Call reduction guidance for false alarm/unwanted fire signals
Introduction

Devon & Somerset Fire & Rescue Service attend in excess of 20,000 incidents each year, approximately ¼ of those incidents are generated from Automatic Fire Alarm systems.

Approximately ¾ of those are false alarms, so in excess of 3,600 incidents and appliance mobilisations per year could be avoided.

The purpose of this document and its information is to highlight best practice, and offer both technical and procedural advice to those affected by unwanted signals from Automatic Fire Alarm system and provide support to fire officers, responsible and competent persons.

A large number of fire alarms can easily be identified as false alarms by persons on or in the property and do not require a call to the fire service. This approach has proven successful where it has been implemented.

Therefore, dependent upon a suitable risk assessment of the property, false alarms should be identified prior to calling the fire service. This approach should also be incorporated into the premises fire training programme.
Why reduce false alarm/unwanted fire signals

Unwanted/false alarms cause a significant drain on resources. Devon & Somerset Fire & Rescue Service is committed to minimising false/unwanted alarms and to reducing the number of unnecessary call outs and their impact on service delivery, business and commerce. A reduction in false alarms will allow services to be available for genuine emergencies. This will release essential resources to allow for more training and community safety protection and prevention activities to take place.

The impact on the community

- They are disruptive and costly to businesses in terms of down time and productivity. They may have an adverse effect on staff.
- Responding to these calls creates unnecessary risk to members of the public when appliances are responding under ‘blue light’ conditions.
- Occupants of those buildings that have frequent false alarms get used to them and may delay their response, or worse not respond at all, in a real emergency.
- Disruption to community safety activities – education, home safety visits and fire safety checks.
- They adversely affect businesses who release their employees to respond as ‘on-call’ firefighters. 80 of our 85 fire stations have at least one appliance which is crewed by ‘on call’ firefighters.

The impact on the fire service

- They divert essential resources and may result in a delayed attendance at a genuine emergency.
- Responding to these calls creates unnecessary risk to fire crews when appliances are responding under ‘blue light’ conditions.
- It is expensive to the Service particularly salaries and vehicle costs.
- They are disruptive to fire service work routines, particularly community safety protection and prevention activities, arson reduction and training.
Typical causes

The following typical causes of false alarms can usually be avoided by improved awareness and by taking preventative measures.

General – including human factors
1. Cooking fumes
2. Steam
3. Aerosol sprays
4. Dust and insects in detectors
5. Smoking near detectors
6. Controlled processes that produce smoke and fumes
7. Water ingress
8. Contractors involved in hot works
9. Mechanical damage/disruption
10. Testing or maintenance of fire alarm systems without prior warning to the Alarm Receiving Centre

Environmental
11. Electrical storms
12. Extreme fluctuation in temperature
13. Pressure surges on water mains serving automatic sprinkler systems
14. External smoke or fumes
15. High air velocities

Technical
16. Detector or alarm system equipment faults
17. Change of use of building, processes or occupants
Remedial advice and actions that can be taken

In many cases someone is aware of the cause of an alarm and whether or not it is a false alarm. Many false alarms can be easily resolved with common sense approach.

- In Houses of Multiple Occupancy make sure there is appropriate signage and information available to residents and staff.
- Review management procedures - what should happen when a fire alarm sounds? Ensure safe investigation is carried out prior to calling the fire service.

Cooking fumes

Cooking fumes are one of the major causes of false alarms, especially in Houses of Multiple Occupancy, sheltered housing schemes and domestic dwellings. Doors should not be propped open as this can allow cooking fumes from kitchen areas to activate smoke detectors in adjacent areas.

Areas for consideration

- Close doors or fit automatic or spring loaded door closers.
- Fit an extractor fan, making sure that it is maintained.
- Review detector type and positioning.
- Fit a cooker gas/electricity switch. These should be fitted in premises that consistently suffer from false alarms due to cooking fumes. They can switch the gas or electricity off after a period of time if a safeguard button is not pressed. Others use motion sensors that switch the gas or electricity off if the kitchen has been empty for a period of time.
- Food trolleys in hospitals - one method of reducing false alarms activated by food trolleys is to encourage the marking of safe areas to leave the trolleys that are away from detectors.
- Toasters – remove toasters that do not have timers or a pop up facility, or have them wired or a unique plug attached so they cannot be relocated.

Steam

Smoke detectors can be activated by steam. Ensure that steam from ovens, showers and bathrooms etc. cannot reach smoke detectors in adjacent areas.

Areas for consideration

- Close doors or fit automatic door closers
- Fit an extractor fan and keep it well maintained
- Review the type and positioning of detectors.
Aerosol Sprays

Cleaning staff in particular should be made aware that aerosol sprays used near smoke detectors can cause false alarms. Use aerosols with care and if possible, away from detector heads.

Areas for consideration
- Education of occupants and cleaning staff

Dust and insects in detectors

Dust that collects in a smoke detector can be removed by regular quarterly vacuum cleaning for domestic properties. A maintenance contractor should thoroughly service all detection at relevant intervals in all commercial properties.

Areas for consideration
- Use of an insect repellent system.
- Insect repellent strips can be fitted near the detector.
- Have a regular maintenance and cleaning regime to remove dust and insects in the vicinity of detectors.

Smoking near detectors

Smoking near detectors can trigger false alarm activations.

Areas for consideration
- Education of all occupants and staff.
- Review detector type and position.
- Put in place a designated smoking area away from detectors, preferably in the open fresh air.
Testing of alarm systems

The fire and rescue service often attend false alarm calls received by 999 system and Alarm Receiving Centres to premises that are testing alarm systems as part of their maintenance regime.

Areas for consideration

• Encourage premises and Alarm Receiving Centre’s to have a communication procedure in place to confirm if the signal received from the premises is confirmed as fire or a false alarm.
• Review staff training and testing procedures.

Engineers and contractors working on site

When engineers and contractors are working on site there is an increased risk that fire alarm systems may be activated accidently. This may be due to the creation of dust by contractors using power tools. ‘Hot’ work close to smoke detectors involving cutting, welding or electrical interference can also cause false alarms. Engineers working on the system should also ensure that they don’t cause false alarms.

Areas for consideration

• Ensure the contractors have and operate a ‘hot’ working permit system.
• Educate the contractors on false alarm reduction and actions they can take to prevent false alarms.
• Use of signage and information to staff and contractors.
• Write a false alarm activations clause/penalties into contracts of work.
• Cover detectors that may be affected or create an isolation zone. Ensure staff are warned of the temporary change and update the fire risk assessment accordingly to take account of any temporary measures.
• Clean covers before removing them from the detector head.
• Ensure that at the end of the work, all covers are removed and that the system is returned to its functioning state.
Environmental

Environmental conditions e.g. adverse weather conditions particularly electrical storms can cause a fire alarm system to activate or malfunction producing a false alarm.

Areas for consideration

- Consider taking remotely monitored automatic alarms systems off line during this period if a responsible person is present. Review the fire risk assessment to take into account any change in procedures. A 999 call should be made in an emergency.

- Encourage premises and Alarm Receiving Centre’s to have a communication procedure in place to confirm if the signal received from the premises is confirmed as a fire or false alarm.

Technical Faults

Ensure that following a false alarm the cause is investigated and recorded. Prevent re-occurrence and improve reliability by taking necessary remedial action, involving the alarm maintenance company as necessary.

Areas for consideration

- The Chief Fire Officers Association (CFOA) and relevant trade associations encourage the use of a third party accredited maintenance company. Use of these companies should be considered.

- Ensure maintenance is in compliance with relevant British Standards.

- Ensure an engineer is mobilised to resolve any problems and interim actions are in place to prevent a repeat activation due to a system fault.

- Ensure the problems are resolved as soon as possible to prevent the fire and rescue service mobilising to the false alarm.
Incorrect positioning or the wrong type of detector

It is well known that the incorrect positioning or the wrong type of detector can cause false alarm activations in certain situations. Consider the use of a different type of detector to reduce the likelihood of false calls.

Areas for consideration

- Review the location of detectors with an approved maintenance service provider.
- Consider the use of an alternative fire detector.
- A heat detector can reduce the majority of false activations; however they do not react as quickly, and so do not offer as much protection.

The use of a heat detector requires special consideration to ensure that the properties risk assessment accounts for the reduction in protection. In a property where people sleep it is generally accepted that the person in the room where the fire starts could be at risk due to the fact that heat detectors activate later than other types of detector. However the heat detector would still set the automatic fire alarm system off and alert the rest of the premises.

Alternatively consider a standalone mains powered (with battery back-up) smoke detector as an additional system. This still protects the person in a room where the fire starts, but allows the false alarm to be identified without the full alarm system being activated. If the heat detector is activated then the full system would also be activated.

Any risk based approach will need to suitably assessed by a competent professional prior to any changes taking place.

- A system of maintenance (for both automatic and standalone alarm systems must be provided).
- Carbon Monoxide (CO) detectors should be used in conjunction with the approved fire alarm system where there are persistent false alarms caused by cooking fumes.
- Ionisation chamber smoke detectors positioned where shower steam is allowed to escape can cause persistent false alarms.
- New technology, such as multi sensor detectors offer a greater flexibility in terms of sensitivity and identification. The use of newer technologies, such as hybrid detectors should be considered to offer suitable protection while reducing the occurrence of false alarms.
Poor management

There is a general misunderstanding that the fire safety arrangement in a property is only of concern just prior to the fire and rescue service carrying out an audit. The Regulatory Reform (Fire Safety Order) 2005 which came into force in 2006 clearly places the emphasis on the management/owners to effectively manage this every day.

Areas for consideration

- Encourage pro-active management.

  It is no longer acceptable to call the fire service as soon as an alarm activates (in some cases the fire service may not attend unless it is a confirmed fire). A review of the premises Fire Risk Assessment and procedures to (where possible) identify obvious false alarms prior to calling the fire service should be implemented.

Management procedures

A large proportion of the causes listed could easily be identified as false alarms by persons on or in the premises and don’t require a call to the fire service. This approach has proven successful where it has been implemented.

Therefore, dependent upon a suitable risk assessment of the premises, false alarm clarification prior to calling the fire service should be implemented. This approach should also be incorporated into the premises fire training programme.

The use of a predetermined time delay to allow fire marshals/responsible persons to identify and confirm obvious false alarms within the property is strongly encouraged, subject to the property risk assessment. It is no longer acceptable to call the fire service, whether by 999 or by Alarm Receiving Centres just because the alarm has activated without trying to implement management procedures (where possible) to identify false alarms.

If the property is connected to an Alarm Receiving Centre, then a call to confirm the cause of the alarm prior to calling the fire service should be made.
Best Practice examples

1. All premises that have a false alarm should seek professional advice from competent persons.

2. Time period delay at fire alarm panels (e.g. 2-5 minutes based on site specific risk assessment)
   - If the alarm activates, trained fire marshalls/responsible persons should safely check to confirm an obvious false alarm. This should not be a thorough investigation, but to identify obvious false alarms such as the previously hi-lighted causes.
   - If the premises use an Alarm Receiving Centre to monitor its alarm system, the signal would hold at the panel for a predetermined time period, if not reset (false alarm) after by the end of the predetermined buffer time. The signal should then be directed to the fire service via the Alarm Receiving Centre and an Automatic Fire Alarm attendance would be mobilised. This procedure allows for a buffer to identify false alarms but also provides back up, so that if fire marshalls/responsible persons were unable to investigate in time the fire service will be mobilised after the buffer time period lapses. This option could be used at appropriate times (working hours).
   - If a false alarm is identified then you do not need to call the fire service. The system panel should be reset, or an engineer called to check and reset the system. The incident should then be recorded in the premises Fire Log Book and investigated to reduce future occurrences.
   - If fire marshalls/responsible persons cannot readily identify the reason for the alarm, the fire service should be called immediately. The fire service will mobilise an Automatic Fire Alarm attendance (normally one appliance).
   - If signs of fire are identified at the premises, then the fire service should be called immediately (via the 999 system even if the system is monitored) and a full fire attendance will be made.

3. Alarm Receiving Centres (ARC) call back
   - A few Alarm Receiving Centres offer a call back procedure. If the alarm activates they will call the premises to check if the alarm is false before calling the fire service. An investigation of the property should have identified the cause of the alarm. If there are doubts as to the cause of the alarm or signs of fire a 999 call should be made to ensure early mobilisation of the fire service. At sheltered housing schemes it is essential that the call back system is positioned in a place that can still be heard if the alarm activates, and the system accounts for any residents disabilities. If an Alarm Receiving Centre calls the fire service and the cause of the alarm is unknown (empty property) then a key holder should also be contacted by the Alarm Receiving Centre to attend the site within twenty minutes (or less) at the same time.

4. Reconfigure the Automatic Fire Alarm system
   - Consideration should be taken to the reconfiguration of the Automatic Fire Alarm system e.g. requiring the activation of a second adjacent detector(double knock) before the system goes into full alarm mode.
5. Management of premises

- Management of the premises (including staff and any person on those premises) should compensate for human error and actions are essential to reduce the occurrence of false alarms.

6. Taking the Automatic Fire Alarm system offline

- On occasions, the Automatic Fire Alarm system will need to be taken offline for maintenance by qualified service engineers. When the system is taken offline for any reason, the premises will need to revise their risk assessment accordingly. It is essential that the management procedures account for the system being offline and that it is switched online when required.

7. Sheltered housing

- When a detector in a flat or house is connected to the communal automatic fire alarm system it should not render the whole system vulnerable to a false alarm originating from that flat or house. The general use of the smoke detectors in these situations can often mean the system is prone to false alarm activations, typically due to cooking fumes and steam. A heat detector located in the properties hall or lobby with the additional provision of a standalone mains powered (with battery back-up) smoke detector/s should be considered to provide early warning of a fire. See specific fire safety guides and guidance or contact your local fire protection office. The standalone detector should be provided in the flat or house, mains powered with battery backup to alert residents.

- The practice of hard wiring (connecting) detectors to a Speech Call Unit as a means of providing an automatic alarm signal is common in sheltered housing. This arrangement allows a call back to the premises to identify the cause of the activation. This however does not always reduce false alarms and is dependent on the resident’s situation. Many call backs may not be heard due the fire alarm sounding; other residents may be hard of hearing and might not hear the call unit, or have reduced mobility and be unable to reach the unit in time. The accommodation provider/housing association is expected to review this process if the location is having false alarms, and take account of the needs and limitations of the occupants as part of the Fire Risk Assessment process.

Many Sheltered Housing Providers/Management Organisations are reducing the amount of staff and wardens due to financial constraints. This may result in an increase in the number of false alarms the fire service is mobilised to. It must be stated that the fire service should not be considered as a free resource to cover a reduction in premises staffing. Not only is it inappropriate but may be an indication that the management team are not fulfilling its legal duties under the Fire Safety Order.
Residential care premises

Residential care premises should conform to the code of practice for the design, installation, commissioning and maintenance of systems in non-domestic premises or provide an equivalent or better standard. In order to comply with the code of practice the following is required.

- The responsibility for in-house maintenance and testing of the fire detection and warning system rests with the ‘premises management’.

- Where a staff alarm or pre-alert system is used, the fire and rescue service should be called immediately on activation of the fire alarm system. There may be a delay in activating the general alarm, provided all staff are aware that the pre-alert alarm has activated.

- Provision is made for the automatic transmission of the fire alarm signal to an Alarm Receiving Centre. The need for staff to call the fire and rescue service through the 999 emergency system should continue.

- Accurate and unambiguous information is provided to staff regarding the location of a fire.

- Where the safety of life is dependent on the location of a fire, it may be necessary to use an addressable fire alarm system - a system able to provide detailed information as to the location of a fire.

- An addressable fire alarm system should also be provided where occupants need assistance from staff to evacuate the building, and where 10 or more people may sleep.

- It is the responsibility of the premises management to ensure that a zone plan is provided and kept up to date. This plan should be a clear diagram showing the shape and layout of each floor including any alarm system detection zones.

1. Identify fire hazards
2. Identify people at risk
3. Evaluate, remove or reduce, and protect from risk
4. Record, plan, inform, instruct and train
5. Review
National guidance and further information

• Chief Fire Officers Association (CFOA) policy guidance for the reduction of false alarms and unwanted fire signals.

• The Regulatory Reform (Fire Safety) Order 2005 and fire safety risk assessment guide issued thereunder.

• BS5839 Fire Detection and Alarm Systems (part 1 & 6).

• The Housing Act 2004.

• HTM 05-03 Part H Reducing Unwanted Fire Signals in Healthcare Premises.


• National Framework Document.

• Localism Act 2011 (Powers of Competence).

If you require any further information or detail please contact the Service Call Reduction Officer at SHQ on 01392 872172.