Intervention Window

The first critical factor in relation to Emergency Response Planning and the Intervention Window model is the ability to process calls for emergency assistance quickly and professionally. This will ensure that the correct emergency resources are identified and dispatched as fast as possible, and that where necessary, callers are provided with life-saving advice whilst awaiting the arrival of fire & rescue crews.

EMERGENCY INTERVENTION ALARMS OPERATING

Firefighters (Control) received an emergency call from a foreign visitor who reported a fire alarm sounding in a building. The call was made by mobile phone and the caller had limited knowledge of their location. Through systematic questioning of the caller the Firefighter (Control) ascertained the caller's location. The Firefighter (Control) was aware that the building had just been renovated, had re-opened as a restaurant, and was not yet on the brigade's computer mobilising system. Two fire appliances were mobilised to the incident. The incident escalated to an 8-pump incident and required an Aerial Ladder Platform. 2003

FBU Policy – Annual Conference 1998 Resolution 39 FUNDING FIRE SAFETY

This Conference views with concern many of the findings of the Community Task Force report, in particular their view that increased Community Fire Safety Education can be achieved within existing budgets. This can only be achieved by a redeployment of already overworked and under resourced staff and budgets. Therefore, this Conference calls on the Executive Council to press the Government that any such initiatives shall be introduced nationally with extra and adequate funding. **CLEVELAND**



Picture courtesy of Northern Ireland Fire & Rescue Service

As such fire & rescue authorities must consider emergency call handling times, and ensure that sufficient numbers of Fire & Rescue Control personnel are available to process these calls and to provide Fire Survival Guidance (where required) to keep the Intervention Window open long enough for successful emergency rescue and firefighting. Correct fire & rescue authority decisions here will dictate:

- **PUBLIC FIRE SURVIVAL RATES** – faster incident identification, resource mobilisation times, and Fire Survival Guidance opportunities increases the prospect of successful rescue;
- **FIREFIGHTER SAFETY** – faster incident identification and resource mobilisation times, coupled with the initial mobilisation of the resource levels necessary for the incident, reduces the risk to Firefighters who may otherwise be faced with more fully developed fires, and/or be compelled to act outside Standard Operating Procedures due to a lack of resources being mobilised to the incident;
- **PROPERTY LOSS** – faster incident identification and resource mobilisation times, coupled with the initial mobilisation of the resource levels necessary for the incident, increases the likelihood of firefighting operations being successful.

Resolution 44 STAFFING LEVELS

Due to the constant need to work within the realms of the Health and Safety at Work Act, and the necessity to use the correct level of command and control on the fireground, this Conference demands that the current level of staffing of fire appliances be increased to a minimum of five on all pumping appliances. This is to be achieved without loss of any appliances. **WEST MIDLANDS**
As amended by CLEVELAND

EMERGENCY INTERVENTION HOUSE FIRE

An emergency call was received by Firefighters (Control) to a house where a firework had been deliberately set off through the letterbox. Two persons were trapped inside the house by the resulting fire. Fire & Rescue Control remained on the line giving emergency Fire Survival Guidance to the caller to maximise their chances of rescue by emergency crews when they arrived. When fire crews arrived they assisted two casualties out of the property. Both persons were transported to hospital by ambulance suffering from the effects of smoke inhalation. 2002



EMERGENCY INTERVENTION HOUSE FIRE

A local councillor was leaving a meeting when he noticed smoke issuing from the rear of a house. He immediately went to a nearby building where he knew that FBU Brigade Committee members were meeting and asked for assistance. The off-duty Firefighters quickly established that the fire was serious and that there may be persons in the house. They contacted Fire & Rescue Control stating that the fire was a potential 'persons reported' call. A neighbour was assisted from his house by the off-duty Firefighters prior to the arrival of the emergency crews who extinguished the fire. The Councillor expressed his surprise at how long it seemed to take the fire & rescue service to arrive. The 1985 Standards of Fire Cover attendance times were met. 2004

The second critical factor in relation to the Intervention Window model for fire & rescue authorities charged with making local decisions on emergency attendance times (in the absence of national standards of fire cover) is **first fire appliance emergency attendance times**. These must be set in order to reduce the existing level of fire deaths and improve public and property safety. Correct fire & rescue authority decisions here will dictate:

- **PUBLIC FIRE SURVIVAL RATES** – faster first fire appliance attendance times increases the prospect of successful rescue (but see also LAG opposite);
- **PROPERTY LOSS LEVELS IN FIRES** – faster first fire appliance attendance times increases the likelihood of firefighting operations being successful (but see also LAG opposite).

EMERGENCY INTERVENTION HOUSE FIRE

Fire & Rescue Control received an emergency call from a family of four who were trapped by thick smoke in their house. A fire had started in the kitchen. Firefighters (Control) mobilised fire & rescue crews to the incident, and remained in contact with the family by mobile phone. Based on the information passed to them, they advised the family to move to a second floor bedroom to await rescue. This information was conveyed to Firefighters en-route to the fire. The information enabled fire & rescue crews to make fast, well-informed decisions on the extent of the fire and the critical actions necessary when they arrived. Fire & rescue crews located the family quickly, and rescued them by ladder. 2004

FBU Policy – Annual Conference 1999 Resolution 37 – FUNDING COMMUNITY RELATIONS

This Conference, whilst supporting the principle of "Community Relations", is concerned at the lack of additional funding from Central and Local Government, which Conference believes is required to allow Brigades to carry out these initiatives without compromising the levels of fire cover in each Brigade. We call on the Executive Council to negotiate with all relevant Government departments in order to secure the necessary additional funding. **WEST MIDLANDS**

Having decided the first fire appliance emergency attendance time the fire & rescue authority must then factor in the attendance LAG maximums (Section 4 page 40). These ensure that the correct level of resources to get the job done are available when needed, and importantly that Firefighter safety is maintained at an acceptable level as a result. Correct fire & rescue authority decisions here will dictate:

- **PUBLIC FIRE SURVIVAL RATES** – faster full Critical Attendance Standard arrival increases the prospect of successful rescue;
- **FIREFIGHTER SAFETY** – arrival of the full Critical Attendance Standard emergency response within tightly-controlled phased arrival times reduces the risk to Firefighters who may otherwise be compelled to act outside Standard Operating Procedures due to a lack of available resources in the critical early stages of the incident;
- **PROPERTY LOSS LEVELS IN FIRES** – arrival of the full Critical Attendance Standard emergency response within tightly-controlled phased arrival times increases the likelihood of firefighting operations being successful.

EMERGENCY INTERVENTION FLAT FIRE

Fire & Rescue Control received an emergency call to a fire reported as being on the ground floor of a block of flats with persons on the first floor trapped by the fire. Two fire appliances were initially mobilised to the incident. Firefighters (Control) remained in contact with the caller who was one of the persons trapped, giving emergency Fire Survival Guidance to maximise their chances of rescue by emergency crews when they arrived. On arrival of fire & rescue crews a further two fire appliances were requested to be sent to the incident. Three persons were rescued from the premises by Firefighters using a 13.5m ladder. The fire was extinguished by Firefighters wearing breathing apparatus. 2002

EMERGENCY INTERVENTION HOUSE FIRE

Fire & Rescue Control received an emergency call from a person trapped in a house fire. The fire was on the ground floor and smoke was issuing from both ground and first floor windows. The woman was in a state of distress and informed Firefighters (Control) that she intended to jump from an upstairs window. Fire & Rescue crews were mobilised to the incident whilst Firefighters (Control) persuaded the woman, based on the information that they were able to extract from her, to remain where she was, to shut her bedroom door and to block the gap beneath the door with bedding to prevent smoke seeping in. Information on the woman's location was passed to Firefighters en-route to the incident, who rescued her by ladder. The woman was treated in hospital for the effects of smoke inhalation and survived. There was no smoke alarm in the house.

2003

The Intervention Window model assists by clearly focussing integrated risk management planning decisions on strategies for reducing fire deaths, reducing deaths from other emergency incidents, and reducing property and other fire losses. By including the Critical Attendance Standard methodology it also deals with the deficiencies in many of the current 1985 Fire Cover Standards-based Standard Operating Procedures.

Assessing Emergency Response and Attendance Times

The fire fatality rate Vs attendance time research found that there was some difference in the rate of fire deaths for first fire appliance attendance times of between 5 and 10 minutes. The research found that persons remaining in areas affected by high levels of heat, fire or smoke for longer than 5 minutes are likely, but not certain, to be incapacitated, with death or serious injury being likely for longer exposures. However as the time from flaring of fires to the time of rescue increases from a few minutes to over 10 minutes, the likelihood of death also increases.

As stated the research was only able to consider the effect of attendance times on fire fatality rates based on the first fire appliance to arrive. Additionally the research calculated the fatality rate not from the time of the first call to the fire service, but from the time that Firefighters were alerted and mobilised i.e. from the time that fire station alarm bells were sounded or Firefighter personal alerters were activated.



Picture courtesy of Northern Ireland Fire & Rescue Service



FBU Policy – Annual Conference 1991 Resolution 85 CONTROL STAFFING LEVELS

Due to the present financial difficulties caused by the standard spending assessment, Conference instructs the EC to pursue as a matter of urgency a minimum staffing level for controls.

SOUTH YORKSHIRE

Taking an emergency response attendance time of 8 minutes as being the ‘optimum’ attendance time for effective rescue, and also taking into account Critical Attendance Standard LAG maximums and average call handling times, the following attendance time maximums can be set:

CRITICAL EVENT	MAXIMUM Running Times
Receipt of first emergency call for incident at Fire & Rescue Control	ZERO minutes
Fire & Rescue Control call handling time prior to mobilisation of fire & rescue emergency response	2 minutes after first call
Attendance of FIRST fire appliance at incident	8 minutes after first call
Attendance of SECOND fire appliance at incident (<i>where required by CAST</i>)	11 minutes after first call
Attendance of THIRD Fire Appliance at incident (<i>where required by CAST</i>)	13 minutes after first call

EMERGENCY INTERVENTION SHELTERED HOUSING COMPLEX FIRE

A smoke detector operated at a sheltered housing complex. The resident was contacted via the intercom system of the council's Lifeline service to ascertain what had caused the alarm, but told the council operator that he was alright. The policy at the sheltered accommodation was to first ask residents why their smoke detectors had activated and then to send a warden to investigate. The fire & rescue service were only called after an alarm went off in the flat above, and a warden, who had been called to investigate that alarm found the flat full of smoke. The resident was rescued by Firefighters, but died. The Coroner subsequently wrote to the council and the fire & rescue service requesting that they consider whether the emergency services should be called immediately, rather than getting a warden to investigate first in such cases. 2003

EMERGENCY INTERVENTION ROAD TRAFFIC ACCIDENT

Fire & rescue crews were mobilised to a road traffic accident involving a car, a heavy goods vehicle and a bus. Two adults and three children were trapped in the car which had been crushed between the bus and the heavy goods vehicle. One child died, and one child (according to the hospital) survived only as a result of the speed of the extrication carried out by Firefighters and ambulance crews. 4 casualties were treated in hospital for their injuries. 2004

Wider Preventative Strategies & the Intervention Window

The size of the Intervention Window will dictate both survival rates of the public in fire, and the ability to mount effective firefighting operations without increasing risk to Firefighters over and above that to which they would normally expect to be exposed in an inherently ‘risky’ job. Legislative fire safety activity and CFS strategies must be planned with the aim of increasing the size of this Intervention Window. These strategies can be seen therefore as having the dual role of both preventing fires occurring in the first place, and preparing people for the fires that do occur. Preventative strategies must be effective in reducing the time taken for the first emergency call to be made to Fire & Rescue Control.

Information recorded on fire & rescue authority FDR1 reports indicates that almost half of fire fatalities occur in fires which are estimated to have been burning for more than 30 minutes before the alarm of fire is raised. However the Pathfinder research concluded that there appears to be only a minority of fires where emergency attendance in response to a call will not avert death irrespective of how fast the attendance is.

Strategies aimed at preventing fires happening in the first instance aside, all available research evidence suggests that earlier fire detection and first call to the fire & rescue service will undoubtedly reduce significantly fire fatality rates, particularly where self-rescue is not possible. Fire Survival Guidance strategies also play an increasingly important role in effective emergency intervention. The challenge for preventative strategies, particularly strategies aimed at giving earlier warning of fires that do occur, undoubtedly begins here. Section 9 page 97 gives further details.

FBU Policy – Annual Conference 2001 Resolution 99 FITTING OF SMOKE ALARMS

This Conference urgently demands clear national guidelines on the fitting of smoke alarms by operational Firefighters. Until that is achieved the fitting of smoke alarms will only be undertaken after an appropriate written risk assessment and proper training, on a voluntary basis. **ISLE OF WIGHT As amended by WEST MIDLANDS**