

The Scottish Ambulance Service



Policy and Procedure For Safe Working with Electrical Systems

Review History

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2	Reviewed June 2008 – no changes	June 2008
3	Reviewed August 2015 – due to changes in legislation, job titles and new format	September 2015
4	Reviewed – processes updated to reflect RoSPA requirements	August 2017
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1.0 Introduction

The integrity of electrical systems in Scottish Ambulance Service properties is vital in meeting both safety and operational requirements. Improper use of electrical systems is a danger to both life and property. In Scottish Ambulance Service properties, electricity is used for powering simple lighting circuits to complex installations. The key statutory provisions are the Health and Safety at Work etc Act 1974, The Electricity at Work Regulations 1989, and The Management of Health and Safety Regulations 1989. The responsibility falls on the Chief Executive to secure the safe management, design, installation, operation and maintenance of electrical systems within Scottish Ambulance Service properties.

2.0 Objectives of Policy

This policy acknowledges the requirement of the Scottish Ambulance Service Board to have a clearly defined Safe Working with Electrical Systems Policy:

- To protect staff, contractors and the general public from the hazards of electricity on sites operated by the Scottish Ambulance Service Board;
- To monitor the condition of and keep safe all electrical systems;
- To ensure that only full trained and competent persons carry out work on electrical systems;

The policy statement sets out the Scottish Ambulance Service Board's general approach to safe working with electrical systems and the key responsibilities section sets out the main organisational arrangements.

3.0 Policy Statement

The Scottish Ambulance Service Board acknowledges that the integrity of electrical systems installed within its properties is vital in meeting both safety and operational requirements and that improper use of electrical systems is a danger to both life and property. The Scottish Ambulance Service Board will protect its employees and other persons exposed to the hazards of electrical systems as far as is reasonably practicable by ensuring that electrical systems are maintained in a safe condition and that only competent persons carry out work on electrical systems. This policy requires the co-operation of staff and management alike at all levels.

4.0 Roles and Responsibilities

4.1 Chief Executive

The Chief Executive of the Scottish Ambulance Service is ultimately responsible for:

- Ensuring statutory compliance;
- Ensuring that appropriate policies and procedures are in place in relation to safe working with electrical systems;
- Ensuring that one of the executive directors is designated responsible to the Scottish Ambulance Service board in relation to safe working with electrical systems;

4.2 Director of Finance & Logistics

The designated executive director with responsibility for safe working with electrical systems is the Director of Finance & Logistics, who is responsible for:

- Carrying out statutory compliance on behalf of the Chief Executive;
- Putting in place appropriate policies and procedures on behalf of the Chief Executive;
- Appointing a responsible person;
- Liaising with the Responsible Person on all aspects of safe working with electrical system;

4.3 Head of Estates

The Head of Estates is designated as the Responsible Person from whom employees can seek advice and information on electrical systems and is responsible for:

- Advising the Scottish Ambulance Service Board on all aspects of compliance with statutes and Codes of practice in force;
- Ensuring that electrical systems are maintained in a safe manner;
- Ensuring that electrical systems are repaired in a safe manner;
- Appointing the authorised person;
- Liaising with the authorised person on all aspects of safe working with electrical systems;
- Ensuring that method statements, risk assessments and permit-to-work are completed and retained for at least 3 years;

4.4 Estate Manager

The Estate Manager is the designated Authorised Person and is responsible for:

- Ensuring that fixed electrical installations and portable appliances undergo the necessary testing, inspection and maintenance as laid down in the Policy to ensure that the installations and equipment are safe and fully serviceable at all times;
- Remedial action is taken as required when installations or equipment are found to be defective;
- That staff under their control receive appropriate training in relation to the duties they are required to undertake;
- That maintenance history and test records are retained for the life of the appropriate equipment;
- Prior to carrying out programmed equipment testing and maintenance wherever possible, notify sites to enable them to ensure equipment availability and accessibility;
- Ensure Competent Persons (contractors) are appointed in writing to carry out defined work and who possess the necessary technical knowledge, skill and experience relevant to the work to be undertaken, and that safe systems of work are used;

4.5 All Staff

It is the employee's responsibility to ensure:

- That they understand and comply with this and other relevant policies in the area in which they work, and bring any problems/faults to the attention of their line manager;
- Arrange for any unsafe equipment/items to be taken out of service immediately, labelled and then reported to their line manager;
- Make full and proper use of any safe system of work/equipment provided for them;
- To carry out a visual safety check before using any equipment;
- To use the equipment in accordance with the manufacturer's instructions;
- Not to use equipment they are unfamiliar with until they have received the appropriate instruction;
- Only use equipment purchased by Scottish Ambulance Service e.g. staff should not bring in tools, appliances or equipment from home;
- Not to use faulty equipment;

- Not to alter the specification of equipment, re-wire, repair or attempt to repair faulty equipment (including changing fuses);

4.6 Competent Persons (Contractors)

It is the responsibility of all contractors employed by the Scottish Ambulance service to ensure:

- All contractor employees possess the necessary technical knowledge, skills and experience relevant to the works they are undertaking;
- Only suitable battery operated and/or 110V portable electrical equipment is used;
- All 110V portable electrical equipment is tested in line with best working practices and at least annually;
- Certificates are available for all tested equipment. (This may be in the form of labels attached to tools etc.);
- They do not attach any electrical equipment to the mains supply until authority has been given by the Estates Department;

5.0 Operating Procedures

5.1 General Requirements

- 5.1.1 Portable and transportable electrical equipment should only be used for the purpose for which it was intended and in the environment for which it was designed and constructed. It is unlikely that maintenance will remedy any situation where equipment is not being used for its intended purpose, or in an environment for which it was not designed.
- 5.1.2 Specialised equipment, e.g. information technology (IT) equipment (computers and printers) photocopiers, fax machine etc, used in offices are not considered to present the same degree of risk, providing the lead and plug are protected from mechanical damage or stress. Movement, and therefore damage through being moved, is less likely to occur, and the equipment is often double insulated and used in a dry, clean environment with non-conducting floors.
- 5.1.3 User visual checks should be carried out by the person using the equipment.
- 5.1.4 Formal visual checks will be carried out annually by a competent person (contractor).
- 5.1.5 Planned testing and inspections will be carried out on all portable equipment on a three year cycle apart from hand tools used within the Service's Workshops which will be tested and inspected annually.

5.1.6 Planned Inspections for fixed electrical equipment will be completed on a three – year cycle.

6.0 Electrical Installations and Equipment

6.1 Electrical installations shall be designed, specified, installed and tested to meet the requirements of BS 7671:2018: Requirements for Electrical Installations, including all subsequent amendments. This shall include all new installations, upgrading existing installations and testing both new and existing installations. Installation, maintenance and testing works shall only be undertaken by suitably qualified electrical engineers (competent persons).

6.1.2. Each piece of equipment supplied through a permanent cable must have its own plug and socket arrangement so that it can be disconnected from the electrical supply for cleaning or repair. Within ACC premises, each plug and dedicated socket outlet should be clearly labelled to show which equipment it supplies as certain sockets are linked to essential services back-up systems.

6.1.3. Use the correct fuse (as a rough guide Watts divided by Volts = Amps).The earth wire (where provided) must always be properly connected. Loose, cracked or broken plugs should be taken out of use immediately and reported to the line manager and not be put back into use until it has been replaced.

6.1.4 Flexible cables should be positioned and protected so that they cannot be easily damaged. They should not trail across sharp or heated surfaces. They should be checked regularly by the user for damage and loose connections. Cables to equipment in everyday use are to be checked daily by the user. If a cable is damaged, or shows signs of swelling or cracking the equipment should be taken out of use and the cable replaced. Staff should not carry out makeshift repairs to damaged cables. This should be reported and repaired / replaced by a Competent Person.

6.1.5. There is an increased risk of electric shock if water gets into electrical equipment. Do not trail extension cables through water and do not let water get into any electrical equipment during cleaning. Hoses and pressure washers create the greatest risk: do not use a hose to clean equipment that is not suitably constructed. Socket outlets should not be sited where they can get wet. Domestic 13 Amp square pin plugs are not suitable for use in wet or moist conditions. If such conditions are likely, splash-proof, hose-proof or watertight electrical plug sockets and equipment will be used. If electrical equipment is used in a wet environment it must be fitted with sealed waterproof connections, and fitted with a residual circuit device (RCD)

6.1.6. No person shall work on or near a live conductor unless:

- The circumstances of the work require the system to remain live, for example voltage, current and load testing.
- Suitable precautions (including, where necessary, the provision of suitable protective equipment) are taken to prevent electrical shock or

injury, supported by an appropriate safe system of work.

- A suitable risk assessment and method statement will be developed and submitted to the Authorised Person for approval, prior to undertaking any works on or near live conductors and / or equipment.
- A permit to work raised by an Authorised Person is issued and used correctly.

6.1.7 The loading on a single socket must not exceed 13 amps (3.25 KW at 250V). The use of trailing adapters/extension leads is discouraged and additional fixed power sockets should be fitted if necessary.

6.1.8 Staff wishing to bring their own portable equipment for use onto Service properties **must**, in the first instance, seek **approval** from their line manager and then arrange for the portable equipment to be tested prior to being used.

7.0 User Check (visual)

7.1 The person using the equipment should look critically at the electrical equipment they use and visually check for signs that the equipment is in sound condition, for example:

- There is damage (apart from light scuffing) to the cable sheath;
- The plug is damaged, for example the casing is cracking or the pins are bent;
- There are inadequate joints, including taped joints in the cable;
- The outer sheath of the cable is not effectively secured where it enters the plug or equipment. Obvious evidence would be if the coloured insulation of the internal cable covers were showing;
- The equipment has been subjected to conditions for which it is not suitable, e.g. it is wet or excessively contaminated;
- There is damage to the external casing of the equipment or there are some loose parts or screws;
- There is evidence of overheating (burn marks or discoloration);
- The test date is not valid (a test date label should be fitted by the relevant Competent Person).

8.0 Formal Visual Inspections (Competent Persons)

8.1 The most important component of a maintenance regime is the formal visual inspection carried out routinely by a Competent Person. The majority of potentially dangerous faults can be identified up by such inspections and the

maintenance regime will always include this component. To control the risks and to monitor the user checks, a competent person will carry out regular inspections/examinations, visual checks in a more formal and systematic manner. These checks will include:

- equipment in switch rooms;
- distribution equipment;
- circuit breakers & isolators;
- Low voltage sub circuit wiring;
- Lamps, shades & fittings;
- Fittings & accessories;
- Electrical water heaters;
- Electrical space heaters;
- External lighting, control and feed pillars
- Vehicle charging installations;

The formal visual inspection will not include taking the equipment apart. This will be confined, where necessary, to the combined inspection and testing.

8.2 The Competent Person will a fully qualified contractor employed by the Scottish Ambulance Service to undertake the check.

8.3 The inspections will be undertaken annually and any faulty equipment will be taken out of use until either repaired or replaced

9.0 Periodic Testing of Fixed Electrical Systems and Portable Appliances (PAT)

9.1 Inspection and Testing of Fixed Electrical Systems:

Inspection and testing will be undertaken on a three-year cycle and will include:

- Check operation of protective devices;
- Check earthing arrangements;
- Check general condition of installation;
- Test prospective short circuit current at origin of system;
- Test earth fault loop impedance at origin of system;

- Test insulation resistance to earth of each item of equipment tested separately;
- Test continuity of ring final circuit conductors
- Test continuity of protective conductors and potential bonding;
- Test operation of residual current devices for earth fault protection;
- Test insulation resistance of fixed circuit wiring;
- On completion of inspection and testing, an inspection certificate completed and signed by the person undertaking the works, based on the model shown in the Requirements for Electrical installations (BS7671:2018) shall be submitted;
- On completion of inspection and testing, an examination report, detailing any necessary repairs to the installation, prioritised as follows:

A: requires immediate action;

B: requires attention as soon as practicable as the condition could lead or contribute to danger;

C: recommendations for good housekeeping and bringing equipment into line with current standards of good workmanship and safety;

- On completion of inspection and testing a line schematic diagram of the system, in autocad format, detailing all control and distribution equipment should be checked and updated as necessary;
- On completion of inspection and testing, circuit charts of each item of distribution equipment, presented in tabular form and recording the test results, as detailed in the Requirements for Electrical installations (BS7671:2018) ;
- Inspection reports shall be forwarded to the Estates Department, no later than one month following completion of the works;

9.2 Portable Appliance Testing:

All checks and tests will be undertaken on a three-year cycle and will include:

- Examination of appliance for condition of leads, plugtops, casings and isolating devices;
- Check rating and condition of fuse;
- Test continuity of earthing conductor;

- Test insulation resistance;
- Label appliance with name of person testing appliance and date next test due;
- Issue report detailing list of assets, location of assets and test results, pass or fail status;

10.0 MONITORING & RECORDS

10.1 The effectiveness of this Electrical Safety Policy and Procedure shall be monitored by the Estates Department.

10.2 All inspections examination reports, test certificates, asset lists and all records on maintenance and repair will be held centrally by the Estate Department for the life of the asset.

11.0 Policy Review

The policy will be reviewed and updated every two years or sooner if regulations or documentation are revised

12.0 Applicable Legislation/Guidance

The Electricity at Work Regulation 1989

The Health & Safety at Work Act 1974

Requirements for Electrical Installations (BS7671:2018)

The Management of Health and Safety Regulations 1989

12.1 Other Estate Related Policies & Procedures

Procedure for Issue and Management of Permits to Work

Policy & Procedure for Management of Contractors

Fire Safety Policy & Procedure