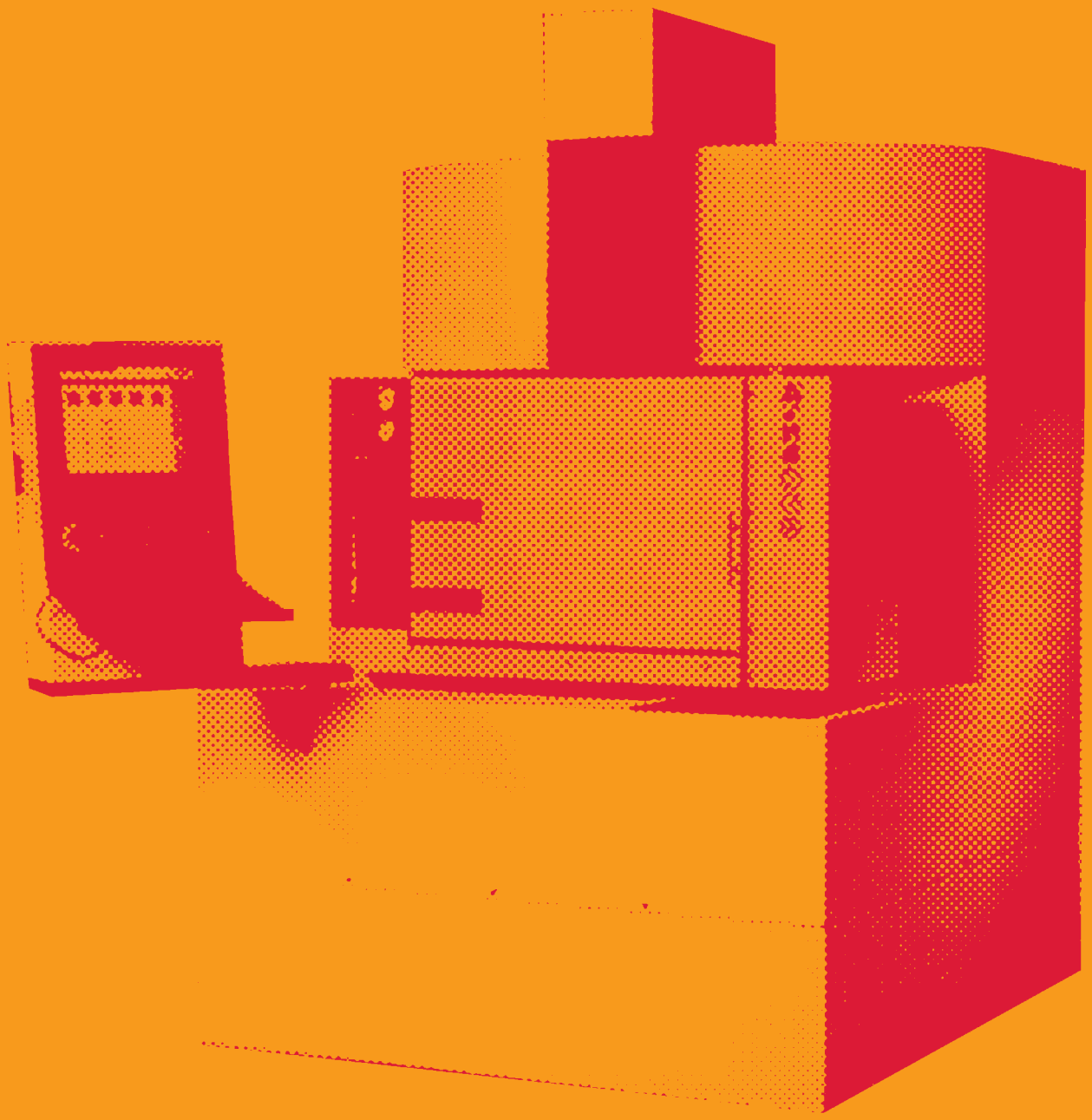
RC42
First published 2010
Version 01

Risk Control

Fire safety of unattended processes



RISCAuthority

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SCOPE

These recommendations are applicable to processes which, while involving the application or production of heat, are required to run unattended for significant periods of time either within or outside of normal working hours. Examples include engineering processes, such as gear cutting and spark erosion, injection moulding, the firing of pottery and similar operations. They also include some processes such as those in the baking and printing industries.

In the case of laboratories, where unattended process may include the distilling of solvents, this document should be read in conjunction with RC5: **Fire protection of laboratories** (ref. 1). RC29: **Recommendations for spark erosion machining** (ref. 2) gives further advice on that process.

SYNOPSIS

It is important to maximise the use of equipment with a high capital investment. These recommendations provide guidance for businesses considering leaving processes that involve the application or production of heat to operate unattended routinely for prolonged periods of time.

DEFINITIONS

Unattended process

An unattended process is one that, once set up, is required to continue for a prolonged period of time without intervention or periodic monitoring by personnel.

INTRODUCTION

Organisations are under increasing pressure to reduce manpower and automate processes as far as possible for a number of reasons. These include the need to:

- reduce staff costs and hence the final cost of the product or service being provided;
- meet customer demands, whether short or long term;
- meet production deadlines or targets; and
- achieve a return on capital investment in an acceptable timeframe.

These factors have led to an increasing number of processes that are allowed to function overnight or at other times when personnel are not present. As some of these processes involve the application or production of heat, there is a potential for a fire to occur which, in the absence of trained staff, could develop and spread rapidly. Such a fire could have a serious impact on the safety of staff in other parts of the premises, the equipment involved in the fire, the building in which it is situated and the continuity of the business. There may also be a threat to the environment and the welfare of other people in the neighbourhood.

It is advisable, whenever possible, for all manufacturing operations to be carried out when staff are present but in some instances, such as where the operation to be carried out is extremely lengthy, unattended operation may be the only option.

The introduction of an unattended operation should trigger a review of the fire risk assessments for the premises that have been undertaken in accordance with the Regulatory Reform (Fire Safety) Order 2005 and equivalent legislation in Scotland and Northern Ireland (refs. 3 to 6) and the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR) (ref. 7). In updating these assessments, the advice set out in this document should be applied, as appropriate, in conjunction with other in-depth advice on specific fire hazards that relate to the processes concerned.

During the assessments, consideration should be given to measures to reduce the hazards associated with the process, or possibly to eliminate the need for unattended operation at all. For example, it may be possible in some laboratories to use aqueous solvents which would eliminate the need for unattended solvent distillation.

If, following a fire risk assessment, a process is to be left unattended, the insurers should be informed, as additional fire protection measures to supplement those set out in these recommendations may be required.

RECOMMENDATIONS

1. Compliance with fire safety legislation

1.1 The fire safety management strategy for unattended processes should consider practical passive, active and managerial control measures as part of the fire risk assessment for the premises undertaken in compliance with the Regulatory Reform (Fire Safety) Order 2005 (or equivalent legislation in Scotland and Northern Ireland) (refs. 3-6). These measures should include:

- physical segregation of the process from other operations being carried out on site, whether these are automated or manned;
- development of suitable control systems;
- suitable fire detection and warning systems in case of fire;
- the application of automatic fire protection measures and provision of portable firefighting equipment;
- development of an emergency action plan to protect life and property and ensure the continuing functioning of the business in the case of fire; and
- staff training in the actions to take in the event of fire, including the safe shut down of the process and evacuation of the premises.

1.2 An assessment in compliance with DSEAR (ref. 7) should be undertaken where hazardous materials such as significant quantities of flammable liquids, oils, compressed gases or dusts are involved in the process.

2. Business continuity

2.1 Even a small fire can have a disproportionate effect on a business if it occurs in a critical piece of equipment. Many items of modern equipment are increasingly expensive resulting in pressure for them to be used to the maximum benefit, including consideration for them to be run automatically during the nights or over weekends when no, or very few, staff are present. Careful consideration must be given to all fire and safety implications before such a decision is made.

2.2 All organisations should take steps to ensure the continued smooth running of their business by making a suitable emergency plan. Guidance for this is set out in **Business resilience: A guide to protecting your business and its people** (ref. 8). The emergency plan should address the implications of a fire, flood or other perceived disaster on all facets of the business model. It should indicate the lines

of communication that should be followed and the contact details for specialist assistance, providers of alternative accommodation and suppliers of manufacturing plant.

2.3 When complete, the emergency plan should be tested by means of a table top exercise, with the results being assessed and amendments made to the plan as necessary.

2.4 Consideration may be given to applying commercially available computer programmes, such as the **Robust** software (**Resilient Business Software Toolkit**) that is available free of charge (ref. 9), or other appropriate product, to develop and check the adequacy of the plan.

3. Management of the process

3.1 Before being left unattended, a new process should be fully developed and run for a prolonged period of time with staff in attendance. This is in order to ensure that the equipment is working satisfactorily, that all foreseeable potential safety issues and fire hazards have been identified and addressed and that the fire risk assessment for the process has been satisfactorily completed.

3.2 Security or other responsible staff on site that may be called to take action in an emergency should be made aware of details of the process to be carried out and who to call in an emergency.

3.3 Time switches may be used to start or to shut down operations but preferably processes should be commenced manually and monitored for a suitable period to ensure that they are continuing correctly before being left to operate unattended.

3.4 Appropriate devices should be in place to ensure the continued running or safe shut down of the equipment in the event of failure of the mains electrical supply.

3.5 Appropriate safety mechanisms should be in place to ensure that the equipment shuts down safely in the event of failure of the supplies of coolant or any gas, oil or other fuel or reagent.

3.6 Electrical isolators and the control valves for the supplies of coolants and reagents should be carefully sited to prevent inadvertent isolation of these services. Where necessary, notices should be displayed to the effect that the isolators or valves should not be adjusted by unauthorised persons.

3.7 There should be provision remotely in the premises to shut down the process safely and promptly in the event of an emergency, such as a fire. The emergency shutdown controls should be grouped together, be easily accessible and be prominently signed. Key staff should be trained in their use.

3.8 Critical safety devices, such as thermostats and liquid flow or level sensors, which are not incorporated into proprietary equipment should be installed in duplicate, with the duplicate devices being located in series in the circuitry.

3.9 The unattended process should operate independently of any item of equipment or process elsewhere in the premises and thus not be affected by the isolation or failure of another piece of equipment.

3.10 The unattended process should be free of any devices intended to restart the process automatically following failure of the operation.

3.11 Sensors should be installed on drains, exhausts and flues to monitor any releases to the environment so as to raise an alarm, which should be monitored remotely, in the event of specified parameters being exceeded.

3.12 Notices should be displayed prominently outside the door(s) to the compartment in which the process is located giving the contact details of staff who should be contacted in an emergency.

3.13 All equipment, including safety cut-out devices, should be installed, used and maintained in accordance with the manufacturer's instructions. Servicing and maintenance should be carried out by a competent engineer. The periodic maintenance regimes should continue to be observed even if the equipment is only used occasionally.

3.14 Safety cut-out devices that are installed but are not part of the equipment supplied by the manufacturer should be tested periodically, at intervals in accordance with a risk assessment, and the results should be recorded.

3.15 Where cut-out devices are found to be faulty, operation of the unattended equipment should cease immediately until the safety cut-out devices have been satisfactorily replaced or repaired by a competent engineer.

4. Compartmentation

4.1 Wherever possible, any process that is to continue operating unattended should be located in a separate compartment designed to provide at least 60-minutes' fire resistance (integrity and insulation).

Where this is not practicable, combustible construction materials (including insulated panels with combustible cores) should be physically separated from the unattended process to a suitable degree.

Alternatively, the existing combustible construction materials in the immediate vicinity should provide at least 60-minutes' fire resistance.

4.2 Ducts and flues associated with unattended processes should be of fire-resistant construction and be routed directly to the outside without passing through another fire compartment within the building.

4.3 Care must be taken to ensure that all holes around piped services, ducts and cables passing through the walls, floor and ceiling of the compartment are suitably fire stopped.

5. Fire safety management

5.1 Electrical installations should be designed, installed and periodically tested by a competent electrician in accordance with the current edition of BS 7671: **Requirements for electrical installations. IEE Wiring Regulations** (ref. 10). Inspections should be carried out on a risk assessed basis as recommended in the Periodic Inspection Report.

5.2 A suitable number of electrical socket outlets should be provided; the use of electrical extension leads and adaptors should be prohibited in the compartment in which the equipment is located.

5.3 The equipment selected for installation should take into account the findings of the DSEAR assessment, which should identify hazard zones where there may be potential for explosible quantities of flammable liquid vapours or dusts to accumulate (ref. 7).

5.4 Portable electrical equipment should be inspected and tested at least in accordance with HS(G) 107: **Maintaining portable and transportable electrical equipment** (ref. 11) and/or the IEE **Code of practice for in-service inspection and testing of electrical equipment** (ref. 12). A risk assessment should determine the actual programme of inspection and testing.

5.5 Where the risk assessment indicates that a hazard from static electricity could develop, appropriate earthing and bonding of the equipment and any extraneous metal parts should be introduced and regular inspections of the arrangements be undertaken and recorded.

5.6 The operation of the process should be independent of the temperature of the enclosure in which it is located. Any heating should be appropriate for the process and the enclosure in which it is located, and should be subject to a risk assessment.

5.7 Before setting up the process with the aim of allowing it to continue unattended, staff should receive appropriate instruction, including:

- the correct method of using the equipment in accordance with the manufacturer's instructions;
- the importance of routine maintenance and the procedures for undertaking and recording this;
- the safety features that are incorporated into the process and the correct method of setting these for the operation that is to be undertaken;
- the maximum period for which the process may be left between checks;
- the mode of operation of the automatic and manual fire protection equipment that is provided;
- the method for shutting down the equipment safely in an emergency; and
- the emergency procedures in the event of a fire in either the equipment concerned or elsewhere in the building in which it is housed.

5.8 If the equipment is located in a separate fire compartment, no combustible materials, whether raw materials, finished products or packaging, should be stored in that compartment. If the equipment is not physically isolated, no stored combustible materials should be located within an area around the process as determined by a risk assessment or as agreed with the insurer.

5.9 All combustible waste materials should be located at least 10m from the building. Further advice is provided in RC48: **Arson prevention, the protection of premises from deliberate fire raising** (ref. 13)

5.10 The possibility of deliberate fire raising from outside the building, by intruders or by staff, should not be forgotten. When left to run unattended, access should be secure other than to staff trained in the operation and maintenance of the process.

5.11 Good liaison is often established by inviting the fire and rescue service to visit the site and be involved in an emergency evacuation of the premises.

5.12 Information should be provided for the fire and rescue service at a prominent location to indicate:

- the layout of the site;
- the location of unattended processes;
- the location of emergency shut down points for the process;
- the nature of the automatic fire suppression system(s) and the location of any controls;
- the nature and location of any hazardous substances involved in the process and related control valves or mechanisms;
- contact details for specialist staff who may need to be consulted; and
- the location of hydrants, rising mains or other sources of water for firefighting purposes.

6. Fire protection

6.1 Any fire protection system to be installed to protect unattended process equipment should be subject to a fire risk assessment and consultation with the insurer.

6.2 The structure in which any unattended process is allowed to operate should be protected by an automatic fire detection and alarm system designed, installed and maintained by an engineer with accreditation by an independent, UKAS-accredited third party certification body. The installation should be to a recognised category of installation in accordance with BS 5839-1: **Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance** (ref. 14).

6.3 The automatic fire detection and alarm system should be monitored either on-site or by an off-site alarm receiving centre with accreditation by an independent, UKAS-accredited third party certification body and operating in accordance with BS 5979: **Remote centres receiving signals from fire and security systems. Code of practice** (ref. 15).

6.4 The installation should be periodically serviced and maintained by a competent engineer with accreditation by an independent, UKAS-accredited third party certification body in accordance with BS 5839-1 (ref 14).

6.5 The installation of an automatic fixed fire extinguishing system is strongly recommended if equipment is to run unattended. The installation should be designed to operate within the equipment enclosure or in the compartment in which the process is being undertaken. It is important that proving tests are undertaken at the design stage in order to ensure that system is suitable and appropriate for the intended application.

6.6 Prior to the design of the installation, a risk assessment should be undertaken in order to identify all conditions that the systems must protect against, including idling, maintenance, routine servicing and cleaning operations.

6.7 The fire suppression system should operate automatically as soon as the fire is detected. The installation should be designed so as to minimise the likelihood of an unwanted actuation and thus passive infra-red or heat detectors or an aspirating detection system may be the most appropriate method for adoption. Heat detectors may take the form of conventional detector heads, break-glass bulbs, fusible links or other suitable mechanisms.

6.8 The most effective extinguishing agent for the particular application should be selected following a risk assessment, taking into consideration the effectiveness of the agent as well as toxicity, asphyxiation potential, environmental and contamination issues in the context of the application of the system. The principal alternatives are dry powder (which can cause contamination of electrical control systems) carbon dioxide and other gaseous flooding systems.

6.9 Any automatic fire suppression system in a small enclosed item of equipment should be monitored by the fire alarm panel so as to raise the alarm if the system operates. The installation should be engineered to be effective in the most demanding foreseeable circumstances and relevant test data should be available to support this.

6.10 On operation of the fire suppression system, the process should automatically switch off and remote signalling be activated.

6.11 Where the application for the fire suppression system may be regarded as a Class B (deep liquid) as defined in BS 5306-8: **Fire extinguishing installations and equipment on premises. Selection and installation of portable fire extinguishers. Code of practice** (ref. 16), the quantity of extinguishing agent provided should be related to the surface area of the liquid as indicated in Table 1 in BS 5306-8, part of which is reproduced below.

Extinguisher rating class B fire risk	Maximum area for one extinguisher (m^2)
21B	0.14
34B	0.23
55B	0.37
70B	0.47
89B	0.59
113B	0.75
144B	0.96
183B	1.22
233B	1.55

6.12 The design of open fluid tanks may also be suitable for the application of a heavier-than-air extinguishing gas, such as carbon dioxide.

6.13 Fixed fire suppression installations should comply with the relevant British Standard (see refs. 17-21). Where there is no appropriate British Standard, best practice, such as the instructions issued by the manufacturer or supplier of the equipment, should be followed.

6.14 Fixed fire suppression systems should be designed, installed, commissioned and maintained by a company with accreditation by an independent, UKAS-accredited third party certification body as complying with the requirements of LPS 1204: **Requirements for firms engaged in the design, installation and commissioning of firefighting systems** (ref. 22) or other appropriate standard.

6.15 In large areas or where there is not a significant hazard in the form of flammable liquids or electrical installations, the risk assessment may indicate that a water sprinkler installation may be appropriate. Sprinkler systems should be designed, installed, commissioned and maintained in accordance with the **LPC Rules for automatic sprinkler installations incorporating BS EN 12845** (ref. 23) by engineers having accreditation by an independent, UKAS-accredited third party certification body.

6.16 Suppression systems should be tested and maintained according to the requirements of the relevant British Standard and/or the installer's recommendations by a competent engineer with accreditation by an independent, UKAS-accredited third party certification body. Suitable records should be kept.

6.17 Arrangements should be in place for the prompt recommissioning of an automatic fire suppression system that has actuated. Back-up supplies of extinguishing agents should therefore be kept or arrangements made for their immediate replacement.

6.18 Following actuation of the fire suppression system, the process must not be left working unattended until:

- the automatic fire suppression system has been fully recommissioned; and
- the equipment has been inspected and found to be serviceable by a competent person; or
- appropriate repairs have been undertaken or replacement parts fitted by a competent person to render the equipment serviceable.

6.19 In addition to the automatic extinguishing systems, a suitable number of appropriate portable fire extinguishers should be available and immediately accessible in the case of a fire. Such portable extinguishers should be approved and certified by an independent, third party certification body and be installed in accordance with BS 5306-8 (ref. 16) and inspected and maintained in compliance with BS 5306-3: **Fire extinguishing installations and equipment on premises. Commissioning and maintenance of portable fire extinguishers. Code of practice** (ref. 24).

7. Checklist

		Yes	No	N/A	Action required	Due date	Sign on completion
7.1	**Compliance with fire safey legislation (section 1)**						
7.1.1	Does the fire safety management strategy for unattended processes consider practical passive, active and managerial control measures as part of the fire risk assessment for the premises undertaken in compliance with the Regulatory Reform (Fire Safety) Order 2005? (1.1)						
7.1.2	Has an assessment been undertaken in compliance with the Dangerous Substances and Explosive Atmospheres Regulations 2002 (DSEAR)? (1.2)						
7.2	**Business continuity (section 2)**						
7.2.1	Has careful consideration been given to all fire and safety implications of operating an unattended process before such a decision has been made? (2.1)						
7.2.2	Does the emergency plan address the implications of a fire, flood or other perceived disaster on all facets of the business model? (2.2)						
7.2.3	Following completion, has the emergency plan been tested by means of a table top exercise, with the results being assessed and amendments made to the plan as necessary? (2.3)						
7.2.4	Has consideration been given to applying commercially available computer programmes to develop and check the adequacy of the business continuity plan? (2.4)						
7.3	**Management of the process (section 3)**						
7.3.1	Before being left unattended, has the new process been fully developed and run for a prolonged period of time with staff in attendance? (3.1)						
7.3.2	Are security or other responsible staff on site that may be called to take action in an emergency made aware of details of the process and who to call in an emergency? (3.2)						
7.3.3	Are processes monitored for a suitable period to ensure that they are continuing correctly before being left to operate unattended? (3.3)						
7.3.4	Are appropriate devices in place to ensure the continued running or safe shut down of the equipment in the event of failure of the mains electrical supply? (3.4)						
7.3.5	Are appropriate safety mechanisms in place to ensure that the equipment shuts down safely in the event of failure of the supplies of coolant or any gas, oil or other fuel or reagent? (3.5)						

		Yes	No	N/A	Action required	Due date	Sign on completion
7.3.6	Are electrical isolators and the control valves for the supplies of coolants and reagents carefully sited to prevent inadvertent isolation of these services? (And where necessary, are notices displayed to the effect that the isolators or valves should not be adjusted by unauthorised persons?) (3.6)						
7.3.7	Is there provision remotely in the premises to shut down the process safely and promptly in the event of an emergency, such as a fire? (3.7)						
7.3.8	Are critical safety devices, such as thermostats and liquid flow or level sensors, which are not incorporated into proprietary equipment installed in duplicate, with the duplicate devices being located in series in the circuitry? (3.8)						
7.3.9	Does the unattended process operate independently of any item of equipment or process elsewhere in the premises and is it thus not affected by the isolation or failure of another piece of equipment? (3.9)						
7.3.10	Is the unattended process free of any devices intended to restart the process automatically following failure of the operation? (3.10)						
7.3.11	Are sensors installed on drains, exhausts and flues to monitor any releases to the environment and are these configured to raise an alarm, which is monitored remotely, in the event of specified parameters being exceeded? (3.11)						
7.3.12	Are notices displayed prominently outside the door(s) to the compartment in which the process is located giving the contact details of staff who should be contacted in an emergency? (3.12)						
7.3.13	Is all equipment, including safety cut-out devices, installed, used and maintained in accordance with the manufacturer's instructions with servicing and maintenance being carried out by a competent engineer? (3.13)						
7.3.14	Are safety cut-out devices that are installed but are not part of the equipment supplied by the manufacturer tested periodically, at intervals in accordance with a risk assessment? (3.14)						
7.3.15	Where cut-out devices are found to be faulty, does operation of the unattended equipment cease immediately until the safety cut-out devices have been satisfactorily replaced or repaired by a competent engineer? (3.15)						
7.4	**Compartmentation (section 4)**						
7.4.1	Wherever possible, is any process that is to continue operating unattended located in a separate compartment designed to provide at least 60-minutes' fire resistance (integrity and insulation)? (4.1)						

		Yes	No	N/A	Action required	Due date	Sign on completion
7.4.2	Where circumstances do not allow unattended processes to be located in a separate fire compartment, are combustible construction materials (including insulated panels with combustible cores) physically separated from the unattended process to a suitable degree? (4.1)						
7.4.3	Where circumstances do not allow unattended processes to be located in a separate fire compartment or combustible construction materials to be physically separated from the process, do the existing combustible construction materials in the immediate vicinity provide at least 60-minutes' fire resistance? (4.1)						
7.4.4	Are ducts and flues associated with unattended processes of fire-resistant construction routed directly to the outside without passing through another fire compartment within the building? (4.2)						
7.4.5	Is care taken to ensure that all holes around piped services, ducts and cables passing through the walls, floor and ceiling of the compartment are suitably fire stopped? (4.3)						
7.5	**Fire safety management (section 5)**						
7.5.1	Are electrical installations designed, installed and periodically tested by a competent electrician in accordance with the current edition of BS 7671 and inspections carried out on a risk assessed basis as recommended in the Periodic Inspection Report? (5.1)						
7.5.2	Are a suitable number of electrical socket outlets provided and the use of electrical extension leads and adaptors prohibited in the compartment in which the equipment is located? (5.2)						
7.5.3	Does the selection of the equipment for installation take into account the findings of the DSEAR assessment, which identifies the hazard zones where there may be potential for explosible quantities of flammable liquid vapours or dusts to accumulate? (5.3)						
7.5.4	Is portable electrical equipment inspected and tested at least in accordance with HS(G) 107 and/or the **IEE Code of practice for in-service testing of electrical equipment**? (5.4)						
7.5.5	Where the risk assessment indicates that a hazard from static electricity could develop, has appropriate earthing and bonding of the equipment and any extraneous metal parts been introduced and regular inspections of the arrangements been undertaken and recorded? (5.5)						
7.5.6	Is the operation of the process independent of the temperature of the enclosure in which it is located? (5.6)						

		Yes	No	N/A	Action required	Due date	Sign on completion
7.5.7	Before setting up the process with the aim of allowing it to continue unattended, have staff received appropriate instruction? (5.7)						
7.5.8	If the equipment is located in a separate fire compartment, is the storage of combustible materials, whether raw materials, finished products or packaging, prohibited in that compartment? (5.8)						
7.5.9	If the equipment is not physically isolated, is an area around the process as determined by a risk assessment, or as agreed with the insurer, kept free of stored combustible materials? (5.8)						
7.5.10	Are all combustible waste materials removed at least 10m from the building? (5.9)						
7.5.11	Has the possibility of deliberate fire raising from outside the building, by intruders or by staff, been assessed? (5.10)						
7.5.12	Has good liaison been established by inviting the fire and rescue service to visit the site and be involved in an emergency evacuation of the premises? (5.11)						
7.5.13	Is relevant information provided for the fire and rescue service at a prominent location? (5.12)						
7.6	**Fire protection (section 6)**						
7.6.1	Has any fire protection system been subject to a fire risk assessment and consultation with the insurer? (6.1)						
7.6.2	Is the structure in which the unattended process is allowed to operate protected by an automatic fire detection and alarm system designed, installed and maintained by an engineer with accreditation by an independent, UKAS-accredited third party certification body? (6.2)						
7.6.3	Is the automatic fire detection and alarm system to a recognised category of installation in accordance with BS 5839-1 as determined by a risk assessment or in consultation with the insurer? (6.2)						
7.6.4	Is the automatic fire detection and alarm system monitored either on-site or by an off-site alarm receiving centre with accreditation by an independent, UKAS-accredited third party certification body and operating in accordance with BS 5979? (6.3)						
7.6.5	Is the AFD installation periodically serviced and maintained by a competent engineer with accreditation by an independent, UKAS-accredited third party certification body in accordance with BS 5839-1? (6.4)						
7.6.6	Have proving tests been undertaken at the design stage to ensure that the fire suppression system is suitable and appropriate for the intended application? (6.5)						

		Yes	No	N/A	Action required	Due date	Sign on completion
7.6.7	Does the fire suppression system operate automatically as soon as the fire is detected? (6.7)						
7.6.8	Has the most effective extinguishing agent for the particular application been selected following a risk assessment, taking into consideration the effectiveness of the agent as well as toxicity, asphyxiation potential, environmental and contamination issues in the context of the application of the system? (6.8)						
7.6.9	Is any automatic fire suppression system monitored by the fire alarm panel, and is test data available to demonstrate the effectiveness of the system? (6.9)						
7.6.10	On operation of the fire suppression system, does the process automatically switch off and activate remote signalling? (6.10)						
7.6.11	Where the application for the fire suppression system may be regarded as a Class B (deep liquid) is the quantity of extinguishing agent provided related to the surface area of the liquid? (6.11)						
7.6.12	Has a heavier-than-air extinguishing gas, such as carbon dioxide, been considered for open fluid tank? (6.12)						
7.6.13	Do fixed fire suppression installations comply with the relevant British Standard or where there is no appropriate British Standard, do they follow best practice? (6.13)						
7.6.14	Are fixed fire suppression systems designed, installed, commissioned and maintained by a company with accreditation by an independent, UKAS-accredited third party certification body as complying with the requirements of LPS 1204 or other appropriate standard? (6.14)						
7.6.15	Are sprinkler systems designed, installed, commissioned and maintained in accordance with the **LPC Sprinkler Rules incorporating BS EN 12845** by engineers having accreditation by an independent, UKAS-accredited third party certification body? (6.15)						
7.6.16	Are suppression systems tested and maintained according to the requirements of the relevant British Standard and/or the installer's recommendations by a competent engineer with accreditation by an independent, UKAS-accredited third party certification body? (6.16)						
7.6.17	Are arrangements in place for the prompt recommissioning of an automatic fire suppression system that has actuated? (6.17)						
7.6.18	Following actuation of the fire suppression system, is there a prohibition on the process working unattended until the automatic fire suppression system has been fully recommissioned and the equipment has been found to be serviceable by a competent person? (6.18)						
7.6.19	Are a suitable number of appropriate portable fire extinguishers available and immediately accessible in the case of a fire? (6.19)						

REFERENCES

1. RC5: **Fire protection of laboratories**, 2009, RISCAuthority. Available from the RISCAuthority website: www.riscauthority.co.uk
2. RC29: **Recommendations for spark erosion machining**, 2006, RISCAuthority. Available from the RISCAuthority website: www.riscauthority.co.uk
3. Regulatory Reform (Fire Safety) Order 2005, SI 2005 No 1541, The Stationery Office.
4. The Fire (Scotland) Act 2005, asp 5, The Stationery Office.
5. Fire Safety (Scotland) Regulations 2006, Scottish SI 2006 No 456, The Stationery Office.
6. Fire and Rescue Services (Northern Ireland) Order 2006, SI 2006 No 1254 (NI9), The Stationery Office.
7. Dangerous Substances and Explosive Atmospheres Regulations (DSEAR), 2002, SI 2002 No 2776, The Stationery Office.
8. **Business resilience: A guide to protecting your business and its people**, 2005, RISCAuthority. Available from the RISCAuthority website: www.riscauthority.co.uk
9. The **Robust** software (**Resilient Business Software Toolkit**) may be found at https://robust.riscauthority.co.uk
10. BS 7671: 2008: **Requirements for electrical installations. IEE Wiring Regulations. Seventeenth edition**, British Standards Institution.
11. HS(G) 107: **Maintaining portable and transportable electrical equipment**, 2004, Health and Safety Executive.
12. **Code of practice for in-service inspection and testing of electrical equipment**, 2008, Institution of Electrical Engineers.
13. RC48: **Arson prevention, the protection of premises from deliberate fire raising**, 2010, RISCAuthority. Available from the RISCAuthority website: www.riscauthority.co.uk
14. BS 5839-1: 2002 + A2: 2008: **Fire detection and fire alarm systems for buildings. Code of practice for system design, installation, commissioning and maintenance**, British Standards Institution.
15. BS 5979: 2007: **Remote centres receiving signals from fire and security systems. Code of practice**, British Standards Institution.
16. BS 5306-8: 2000: **Fire extinguishing installations and equipment on premises. Selection and installation of portable fire extinguishers. Code of practice**, British Standards Institution.
17. BS 5306-0: 1986: **Fire extinguishing installations and equipment on premises. Guide for the selection of installed systems and other fire equipment**, British Standards Institution.
18. BS 5306-4: 2001: **Fire extinguishing installations and equipment on premises. Specification for carbon dioxide systems**, British Standards Institution.
19. BS 5306-6.1: 1988: **Fire extinguishing installations and equipment on premises. Foam systems. Specification for low expansion foam systems**, British Standards Institution.
20. BS 5306-6.2: 1989: **Fire extinguishing installations and equipment on premises. Foam systems. Specification for medium and high expansion foam systems**, British Standards Institution.
21. BS 5306-7: 1988: **Fire extinguishing installations and equipment on premises. Specification for powder systems**, British Standards Institution.
22. **Requirements for firms engaged in the design, installation and commissioning of firefighting systems**, Loss Prevention Standard (LPS) 1204: Issue 2, BRE Certification, 1994.
23. **LPC Rules for automatic sprinkler installations incorporating BS EN 12845 (Fixed firefighting systems. Automatic sprinkler systems. Design, installation and maintenance, British Standards Institution) 2009**, RISCAuthority. Available from the RISCAuthority website: www.riscauthority.co.uk
24. BS 5306-3: 2009: **Fire extinguishing installations and equipment on premises. Commissioning and maintenance of portable fire extinguishers. Code of practice**, British Standards Institution.

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