

# 3 Electricity

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## Preface

1. This Chapter of JSP 375, Volume 3 was prepared under the patronage of the Ministry of Defence (MOD) Director Health Safety and Environmental Protection (DHSEP) and is to be read in conjunction with JSP 375 Volume 3 Chapter 2 - Common Requirements. These Safety Rules and Procedures are mandatory for adoption by the Commanding Officer, Chief Executive or Head of Establishment, into their site safety plans, to secure compliance with the Health and Safety at Work etc. Act 1974 and to aid the safe conduct of works activities.

2. These Safety Rule and Procedures, when read in conjunction with Chapter 2 - Common Requirements, address the responsibilities of the MOD under the Electricity at Work Regulations 1989 regarding the design, installation, commissioning, operation, maintenance, and de-commissioning of electrical equipment in the ownership, in the widest sense, of the MOD. These Safety Rules and Procedures do not apply to ships and ancillary craft whether afloat, moored or in dry dock. In these instances, other arrangements are to be put in place by the Duty Holder.

3. This Chapter of JSP375, together with Chapter 2 — Common Requirements replace the 2016 Edition of JSP 375 Volume 3 Chapter 3.

4. The adoption of the document into the site safety plan will influence the conduct of many organisations and personnel, including those whose responsibilities are defined in Chapter 2 Common Requirements, as follows:

- a. Site Safety Officer
- b. Establishment Works Consultant (where this duty is still extant)
- c. Works Service Management organisation, and other Maintenance Management Organisations, other Contractors and Sub-Contractors
- d. Facilities Managers, Project Sponsors, Project Managers and Contractors for Projects
- e. Designers of facilities and installations

5. Technical advice and assistance on electrical working on the Defence Estate can be obtained from:

Senior Authorising Authority (Electrical) (SAA(E))  
Defence Infrastructure Organisation  
Kingston Road  
Sutton Coldfield  
B75 7RL

6. Amendments to this publication will be advised by a Defence Instructions and Notices or a Defence Infrastructure Organisation Policy Instruction issued across MOD. It is the responsibility of the person using this publication on any MOD Establishment to check with the Facilities Manager or Project Sponsor to ascertain if amendments have been issued.

7. JSP 375 Volume 3 has been devised for the use of the MOD and its contractors in the execution of works in relation to the Defence estate. The Crown hereby excludes all

liability (other than liability for death or personnel injury) whatsoever and howsoever arising (including but without limitation, negligence on the part of the Crown, its servants or agents) for any loss or damage however caused where the Standard (JSP 375 Volume 3) is used for any other purpose.

8. Compliance with either this Chapter or Chapter 2 - Common Requirements does not of itself confer immunity from legal obligations.

9. In case of conflict between these Safety Rules and Procedures and a Statutory Requirement becoming evident, the Statutory Requirement takes precedence and DSA and the SAA(E) are to be informed. Contract addresses are given below:

DHSEP  
Director HS&EP  
MOD Main Building  
Whitehall  
LONDON  
W1A 2HB

SAA(E)  
Defence Infrastructure Organisation  
Kingston Road  
Sutton Coldfield  
B75 7RL  
Email: Waiting for multiuser email address

## Acknowledgements

10. These Safety Rules and Procedures have been produced by a joint Industry / Ministry of Defence working group comprising of representation from the following contributing companies and organisations:

Atkins Defence  
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## Introduction

### Application of these Rules and Procedures

11. These Rules and Procedures apply only to equipment that is permanently connected to an electricity distribution system or forms part of an electrical installation, and to disconnected equipment where an electrical hazard may be created by high voltage tests.
12. For the purpose of these Safety Rules and Procedures electrical systems incorporate:
  - a. low voltage systems in non-hazardous areas;
  - b. low voltage systems in hazardous areas;
  - c. high voltage systems (up to and including 33kV); and
  - d. aeronautical ground lighting systems.
13. This document provides a system for:
  - a. controlling work on electrical systems (as defined above) for which the MOD is the responsible authority;
  - b. minimising the risks associated with working on electrical systems;
  - c. the appointment of key individuals to manage, oversee and perform any such work; and
  - d. the documentation for the use in the application of these safety rules and procedures.
14. The Defence Infrastructure Organisations Senior Authorising Authority (Electrical) must approve any proposed deviations from these Safety Rules and Procedures that might be considered for specific MOD establishments.
15. The application of these rules is not the sole responsibility of the Authorised Person (Electrical) but all those operating, working on, testing, de-commissioning, ordering, specifying and designing electrical systems. The onus is on those responsible for the ordering or tasking the work to co-ordinate the activities of those carrying out the work and those making the activity safe. All parties involved in the work are to follow the health and safety executive (HSE) recommendations (Use of Contractors — a joint responsibility ([www.hse.gov.uk](http://www.hse.gov.uk))), which promotes the co-operation of all parties to ensure that health and safety is properly managed.
16. The client, or those specifying work, must consider the needs of the operators of the electrical system(s) to be able to isolate equipment for maintenance or in the event of an emergency. The design must incorporate suitable and sufficient means of isolation, temporary earthing and safety signage to permit such that this will be undertaken safely. The design must enable the operation and maintenance of the equipment to be undertaken comfortably and unhindered. Although on site changes are inevitable, any changes made to the original design by the installer must maintain adequate working areas around the equipment and preserve the ability to isolate and

earth the equipment. The project manager responsible for the work is to ensure that any alterations made on site do not affect the application of these rules.

## **Associated Regulations and Documents**

17. These Safety Rules and Procedures are based, where applicable, on the Acts, regulations and documents detailed in JSP 375 Volume 3 Chapter 2 - Common Requirements and those included below (current versions of the Regulations and documents should be referred to where applicable):

- a. Electricity at Work Regulations;
- b. Electricity, Safety, Quality and Continuity Regulations;
- c. DSA03 OME Part 2: In-Service and Operational Safety Management of OME;
- d. JSP 317: Joint Service Safety Code for the Storage and Handling of Petroleum Oils and Lubricant (POL);
- e. JSP 319: Joint Service Safety Regulations for the Storage, Handling of Gases;
- f. JSP 375 Vol 3 Ch 5 - Petroleum Systems;
- g. ESTC Standard No. 6. Requirements for the Commissioning, Inspection, Testing and Maintenance of Works for explosive facilities;
- h. MAA Regulatory Publications;
- i. JSP 418 - Sustainable Development and Environment Manual;
- j. HSG 230 Keeping Electrical Switchgear Safe. Issued by the Health and Safety Executive;
- k. Model Code of Safe Practice - Part 1 Electrical, and Part 9 Liquid Petroleum Gas. Issued by the Institute of Petroleum; and
- l. Best Practice Guide - Guidance on safe isolation procedures for low voltage installations. Issued by the Electrical Safety First.

## **Definitions**

18. For the purposes of these Safety Rules and Procedures the following definitions apply in addition to those detailed in JSP 375 Volume 3 Chapter 2 - Common Requirements.

19. The abbreviations identified against specific definitions (e.g. Safety Lock (SL)) and those identified in JSP 375 Volume 3, Chapter 2 — Common Requirements, may be used in the preparation of the Safety Documentation, with the prior authorisation of the Authorising Engineer (Electrical), and where it is deemed no confusion can arise by the use of the abbreviation. Where confusion may occur, the full description is to be used.

## **Accompanying Safety Person (ASP)**

20. A responsible person not involved in the work or test activity, who is to contribute to the prevention of injury and who has received training in emergency first-aid and has

adequate knowledge, experience and ability to recognise danger, keep watch, prevent interruption, apply first aid and summon help.

### **AGL Field Circuit**

21. Equipment configured as an electrical circuit to provide specified visual cues for aeronautical purposes and installed within the manoeuvring area and terminating in a cable termination panel, or similar device, constant current regulator or Transformer Mains Supply. The AGL Field circuit excludes the cable termination panel, constant current regulator or Transformer Mains Supply and any interconnecting cable.

### **Aeronautical Ground Lighting Primary Series Circuit Equipment**

22. Any Electrical Equipment and conductors connected together to form or intended to form an Aeronautical Ground Lighting Primary Series Circuit. This includes Constant Current Regulators, Series Circuit Regulators, Transformers Mains Supply, Circuit Selector Switches, Cable Termination Panels, Primary Series Circuit Cables, and Series Circuit Transformers.

### **Area Custodian**

23. A person appointed by the line management for a defined area, which may include a building(s) and whom is responsible for liaison with visiting contractors.

### **Authorised Person (Electrical) (AP)**

24. A person who has been appointed in writing by the Authorising Engineer (Electrical), to be responsible for the implementation and operation of these rules.

25. In this document, when reference is made to 'the Authorised Person (Electrical)' this means the duty Authorised person (Electrical). When reference is made to 'an Authorised Person' this means any Authorised Person (Electrical) who may be on or off duty.

### **Authorising Engineer (Electrical) (AE)**

26. An engineer who holds an extant Licence for defined systems issued by the Senior Authorising Authority (SAA) and who is to be responsible for implementing and monitoring these Rules and Procedures including the assessment of the Authorised Persons (Electrical)

### **Authority for Access (Electrical)**

27. A document as Model Form No. 10 issued by the Authorised Person (Electrical) when work, not requiring a Permit to Work, Sanction to Test or Sanction for Work on or near Live Electrical Equipment and not covered by a Standing Instruction or Specific Written Instruction, is to be undertaken in an area or location which is under the control of the Authorised Person (Electrical).

### **Caution Sign (CS)**

28. A non-metallic sign as Model Sign No. T1 bearing the words "CAUTION - Persons working on equipment" and "DO NOT TOUCH".

## **Certificate of Isolation and Earthing (CIE)**

29. A document as Model Form No. 7 issued by the Authorised Person responsible for one side of the demarcation line between two different electrical systems, and to be given to the responsible person for the other side of the demarcation, detailing the isolation and temporary earthing operations carried out to enable the work to be undertaken on the responsible persons electrical system.

## **Circuit Protective Conductor (CPC)**

30. A protective conductor connecting exposed conductive parts of equipment to the main earthing terminal.

## **Conductor**

31. A conductor of electrical energy.

## **Confirm Dead**

32. Demonstrate with the use of Test Equipment that no electrical potential liable to cause danger or, where appropriate, injury is present.

## **Constant Current Regulator (CCR)**

33. Apparatus that produces a current output at a constant rms value independent of variations in the series circuit load, input voltage and service condition as specified.

## **Dead**

34. Not electrically "live" or "charged".

## **Disconnected**

35. Equipment (or part of an electrical system) that is not connected to any source of electrical energy. NB; In this case the physical removal of the means by which an item of electrical equipment is connected to every source of electrical energy.

## **Earthed**

36. Connected to the general mass of earth in such a manner as to ensure at all times an immediate discharge of electrical energy without danger or, as appropriate, injury.

## **Earth**

37. The conductive mass of earth whose electrical potential is conventionally taken as zero, and can be a:

- a. Temporary Earth - A connection to earth, applied by an Authorised Person (Electrical) (or Skilled Person working or testing in accordance with Table LV3) at a position specified in a Permit to Work or Sanction to Test, made before working on or testing equipment to ensure as far as is practicable that the equipment does not become electrically charged. It is secured, where practicable, by a Safety Lock. On completion of a Permit to Work or Sanction to Test these earths are removed by the Authorised Person (Electrical); or

b. Removable Temporary Earth - a proprietary earth applied by an Authorised Person (Electrical) (or a Skilled Person working or testing in accordance with Table LV3) at a position specified on a Sanction to Test which may be removed by the person in charge for the duration of the test. These earths are listed on the Sanction to Test by the Authorised Person (Electrical) prior to the issue of the Sanction to Test; or

c. Additional Earth - a proprietary earth applied after the issue of a safety document by the Person in Charge usually at the point of work. These are to be removed before the Permit to Work or Sanction to Test is cancelled.

### **Electrical Equipment**

38. Anything used, intended to be used or installed for use, to generate, provide, transmit, transform, rectify, convert, conduct, distribute, control, store, measure or use electrical energy.

### **Electrical Equipment Warning Sign (EEWS)**

39. A non-metallic sign as Model Sign No. T3 bearing the words 'WARNING Live Electrical Equipment' and 'Access Prohibited'.

### **Electrical Installation**

40. An assembly of associated Electrical Equipment to fulfil a specific purpose, which forms part of a System.

### **Equipment**

41. Abbreviation within this document for Electrical Equipment.

### **Explosives Facility**

42. A facility used for the storage, processing and testing of explosives.

### **Explosives Safety Representative (ESR)**

43. A person appointed by the Commanding Officer / Head of Establishment (CO / HoE) and responsible for explosives safety at the establishment.

### **Hazardous Area**

44. Any location in which there is danger or a risk to health created by the presence of combustible material, explosive material, poisonous substances, electromagnetic radiation, or may be due to the location of the work such as the danger posed by a confined space.

### **Hazardous Area Manager (HAM)**

45. A person appointed by the CO / HoE and having control of the works and other defined responsibilities within a Hazardous Area. For Explosive facilities this person is referred to as the Explosives Safety Representative (See 'Explosives Safety Representative').



## **High Voltage Enclosure (HVE)**

46. A location within which a live High Voltage conductor is or may be exposed without the use of a tool or key.

## **High Voltage Enclosure Sign**

47. A non-metallic sign as Model Sign No. T2 bearing the words "DANGER High Voltage Enclosure" and "KEEP OUT Authorised Access Only".

## **Injury**

48. Death or personal injury as a direct or indirect consequence of electric shock, electric burn, electrical explosion or arcing, or from fire or explosion initiated by electrical energy. The injury may be associated with the generation, provision, transmission, transformation, rectification, conversion, conduction, distribution, control, storage, measurement or use of electrical energy.

## **Installation**

49. Abbreviation within this document for Electrical Installation.

## **Intrinsically Safe Equipment for Test Purposes**

50. Test Equipment satisfying the requirements of BS1259 - Intrinsically safe electrical apparatus and circuits for use in explosive atmospheres, or of the relevant parts of BS EN 60079 - Electrical apparatus for potentially explosive atmospheres.

## **Isolate**

51. Disconnect and separate Equipment from every source of electrical energy in such a way that the disconnection and separation is secure.

## **Main Intake Switch (MIS)**

52. A main intake switch at the origin of the supply to a building or facility to provide a means of isolation and to enable interruption of the supply on load and identified by the application of Model Sign No. P3. Also, a point of demarcation as designated by the Authorising Engineer (Electrical) and identified by the application of Model Sign No. P3

## **Mimic Diagram (MD)**

53. A single line diagram of an electrical distribution system so made that the symbol for each item of switchgear may be adjusted to indicate the ON, the OFF, or the EARTHED position. The symbol for each item of Equipment shall use the appropriate colour indication of voltages to BS 3939.

## **Multi-meter**

54. An instrument that combines more than one function for measuring or testing electrical characteristics (i.e. a single instrument that measures amperes, volts, and ohms).

## **Multi-range Instrument**

55. An instrument with one function for measuring or testing a range of values of an electrical characteristic (i.e. an instrument that only measures amperes).

## **Operation (of Equipment)**

56. Undertaking a function such as a switching process for which the Equipment is specifically installed.

## **Operational Risk Assessment (ORA)**

57. A Risk Assessment prepared by an Authorised Person (Electrical) to address the hazards exhibited by the electrical system and present within the environment in which the work and / or test is to be completed.

## **Permit to Work (Electrical) (PTW(E)NHA)**

58. Written authority as Model Form No. 2 issued by the Authorised Person (Electrical) for work to be undertaken on Equipment in a Non-hazardous Area.

## **Permit to Work (Electrical) Hazardous Area (PTW(E)HA)**

59. Written authority as Model Form No. 3 issued by the Authorised Person (Electrical) for work to be undertaken on Equipment in a Hazardous Area.

## **Permit to Work (Explosives)**

60. Written authority issued by the Explosives Safety Representative for work and / or testing to be undertaken on Equipment in an explosive facility.

## **Permit to Work (Petroleum) Hazardous Area (PTW(P)HA)**

61. Written authority issued by the Authorised Person (Petroleum) for work to be undertaken in a Hazardous Area (Petroleum).

## **Permit to Work (Petroleum) Restricted Area (PTW(P)RA)**

62. Written authority issued by the Authorised Person (Petroleum) for work to be undertaken in a Restricted Area (Petroleum).

## **Person in Charge (PiC)**

63. A Skilled Person who has accepted a Permit to Work, a Sanction to Test, a Sanction for Work on or near Live Electrical Equipment, a Specific Written Instruction or an Authority for Access, for a particular task from the Authorised Person (Electrical), or a Skilled Person who has accepted a Standing Instruction from an Authorised Person (Electrical), or a Skilled Person who is responsible for working on or testing low voltage equipment in non-hazardous areas in accordance with Table LV3.

(Except for recipients of an Authority for Access, a Person in Charge will be a Skilled Persons (Electrical)).

## **Protective Conductor**

64. A conductor used for some measure of protection against electric shock and intended for connecting any of the following parts:

- a. exposed-conductive-parts;
- b. extraneous-conductive-parts;
- c. the main earthing terminal;
- d. earth electrode(s); and
- e. the Earthed point of the source, or an artificial neutral.

## **Protective Equipment**

65. Equipment used to protect persons from injury in the working environment. Protective Equipment includes items such as special tools, protective clothing, insulating screening, safety harnesses and temporary Safety Signs.

## **Prove Dead**

66. Demonstrate with the use of Test Equipment that no electrical potential liable to cause danger or, where appropriate, injury, is present.

## **Proving Unit (PU)**

67. Test Equipment to confirm the operation of a Test Indicator / Potential Indicator.

## **Safety Documentation**

68. Safety Programme, Permit to Work, Sanction to Test, Sanction for Work on or near Live Electrical Equipment, Certification of Isolation and Earthing, Standing Instruction, Specific Written Instruction, Authority for Access, or variation thereof.

## **Safety Lock (SL)**

69. A padlock indelibly coloured red, having a single key which differs from all other keys provided for the system or installation, used for securing the means of isolation and to prevent the removal of Temporary Earths.

## **Safety programme (Electrical) (SP(E))**

70. Abbreviation within this document for Safety programme (Electrical). A document as Model Form No. 1 consisting of a written plan and a circuit diagram(s) and indicating the condition immediately prior to the issue of a Permit to Work, Sanction to Test, and Certification of Isolation and Earthing, including the reinstatement process for the electrical system on completion of the work and / or test. It is to include: the purpose of the proposed work or test, the intended sequence of safety operations to be performed and details of the safety documents issued.

## **Safety Sign**

71. A non-metallic sign as Model Sign No. P1 bearing the words "DANGER OF DEATH", or a combined Danger Sign and Notice as Model Sign No. P2.

## **Sanction for Work on or near Live Electrical Equipment (SWLEE)**

72. Written authority as Model Form No. 6 issued by the Authorised Person for work or Test to be undertaken on or near live Equipment.

## **Sanction to Test (Electrical) (STT(E))**

73. Written authority as Model Form No. 4 issued by the Authorised Person (Electrical) for testing to be undertaken on Electrical Equipment in a non-hazardous area.

## **Sanction to Test (Electrical) Hazardous Area (STT(E)HA)**

74. Written authority as Model Form No. 5 issued by the Authorised Person (Electrical) for testing to be undertaken on Electrical Equipment in a Hazardous Area.

## **Skilled Person (SKP)**

75. A person approved and recorded in the Skilled Persons Register by an Authorised Person for defined work who possesses, as appropriate to the nature of the electrical work and / or test to be undertaken, adequate education, training and practical skills, and who is able to perceive risks and avoid hazards which electricity can create.

76. In this document, when reference is made to 'the Skilled Person' it refers to the Skilled Person (Electrical) (SKP (E)), and when reference is made to 'a Skilled Person' this means a Skilled Person (SKP) other than a Skilled Person (Electrical).

## **Specific Written Instruction (SWI)**

77. Abbreviation within this document for Specific Written Instruction for particular switching operations in respect of specific items of High and Low Voltage Equipment and phasing tests. A written instruction as Model Form No. 9 issued by the Authorised Person to a Skilled Person to carry out defined operations of switchgear and phasing tests, immediately and without any intentional delay.

## **Standing Instruction (SI)**

78. Abbreviation within this document for Standing Instruction for Electrical Equipment. Written authority, applicable for up to three years and reviewed annually, as Model Form No. 8 issued by an Authorised Person to a Skilled Person to undertake defined tasks.

## **Substation**

79. Any premises or part of premises in which electrical energy is transformed or converted to or from high voltage, or which contains high voltage switchgear.

## **Supervision**

80. Types of supervision:

- a. Immediate Supervision: is given by a competent person, who is available and attends the work as necessary; and / or
- b. Personal Supervision: is given by a competent person who is present at the work at all times.

### **Switch-Disconnecter**

81. A switch which, in the open position, satisfies the isolating requirements specified for a disconnector (BS EN 60947 part 3).

### **System**

82. An electrical system in which all the Equipment is, or may be, electrically connected to a common source of electrical energy, including such source and such Equipment.

### **Task Risk Assessment**

83. A Risk Assessment prepared by a Skilled Person to address the hazards exhibited by the work and / or test and including local hazard information provided by the Area Custodian in accordance with MOD's '4C' management system (JSP 375, Vol 1 Chapter 34 - 4C System. The Management of Visiting Workings and Contractors.)

### **Test / Testing (of Equipment)**

84. Defined as follows:

- a. Functional test / testing: Proving a sequence of operations or the measuring of electrical characteristics of live Electrical Equipment (for example, diagnostic testing of faulty equipment); or
- b. Quality test / testing: Applying test voltages, currents or signals for the purposes of proving insulation, continuity or other characteristic of isolated electrical equipment (for example, before a permanent electrical installation is energised from any source of electrical energy).

### **Test Equipment**

85. Equipment to undertake particular tests, that is suitable for the use for which it is provided, that is maintained in a condition suitable for that use, and that is properly used.

### **Test Indicator / Potential Indicator (PI)**

86. Test Equipment for proving dead and confirming dead in connection with these Rules and Procedures.

### **Test Supply**

87. Test Equipment for proving the function of a voltage Test Indicator or a Potential Indicator or live voltage and phasing Test Equipment or a current Test Indicator.

### **Voltage**

88. The following ranges of voltage are defined below for non-conductive environments.

## **High Voltage**

89. A potential normally exceeding Low Voltage.

## **Low Voltage**

90. A potential normally exceeding Extra-Low Voltage but not exceeding 1000 volts ac or 1500 volts dc between conductors, or 600 volts ac or 900 volts dc between a conductor and earth.

## **Extra-Low Voltage**

91. A potential normally not exceeding 50 volts ac, or 120 volts dc, between conductors or between a conductor and earth. (The rms ripple on the dc supply is not to exceed 10% of the nominal dc and the maximum peak value of the dc supply is not to exceed 137 volts.)

92. Note 1: AC values are rms and, except for the maximum peak value of the Extra Low Voltage dc supply, the voltages given in the above definitions are nominal values. The actual voltage of an Extra-Low Voltage or Low Voltage installation may exceed the nominal maximum voltage of the range by a quantity within normal tolerances.

93. Note 2: A 120 volts dc supply derived from a conventional three phase bridge rectifier does comply with the ripple and maximum peak value requirements stated above. Supplies derived from single-phase rectifiers require a considerable degree of smoothing to achieve compliance.

94. Note 3: For the purpose of insulation resistance testing on installations designed in accordance with BS7671; a test voltage of 1000V dc, with a maximum test current of 1mA, does not require the issue of a Sanction to Test.

## **Working Lock (WL)**

95. A padlock, except a Safety Lock, used to secure Equipment.

## **Work / Working (on Equipment)**

96. The installing, dismantling, assembling, maintaining or repairing of Electrical Equipment.

## **Work / Working near Live Electrical Equipment**

97. Any work activity where there is a risk of contact with dangerous live conductors. This includes accidental short circuit contact.

## **Work / Working on Live Electrical Equipment**

98. Work / Working (on Equipment) involving the handling of exposed dangerous live conductors.

## **Work on or near Live Equipment Sign**

99. A non-metallic sign as Model Sign No. T4 bearing the words "DANGER Work on or near live Equipment - in progress".

## Allocation of Specific Responsibilities between Ministry of Defence and Others

(To be read in conjunction with the requirements of JSP 375 Volume 3 Chapter 2 — Common Requirements.)

100. Where the Ministry of Defence provides a Temporary Electricity Supply to a Consumer:

- a the temporary supply is to include a means of isolation under the control of the Ministry of Defence. The supply terminals of the temporary supply are to be the outgoing terminals of a switch disconnector, circuit breaker or other clearly identified terminals; and
- b the Ministry of Defence is to be responsible for the control of the system up to and including the supply terminals. The consumer is to be responsible for the connections to the terminals and for the remainder of the downstream system.

101. Where the Ministry of Defence provides a Permanent Electricity Supply to a Consumer:

- a before an installation is connected to the system for the first time, the Ministry of Defence is to be satisfied that the installation complies with the Electricity Safety, Quality and Continuity Regulations and other appropriate regulations;
- b the Ministry of Defence is responsible for the supply cable, the disconnecting device, any metering equipment and the conductors up to the supply terminals;
- c the Ministry of Defence is not responsible for the installation downstream of the supply terminals but, if the installation is known to be unsafe or likely to cause interference to the system, the supply is to be discontinued until all defects are remedied; and
- d the Authorising Engineer (Electrical) is to ensure in conjunction with the consumer's responsible person a written agreement is available defining the demarcation between the MOD's and the consumer's equipment and their associated responsibilities indicating the boundaries, operation, protection and maintenance procedures for the equipment and located in the Electrical Safety Document Register.

102. Where a Supply Authority appoints personnel to operate equipment:

- a the supply authority may appoint nominated Authorised Persons (Electrical) to operate their Equipment under defined conditions and in accordance with defined procedures. In such cases, appropriate Authorised Persons (Electrical) are to be nominated by the Authorising Engineer (Electrical) for appointment by the supply authority;
- b each nominated Authorised Person (Electrical) is to obtain from the supply authority's appointing officer a written agreement defining;

- (1) the responsibilities to be accepted and the regulations to be complied with and procedures to be followed; and
  - (2) the demarcation of the supply authority equipment and their responsibilities to provide an electrical supply, indicating the boundaries and control switching procedures for their equipment.
- c. each nominated Authorised Person (Electrical) is to acknowledge, in writing, receipt of the agreement from the supply authority, and acceptance of the responsibilities after consultation with the Authorising Engineer (Electrical). Each agreement is to be reviewed when there is a change of state of equipment;
  - d. copies of the agreement and acknowledgement are to be sent to the Authorising Engineer (Electrical) and placed in the Electrical Safety Documents Register;
  - e. a copy of any relevant regulations of the supply authority is to be available in each nominated Authorised Person (Electrical)'s office and at any other location required by the supply authority;
  - f. any action taken by a nominated Authorised Person (Electrical) on behalf of the supply authority is to comply with the instructions of the supply authority and is to be recorded in the Electrical Distribution Operating Record and in any documentation required by the supply authority; and
  - g. Authorised Persons (Electrical) appointed by the supply authority are, where practicable, to provide advance warning to the supply authority and the Authorising Engineer (Electrical) before relinquishing an appointment.

## **Roles and Duties**

### **General**

103. The Roles and Duties included below for the Authorising Engineer (Electrical), Authorised Person (Electrical), and Person in Charge are in addition to those identified in JSP 375 Volume 3 Chapter 2- Common Requirements.

### **Duties of Authorising Engineers (Electrical) in Connection with Authorised Persons (Electrical)**

104. The Authorising Engineer (Electrical) is to issue to each Authorised Person (Electrical), on appointment or re-appointment, a Certificate of Appointment as an Authorised Person (Electrical).

105. Where live working is considered appropriate the requirements of the Electricity at Work Regulations, Regulation 14 are to be specifically addressed in the Task Risk Assessment. This is to be undertaken before the Authorising Engineer (Electrical) issues written authority for work on or near live Electrical Equipment, within an establishment, to the Authorised Person (Electrical). The authority is to include:

- a. the establishment to which the authority applies;
- b. acceptance of the reasons which make live working unavoidable;



- c. the particular equipment on which live working is permitted;
- d. the extent of the work allowed (this may include a Method Statement);
- e. any limitation of the work imposed for safety reasons;
- f. any Protective Equipment that is to be made available; and
- g. whether the authority is for a single operation (such as a repair or modification), or for a repetitive task (such as routine maintenance or adjustment).

### **Duties of Authorised Persons (Electrical).**

106. More than one Authorised Person (Electrical) may be appointed for a system or installation, but at any one time only one Authorised Person (Electrical) is to be on duty for a system or installation. Each transfer of responsibility between Authorised Persons (Electrical) is to be recorded in the Electrical Distribution Operating Record.

107. If appointed for an establishment that includes an Aeronautical Ground Lighting installation communicate and co-operate with the Duty Air Traffic Control Officer as required by paragraph 404.

108. Supervise or undertake cable detection or location work within the geographical area of the Authorised Persons appointment.

109. Ensure that an Operational Risk Assessment for the isolation of an electrical system is prepared prior to the production of a Safety Programme.

110. Ensure that a Task Risk Assessment for each task on or associated with an electrical system is prepared to the satisfaction of the Authorised Person (Electrical) prior to issue of a task related safety document.

### **Role of Persons in Charge**

111. A Person in Charge is a Skilled Person who:

- a. is working in accordance with Table LV3 or paragraph 359.b.(3).;
- b. is testing equipment in accordance with Table LV3;
- c. has accepted a Permit to Work, Sanction to Test or Sanction to Work on or near Live Electrical Equipment;
- d. has a Specific Written Instruction or Authority for Access from the Authorised Person (Electrical); or
- e. has a Standing Instruction from an Authorised Person (Electrical).

### **Approval of Accompanying Safety Persons**

112. In addition to the appointment procedures defined in the Common Requirements an Accompanying Safety Person may be approved by:

- a. a Skilled Person working in accordance with Table LV3 or paragraph 359.b.(3). before undertaking a task requiring an Accompanying Safety Person;

- b. by a Skilled Person before undertaking inspection, fault finding or testing of live Low Voltage Equipment in accordance with paragraph 309.a.;
- c. the Authorised Person when a Permit to Work (Electrical), Sanction to Test (Electrical), Sanction to Work on or near Live Electrical Equipment, Specified Written Instruction or Authority for Access is issued;
- d. the Authorised Person before undertaking a task requiring an Accompanying Safety Person; or
- e. a Person in Charge before undertaking a task requiring an Accompanying Safety Person.

## **Documents and Operating Records**

### **Safety programme (Electrical)**

113. Prior to the issue of any Permit to Work, Sanction to Test, or Certificate of Isolation and Earthing, a safety programme detailing the intended sequence of operations to be performed to make the equipment safe for the execution of the work or test, and its restoration, if applicable, into service, is to be prepared.

114. The sequence of operations defined in the safety programme shall comprise all activities, including the issue and cancellation of associated safety documentation, required to make the electrical systems or equipment safe to work on or test, through to the restoration, if applicable, of the electrical supply to the electrical system or equipment. The method of preparation of the safety programme is to be agreed in advance by the two Authorised Persons (Electrical) (Originating and Countersigning) or Authorising Engineer (Electrical), if applicable, responsible for its authorisation and shall be in accordance with one of the following:

- a. where the task comprises either work or testing or both, but no additional isolations or earthing are required to complete the testing, then all sequences through to the complete restoration may be recorded in a single Safety Programme; or
- b. where the task requires a sequence of multiple safety documents (for example: test, work, test) and additional isolations and / or earthing are required, then either:
  - (1) all sequences through to the restoration may be recorded in a single safety programme supplemented by additional electrical diagrams, as necessary. The first diagram shall detail the isolation and earthing arrangements associated with the initial test or work. Subsequent diagram(s) shall show all isolation and earthing arrangements in place prior to issuing the subsequent safety documentation; or
  - (2) all sequences through to the restoration may be recorded on multiple safety programme. Each safety programme shall show all the isolation and earthing arrangements in place prior to issue of each safety document. All safety programme are to be cross-referenced.

115. The restoration of the electrical supply to the electrical system or electrical equipment is to be detailed on the safety programme supporting the last safety document issued.

116. A safety programme form is to have a format in accordance with Model Form No.1 printed in black on pale green paper. It shall have an original and a duplicate of each page, and each sheet of a programme shall bear the same unique and non-repeatable pre-printed serial number. Sets of numbered forms shall be used in sequence. Where a supplementary form is required it is to have a format in accordance with Model Forms Nos. 1 a and 1 b, be attached to the safety programme and numbered accordingly.

117. Contents of Safety Programmes:

- a. the safety programme is to be completed in duplicate and implemented by the originating Authorised Person (Electrical) or countersigning Authorised Person (Electrical), who is to be responsible for issuing any Permit to Work, Sanction to Test or Certificate of Isolation and Earthing associated with the Safety Programme;
- b. the safety programme is to indicate:
  - (1) the purpose of the proposed work or test;
  - (2) the equipment for which the proposed sequence of operations are intended to make safe to work on or test;
  - (3) the location of the equipment;
  - (4) details of other safety procedures or documents that relate to the proposed work or test including the Operational and Task Risk Assessments and the method statement for the task;
  - (5) details of the work or test to be done;
  - (6) the date on which countersigned programme is required to commence;
  - (7) special instructions or safety measures to be included on the Permit to Work or Sanction to Test;
  - (8) a circuit diagram, or diagrams (see paragraph 114.b.(1). and 114.b.(2).) of the isolating and earthing arrangements. (To be signed by the Person in Charge. See paragraph 117.d.);
  - (9) the sequence of operations to be undertaken prior to issuing the Permit to Work, Sanction to Test or Certificate of Isolation and Earthing including the location, including any name and identification code, at which each operation is to be performed;
  - (10) the identity of each item of switchgear to be operated, including generic type, manufacturers name and manufacturers type or reference;
  - (11) the operation to be performed;
  - (12) the reason for the operation;
  - (13) any items required (for example: keys, locks, Protective Equipment);

(14) the name of the Accompanying Safety Person required for a specific operation;

(15) the name of the originating Authorised Person;

(16) the name of the countersigning Authorised Person;

(17) the serial number of the Permit to Work, Sanction to Test or Certificate of Isolation and Earthing and the recipient of the document; and

(18) the sequence of operations to be undertaken on the cancellation of the Permit to Work, Sanction to Test or Certificate of Isolation and Earthing up to the completion of the reinstatement of the system including live voltage and phasing tests.

c. the original of the completed Safety Programme is to be signed by the originating Authorised Person (Electrical) and then countersigned by a second Authorised Person (Electrical) or Authorising Engineer (Electrical) who has knowledge of the system or installation and has access to an up-to-date diagram of that system or installation; and

d. the originals of pages 2, 3 and 4 and of any additional pages used for the Programme are to be initialled by the originating and the countersigning Authorised Persons (Electrical).

#### 118. Implementing Safety Programmes:

a. before commencing the sequence of operations detailed on the countersigned Safety Programme, the Authorised Person (Electrical) is to confirm that, the DIO Estate Facilities Manager (for Regional Prime Contracts), the DIO Project Manager (for other forms of DIO contract) and the Property Manager for other residual works and maintenance contracts on the defence estate or his nominated representative, as appropriate, and the person responsible for the day to day operations of the areas that are to be affected, have given permission for the intended work or test. It is also to be confirmed that these persons have been informed of the date and time of the intended operations and the effect upon the electricity supplies to the affected areas;

b. before commencing the sequence of operations detailed on the countersigned Safety Programme, the duplicate is either to be placed in the Electrical Safety Documents Register or retained in the Safety Programme Pad and located in the Document Cabinet;

c. the Authorised Person (Electrical) is to refer to the original of the safety programme while carrying out the sequence of operations detailed on the Programme, and is to note on it the date and time of each operation; and

d. the Authorised Person (Electrical) is to show the circuit diagram(s) on the safety programme to the prospective Person in Charge while showing that person the safety arrangements at the points of isolation and at the places of the Work or Test. The Person in Charge is then to sign and date the diagram(s) to indicate their understanding.

119. Completion of Safety Programmes:

- a. on completion of the sequence of operations detailed on the safety programme, the serial number, task description and status of the task is to be entered in the Electrical Distribution Operating Record, and both the original and duplicate are to be retained in the Electrical Safety Documents Register; and
- b. the original safety programmes are to be retained, in the Electrical Safety Documents Register, for three years after the dates on which they were implemented.

**Permit to Work**

120. A Permit to Work is to be issued by the Authorised Person (Electrical) to a Skilled Person before any Work on defined items of equipment is commenced. The items of equipment requiring a Permit are defined in Tables LV1, HAZ1, HV1 and AGL1 of these Rules and Procedures.

121. A Permit to Work form shall have a format in accordance with Model Forms Nos. 2 or 3 printed in black on pale blue paper. It shall have an original page and a duplicate page for Parts 1 and 2 and a single page for Parts 3 and 4 or, where applicable, for Parts 3, 4 and 5. Each page of a Permit shall bear the same pre-printed serial number and sets of numbered forms shall be used in sequence.

122. Only one set of Permit to Work (Electrical) Non-hazardous Area and Permit to Work (Electrical) Hazardous Area forms are to be in use at any time within each site, location or geographical area for which an Authorised Person is on duty.

123. When not in use the Permit to Work forms are to be kept in the Document Cabinet.

124. Unless paragraph 125 applies, a Permit to Work (Electrical) is not to be issued for any item of equipment for which an existing Permit to Work (Electrical), a Sanction to Test or a Sanction for Work on or near Live Electrical Equipment, remains valid, nor for equipment which is within an area for which an Authority for Access exists unless a Risk Assessment indicates that it is safe to do so.

125. More than one Permit to Work (Electrical) Non-hazardous Area may be issued for one item of Equipment provided that:

- a. a risk assessment indicates that it is safe to do so;
- b. a single safety programme is prepared which applies to all the Permits;
- c. all the Permits are prepared before issued;
- d. all the Persons in Charge are told of the existence of the other Permits, which are to be listed in Part 1 of each Permit; and
- e. multiple locking devices are used, the devices having sufficient capacity to accommodate the Safety Locks required for all the Permits.

126. Permits to Work are to be issued only to Skilled Persons who are:

- a. recorded in the Skilled Persons Register and appropriate to the equipment to be worked; or
- b. an Authorised Person (Electrical) who has knowledge of the system or installation; or
- c. where an ad hoc assessment using Discretionary Procedures (See JSP 375 Vol 3 Ch 2 — Common Requirements) has been carried out by the Authorised Person (Electrical) on the Skilled Person and recorded in the Electrical Safety Documents Register.

127. On accepting a Permit to Work, the Skilled Person becomes the Person in Charge as described in JSP 375 Vol 3 Chapter 2 - Common Requirements.

128. The Authorised Person (Electrical) may not issue a Permit to Work to themselves without the prior written authorisation from the Authorising Engineer (Electrical). Where written authorisation is given by the Authorising Engineer (Electrical), the Authorised Person (Electrical) then becomes the Person in Charge.

129. A Permit to Work is to state precisely and legibly:

- a. equipment to be worked on;
- b. location of equipment;
- c. details of other safety procedures or documents that relate to the proposed work;
- d. details of the work to be done;
- e. specific points where equipment is isolated;
- f. specific points where equipment is earthed;
- g. Serial Number of the Safety Programme;
- h. the safety checks, as detailed on the Permit, which have been undertaken; and
- i. special instructions and safety measures.

130. A Permit to Work (Electrical) Hazardous Areas is, in addition to the information listed in paragraph 129, to include:

- a. statement signed by the Hazardous Area Manager indicating;
  - (1) that the Hazardous Area Manager has received an adequate explanation of the purpose of and the procedure to be adopted for the work detailed;
  - (2) that permission is given for the equipment to be isolated, and for a Permit to Work (Electrical) - Hazardous Area to be issued;
  - (3) the nature of the hazard; and
  - (4) special instructions and safety measures additional to those imposed by the Authorised Person (Electrical).

- b. where appropriate, a statement signed by the Authorised Person (Petroleum) indicating:
  - (1) which of the procedures described in paragraph 359.b. has been adopted; and
  - (2) any special instructions and safety measures additional to those imposed by the Authorised Person (Electrical) and / or the Hazardous Area Manager.
- c. statements signed by the Authorised Person (Electrical) and the Person in Charge on completion of the work that the integrity of the explosion protection of all Equipment affected by the work has been checked and found to be satisfactory;
- d. a statement signed by the Hazardous Area Manager that:
  - (1) it is noted that the work has been satisfactorily completed or stopped and made safe;
  - (2) where appropriate, permission is given for the equipment to be energised and returned to an operational state; and
  - (3) where appropriate, it is noted that a Sanction to Test is now proposed.

131. A Permit to Work is, where practicable, to be issued at the place where the work is to be undertaken. The issue and cancellation of every Permit is to be recorded in the Electrical Distribution Operating Record.

132. Before issuing a Permit to Work, the Authorised Person (Electrical) is to:

- a. confirm that permission for the intended work has been obtained from the Property Manager and the person responsible for the day to day operations of the area affected by the intended work; and
- b. the Skilled Person is in possession of and understands the Task Risk Assessment and the method statement for the task; and
- c. positively identify to the Skilled Person the Equipment upon which work is to be undertaken.

133. Prior to offering a Permit to Work to the Skilled Person, the Authorised Person (Electrical) is to:

- a. explain in detail to the Skilled Person the exact extent of the work to be undertaken;
- b. draw the attention of the Skilled Person to any special instructions and safety measures noted in Part 1 of the Permit;
- c. show the Skilled Person the equipment on which the work is to be done;
- d. show the Skilled Person the circuit diagram on the Safety Programme, and the safety arrangements at the points of isolation and the places of work;
- e. unless paragraphs 133.f. or 133.g. applies, demonstrate to the satisfaction of the Skilled Person that the equipment is dead and safe to work on;

f. for low voltage equipment where it is not practicable to prove equipment dead prior to issuing the Permit to Work, the Authorised Person (Electrical) may instruct the Person in Charge, using appropriate tools, and protective equipment where necessary, to confirm the equipment dead as soon as conductors have been made accessible to a voltage test indicator; alternatively the Authorised Person (Electrical) is to remain with and supervise the Person in Charge until conductors have been made accessible to a voltage test indicator and the equipment confirmed dead to the satisfaction of the Authorised Person and the Person in Charge before the work proceeds; and

g. for high voltage equipment, where it is not practicable to prove equipment dead prior to issuing the permit, the Authorised Person (Electrical), having issued the permit is to remain with and supervise the Person in Charge until conductors at the point of work have been made accessible to a high voltage potential indicator. The Authorised Person (Electrical) is then to confirm the equipment dead to the satisfaction of the Person in Charge before allowing the Person in Charge to undertake the work described on the permit.

134. Prior to accepting the Permit to Work, the Skilled Person, having understood the work to be undertaken, and being prepared to undertake it, is to sign any special instructions or safety measures noted in Part 1 of the permit, and is to complete and sign Part 2. The signatures are to appear on the original and duplicate pages. The signature on Part 2 renders the permit valid for the defined work, and the original pages of Parts 1 and 2 of the permit are issued to the Person in Charge. The Authorised Person is to retain the duplicate pages of Parts 1 and 2 and the blank Parts 3 and 4 (and 5 where applicable), and temporarily keep them with the Electrical Safety Documents Register.

135. After accepting the Permit to Work the Skilled Person becomes the Person in Charge and is responsible for personally supervising or undertaking the defined work. The Person in Charge is not to leave the place where the work is being carried out, or to undertake any other work or tests while the defined work is in progress. During any temporary absence of the Person in Charge from the place where the work is being carried out, the work is to be suspended, and adequate safety precautions taken until work is resumed on the return of the Person in Charge.

136. Having completed the work, having withdrawn all persons, instruments and tools from the place of Work and having advised all persons associated with the work that it is no longer safe to work on the equipment, the Person in Charge is to complete and sign Part 3 of the Permit to Work, which was retained by the Authorised Person (Electrical), and is to return the original of Parts 1 and 2 to the Authorised Person (Electrical). Where work is stopped the aforementioned procedures apply and in addition the Person in Charge confirms that the equipment has been made safe pending the issue of another Permit or a Sanction.

137. In non-hazardous areas the Authorised Person (Electrical) is to check that the work has been satisfactorily completed, and that the equipment is safe to return to service. The Authorised Person (Electrical) is then to cancel the Permit to Work by writing "cancelled" across the original of Parts 1 and 2 and completing and signing Part 4. The original and duplicate pages of the cancelled Permit are then to be retained in the Electrical Safety Documents Register.

138. In Hazardous Areas the Authorised Person (Electrical) is to check that the work has been satisfactorily completed, that the equipment is safe and that the explosion protection



of all equipment affected by the work is satisfactory. The Authorised Person is then to cancel the Permit to Work by writing "cancelled" across the original of Parts 1 and 2 and completing and signing Part 4. The page of the permit bearing Parts 3, 4 and 5 is taken to the Hazardous Area Manager, who is to complete and sign Part 5. The document is to remain under the control of the Authorised Person (Electrical) at all times. The original and duplicate pages of parts of the cancelled Permit are to be retained in the Electrical Safety Documents Register.

139. If the Authorised Person (Electrical) decides, or in Hazardous Areas is advised by the Hazardous Area Manager, that it is necessary to stop the work, the Permit to Work is to be withdrawn and cancelled by writing "stopped" across the original of Parts 1 and 2. The withdrawal is to be noted in Part 4, and the reasons for withdrawal and the actions taken are to be noted in the Electrical Distribution Operating Record.

140. The duplicate pages of Parts 1 and 2 and Parts 3 and 4 (and 5 where applicable) of cancelled Permits to Work are to be retained in the Permit Pad, if not loose leaf. Loose leaf Permits to Work are to be retained in the Electrical Safety Documents Register and / or completed Permit to Work Pads are to be retained in the Document Cabinet for three years after their dates of cancellation.

141. If the Person in Charge has lost the original of Parts 1 and 2 of the Permit to Work, the loss is to be recorded by the Authorised Person (Electrical) in Part 4, and in the Electrical Distribution Operating Record. The Person in Charge is to countersign Part 4 to confirm the loss of the original Permit. The loss is to be reported to the Authorising Engineer (Electrical).

142. Where the Authorised Person (Electrical) prepares a Permit to Work but does not issue it to a Skilled Person the Permit to Work is to be cancelled by writing "not issued" across the original Parts of 1 and 2 and retaining them in the Electrical Safety Documents Register.

### **Sanction to Test**

143. A Sanction to Test is to be issued by the Authorised Person (Electrical) to a Skilled Person before the commencement of:

- a. any testing of equipment at High Voltage that is permanently connected to an electrical distribution system or forms part of an electrical system or installation; or
- b. any testing, involving the connection of Removable Temporary Earths to equipment defined by Tables LV2, HAZ2, HV2 or AGL2 of these Safety Rules and Procedures.

144. A Sanction to Test form shall have a format in accordance with Model Forms Nos. 4 or 5 printed in black on pale yellow paper. It shall have an original page and a duplicate page for Parts 1 and 2 and a single page for Parts 3 and 4 or, where applicable, for Parts 3, 4 and 5. Each page of a Sanction shall bear the same pre-printed serial number and sets of numbered forms shall be used in sequence.

145. Only one set of Sanction to Test (Electrical) Non-hazardous Area and Sanction to Test (Electrical) Hazardous Area forms are to be in use at any time within each site, location or geographical area for which an Authorised Person (Electrical) is on duty.

146. When not in use the Sanction to Test forms are to be kept in the Document Cabinet.

147. A Sanction to Test is not to be issued for any item of equipment for which an existing Sanction to Test, a Permit to Work, or a Sanction for Work on or near Live Electrical Equipment, remains valid, nor for equipment which is within an area for which an Authority for Access exists.

148. Sanctions to Test are to be issued only to Skilled Persons who are:

- a. recorded in the Skilled Persons Register and appropriate to the equipment to be tested; or
- b. an Authorised Person (Electrical) who has knowledge of the system or installation; or
- c. where an ad hoc assessment using Discretionary Procedures (See JSP 375 Vol 3 Chapter 2 — Common Requirements) has been carried out by the Authorised Person on the Skilled Person and recorded in the Electrical Safety Documents Register.

149. On accepting a Sanction to Test, the Skilled Person becomes the Person in Charge as described in JSP 375 Vol 3 Chapter 2 - Common Requirements.

150. The Authorised Person (Electrical) may not issue a Sanction to Test to themselves without the prior written authorisation from the Authorising Engineer (Electrical). Where written authorisation is given by the Authorising Engineer (Electrical), the Authorised Person (Electrical) then becomes the Person in Charge.

151. A Sanction to Test is to state precisely and legibly:

- a. equipment to be tested;
- b. location of equipment;
- c. details of other safety procedures or documents that relate to the proposed test;
- d. details of the test to be done;
- e. specific points where equipment is isolated;
- f. specific points where equipment is earthed;
- g. Removable Temporary Earths which may be removed during testing;
- h. serial number of the safety programme;
- i. the safety checks, as detailed on the Sanction, which have been undertaken;  
and
- j. special instructions and safety measures.

152. A Sanction to Test (Electrical) Hazardous Areas is, in addition to the information listed in paragraph 151, to include:

- a. a statement signed by the Hazardous Area Manager indicating;

- (1) that the Hazardous Area Manager has received an adequate explanation of the purpose of and the procedure to be adopted for the test detailed;
- (2) that permission is given for the equipment to be isolated, and for a Sanction to Test (Electrical) Hazardous Area to be issued;
- (3) the nature of the hazard; and
- (4) special instructions and safety measures additional to those imposed by the Authorised Person (Electrical).

b. where appropriate, a statement signed by the Authorised Person (Petroleum), indicating any special instructions and safety measures additional to those imposed by the Authorised Person (Electrical) and / or the Hazardous Area Manager;

c. confirmation by the Authorised Person (Electrical) and the Person in Charge that the condition of the protective conductors has been visually checked and found to be satisfactory;

d. statements signed by the Authorised Person (Electrical) and the Person in Charge on completion of the tests that the integrity of the explosion protection of all equipment affected by the tests has been checked and found to be satisfactory; and

e. a statement signed by the Hazardous Area Manager that:

(1) it is noted that the test has been satisfactorily completed or stopped and made safe;

(2) where appropriate, permission is given for the equipment to be energised and returned to an operational state; and

(3) where appropriate, it is noted that a Permit to Work is now proposed.

153. A Sanction to Test is, where practicable, to be issued at the place where the "Testing" is to be undertaken. The issue and cancellation of every Sanction is to be recorded in the Electrical Distribution Operating Record.

154. Before issuing a Sanction to Test, the Authorised Person (Electrical) is to:

a. confirm that permission for the intended test has been obtained from the Property Manager and the person responsible for the day to day operations of the area affected by the intended test, and

b. the Skilled Person is in possession of and understands the Task Risk Assessment and the method statement for the task, and

c. positively identify to the Skilled Person the Equipment upon which testing is to be undertaken.

155. Prior to offering a Sanction to Test to the Skilled Person, the Authorised Person (Electrical) is to:

a. explain in detail to the Skilled Person the exact extent of the testing to be undertaken;

- b. draw the attention of the Skilled Person to any special instructions or safety measures noted in Part 1 of the Sanction;
- c. show the Skilled Person the equipment on which the tests are to be done;
- d. show the Skilled Person the electrical diagram(s) on the Safety Programme, and the safety arrangements at the points of isolation and the places of test, and at other places affected by the test;
- e. unless paragraphs 155.f. or 155.g. applies, demonstrate to the satisfaction of the Skilled Person that the Equipment is dead and safe to test;
- f. for Low Voltage Equipment where it is not practicable to prove equipment dead prior to issuing the Sanction to Test, the Authorised Person (Electrical) may instruct the Person in Charge, using appropriate tools, and Protective Equipment where necessary, to confirm the equipment dead as soon as conductors have been made accessible to a voltage Test Indicator; alternatively the Authorised Person (Electrical) is to remain with and supervise the Person in Charge until conductors have been made accessible to a voltage Test Indicator and the equipment confirmed dead to the satisfaction of the Person in Charge before the tests proceed;
- g. for High Voltage Equipment, where it is not practicable to prove equipment dead prior to issuing the Sanction, the Authorised Person (Electrical), having issued the Sanction is to remain with and supervise the Person in Charge until conductors at the Point of Test have been made accessible at the point of test to a High Voltage potential indicator. The Authorised Person (Electrical) is then to confirm the equipment dead to the satisfaction of the Person in Charge before allowing the Person in Charge to undertake the tests described on the Sanction; and
- h. confirm that permission for the intended test has been obtained from the Property Manager and the person responsible for the day to day operations of the area affected by the intended test.

156. Prior to accepting the Sanction to Test, the Skilled Person, having understood the tests to be carried out, and being prepared to undertake them, is to sign any special instructions or safety measures noted in Part 1 of the Sanction, and is to complete and sign Part 2. The signatures are to appear on the original and duplicate pages. The signature on Part 2 renders the Sanction valid for the defined tests, and the original pages of Parts 1 and 2 of the Sanction are issued to the Person in Charge. The Authorised Person (Electrical) is to retain the duplicate pages of Parts 1 and 2 and the blank Parts 3 and 4 (and 5 where applicable), and temporarily keep them with the Electrical Safety Documents Register.

157. After accepting the Sanction to Test the prospective Person in Charge becomes the Person in Charge and is responsible for personally supervising or undertaking the defined tests. The Person in Charge is not to leave the place where the testing is being carried out, or to undertake any other work or tests while the defined tests are in progress. During any temporary absence of the Person in Charge from the place where the testing is being carried out, the tests are to be suspended, and adequate safety precautions taken until testing is resumed on the return of the Person in Charge.

158. Having completed the tests, having withdrawn all persons, instruments and tools from the place where testing was undertaken and having advised all persons

associated with the work that it is no longer safe to work on or test the equipment, the Person in Charge is to complete and sign Part 3 of the Sanction to Test, which was retained by the Authorised Person (Electrical), and is to return the original of Parts 1 and 2 to the Authorised Person (Electrical). Where the test is stopped the aforementioned procedures apply and in addition the Person in Charge confirms that the equipment has been made safe pending the issue of another Sanction or a Permit.

159. In non-hazardous areas the Authorised Person (Electrical) is to check that the tests have been satisfactorily completed, and that the equipment is safe. The Authorised Person (Electrical) is then to cancel the Sanction to Test by writing "cancelled" across the original of Parts 1 and 2 and completing and signing Part 4. The original and duplicate pages are then to be retained in the Electrical Safety Documents Register.

160. In Hazardous Areas the Authorised Person (Electrical) is to check that the tests have been satisfactorily completed, that the equipment is safe, and that the explosion protection of all equipment affected by the tests is satisfactory. The Authorised Person is then to cancel the Sanction to Test by writing "cancelled" across the original of Parts 1 and 2 and completing and signing Part 4. The page of the Sanction bearing Parts 3, 4 and 5 is taken to the Hazardous Area Manager, who is to complete and sign Part 5. The document is to remain under the control of the Authorised Person (Electrical) at all times. The original and duplicate pages of Parts of the cancelled Sanction are to be retained in the Electrical Safety Documents Register.

161. If the Authorised Person (Electrical) decides, or in Hazardous Areas is advised by the Hazardous Area Manager, that it is necessary to stop the testing, the Sanction to Test is to be withdrawn and cancelled by writing "stopped" across the original of Parts 1 and 2. The withdrawal is to be noted in Part 4, and the reasons for withdrawal and the actions taken are to be noted in the Electrical Distribution Operating Record.

162. The duplicate pages of Parts 1 and 2, and Parts 3 and 4 (and 5 where applicable) of cancelled Sanctions to Test are to be retained in the Permit Pad, if not loose leaf. Loose leaf Sanctions to Test are to be retained in the Electrical Safety Documents Register and / or completed Sanction to Test Pads are to be retained in the Document Cabinet in the Electrical Safety Documents Register, for three years after their dates of cancellation.

163. If the Person in Charge has lost the original of Parts 1 and 2 of the Sanction to Test, the loss is to be recorded by the Authorised Person (Electrical) in Part 4, and in the Electrical Distribution Operating Record. The Person in Charge is to countersign Part 4 to confirm the loss of the original Sanction. The loss is to be reported to the Authorising Engineer (Electrical).

164. Where the Authorised Person (Electrical) prepares a Sanction to Test but does not issue it to a Skilled Person the Sanction to Test is to be cancelled by writing "not issued" across the original Parts of 1 and 2 and retaining them in the Electrical Safety Documents Register.

### **Sanction for Work on or near Live Electrical Equipment**

165. A Sanction for Work on or near Live Electrical Equipment is issued by the Authorised Person (Electrical) to a Skilled Person before the commencement of any work or Test on or near live Electrical Equipment, unless such equipment is operating at Extra Low Voltage

and a Risk Assessment indicates that live working presents no dangers, or the conditions of paragraph 308.i. are applicable.

166. Live Working on Low Voltage Equipment and Extra Low Voltage Equipment may be undertaken (paragraph 308.c.) providing all reasonable steps are taken to prevent danger or, where appropriate, injury.

167. Regulation 14 of the Electricity at Work Regulations 1989 states:

“No person shall be engaged in any work or test activity on or so near any live conductor (other than one suitably covered with insulating material to prevent danger) that danger may arise unless:

- a. it is unreasonable in all the circumstances for it to be dead;
- b. it is reasonable in all the circumstances for him to be at work on or near it while it is live; and
- c. suitable precautions (including where necessary the provision of suitable protective Equipment) are taken to prevent injury.”

168. The Authorised Person (Electrical) is to have written authority, allowing the defined work on or near the defined live equipment, from the Authorising Engineer (Electrical). The authority is to include:

- a. the establishment to which the authority applies;
- b. acceptance of the reasons which make live working unavoidable;
- c. the particular equipment on which live working is permitted;
- d. the extent of the permitted Work and any limitations to be imposed by the Authorised Person (this may include a method statement);
- e. any limitation of the work imposed for safety reasons;
- f. any protective equipment that is to be made available; and
- g. whether the authority is for a single operation or for a repetitive task.

169. A Sanction for Work on or near Live Electrical Equipment shall have a format in accordance with Model Form No.6 printed in black on pale pink paper. It shall have an original page and a duplicate page for Parts 1 and 2 and a single page for Parts 3 and 4. Each page of a Sanction for Work on or near Live Electrical Equipment shall bear the same pre-printed serial number and sets of numbered forms shall be used in sequence.

170. Only one set of Sanction for Work on or near Live Electrical Equipment forms is to be in use at any time within each site, location or geographical area for which an Authorised Person (Electrical) is on duty.

171. When not in use, the Sanction to Work on or near Live Electrical Equipment forms are to be kept in the Document Cabinet.

172. A Sanction for Work on or near Live Electrical Equipment is not to be issued for any item of equipment for which an existing Sanction for Work on or near Live Electrical

Equipment, a Sanction to Test, or a Permit to Work, remains valid, nor for equipment which is within an area for which an Authority for Access exists.

173. A Sanction for Work on or near Live Electrical Equipment is not to be issued for any item of Equipment which is located within a Hazardous Area.

174. Except where the Authorised Person (Electrical) is to undertake the work personally, Sanctions for Work on or near Live Electrical Equipment are to be offered only to Skilled Persons who are:

- a. recorded in the Skilled Persons Register and appropriate to the equipment to be worked on; or
- b. where an ad hoc assessment using Discretionary Procedures (See JSP 375 Vol 3 Chapter 2 — Common Requirements) has been carried out by the Authorised Person on the Skilled Person and recorded in the Electrical Safety Documents Register.

175. On accepting a Sanction for Work on or near Live Electrical Equipment, the Skilled Person becomes the Person in Charge as described in the JSP 375 Vol 3 Chapter 2 - Common Requirements document.

176. The Authorised Person (Electrical) may not issue a Sanction for Work on or near Live Electrical Equipment to themselves without the prior written authorisation from the Authorising Engineer (Electrical). Where written authorisation is given by the Authorising Engineer (Electrical), the Authorised Person (Electrical) then becomes the Person in Charge.

177. A Sanction for Work on or near Live Electrical Equipment is to state precisely and legibly:

- a. the name of the prospective Person in Charge and of the Accompanying Safety Person;
- b. equipment to be worked on;
- c. location of equipment;
- d. details of other safety procedures or documents that relate to the proposed live working;
- e. details of the work to be undertaken live;
- f. the protective equipment to be provided;
- g. the precautions to be taken; and
- h. the points where Electrical Equipment Warning Signs and Work on or near Live Equipment Signs are displayed.

178. A Sanction for Work on or near Live Electrical Equipment is to include a declaration which is either to be signed by the Authorising Engineer (Electrical) or completed by the Authorised Person (Electrical) with the Authorising Engineer's (Electrical) formal authorisation attached to and cross-referenced on the Sanction. In consideration of the

declaration the signatory states that it is unreasonable for the equipment to be dead, that it is reasonable for the Skilled Person to work on or near live equipment, that suitable precautions have been specified to prevent injury and gives permission for the specified work to proceed.

179. A Sanction for Work on or near Live Electrical Equipment is to be issued, where practicable, at the place where the work is to be undertaken. The issue and cancellation of every Sanction for Work on or near Live Electrical Equipment is to be recorded in the Electrical Distribution Operating Record.

180. Prior to offering a Sanction for Work on or near Live Electrical Equipment to the Skilled Person, the Authorised Person is to:

- a. ensure the Skilled Person is in possession of and understands the task risk assessment and the method statement for the task;
- b. positively and physically identify to the Skilled Person the equipment on which the work is to be undertaken;
- c. explain to the Skilled Person the safety precautions to be taken; and
- d. instruct the Skilled Person to inspect all Protective Equipment before use.

181. Prior to accepting the Sanction for Work on or near Live Electrical Equipment the Skilled Person, having understood the work to be undertaken, and being prepared to undertake it, is to complete and sign Part 2. The signature is to appear on the original and duplicate pages. The signature on Part 2 renders the Sanction for Work on or near Live Electrical Equipment valid for the defined work, and the original pages of Parts 1 and 2 of the Sanction for Work on or near Live Electrical Equipment are issued to the Person in Charge. The Authorised Person (Electrical) is to retain the duplicate pages of Parts 1 and 2 and the blank Parts 3 and 4, and temporarily keep them with the Electrical Safety Documents Register.

182. After accepting the Sanction for Work on or near Live Electrical Equipment the Skilled Person becomes the Person in Charge and is responsible for personally undertaking the defined work. The Person in Charge is, therefore, not to leave the place where the work is being carried out, or to undertake any other work or tests while the defined work is in progress. During any temporary absence of the Person in Charge from the place where the work is being carried out, the work is to be suspended, and adequate safety precautions taken until work is resumed on the return of the Person in Charge.

183. Having completed the work, and having withdrawn all persons, instruments and tools from the place of work, the Person in Charge is to complete and sign Part 3 of the Sanction for Work on or near Live Electrical Equipment, which was retained by the Authorised Person (Electrical), and is to return the original of Parts 1 and 2 to the Authorised Person (Electrical). Where work is stopped the aforementioned procedures apply and in addition the Person in Charge confirms that the equipment has been made safe.

184. The Authorised Person (Electrical) is to check that the work has been satisfactorily completed, and that the equipment is safe. The Authorised Person (Electrical) is then to cancel the Sanction for Work on or near Live Electrical Equipment by writing "cancelled" across the original of Parts 1 and 2 and completing and signing Part 4. The original and duplicate pages of Parts 1 and 2 and the completed page of Parts 3 and 4 of the cancelled



Sanction for Work on or near Live Electrical Equipment are to be retained in the Electrical Safety Documents Register, for three years after their dates of cancellation.

185. If the Authorised Person (Electrical) decides that it is necessary to stop the work, the Sanction for Work on or near Live Electrical Equipment is to be withdrawn and cancelled by writing "stopped" across the original of Parts 1 and 2. The withdrawal is to be noted in Part 4, and the reasons for withdrawal and the actions taken are to be noted in the Electrical Distribution Operating Record.

186. If the Person in Charge has lost the original of Parts 1 and 2 of the Sanction for Work on or near Live Electrical Equipment, the loss is to be recorded by the Authorised Person (Electrical) in Part 4, and in the Electrical Distribution Operating Record. The Person in Charge is to countersign Part 4 to confirm the loss of the original Sanction for Work on or near Live Electrical Equipment. The loss is to be reported to the Authorising Engineer (Electrical).

187. Where the Authorised Person (Electrical) prepares a Sanction to Work on or Near Live Electrical Equipment but does not issue it to a Skilled Person the Sanction to Work on or Near Live Electrical Equipment is to be cancelled by writing "not issued" across the original Parts of 1 and 2 and retaining them in the Electrical Safety Documents Register.

### **Certificate of Isolation and Earthing**

188. A Certificate of Isolation and Earthing is a formal statement to be completed by a responsible person, such as an Authorised Person, responsible for one side of a demarcation line between two different electrical systems to enable work to be undertaken on an electrical system that is the responsibility of another responsible person. The Certificate of Isolation and Earthing is issued by the controlling Authority across the boundary.

189. A Certificate of Isolation and Earthing form shall have a format in accordance with the Model Form No. 7 printed in black on off-white paper. It shall have an original page and a duplicate page. Each page of a certificate shall bear the same pre-printed serial number and sets of numbered forms shall be used in sequence.

190. A Certificate of Isolation and Earthing shall be used where:

- a. the Authorised Person (Electrical) requires the supply authority to isolate and, where required, earth the supply to a main intake sub-station. The Certificate of Isolation and Earthing is to be issued by the supply authority;
- b. the Authorised Person (Electrical) is requested to isolate and, where required, earth an electrical supply to a consumer;
- c. a risk assessment deems it necessary to isolate and, where required, earth electrical equipment to facilitate work in the vicinity of electrical services; or
- d. a risk assessment deems it necessary to isolate and, where practicable, earth the electrical supply to a disused building or electrical equipment.

191. When a Certificate of Isolation and Earthing is used solely for isolation with no earths being applied the sections on Model Form No. 7 with reference to the application of the 'Earth' are to be deleted and initialled by the issuing Authorised Person (Electrical).

192. Only one set of Certificate of Isolation and Earthing forms is to be in use at any time within each site, location or geographical area for which the Authorised Person (Electrical) is responsible.
193. When not in use, the Certificate of Isolation and Earthing forms are to be kept in the Document Cabinet.
194. A safety programme is to be prepared prior to the issue of the Certificate of Isolation and Earthing unless the isolation can be undertaken in accordance with Table LV3.
195. A Certificate of Isolation and Earthing is to be issued to the Authorised Person (Electrical), or the responsible person when the receiving organisation does not have formal 'Permit to Work' procedures, responsible for undertaking the work on the other side of a line of demarcation, detailing the isolation and earthing operations undertaken by the issuing Authorised Person (Electrical).
196. The recipient of the Certificate of Isolation and Earthing is to acknowledge receipt of the Certificate by signing the original and duplicate. The signature renders the Certificate valid for the period of the Work. The original of the Certificate is issued to the receiving Authorised Person (Electrical), or responsible person, who thereafter takes responsibility for carrying out the work.
197. The issue or receipt of a Certificate of Isolation and Earthing and details of the safety programme associated with the issue of a Certificate of Isolation and Earthing are to be recorded in the Electrical Distribution Operating Record.
198. The duplicate of the signed Certificate of Isolation and Earthing is to be retained by the issuing Authorised Person (Electrical) and placed in the Electrical Safety Documents Register, until the work is completed and the original returned.
199. On completion of the Work requiring the Certificate of Isolation and Earthing and to confirm the cancellation of all associated Permits to Work and Sanctions To Test; and the removal of all persons under the control of the recipient including associated tools and equipment the recipient is to sign Part 3 of the form 'Clearance' and return the original Certificate to the Authorised Person (Electrical) immediately and without any intentional delay.
200. The Authorised Person (Electrical) is to sign Part 4 of the form cancelling the Certificate of Isolation and Earthing and then restore the network as defined in the Safety Programme.
201. The original is to be retained in the Electrical Safety Documents Register for three years from the date of issue, the duplicate may then be destroyed.
202. If the recipient has lost the original Certificate of Isolation and Earthing, the loss is to be recorded by the Authorised Person (Electrical) in the Electrical Distribution Operating Record. The recipient is to sign Part 3 of the Duplicate and the Authorised Person (Electrical) is to complete Part 4 and write on the Duplicate that the 'Original was lost' to record the loss of the original Certificate. The loss is to be reported to the Authorising Engineer (Electrical).
203. Where the Authorised Person (Electrical) prepares a Certificate of Isolation and Earthing but does not issue it to an Authorised Person (Electrical), or responsible person, the Certificate of Isolation and Earthing is to be cancelled by writing "not issued" across

the original Parts of 1 and 2 and retaining them in the Electrical Safety Documents Register.

## **Standing Instructions**

204. An Authorised Person (Electrical) may originate a Standing Instruction for:

- a. defined tasks on a Low Voltage system or installation in non-hazardous areas;
- b. defined tasks on a Low Voltage system or installation in an explosive facility type Category C and Category D;
- c. defined tasks on a Low Voltage system or installation in a petroleum facility;
- d. inspection, fault finding and testing of equipment on Low Voltage systems, and inspection, fault finding, testing and topping-up on battery installations, with a terminal voltage at Low Voltage. The issuing of such a Standing Instruction is limited to non-hazardous areas where it has been decided that these activities may be undertaken without a Sanction for Work on or near Live Electrical Equipment in accordance with paragraph 307.i;
- e. defined switching operations in respect of specific items of High Voltage Equipment and Low Voltage distribution equipment, where the defined operations do not give rise to the need to issue a Sanction to Test, Permit to Work, or Certificate of Isolation and Earthing; and / or
- f. insulation resistance and continuity testing of an Aeronautical Ground Lighting primary series circuit where the test is undertaken in the B Centre.

205. A Standing Instruction form shall have a format in accordance with the Model Form No. 8 printed in black on off-white paper. It shall have original and duplicate pages. Each page of a Standing Instruction shall bear the same pre-printed serial number and sets of numbered forms shall be used in sequence.

206. The original and the duplicate of the Standing Instruction are to be signed by all the Authorised Persons (Electrical) appointed for the system or installation to which the Instruction applies.

207. A Standing Instruction for defined tasks as described in paragraph 204.d. is to include a declaration which is either to be signed by the Authorising Engineer (Electrical) or completed by the Authorised Person (Electrical) with the Authorising Engineer's (Electrical) formal authorisation attached to and cross-referenced on the Standing Instruction. In consideration of the declaration the signatory states that it is unreasonable for the equipment to be dead, that it is reasonable for the Skilled Person to work on or near live equipment, that suitable precautions have been specified to prevent injury and gives permission for the specified tasks to proceed.

208. A Standing Instruction is to be issued only to a Skilled Person who is:

- a. recorded in the Skilled Persons Register and appropriate to the equipment to be worked on or tested, or where applicable, to work on or near live low voltage Electrical Equipment;

- b. to an Authorised Person (Electrical) who has knowledge of the system or installation; or
- c. where an ad hoc assessment using Discretionary Procedures (See JSP 375 Vol3 Chapter 2 — Common Requirements) has been carried out by the Authorised Person (Electrical) on the Skilled Person and recorded in the Electrical Safety Documents Register.

209. A Standing Instruction is not to be transferred from one Skilled Person to another.

210. The Skilled Person is to acknowledge receipt by completing and signing the original and the duplicate pages of the Standing Instruction; the signature renders the Instruction valid for the defined work or tests. The original of the Instruction is issued to the Skilled Person who thereafter becomes the Person in Charge as described in the JSP Vol 3 Chapter 2 - Common Requirements.

211. The issue of a Standing Instruction is to be recorded in the Electrical Distribution Operating Record.

212. The duplicate of the signed Standing Instruction is to be retained in the Electrical Safety Documents Register from the date of issue until termination (in accordance with paragraph 214).

213. An Authorised Person (Electrical) may, at any time, cancel a Standing Instruction by retrieving the original from the Person in Charge and destroying it. The cancellation is to be notified to all other Authorised Persons (Electrical) appointed for the system or installation.

214. On termination, the original of the Standing Instruction is to be retained and held in the Electrical Safety Documents Register. Both the original and the duplicate are to be overwritten with the word, "CANCELLED" or "EXPIRED", as appropriate, followed by the date of termination. The duplicate is to be countersigned by each of the Authorised Persons (Electrical) and retained in the Electrical Safety Documents Register for three years after its date of termination.

215. The cancellation or expiry of a Standing Instruction is to be noted in the Electrical Distribution Operating Record.

216. A Standing Instruction is to be renewed at intervals of no longer than three years and is to be reviewed by an Authorised Person (Electrical) at intervals of not more than twelve months and recorded in the Electrical Distribution Operating Record. When an Authorised Person (Electrical) is appointed, they are to review all extant Standing Instructions, and familiarise themselves with the contents of the extant Standing Instructions and associated Risk Assessments and Method Statement for the tasks and annotate the Electrical Distribution Operating Record to record this fact.

217. Where the Authorised Person (Electrical) prepares a Standing Instruction but does not issue it to a Skilled Person the Standing Instruction is to be cancelled by writing "not issued" across the original and duplicate with the original retained in the Electrical Safety Documents Register.

## Specific Written Instructions

218. The Authorised Person (Electrical) may issue a Specific Written Instruction for a defined switching operation or a sequence of operations or phasing tests in respect of specific items of High and Low Voltage Equipment, where the defined operations do not give rise to the need to issue a Sanction to Test or Permit to Work or Certificate of Isolation and Earthing.

219. A Specific Written Instruction form shall have a format in accordance with Model Form No.9 printed in black on off-white paper. It shall have original and duplicate pages. Each page of a Specific Written Instruction shall bear the same pre-printed serial number and sets of numbered forms shall be used in sequence.

220. A Specific Written Instruction is to be issued only to a Skilled Person who is:

- a. recorded in the Skilled Persons Register and appropriate to the equipment to be operated;
- b. to an Authorised Person (Electrical) who has knowledge of the system or installation; and
- c. where an ad hoc assessment using Discretionary Procedures (See JSP 375 Vol 3 Chapter 2 — Common Requirements) has been carried out by the Authorised Person (Electrical) on the Skilled Person and recorded in the Electrical Safety Documents Register.

221. A Specific Written Instruction is not to be transferred from one Skilled Person to another, or from an Authorised Person (Electrical) to another.

222. The Skilled Person is to acknowledge receipt of the Specific Written Instruction by signing the original and duplicate; the signature renders the Instruction valid for the defined operations. The original of the Instruction is issued to the prospective Person in Charge who thereafter becomes the Person in Charge as described in the Common Elements and Requirements document. The switching operations are to be undertaken immediately without any intentional delay following the issue of the Instruction.

223. The duplicate of the signed Specific Written Instruction is to be retained by the Authorised Person (Electrical) and where practicable placed in the Electrical Safety Documents Register, until the operations are completed and the original returned.

224. The issue of a Specific Written Instruction is to be recorded in the Electrical Distribution Operating Record.

225. On completion of the switching operations the Person in Charge is to return the original Instruction to the Authorised Person (Electrical) immediately without any intentional delay. Details of the switching operations carried out are to be entered in the Electrical Distribution Operating Record. The original is to be retained in the Electrical Safety Documents Register for three years from the date of issue and the duplicate is to be retained in the Pad

226. Where an Authorised Person (Electrical) prepares a Specific Written Instruction but does not issue it to a Skilled Person the Instruction is to be cancelled by writing "not issued" across the original and duplicate and retaining the original in the Electrical Safety Documents Register.

## **Authority for Access**

227. An Authority for Access is issued by the Authorised Person (Electrical) to a person of any discipline or specialism. The Authority is issued when any work activities, not requiring a Permit to Work (Electrical), Sanction to Test (Electrical), a Sanction for Work on or near Live Electrical Equipment, or not covered by a Standing Instruction or Specific Written Instruction are to be undertaken in an area or location which is normally under the control of the Authorised Person (Electrical).

228. An Authority for Access form shall have a format in accordance with the Model Form No. 10 printed in black on off-white paper. It shall have an original page and a duplicate page for Parts 1 and 2 and a single page for Parts 3 and 4. Each page of an Authority shall bear the same pre-printed serial number and sets of numbered forms shall be used in sequence.

229. Only one set of Authority for Access forms is to be in use at any time within each site, location or geographical area for which the Authorised Person (Electrical) is responsible.

230. When not in use, the Authority for Access forms are to be kept in the Document Cabinet.

231. Provided that the Task Risk Assessment indicates that it is safe, an Authority for Access may be issued for work activities to be undertaken in an area or location containing an item of equipment for which a Permit to Work (Electrical) remains valid.

232. An Authority for Access is not to be issued for any area for which a Sanction to Test (Electrical) or a Sanction for Work on or near Live Electrical Equipment remains valid, or where a High Voltage enclosure has been set up.

233. Where practicable, all items of live equipment at the location are to be cordoned from the working area covered by an Authority for Access for the duration of the work activities. This is to be achieved by placing temporary barriers, comprising as a minimum no entry warning tape or equivalent prominent markers, to define the non-accessible area. No Entry warning tape may be attached to suitably located temporary posts and to conveniently located fixed items or structure.

234. Electrical Equipment Warning Signs are to be prominently displayed on all items of live equipment at and adjacent to the location to which the Authority for Access applies and whilst it remains valid.

235. Where the Authority for Access applies to similar multiple outdoor substations for the purpose of weed killing or other similar repetitive tasks, the Authorised Person (Electrical) may instruct the Person in Charge on the placement of Electrical Equipment Warning Signs and the identification of hazards at the first substation; and providing said instructions are included in the special instructions and safety measures on the Authority for Access form, the Person in Charge may become responsible for placing the Electrical Equipment Warning Signs and identification of hazards at the subsequent substations.

236. Whilst the Authority for Access is in force, the Authorised Person (Electrical) is to confirm at the end of each working period or day that:

- a. any flammable or hazardous materials introduced into the area during the work activities are removed when the activities any cease at the end of each working period or day;
- b. access to essential Electrical Equipment is not obstructed; and
- c. the switch room or sub-station is secure.

237. An Authority for Access is to state precisely and legibly:

- a. the name of the person who is in charge of the work activities;
- b. the location in which the work activities are to be done;
- c. the details of work activities to be done;
- d. that Electrical Equipment Warning Signs are displayed where required; and
- e. any special instructions and safety measures (this may include a documented Risk Assessment).

238. An Authority for Access is to be offered to a person of any discipline or specialism who is competent to personally execute the work activities or to supervise the execution of the work activities by others. On accepting the Authority, the person becomes the Person in Charge and is responsible for personally undertaking or supervising the work activities, for which the access is required.

239. An Authority for Access is to be issued, where practicable, at the place where the work activities are to be undertaken. The issue and cancellation of every Authority is to be recorded in the Electrical Distribution Operating Record.

240. Before issuing an Authority for Access, the Authorised Person (Electrical) shall:

- a. positively identify the scope and limits of the work activities which are to be carried out;
- b. the physical extent of the work activities at the location; and
- c. ensure the person is in possession of and understands the Task Risk Assessment and method statement for the task.

241. Prior to offering an Authority for Access to the person, the Authorised Person (Electrical) is to:

- a. confirm with the person in detail the exact extent of the work activities to be undertaken, including its scope and limits;
- b. show the person the area in which the work activities are to be done;
- c. draw the attention of the person to any special instructions and safety measures noted in Part 1 of the Authority, and indicate the safety measures applied by the Authorised Person (Electrical); and

d. indicate to the person all items of live Electrical Equipment in or adjacent to the work activities area, which are to be identified by Electrical Equipment Warning Signs.

242. Prior to accepting the Authority for Access the person, having understood the scope and extent of, and limits to the work activities to be undertaken, and being prepared to undertake it, is to sign any special instructions and safety measures noted in Part 1 of the Authority, and is to complete and sign Part 2. The signatures are to appear on the original and duplicate pages. The signature on Part 2 renders the Authority valid for the defined work activities, and the original pages of Parts 1 and 2 of the Authority are issued to the Person in Charge. The Authorised Person (Electrical) is to retain the duplicate pages of Parts 1 and 2 and the blank Parts 3 and 4, and temporarily keep them with the Electrical Safety Documents Register.

243. The acceptance of an Authority for Access makes the Person in Charge responsible for personally supervising or undertaking the defined work activities. The Person in Charge is, therefore, not to leave the place where the work activities are being carried out, or to undertake any other activities of any kind while the defined work activities are in progress. During any temporary absence of the Person in Charge from the place where the work activities are being carried out, the work activities are to be suspended, and adequate safety precautions taken until work activities are resumed on the return of the Person in Charge.

244. Completion of Work and Cancellation of Authority for Access:

a. having completed the work activities and having withdrawn all persons, surplus materials, instruments and tools from the working place, the Person in Charge is to complete and sign Part 3 of the Authority for Access, which was retained by the Authorised Person (Electrical), and is to return the original of Parts 1 and 2 to the Authorised Person (Electrical);

b. the Authorised Person (Electrical) is to confirm that the location has been left in a clean and tidy condition and to secure it against unauthorised access. The Authorised Person (Electrical) is then to cancel the Authority for Access by writing "cancelled" across the original of Parts 1 and 2 and completing and signing Part 4. The original and duplicate pages of Parts 1 and 2 and the completed page of Parts 3 and 4 of the cancelled Authority are to be retained in the Electrical Safety Documents Register, for three years after their dates of cancellation;

c. if the Authorised Person (Electrical) decides that it is necessary to stop the work activities, the Authority is to be withdrawn and cancelled by writing "stopped" across the original of Parts 1 and 2. The withdrawal is to be noted in Part 4, and the reasons for withdrawal and the actions taken are to be noted in the Electrical Distribution Operating Record; and / or

d. if the Person in Charge has lost the original of Parts 1 and 2 of the Authority for Access, the loss is to be recorded by the Authorised Person in Part 4, and in the Electrical Distribution Operating Record. The Person in Charge is to countersign Part 4 to confirm the loss of the original Authority. The loss is to be reported to the Authorising Engineer (Electrical).



## Electrical Distribution Operating Record

245. For each geographical area for which an Authorised Person (Electrical) is appointed, a bound stiff covered book (not loose leaf), entitled "Electrical Distribution Operating Record" is to be prepared. The book is to be clearly and indelibly marked with the name of the site, location and installation to which the records relate, and is to be kept in the Document Cabinet.

246. The pages of the book are to be divided into columns with the following headings:

| <b>TIME AND DATE</b> | <b>LOCATION AND IDENTITY OF EQUIPMENT</b> | <b>EVENT OR OPERATION AND REASON</b> | <b>SIGNATURE</b> |
|----------------------|---|--------------------------------------|------------------|
|                      |   |                                      |                  |

247. Entries are to be made in chronological order; each entry being ruled off with a horizontal line across the page. Entries are to record:

- a. each individual operation of High Voltage switchgear and of Low Voltage distribution switchgear down to and including main intake switches where this information is not recorded on a Safety Programme;
- b. adjustment of the Mimic Diagram (if provided) to indicate the present state of the system or installation;
- c. the issue and return of a key from the Key Cabinet (where not recorded on a Safety Programme);
- d. the removal and return from the Authorised Persons (Electrical) Key Box of the Authorised Persons (Electrical) key and the transfer of the Authorised Persons (Electrical) Key;
- e. the relinquishing and acceptance of responsibility between Authorised Persons (Electrical);
- f. the withdrawal or replacement of the Authorised Persons (Electrical) Duplicate Key;
- g. each safety programme produced prior to the issue of a Permit to Work, a Sanction to Test, or a Certificate of Isolating and Earthing;
- h. the issue, cancellation, withdrawal and non-issue (drafted but not issued by the Authorised Person) of a Permit to Work, a Sanction to Test, a Sanction for Work on or near Live Electrical Equipment, Standing Instruction, Specific Written Instruction, or an Authority for Access or a Certificate of Isolating and Earthing;
- i. the withdrawal of a Permit to Work, a Sanction to Test, a Sanction for Work on or near Live Electrical Equipment or an Authority for Access, the reason and the action taken;

- j. the loss of a Permit, a Sanction, a Sanction to Work on or near Live Electrical Equipment, a Standing Instruction, a Specific Written Instruction or an Authority for Access;
- k. the issue and termination of a Standing Instruction and of a Specific Written Instruction;
- l. the receipt and termination of an Operational Restriction;
- m. any inspection and remedial action associated with an Operational Restriction;
- n. information required for remote sites;
- o. live voltage and phasing tests (where not included in a Safety Programme);
- p. the appointment of an Accompanying Safety Person (where not included in Safety Programme);
- q. the annual inspections of Protective Equipment, Test Equipment and portable earthing Equipment;
- r. annual review of Standing Instructions;
- s. operation of Tap Changers;
- t. spiking of a cable;
- u. AE(E) Audit, and / or visit to site by the AE(E) including reason for visit; and
- v. visit to site by the SAA(E) / DSAA(E) including reason for visit.

248. Electrical distribution Operating Record books are to be retained in the Document Cabinet for a period of three years after the date of the last entry.

### **Electrical Safety Documents Register**

249. For each geographical area for which an Authorised Person (Electrical) is appointed, a ring binder file entitled 'Electrical Safety Documents Register' is to be prepared. The binder file is to be clearly and indelibly marked with the name of the site, location and installation to which the records relate, and is to be kept in the Document Cabinet.

250. The Register is to contain, in separate sections, the original, the duplicate or the copy as appropriate of each:

- a. the Register of Skilled Persons;
- b. Safety Programmes;
- c. cancelled or expired Permit to Work, Sanction to Test, Sanction to Work on or near Live Electrical Equipment, Isolation and Earthing Certificates, Standing Instruction, Specific Written Instruction and Authority for Access;
- d. valid Standing Instruction and Specific Written Instruction;

- e. extant Operational Restrictions;
- f. inspection report and details of any remedial work undertaken in connection with an Operational Restriction;
- g. cancelled Operational Restriction;
- h. details of Protective Equipment, Test Equipment and portable earthing equipment kept within the establishment, including specification, operator or user instructions, maintenance instructions and, where appropriate, calibration records;
- i. demarcation agreement with consumers;
- j. operational agreement with the supply authority;
- k. a copy of all Authorised Persons (Electrical) Certificates of Appointment for the geographical area of appointment applicable to these Operating Records;
- l. a copy of the letter of appointment for the Authorising Engineer (Electrical) responsible for the geographical area of appointment applicable to these Operating Records;
- m. any report, written with the Authorising Engineers (Electrical) authority, regarding the operation of the Electrical Distribution System or the application of these Safety Rules and Procedures;
- n. Operational and Task Risk Assessments and any other Risk Assessment required in accordance with these Safety Rules and Procedures;
- o. documentation required by the Electricity Safety Quality and Continuity Regulations;
- p. documentation associated with the appointment and monitoring of Skilled Persons;
- q. Notification Regime (s) (Hazardous Areas); and
- r. any other document deemed relevant by the Authorising Engineer (Electrical).

251. The Register is to contain an Index enabling each section to be readily identified and the documents contained within located.

252. Documents in the Register are to be retained for a period of three years after the date of their completion, cancellation or termination.

253. The Register is also to contain a copy of the current edition of these Safety Rules and Procedure.

### **Switchgear Maintenance and Operating Instructions**

254. The Register is also to contain a copy of the current edition of these Safety Rules and Procedure. For each geographical area for which an Authorised Person is appointed, one or more ring binder files entitled 'Switchgear Maintenance and Operating Instructions' are to be prepared. The binder files are to be clearly and indelibly marked with the name of

the site, location and installation to which the records relate, and are to be kept in the Document Cabinet.

255. The ring binder files are to contain:

- a. manufacturers maintenance and operating instructions for each type of High and Low Voltage switchgear included in the system or installation with test certificates and records;
- b. copies of any Operational Restrictions, endorsed with their current status, which are applicable to any equipment included in the system or installation; and
- c. information on where maintenance records are to be found.

### **Electrical Distribution Record Drawings**

256. For each geographical area for which an Authorised Person (Electrical) is appointed, a binder or pocket file entitled "Electrical Distribution Record Drawings" is to be prepared. The binder or file is to be clearly and indelibly marked with the name of the site, location and installation to which the records relate, and is to be kept in the Document Cabinet.

257. The binder or file is to contain the following information applicable to the site:

- a. a site location plan;
- b. electrical distribution single line diagram;
- c. a location plan and layout drawings of the High Voltage Distribution System, of each substation, of Low Voltage distribution equipment (up to and including main intake switches), and of Low Voltage switchboards as appropriate;
- d. detail of the supply authority's supplies;
- e. detail of on-site electricity generation;
- f. a Schedule of the High Voltage Switchgear, Distribution Transformers, Low Voltage Switchgear and Feeder Pillars;
- g. details, line diagrams and layout drawings of Uninterruptible Power Supply (UPS) Equipment;
- h. a cable schedule, including as installed cable route plans and drawings;
- i. details of electrical protection, including overcurrent protection grading charts and voltage referenced time grading charts; and
- j. information on where load records are to be found.

### **Document Cabinet**

258. When the documents specified in these Safety Rules and Procedures are not in use, they are to be kept in a lockable Document Cabinet installed, with the Working Key Cabinet, in a room to which Authorised Persons (Electrical) have access at all times.

259. When any Document Cabinet associated with these Safety Rules and Procedures is not in use it is to be closed and securely locked and the key retained in the Working Key Cabinet under the control of the Authorised Person (Electrical).

260. Where the volume of documents is small and there is adequate space, it is permissible to keep them in the Working Key Cabinet.

### **Safety Rule Book**

261. The Electricity Safety Rule Book has been prepared for the benefit of all electrically Skilled Persons involved in operating, working on or near, and testing Electrical Equipment for which the Ministry of Defence is responsible for managing the risk. It includes extracts from these Safety Rules and Procedures and is to be carried as a reference book by those persons.

262. Authority:

- a. the procedures included in the Rule Book are to be followed by all electrical Skilled Persons and Persons in Charge, and by trainees employed by the Ministry of Defence, or its agents, whilst such persons are operating, working on or testing Electrical Equipment that is covered by these Rules and Procedures and is within a Ministry of Defence establishment; and
- b. all persons issued with the Rule Book are to have it available for reference whenever they are operating, working on or testing Electrical Equipment that is covered by these Safety Rules and Procedures and is within a Ministry of Defence establishment.

263. Distribution and Control:

- a. the Rule Book is to include a control page with spaces for details of the issuing authority, the serial number of the book, the holders name and signature, and date of issue;
- b. the Authorised Person (Electrical), within their areas of appointment, are to issue a rule book to each Authorised Person (Electrical), Authorised Person (Petroleum), Hazardous Area Manager, and Skilled Person; and
- c. an Authorised Person (Electrical) is to maintain a Register that includes details of the issuing authority, the serial number of each Rule Book, the name and signature of each person who has been issued with a book, and the date of issue. The Register is to be checked by the Authorising Engineer (Electrical) during their Audit.

## **Operating Procedures**

### **Risk Assessments**

264. This Section describes the documents to be used and the operational procedures to be adopted when controlling work or tests on or associated with any electrical system (as defined by these Safety Rules and Procedures).

265. Prior to any work or test on or associated with an electrical system a 'suitable and sufficient' Risk Assessment is to be produced. For work or tests on or associated with

electrical systems requiring isolation by an Authorised Person (Electrical) there will normally be a requirement for two separate Risk Assessments.

266. The first Risk Assessment is required to be produced by the Authorised Person (Electrical) to address the hazards exhibited by the electrical system and which may be present within the environment in which the task is to be completed. The Risk Assessment will be referred to as the Operational Risk Assessment.

267. Note - The Operation Risk Assessment will address arc flash (see Annex D), and where complex switching operations are to be undertaken but do not warrant a requirement for a Safety Programme as per paragraph 113.

268. The output of the Operational Risk Assessment is to identify the risks and mitigation associated with the sequence of operations detailed within the Safety Programme. This Risk Assessment MUST also include the hazards to the individual(s) carrying out the defined sequence of operations.

269. The second Risk Assessment required is the Task Risk Assessment. This Task Risk Assessment is to be prepared by the person(s) carrying out the task, as defined in the method statement, and is to include local hazard information supplied to the individual by the Area Custodian in accordance with the MOD's '4C' management system (JSP375, Volume 1 Chapter 34).

270. The Authorised Person (Electrical) is to ensure that the Task Risk Assessment is produced and submitted prior to the issue of a task related safety document.

271. The Authorised Person (Electrical) is to review the Task Risk Assessment and determine if it is suitable and consistent with the isolation methodology as defined on the Safety Programme. If the Authorised Person (Electrical) considers that the Task Risk Assessment is inadequate a task related safety document is not to be issued and the work or Test is not to proceed.

272. The Operational Risk Assessments, the Task Risk Assessments and the method statement for the task are to be retained within the Electrical Safety Documents Register, for three years after the dates on which they were implemented.

### **Safety Locks and Safety Key Boxes**

273. Before a Permit to Work is issued, and before a Skilled Person commences work or testing in accordance with Table LV3 or work in accordance with paragraph 359.b., Safety Locks are to be applied wherever practicable at all points of isolation and at all points where Temporary Earths are applied.

274. Before a Sanction to Test is issued, Safety Locks are to be applied wherever practicable at all points of isolation and at all points where Temporary Earths are applied. Padlocks are to be applied wherever practicable at all points where Removable Temporary Earths are applied; neither Safety Locks nor suited padlocks are to be used for this purpose.

275. The keys for Safety Locks currently in use by Authorised Persons (Electrical) in conjunction with Permits to Work or Sanctions to Test are to be secured in one or more Safety Key Boxes. When in use each Safety Key Box is to contain the keys associated with only one Permit to Work or one Sanction to Test.

276. After the Safety Locks have been applied, and before the Permit to Work or Sanction to Test is issued, the keys to all the Safety Locks are to be placed in a Safety Key Box and both locks of the Box are to be secured. When the Permit or Sanction is issued the Authorised Person (Electrical) is to issue the Person in Charge's key of the Safety Key Box to the Person in Charge and is to retain the Authorised Persons (Electrical) key.

277. Skilled Persons may be issued on a permanent basis with their own Safety Locks and Keys for work or testing in accordance with Table LV3 or for defined tasks described on a Standing Instruction issued to that Skilled Person. Such Locks are to bear the name of the Skilled Person, who is to retain control of the Safety Locks and Keys at all times. The Keys to such Safety Locks when in use are to be controlled by the Person in Charge and kept in a secure location.

278. More than one Safety Key Box may be provided on any site. In such cases, each Person in Charge's Key is to release only one Safety Key Box lock on that site, and each box is to bear a serial number ensuring positive identification within the site.

### **Keys, Key Cabinets, Padlocks to Secure Removable Temporary Earths, and Mimic Diagrams**

279. Keys for Switchgear and buildings:

a. Access Keys and locks are to be unique except where a system of controlled suited locks is installed. There is to be a key, or keys where the Authorising Engineer (Electrical) has identified an operational requirement for more than one key, for each lock provided for:

- (1) Low Voltage distribution switchgear including feeder pillars, and main intake switches supplied by distribution cables;
- (2) High Voltage switchgear and equipment;
- (3) substations, standby set houses and any building, part of a building or fenced area containing High Voltage Equipment; and
- (4) any room or enclosure containing a main intake switchboard, a central battery system, fixed uninterruptible power supply equipment or a standby generating set.

b. unless a system of suited locks is installed, the key(s) for a lock are not to open any other locks provided for a system or installation;

c. there is to be an auditable system for the management of all Access Keys on each site. The Authorising Engineer (Electrical) is to define this auditable system and the arrangements are to be documented in the Electrical Systems Document Register;

d. where there are two sets of keys, one is to be secured in a location other than the Authorised Persons (Electrical) office and preferably in a location that is continuously manned. The location of this duplicate set of keys is to be clearly displayed in the Authorised Persons (Electrical) office. A procedure is to be drawn up detailing who (and under what circumstances) has access to any second set of keys. Both sets of keys must be uniquely labelled in accordance with the agreed management system to provide an auditable trail;

- e. the form of storage employed on a particular site must be agreed with the Authorising Engineer. The keys are to be secured in a key cabinet or other safe location; the exact form of storage will be dependent on the number of keys involved. If a key cabinet is necessary, due to the number of keys involved, the cabinet is to be secured and the key kept in a small key safe, which is accessed by a combination lock;
- f. ideally, the Authorised Person (Electrical) should control the access to all switch rooms, central battery installation as well as switchgear and substations but it is recognised that this may not occur on some sites. Where the local client or third party retains control of the access to switch rooms etc. this must be formally recorded in the key management system;
- g. the administration and use of suited lock systems in connection with these Safety Rules and Procedures is detailed in JSP 375 Vol 3 Chapter 2 — Common Requirements;
- h. within the geographical area for which an Authorised Person (Electrical) is appointed, the keys for each substation, building or item of equipment are to be attached to two appropriately sized key plates, one key plate being clearly labelled "Working Keys" and the other "Duplicate Keys";
- i. key plates are to bear the identification of the substation, building or item of equipment to which the keys belong, or the purpose for which each key is intended; and
- j. in connection with these Safety Rules and Procedures where keys are issued for regular or repeated use, to persons other than the Authorised Person, the specific use and purpose intended for the keys is to be detailed on a Standing Instruction issued to that person.

#### 280. Key Cabinets:

- a. except for any key plates in use the key plates holding the working keys are to be kept in a closed and securely locked Working Key Cabinet installed, with the Document Cabinet, in a room to which Authorised Persons (Electrical) have free access at all times;
- b. except for any key plates in use the key plates holding the duplicate keys are to be kept in a closed and securely locked Duplicate Key Cabinet labelled "Electrical Distribution - Duplicate Keys", permanently installed in one of the following locations to which Authorised Persons (Electrical) are to have access at all times:
  - (1) the main Guardroom at a Royal Navy, Army or Royal Air Force establishment; or
  - (2) a continuously manned room or a securely locked room (other than the room in which the Working Set is kept) at a civilian establishment.
- c. the Working Key Cabinet and the Duplicate Key Cabinet are to be fitted with identical locks for which there are only two keys. The keys are to be labelled and held as follows:



(1) one key, labelled "Authorised Person (Electrical) ", is to be held by the Authorised Person (Electrical) or locked in the Authorised Persons (Electrical) Key Safe; and

(2) the other key labelled "Authorised Person (Electrical) - Duplicate", is to be kept in either a glass-fronted box or a key safe fitted with a combination lock, in the same room as the Duplicate Key Cabinet. The key box is to be made so that the glass front has to be broken before access to the key is gained.

d. a notice is to be affixed near to the glass-fronted box containing the Authorised Persons (Electrical) duplicate key stating, "Only the persons listed have authority to break the glass and withdraw the key". This is to be followed by a current list of Authorised Persons (Electrical) appointed for the systems and installations to which the key relates.

#### 281. Padlocks to secure Removable Temporary Earths:

a. padlocks used to secure Removable Temporary Earths are not to be operable by a master key; and

b. the keys for locks used by the Authorised Person (Electrical) to secure Removable Temporary Earths are to be issued by the Authorised Person (Electrical) to the Person in Charge, who is to retain control of them for the duration of the test.

#### 282. Authorised Persons Key Safe:

a. a Key Safe with a combination lock is to be installed adjacent to the Working Key Cabinet. The Authorised Persons (Electrical) key is locked in this safe when it is not held by the duty Authorised Person (Electrical). No other keys are to be kept in this safe;

b. all Authorised Persons (Electrical) appointed for the system or installation, and only such persons, are to know the combination for the lock; and

c. if an Authorised Persons (Electrical) Certificate expires and is not renewed, or is withdrawn, the combination is to be changed.

#### 283. Mimic Diagrams:

a. a Mimic Diagram is to be provided for any High Voltage or Low Voltage distribution system which includes a ring circuit, an automatically started generating set or a fixed uninterruptible power supply. A Mimic Diagram may also be provided for, or include, other electrical systems or installations;

b. Low Voltage ring circuits are to be shown on a separate mimic or are to have a different colour from high voltage ring circuits;

c. a Mimic Diagram is to show as a minimum the electricity distribution system and equipment that is under the control of the Authorised Person (Electrical), from all sources of supply up to and including Low Voltage main intake switchgear. For large installations the Mimic Diagram may finish at the Low Voltage Substation feeder pillars;

- d. substations and Low Voltage main intake switchgear are to be appropriately labelled on the Mimic Diagram with the location name and identification code;
- e. the Mimic Diagram is to be permanently displayed in the room in which the Working Key Cabinet is located. The status of the electricity distribution system and Equipment is to be visible at all times; and
- f. the Mimic Diagram is to be lockable to prevent unauthorised adjustment.

## **Use and Provision of Protective, Test and Earthing Equipment**

### **284. Use, Storage, Inspection and Documentation:**

- a. Protective Equipment, Test Equipment and earthing equipment is to be maintained and stored in accordance with the manufacturers or suppliers' instructions, and it is to be inspected by the user on each occasion before use and is to be properly used;
- b. the location of Protective Equipment, Test Equipment and portable earthing equipment is to be prominently displayed adjacent to the Working Key Cabinet;
- c. where Protective Equipment, Test Equipment and portable earthing equipment is kept on site for use in connection with these Safety Rules and Procedures, details and copies of the equipment specification, operation, maintenance and, where appropriate, calibration, are to be kept in the Electrical Safety Documents Register;
- d. unless more frequent intervals are specified by the manufacturer or supplier an Authorised Person (Electrical) is to inspect each item of Protective Equipment, Test Equipment and portable earthing equipment, kept on the site, at least once a year and in accordance with the manufacturers or suppliers instructions, to ensure that it is suitable for the use for which it is provided and it is maintained in a condition suitable for that use. Where Protective Equipment, Test Equipment and portable earthing equipment is found to be defective or faulty it is to be taken out of use and suitable precautions implemented to prevent further use. The inspecting Authorised Person (Electrical) is to instigate the appropriate remedial or replacement action where necessary. These inspections are to be recorded in the Electrical Distribution Operating Record, as well as in any other maintenance and inspection record system; and
- e. an Authorised Person (Electrical) is to examine the records every twelve months to determine that the maintenance and inspection is being carried out for Protective Equipment, Test Equipment and portable earthing equipment kept on the site.

### **285. Protective Equipment:**

- a. appropriate Protective Equipment is to be provided and is to be readily available at all times to those who need it in connection with these Safety Rules and Procedures. Protective Equipment is to be used when identified in either the Operational or Task Risk Assessments as being necessary to prevent danger or, where appropriate, injury, and as required by these Safety Rules and Procedures;

b. the Authorised Person is to ensure that the Protective Equipment detailed in the Task Risk Assessment is available to Person in Charge prior to the issue of a safety document; and

c. Protective Equipment is to be inspected by the user for visible defects on each occasion prior to use and to ensure that it is suitable for the use for which it is provided, and that it has been maintained in a condition suitable for that use, when properly used. Any suspect item is to be withdrawn and arrangements made for its replacement.

#### 286. Test Equipment:

a. the Authorised Person (Electrical) is to arrange for the necessary Test Equipment to be available when required in connection with these Safety Rules and Procedures;

b. Test Equipment is to be, where appropriate, calibrated and safety checked in accordance with the manufacturers or suppliers' instructions; and

c. Test Equipment is to be inspected by the user for visible defects on each occasion prior to use to ensure that it is suitable for the use for which it is provided, and that it has been maintained in a condition suitable for that use, when properly used. Any suspect item is to be reported to the Authorised Person (Electrical) who is to consider its withdrawal and replacement.

#### 287. Earthing Equipment:

a. before conductors are earthed a check is to be made by the Authorised Person (Electrical) or Skilled Person using the equipment to confirm that the earthing equipment to be used is of sufficient strength and current-carrying capability to discharge electrical energy (under fault conditions) to earth without danger or, where appropriate, risk of injury;

b. the appropriate manufacturers or suppliers proprietary earthing equipment is to be used where it is available. Where none is available, purpose made earthing equipment, with appropriate certification, and which has been approved for the purpose by the Authorising Engineer (Electrical) may be used; and

c. portable earthing equipment is to be inspected by the user before each use to confirm that it is suitable for the use for which it is provided, and that it has been maintained in a condition suitable for that use, when properly used. Any suspect item is to be reported to the Authorised Person (Electrical) who is to consider its withdrawal and replacement.

### **Permanent Safety Signs and Posters**

288. The Safety Signs are to be securely and permanently fixed in accordance with the following:

a. sufficient Safety Signs in accordance with Model Sign No. PI and a notice identifying the installation are to be displayed in prominent positions outside every substation and High Voltage standby set house. The notice identifying the installation is to include a telephone number where a person appointed by the Ministry of

Defence is to be in constant attendance. The Safety Sign may be combined with the notice as Model Sign No. P2;

- b. a Safety Sign in accordance with Model Sign No. P1 is to be displayed on any pole that supports High or Low Voltage conductors or Equipment;
- c. where the English language may not be understood, an additional sign in the appropriate language is to be displayed with symbols to identify danger that are appropriate to the location;
- d. a Main Intake Switch Sign in accordance with Model Sign No. P3 is to be displayed on all Low Voltage main intake switches, except for domestic consumer units;
- e. a Multiple Supplies Sign in accordance with Model Sign No.P4 is to be displayed on all Low Voltage switchboards and equipment having two or more sources of supply;
- f. a Supply to Hazardous Area Sign in accordance with Model Sign No.P5 is to be displayed on or adjacent to the main intake switch or switchboard for a Hazardous Area;
- g. a Remotely / Automatically Controlled Generating Set Sign in accordance with Model Sign No. P6 is to be displayed on or adjacent to all remotely or automatically controlled generating sets; and
- h. a Remotely / Automatically Controlled Machine Sign in accordance with Model Sign No. P7 is to be displayed on or adjacent to all remotely or automatically controlled machines, except for small sealed refrigerator motors, in-line circulating pumps and other such domestic items.

#### 289. Display of Information:

- a. the Authorising Engineer (Electrical) is to carry out a risk assessment to determine the requirement and location for the display of information in connection with these Safety Rules and Procedures, and Health and Safety matters. Information is to be displayed permanently in suitable and prominent positions. The areas to be considered for the display of information in connection with these Safety Rules and Procedures are to include every substation, standby set house, workshop and Authorised Persons (Electrical) office. A record is to be kept of the assessment for audit and review purposes; and
- b. information and posters to be displayed may include the following:
  - (1) the Electricity at Work Regulations;
  - (2) electric shock emergency resuscitation (recommended);
  - (3) any of the Tables from these Safety Rules and Procedures; and
  - (4) other relevant information.

## Safety Rules and Procedures

### Working on and Testing Low Voltage Equipment in Non-hazardous areas

290. These Safety Rules and Procedures do not apply where low voltage equipment in non-hazardous areas has been discharged, disconnected, removed from the system or installation and is not energised by other means.

291. Note - Testing can cause a hazard and care must be taken when testing isolated or disconnected Equipment.

292. Low voltage Equipment which is considered by a Skilled Person or the Authorised Person (Electrical) to be in a Dangerous Condition, or is subject to an extant Warning Notice, Safety Alert, or Policy Instruction that requires it to be immediately switched off, is to be remotely isolated, and action taken by the Authorised Person (Electrical) to prevent it being re-connected to the supply of electricity. The Authorised Person (Electrical) is to report the matter as soon as is reasonably practicable to the Authorising Engineer (Electrical).

293. Where work or tests are to be undertaken on Aeronautical Ground Lighting Primary Series Circuit Equipment and associated luminaires, the Rules and Procedures of the Section 'Working on and Testing Aeronautical Ground Lighting Primary Series Circuit Equipment and Associated Luminaires', commencing at paragraph 402, are to be followed.

294. The requirements of paragraph 404 are to be applied to all work activities on Equipment that affects the functioning of aeronautical ground lighting systems.

295. Unless the provisions of paragraphs 293 and 294 or paragraphs 308.a. to 308.i. apply, all working or testing of Low Voltage Equipment connected to a system is to follow the procedures set out in Tables LV1, LV2 or LV3 of these Safety Rules and Procedures as appropriate. A Skilled Person following the procedures set out in Table LV3 becomes the Person in Charge and is responsible for the work or Test.

296. Safety Locks are to be applied wherever practicable at points of isolation to prevent unauthorised operation or re-connection. A Caution Sign, as required by paragraph 310.a. should always accompany Safety Locks used for isolation. Where it is impracticable to fix a Safety Lock, a Caution Sign must be fixed.

297. Temporary Safety Signs shall be fixed and displayed in accordance with paragraph 312.a. to 312.j. inclusive.

298. Where required by paragraph 310 an Accompanying Safety Person is to be appointed before work or tests are commenced. The Accompanying Safety Persons name shall be recorded on the original of the safety programme along with the time and date of the appointment.

299. Voltage Test Indicators are to be tested immediately before and after use against a Test Supply. Multi-meters are not to be used to prove Equipment dead.

300. Where practicable, equipment is to be proved dead prior to the application of any Temporary Earth and Removable Temporary Earth. Where it is not practicable to Prove Dead other means are to be used to make an assessment that the equipment to which the earth is to be applied is not energised then, any Temporary Earth or Removable Temporary Earth connections shall be made by means of a switch, or circuit breaker with

integral earthing facilities, that form part of the permanently installed Equipment. Other forms of Temporary Earth or Removable Temporary Earth connection shall not be used until the equipment where the earth is to be applied has been confirmed dead.

301. Where the procedures involve the application of Temporary Earths the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of Safety Locks. These Safety Locks are, where practicable, to be in addition to those required by paragraph 296.

302. Where the procedures involve the application of Removable Temporary Earths, the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of padlocks. The keys of the padlocks are to be issued to the Person in Charge who is to retain control of them for the duration of the tests.

303. Prior to the issue of a Permit to Work or Sanction to Test, the Authorised Person (Electrical) is to show the Skilled Person, the electrical diagram(s) on the Safety Programme, the safety arrangements at the points of isolation and at the places of work or test and is to ensure that the person understands all the relevant safety procedures and precautions. If the Skilled Person thereafter accepts the Permit or Sanction that person becomes the Person in Charge and is responsible for the defined Work or Test until the Permit or Sanction is cancelled.

304. Authorised Persons (Electrical) personally undertaking tasks requiring a Permit to Work, a Sanction to Test or a Sanction for Work on or near Live Electrical Equipment, and with the Authorising Engineers (Electrical) prior approval (see paragraph 128, 150 and 176), are to issue these documents to themselves. The Authorised Person (Electrical) then becomes the Person in Charge. (See paragraphs 127, 149 and 175).

305. Where it is not practicable to prove equipment dead until a Permit to Work or Sanction to Test has been issued, one of the following sub-clauses is to apply:

- a. the Authorised Person (Electrical) is to instruct the Person in Charge, using appropriate tools, and Protective Equipment where necessary, to confirm the equipment dead at the point of work or test as soon as conductors have been made accessible to a suitable voltage Test Indicator; or
- b. the Authorised Person (Electrical) is to remain with and supervise the Person in Charge until conductors have been made accessible at the point of work or test to a suitable voltage Test Indicator. The equipment is to be confirmed dead to the satisfaction of the Authorised Person (Electrical) and the Person in Charge before the work or test proceeds.

306. Where a Permit to Work or Sanction to Test is not required and isolation is achieved by the removal of fuses or links and it is not practicable to apply a Safety Lock, then the fuses or links are to be removed and securely retained in the possession of the Skilled Person responsible for the work or test. A Caution Sign as required by paragraph 312.a. must be fixed at the point of isolation.

307. The identification and spiking of cables:

- a. before the conductors of a cable are cut or exposed, the cable to be worked on is to be identified with certainty;

b. the identification may be regarded as clear and certain if one of the following conditions apply:

(1) where the cable is visible throughout its length;

(2) where it is not visible throughout its length a rope loop is passed along those parts which are not visible; or

(3) where it can be visibly traced from the point of work or test to a point where the cable is isolated and proved or confirmed dead and, where practicable, has a Temporary Earth applied.

c. in the absence of clear and certain identification, the cable is to be spiked at the point of the work and thereafter identified by an appropriate procedure. Before spiking it may be necessary to undertake tests which are to be repeated after spiking and the results compared;

d. an appropriate cable identification instrument may be used to assist in identifying a cable when it is to be spiked. However, this instrument shall not be used as the sole means of identifying a cable;

e. cables without an earth bonded metallic sheath or armouring are not to be spiked; and

f. the spiking of cables is to be undertaken only by the Authorised Person and is to be recorded in the Electrical Distribution Operating Record.

### 308. Undertaking work and / or Test on or Near Live Low Voltage Equipment:

a. where electrical systems and installations are supplied at High Voltage, working or testing on or near uninsulated live conductors is not to be undertaken;

b. working or testing on or near uninsulated live conductors operating at Low Voltage is to be avoided, except where a formal assessment procedure for deciding whether to work live is undertaken and recorded by the Authorised Person (Electrical) and reviewed and authorised by the Authorising Engineer (Electrical). The question 'Can the normal policy of dead working be carried out?' is to be addressed, before continuing with the assessment procedure and the requirements of paragraph 308.c.(1). to 308.c.(3). are met. Where any work or test is to be undertaken on or near uninsulated live conductors a Sanction to Work on or Near Live Equipment is to be issued prior to the commencement of the work or Test;

c. no person shall be engaged in any work activity on or so near any live conductor (other than one suitably covered with insulating material to prevent danger) that danger may arise unless:

(1) it is unreasonable in all the circumstances for the conductors to be dead;

(2) it is reasonable in all the circumstances for the person to be at work on or near the conductor while it is live; and

(3) suitable precautions (including where necessary the provision of suitable Protective Equipment) are taken to prevent injury.

- d. after identifying the circuit or equipment to be worked on or near and prior to planning the work, an assessment procedure for deciding whether to work dead or live is to be undertaken by the Authorised Person (Electrical). The question "can the normal policy of dead working be carried out?" is to be addressed first, before continuing with the assessment procedure;
- e. the Authorising Engineer (Electrical) is to review the formal assessment procedure for deciding whether to work live and if acceptable, is to produce or sign a written authority allowing defined work on or near defined live equipment. The written authority is to include:
- (1) the establishment to which the authority applies;
  - (2) the acceptance of the reasons which make live working unavoidable;
  - (3) the particular equipment on which live working is permitted;
  - (4) the extent of the permitted work and any limitations to be imposed by the Authorised Person (Electrical) (this may include a Method Statement);
  - (5) any limitation of the work imposed for safety reasons;
  - (6) any Protective Equipment that is to be made available; and
  - (7) whether the authority is for a single operation, or for a repetitive task.
- f. the Authorised Person (Electrical) is to have a copy of the written authority, allowing defined work on or near the defined live equipment, from the Authorising Engineer (Electrical);
- g. the Authorised Person (Electrical) is responsible for specifying and monitoring the implementation of the safety precautions necessary to prevent injury to persons and damage to equipment;
- h. prior to the issue of a Sanction for Work on or near Live Electrical Equipment, the Authorised Person (Electrical) is to identify the safety arrangement to the Skilled Person and is to ensure that the person understands all the relevant safety procedures and precautions. If the Skilled Person is satisfied with the safety precautions as specified and is prepared to accept responsibility for the work, the Skilled Person is to indicate acceptance by signing the Sanction. Thereafter, the Skilled Person becomes the Person in Charge and is to be responsible for the application of the safety precautions, and for personally undertaking the defined work and only that work, until the Sanction is cancelled;
- i. Protective Equipment is to be used, where necessary, in order to prevent injury; and
- j. inspection, fault finding and testing of equipment on systems having a supply voltage at Extra Low Voltage, and inspection, fault finding, testing and topping-up battery installations that are sectionalised in such a way that this disconnection and separation is secure and each section of batteries has a terminal voltage below Extra Low Voltage, may be undertaken, without a Sanction for work on or near Live Electrical Equipment or Standing Instruction provided that:



- (1) it is unreasonable in all circumstances for the conductors to be dead;
- (2) it is reasonable in all circumstances for the person to be at work on or near the conductor while it is live;
- (3) all live parts are adequately protected to prevent direct contact;
- (4) suitable precautions (including where necessary the provision of suitable Protective Equipment) are taken to prevent injury;
- (5) Test Equipment and all tools in use shall be suitable, for the use for which they are provided and, maintained in a condition suitable for that use and, properly used; and
- (6) adequate precautions are taken to prevent damage to equipment and accidental contact with dangerous live conductors.

### 309. The High Voltage Testing of Low Voltage Equipment:

- a. where High Voltage tests are to be undertaken on Low Voltage Equipment a Sanction to Test is to be issued to the Skilled Person, who on acceptance, becomes the Person in Charge who is to be present throughout the duration of the tests;
- b. the areas containing Test Equipment and any High Voltage connection are to be regarded as High Voltage Enclosures;
- c. unauthorised access to such areas is to be prevented by, as a minimum, yellow and black striped tape, not less than 25mm wide, suspended on posts, and by the display of High Voltage Enclosure Signs in accordance with paragraph 312.d;
- d. a High Voltage Enclosure is to be entered only by:
  - (1) the Authorised Person (Electrical);
  - (2) the Authorising Engineer (Electrical);
  - (3) a Skilled Person, an Authorised Person (Electrical) Designate, or Authorising Engineer (Electrical) Designate acting on the instructions of and personally supervised by the Authorised Person (Electrical);
  - (4) the Person in Charge in receipt of a Sanction to Test, when the High Voltage Enclosure is created as part of the test procedure; and / or
  - (5) an Accompanying Safety Person rendering immediate assistance to the Person in Charge in connection with their safety role.

### 310. Standing Instructions and Specific Written Instructions:

- a. an Authorised Person (Electrical) is to give a Standing Instruction to a named Skilled Person for defined tasks or switching operations on a Low Voltage system or installation where it has been decided that these activities may be undertaken without a Sanction for Work on or near Live Electrical Equipment and where the Standing Instruction is issued for regular inspection and testing, or fault finding on live equipment subject to the conditions of paragraph 308.b., 308.d. and 312.a. When the

Skilled Person accepts the Standing Instruction that person becomes the Person in Charge and is responsible for carrying out the defined tasks until the Standing Instruction is cancelled; or

b. the Authorised Person (Electrical) may give a Specific Written Instruction to a named Skilled Person or to an Authorised Person (Electrical) for defined switching operations in respect of specific items of Low Voltage switchgear. If the Skilled Person or an Authorised Person (Electrical) thereafter accepts the Specific Written Instruction that person becomes the Person in Charge and is responsible for the defined switching operations.

311. An Accompanying Safety Person is to be in attendance in the following circumstances:

a. where working or testing in accordance with Tables LV1 or LV2 is to be undertaken, whilst the equipment is being proved dead;

b. where working or testing in accordance with Tables LV1 or LV2 is to be undertaken, whilst the equipment is being earthed, other than by means of a switch or circuit breaker;

c. where working or testing in accordance with Table LV1 or LV2 is being undertaken on equipment which cannot be proved dead until the Person in Charge has made conductors accessible, an Accompanying Safety Person is to be in attendance until the equipment has been proved dead;

d. where working or testing in accordance with Table LV3 is to be undertaken on equipment for which the means of isolation is not positively identified, an Accompanying Safety Person is to be in attendance until the equipment has been isolated and proved dead;

e. whilst inspection, fault finding, or testing is being undertaken on live Low Voltage Equipment;

f. whilst work on or near live Low Voltage Equipment is being undertaken;

g. whilst testing is being undertaken at High Voltage;

h. whilst the Authorised Person is spiking a cable; and / or

i. where the Operational Risk Assessment identifies it as necessary.

312. The display of temporary safety signs:

a. Caution Signs are to be fixed at the points of isolation and prominently displayed before the start and for the duration of work or testing, and before the issue and for the duration of any Permit to Work or Sanction to Test;

b. Skilled Persons shall obtain Caution Signs and Electrical Equipment Warning Signs as necessary before commencing work in accordance with Table LV3. Such Signs shall bear the Skilled Persons name;

- c. Skilled Persons may be issued on a permanent basis with their own Caution Signs and Electrical Equipment Warning Signs. Such Signs shall bear the Skilled Persons name;
- d. High Voltage Enclosure Signs are to be prominently displayed so that they are visible from every angle of approach to a High Voltage Enclosure, before the issue and for the duration of a Sanction to Test;
- e. Electrical Equipment Warning Signs are to be prominently displayed, on any equipment which remains live and is immediately adjacent to the equipment to be worked on or tested, before the start and for the duration of work or testing and before the issue and for the duration of any Permit to Work, a Sanction to Test or a Sanction for Work on or near Live Equipment;
- f. Electrical Equipment Warning Signs are to be prominently displayed on any live equipment which is accessible, either in or adjacent to an area that is to be the subject of an Authority for Access, before the issue and for the duration of any Authority for Access;
- g. where work or testing is to be undertaken on any part of a multi-cubicle switchboard, Electrical Equipment Warning Signs are to be prominently displayed on the cubicles or compartments immediately adjacent to the part being worked on or tested. If the board has rear access Electrical Equipment Warning Signs shall similarly be displayed at both the front and rear of the board. In identifying parts at the rear of the board, reliance is not to be placed solely upon the switchboard labelling;
- h. before a Permit to Work or a Sanction to Test is issued the Authorised Person (Electrical) is to identify the equipment upon which the work or test is to be undertaken to the Skilled Person. If the work or test involves, or may involve, obtaining access to items of equipment over which confusion could occur, the Authorised Person (Electrical) is to identify such items to the Skilled Person and apply temporary marking to them;
- i. work on or near Live Equipment Signs are to be prominently displayed so that they are visible from every angle of approach to the Low Voltage Equipment before the start and for the duration of work in accordance with paragraph 308.i., and before the issue and for the duration of a Sanction for Work on or near Live Equipment. Work on or near Live Equipment Signs are also to be prominently displayed on the equipment when work on or near the live equipment is in progress; and
- j. Temporary Safety Signs are to be fixed in a secure manner that does not create a hazard.

313. The locking of switchgear and switch rooms:

- a. where it is necessary to prevent danger or, where appropriate, injury, or prevent unauthorised operation, equipment cubicles and operating mechanisms are to be locked when the equipment is unattended; and
- b. any entrance to a room or enclosure containing a main intake switchboard, central battery system, permanently connected uninterruptible power supply

equipment or a generating set is to be closed and securely locked when the equipment is unattended.

### Table LV1 - For Working on Low Voltage Equipment in Non-hazardous Areas

314. Except where a Risk Assessment indicates that an explosion, electric shock or possibility of short circuit exists, equipment operating at Extra Low Voltage is exempt from these procedures.

315. Steps in Column 1 are to be undertaken in numerical order.

316. Columns 2, 3 and 4 provide detail for the specified equipment.

317. The Authorised Person (Electrical) is to be in possession of a current Authorised Person's (Electrical) Certificate of Appointment appropriate to the equipment being worked on, and is responsible for Steps 1, 2, 3, 4, and 7, 8, 9, 10, 11.

318. The Person in Charge is to hold an extant appointment as a Skilled Person appropriate to the equipment being worked on and is responsible for Steps 5 and 6.

| COLUMN 1                           | COLUMN 2  | COLUMN 3   | COLUMN 4   |
|------------------------------------|---|--|--|
| EQUIPMENT                          | Main intake switches, switchboards and Equipment having two or more sources of supply, cables and other Equipment on the supply side of a main intake switch.   | Generating sets started by manual initiation from a remote location, or automatically on receipt of a signal.  | Uninterruptible power supply Equipment.  |
| STEP 1<br>PREPARE SAFETY PROGRAMME | COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION. Review the planned work including any method statements and prepare (or review) the Operational Risk Assessment Prepare a Safety Programme (Electrical) and obtain a countersignature before proceeding to Step 2.   |  |  |
| STEP 2<br>ISOLATE AND FIX SIGNS    | ISOLATE FROM ALL SOURCES OF SUPPLY. Where practicable, prevent unauthorised connection or unauthorised operation by fixing Safety Locks at all the points of isolation, and visibly fix Caution Signs at all points of isolation. Fix Caution Signs on motor starting Equipment. Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the work. | INHIBIT ENGINE START, ISOLATE GENERATOR. Where practicable, prevent unauthorised connection, or unauthorised operation or unauthorised starting by fixing Safety Locks. Fix Caution Signs at all the points of isolation and, clearly visible, on the engine start panel. Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the work. | ISOLATE FROM ALL SOURCES OF SUPPLY. Isolate mains supply, battery supply, output supply and any standby power supply. On parallel Uninterruptible Power Supply systems and those having an external bypass, ISOLATE the output supply terminals of the units being worked on from all sources of supply. If a battery installation is to be worked on, follow the rules applicable to Work on or near Live Equipment, disconnect the battery from its charger and disconnect the battery earth. Where practicable, prevent unauthorised connection or unauthorised operation by fixing Safety Locks at points of isolation, and visibly fix Caution Signs at all points of isolation. Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the work. |

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| <p><b>STEP 3 PROVE DEAD AND EARTH</b></p>        | <p><b>ENSURE THAT THE Equipment TO BE WORKED ON IS THE Equipment THAT HAS BEEN ISOLATED</b><br/>Where practicable prove dead with a voltage Test Indicator at all the points of isolation and at the places of the Work.<br/>Where practicable earth conductors at points of isolation and fix Safety Locks. Identify cables with certainty at the places of the Work. Earth overhead lines near the places of the work.</p>  | <p>Where practicable prove dead with a Voltage Test Indicator at all the points of isolation and where practicable at the places of the Work.<br/>Where practicable, earth the line and neutral generator output terminals or conductors and, where practicable, fix Safety Locks.</p> | <p>Except for the battery installation, where practicable, prove dead with a voltage Test Indicator at all the points of isolation and at the places of the Work.<br/>Except for the battery installation, where practicable, earth conductors at points of isolation and fix Safety Locks.</p> |
| <p><b>STEP 4 ISSUE PERMIT TO WORK</b></p>        | <p>Review the method statement and Task Risk Assessment prior to issuing the Permit to Work. (This may be undertaken in association with Step 1.)<br/>The Skilled Person is to be shown the diagram on the Safety Programme and the safety arrangements at all the points of isolation and at the places of the work.<br/>The Person in Charge's key to the Safety Key Box and the Permit to Work are issued to the Person in Charge.<br/>After issuing the Permit the Mimic Diagram, if installed, is adjusted, the Electrical Distribution Operating Record is completed and the original of the Safety Programme is placed with the duplicate.<br/>(Where the Authorised Person (Electrical) is to confirm dead in Step 5 the updating of the Mimic Diagram; the Electrical Distribution Operating Record; and the Electrical Safety Documents Register is to be completed as soon as is practicable.)</p> |  |   |
| <p><b>STEP 5 CONFIRM DEAD</b></p>                | <p>Where it was not practicable in Step 3 to prove the Equipment dead, the Person in Charge or Authorised Person (Electrical) (as appropriate), using appropriate tools, and Protective Equipment where necessary, is to Confirm Dead at the places of the work as soon as conductors have been made accessible to a Voltage Test Indicator. Where practicable, the conductors are to be earthed by the application of additional earths after they have been confirmed dead.</p>   |  |   |
| <p><b>STEP 6 UNDERTAKE WORK</b></p>              | <p>The Person in Charge is to undertake or provide Personal Supervision for the work and, on completion or when the work is stopped and made safe, returns the original Parts 1 and 2 of the Permit to Work to the Authorised Person and completes and signs Part 3.</p>  |  |   |
| <p><b>STEP 7 CHECK WORK</b></p>                  | <p>If the work has been completed, check that the work is satisfactory, that the Equipment has been restored to working order and that it may be safely energised.<br/>If the work was stopped in Step 6, check that the Equipment has been made safe.</p>  |  |   |
| <p><b>STEP 8 CANCEL PERMIT TO WORK</b></p>       | <p>Cancel the Permit to Work by cancelling the original Parts 1 and 2 and completing and signing Part 4.<br/>The Person in Charge's key to the Safety Key Box is returned to the Authorised Person (Electrical).<br/>Where a test is required before the Equipment is energised, Steps 9 and 10 are omitted, and the procedures of Table LV2 are to be followed.<br/>Where other Permits relate to the Equipment and have not been cancelled, Steps 9 and 10 are omitted.</p>   |  |   |
| <p><b>STEP 9 REMOVE EARTHS</b></p>               | <p>Remove the Safety Locks and earths applied in Steps 3 and 5</p>  |  |   |
| <p><b>STEP 10 MAKE EQUIPMENT OPERATIONAL</b></p> | <p>Remove the Safety Locks and Signs fixed in Step 2 and restore the Equipment to an operational state.</p>   |  |   |

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| STEP 11 REVIEW<br>TASK AND<br>COMPLETE<br>RECORDS | Adjust the Mimic Diagram if installed.<br>Complete the Electrical Distribution Operating Record, Electrical Safety Documents Register and review task and complete the feedback report of JSP 375 Vol 3 Ch 2 — Common Requirements as deemed necessary. |
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**Table LV2 - For Working on Low Voltage Equipment in Non-hazardous Areas**

319. Except where a Risk Assessment indicates that an explosion, electric shock or possibility of short circuit exists, equipment operating at Extra Low Voltage is exempt from these procedures.

320. Steps in Column 1 are to be undertaken in numerical order.

321. Columns 2, 3 and 4 provide detail for the specified equipment.

322. The Authorised Person (Electrical) is to be in possession of a current Authorised Persons (Electrical) Certificate of Appointment appropriate to the equipment being worked on, and is responsible for Steps 1, 2, 3, 4, and 7, 8, 9, 10, 11.

323. The Person in Charge is to hold an extant appointment as a Skilled Person appropriate to the equipment being worked on and is responsible for Steps 5 and 6.

| COLUMN 1                              | COLUMN 2   | COLUMN 3  | COLUMN 4                                |
|---------------------------------------|--|---|---|
| EQUIPMENT                             | Main intake switches, switchboards and Equipment having two or more sources of supply, cables and other Equipment on the supply side of a main intake switch.  | Generating sets started by manual initiation from a remote location, or automatically on receipt of a signal. | Uninterruptible power supply Equipment. |
| STEP 1<br>PREPARE SAFETY<br>PROGRAMME | COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION<br>Review the planned test including any method statements and prepare (or review) the Operational Risk Assessment.<br>Prepare a Safety Programme (Electrical) and obtain a countersignature before proceeding to Step 2 |   |   |

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| <p>STEP 2<br/>ISOLATE AND FIX SIGNS</p> | <p>ISOLATE FROM ALL SOURCES OF SUPPLY.<br/>Where practicable, prevent unauthorised connection or unauthorised operation by fixing Safety Locks at all the points of isolation, and visibly fix Caution signs at all points of isolation. Fix Caution Signs on motor starting Equipment.<br/>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the test.</p>  | <p>INHIBIT ENGINE START, ISOLATE GENERATOR.<br/>Where practicable, prevent unauthorised connection, or unauthorised operation or unauthorised starting by fixing Safety Locks. Fix Caution Signs at all the points of isolation and, clearly visible, on the engine start panel. Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the test.</p> | <p>ISOLATE FROM ALL SOURCES OF SUPPLY.<br/>Isolate mains supply, battery supply, output supply and any standby power supply.<br/>On parallel Uninterruptible Power Supply systems and those having an external bypass, ISOLATE the output supply terminals of the units being tested from all sources of supply.<br/>If a battery installation is to be tested, follow the rules applicable to Work on or near Live Equipment, disconnect the battery from its charger and disconnect the battery earth.<br/>Where practicable, prevent unauthorised connection or unauthorised operation by fixing Safety Locks at points of isolation, and visibly fix Caution Signs at all points of isolation.<br/>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the test.</p> |
| <p>STEP 3<br/>PROVE DEAD AND EARTH</p>  | <p>ENSURE THAT THE Equipment TO BE TESTED IS THE Equipment THAT HAS BEEN ISOLATED<br/>Where practicable Prove Dead with a voltage Test Indicator at all the points of isolation and at the places of the test.<br/>Where practicable earth conductors at points of isolation and fix Safety Locks to Temporary Earth's and padlocks to Removable Temporary Earth's.<br/>Identify cables with certainty at the places of the test and at the distant end.<br/>Earth overhead lines near the places of the test.</p>  | <p>Where practicable Prove Dead with a Voltage Test Indicator at all the points of isolation and where practicable at the places of the test.<br/>Where practicable, earth the line and neutral generator output terminals or conductors and, where practicable, fix Safety Locks to Temporary Earth's and padlocks to Removable Temporary Earth's.</p>                           | <p>Except for the battery installation, where practicable, Prove Dead with a voltage Test Indicator at all the points of isolation and at the places of the test.<br/>Except for the battery installation, where practicable, earth conductors at points of isolation and fix Safety Locks to Temporary Earth's and padlocks to Removable Temporary Earth's.</p>  |
| <p>STEP 4<br/>ISSUE PERMIT TO WORK</p>  | <p>Review the method statement and Task Risk Assessment prior to issuing the Sanction to Test. (This may be undertaken in association with Step 1.)<br/>The Skilled Person is to be shown the diagram on the Safety Programme and the safety arrangements at all the points of isolation and at the places of the test.<br/>If a High Voltage Enclosure is to be set up, fix High Voltage Enclosure Signs and barriers.<br/>The Person in Charge's key to the Safety Key Box and the Sanction to Test are issued to the Person in Charge.<br/>After issuing the Sanction the Mimic Diagram, if installed, is adjusted, the Electrical Distribution Operating Record is completed and the original of the safety Programme is placed with the duplicate. (Where the Authorised Person (Electrical) is to confirm dead in Step 5 the updating of the Mimic Diagram; the Electrical Distribution Operating Record; and the Electrical Safety Documents Register is to be completed as soon as is practicable.)</p> |   |   |
| <p>STEP 5<br/>CONFIRM DEAD</p>          | <p>Where it was not practicable in Step 3 to prove the Equipment dead, the Person in Charge or Authorised Person (Electrical) (as appropriate), using appropriate tools, and Protective Equipment where necessary, is to confirm it dead at the places of the test as soon as conductors have been made accessible to a voltage Test Indicator. Where practicable, the conductors are to be earthed by the application of additional earths after they have been confirmed dead.</p>  |   |   |

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| <p>STEP 6<br/>UNDERTAKE WORK</p>                    | <p>The Person in Charge is to undertake or provide Personal Supervision for the test, including the disconnection of any Removable Temporary Earth's and additional earths. On satisfactory completion of the test, or when the test is stopped and made safe, the conductors are to be discharged and any Removable Temporary Earth's restored. The Person in Charge then returns the original Parts 1 and 2 of the Sanction to Test to the Authorised Person and completes and signs Part 3.</p> |
| <p>STEP 7<br/>CHECK WORK</p>                        | <p>If the test has been completed, check that the result is satisfactory, that the Equipment has been restored to working order and that it may be safely energised. If the test was stopped in Step 6, check that the Equipment has been made safe.</p>   |
| <p>STEP 8<br/>CANCEL PERMIT TO WORK</p>             | <p>Cancel the Sanction to Test by cancelling the original Parts 1 and 2 and completing and signing Part 4. The Person in Charge's key to the Safety Key Box is returned to the Authorised Person (Electrical). Where the test was stopped in Step 6 and work is required before the Equipment is re-tested, Steps 9 and 10 are omitted and the procedures of Table LV1 are to be followed.</p>   |
| <p>STEP 9<br/>REMOVE EARTHS</p>                     | <p>Remove the locks and earths applied in Steps 3 and 5.</p>   |
| <p>STEP 10<br/>MAKE EQUIPMENT OPERATIONAL</p>       | <p>Remove the Safety Locks, barriers and Signs fixed in Steps 2 and 4 and restore the Equipment to an operational state.</p>   |
| <p>STEP 11<br/>REVIEW TASK AND COMPLETE RECORDS</p> | <p>Adjust the Mimic Diagram if installed. Complete the Electrical Distribution Operating Record and review task and complete the feedback report of JSP 375 Vol 3 Ch 2 — Common Requirements, as deemed necessary.</p>   |



**Table LV3 - For Skilled Persons Working on or Testing Equipment in Non-hazardous Areas**

324. Except where a Risk Assessment indicates that an explosion, electric shock or possibility of short circuit exists, equipment operating at Extra Low Voltage is exempt from these procedures.

325. Steps in Column 1 are to be undertaken in numerical order.

326. Columns 2 and 3 provide detail for the specified equipment.

327. The Person in Charge is to hold an extant appointment as a Skilled Person appropriate to the equipment being worked on and is responsible for all Steps.

| COLUMN 1                           | COLUMN 2  | COLUMN 3   |
|------------------------------------|---|--|
| EQUIPMENT                          | Cables and other Equipment on the load side of a main intake switch.<br>(For main intake switches, switchboards and Equipment having two or more sources of supply, cables and other Equipment on the supply side of a main intake switch, see Column 2 of Tables LV1 and LV2, and refer to the Authorised Person (Electrical)).  | Generating sets started by local manual initiation.<br>(For generating sets started by manual initiation from a remote location, or automatically on receipt of a signal, see Column 3 of Tables LV1 and LV2, and refer to the Authorised Person).   |
| STEP 1<br>PREPARATION              | REVIEW TASK METHOD STATEMENT AND RISK ASSESSMENT AND COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION.   |  |
| STEP 2<br>ISOLATE AND<br>FIX SIGNS | ISOLATE FROM ALL SOURCES OF SUPPLY.<br>Make Equipment safe to Work on or Test. Where practicable, prevent unauthorised connection or operation by fixing Safety Locks at all the points of isolation, and visibly fix Caution Signs at all points of isolation.<br>Fix Caution Signs on motor starting Equipment.<br>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the work or test.   | INHIBIT ENGINE START, ISOLATE GENERATOR.<br>Make Equipment safe to Work on or Test. Where practicable, prevent unauthorised connection or unauthorised operation or unauthorised starting by fixing Safety Locks. Fix Caution Signs at all the points of isolation and, clearly visible, on the engine start panel. Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the work or test. |
| STEP 3<br>PROVE DEAD<br>AND EARTH  | ENSURE THAT THE EQUIPMENT TO BE WORKED ON OR TESTED IS THE EQUIPMENT THAT HAS BEEN ISOLATED.<br>Where practicable Prove Dead with a Voltage Test Indicator at all the points of isolation and where practicable at the places of the work or test. Where practicable earth the line and neutral conductors and, where practicable, fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths. Identify cables with certainty at the places of the work or, for testing, at the places of test and at the distant end. | Where practicable Prove Dead with a voltage Test Indicator at all the points of isolation and where practicable at the places of the work or test.<br>Earth the line and neutral generator output terminals or conductors and, where practicable, fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths.   |

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| <p>STEP 4<br/>CONFIRM<br/>DEAD</p>                   | <p>Where it was not practicable in Step 3 to prove the Equipment dead, the Skilled Person, using appropriate tools, and Protective Equipment where necessary, is to confirm it dead at the places of the work or test as soon as conductors have been made accessible to a Voltage Test Indicator. Where practicable, earth the line and neutral conductors unless they were earthed in Step 3.</p> |
| <p>STEP 5<br/>UNDERTAKE<br/>WORK OR<br/>TEST</p>     | <p>Undertake or provide Personal Supervision for the work or test.</p>  |
| <p>STEP 6<br/>CHECK WORK<br/>OR TEST</p>             | <p>Check that the work or test has been satisfactorily completed, that the Equipment has been restored to working order, and that it may be safely energised.</p>   |
| <p>STEP 7<br/>REMOVE<br/>EARTHS</p>                  | <p>Remove any earths applied in Steps 3 or 4.</p>   |
| <p>STEP 8<br/>MAKE<br/>EQUIPMENT<br/>OPERATIONAL</p> | <p>Remove the Signs and Locks fixed in Step 2 and restore the Equipment to an operational state.</p>  |

## Working on and Testing Low Voltage Equipment in Hazardous Areas

328. These Safety Rules and Procedures do not apply where equipment has been discharged, disconnected, removed from the system or installation or removed from the Hazardous Area, and is not energised by other means. For the purpose of this section of these Safety Rules and Procedures the role of Hazardous Area Manager is fulfilled by one of the following:

- a. Petroleum Installation – Operating Authority (OA) as defined within JSP 317;
- b. explosive buildings – Explosives Safety Representative (ESR) as defined within DSA03 OME Part 2 or person appointed in accordance with the Explosive Regulations 2014; or
- c. all other hazardous areas as defined by DSEAR - Area Custodian as defined within JSP 375 Volume 1 Chapter 34.

329. Note - Testing can cause a hazard and care must be taken when testing isolated or disconnected Equipment.

330. Work on or the inspection and testing of electrical equipment and systems within the defined hazardous area. As identified in accordance with the Dangerous Substances and Explosive Atmosphere Regulations (DSEAR), Hazardous Area Classification drawings and associated risk assessments, or DSA03 OME Part 2 for military explosive areas on the MOD estate. This section should be read in conjunction with the main Safety Rules and Procedures for this chapter and the relevant sections of Safety Rules and Procedures Chapter 5 (Petroleum).

331. Equipment which is considered to be in a unfit for continuous operation or in a dangerous condition within a hazardous area by the Skilled Person, Authorised Person (Electrical), Hazardous Area Manager or, where appropriate the Authorised Person (Petroleum) or Explosives Safety Representative is subject to an extant Warning Notice, Safety Alert, or Policy Instruction that requires it to be immediately switched off (unless this action could cause a greater hazard), this is to be achieved by remotely isolating and disconnecting the asset, this action is to too prevent it being re-connected or re-energised. The Authorised Person (Electrical) is to report the matter as soon as is reasonably practicable to the Authorising Engineer (Electrical) and recorded in the EDOR.

332. No work on or near live equipment shall be undertaken within a Hazardous Area.

333. Six aspects of electrical work (including testing) within hazardous areas are to be considered to enable the related risks to be controlled, by these Safe Systems of Work described in this section. These aspects are in addition to the general requirements for the control of the electrical danger:

- a. the integrity of the hazardous area protection concept of electrical equipment is subject to maintenance and must be restored when the maintenance is complete. The integrity must be appropriate for the DSEAR hazardous zone classification or requirements of DSA03 OME Part 2 for any new equipment installed. No alteration that will invalidate the certificate or other approval document relating to the protection of the electrical equipment or system is to be made;
- b. equipment must not be opened, or the protection concept disturbed, until it is electrically isolated and, in a gas, or flammable dust free environment;

Note: This is not applicable to approved Intrinsically Safe Circuits which require calibration in place.

- c. electrical testing can cause induced currents and voltages throughout an installation this may be due to earth bonding and lightning protection systems. To reduce the risks from incendive sparks and where identified as a control measure on the task risk assessment, electrical testing is to be carried out under the control of a gas monitoring regime;
- d. Electrical Inspections and testing within the hazardous areas are defined within BS EN 60079 Part 17;
- e. inspection and testing of earthing system and lightning protection system (LPS) in accordance with BS 7430 and BS EN 62305 respectively can cause stray voltages and currents during testing resulting in incendive sparks occurring; and
- f. the maintenance of electrical equipment in hazardous areas shall be carried out by a Skilled Person having adequate training, experience, and theoretical knowledge to be considered as a competent person on electrical equipment installed in hazardous atmospheres as defined in BS EN 60079 Parts 14 and 17.

334. The Authorised Person (Electrical) is to co-ordinate work and or testing of electrical equipment installed within a Hazardous Area in co-operation with the Area Custodian, or Authorised Person (Petroleum), or Explosives Safety Representative. The Authorised Person (Electrical) is responsible for producing the Operational Risk Assessment in conjunction with the above, which shall cover the safe isolation and reinstatement of the equipment. The assessments are to take in account any time which may be required to allow any surface temperature or stored electrical energy to decay to a level below which it is incapable of causing ignition.

335. All persons required to work, or test equipment located within a Hazardous Area are to be familiar with equipment and the concepts of protection used. The work is to be conducted in a manner that complies with these Rules and Procedures and any instructions issued by the equipment manufacturer, Area Custodian, Authorised Person (Petroleum) or Explosives Safety Representative.

336. Whenever reasonably practicable, the working location is to be rendered non-hazardous for the duration of the work or test. However, the provisions of this section apply even if the working location has been rendered non-hazardous for the duration of the work or test.

337. Formal written notification regime is to be implemented between the Area Custodian and the Authorised Persons (Electrical) for each site, but excluding the petroleum installation which are subject to existing notification procedure in accordance with JSP 375 Volume 3 Chapter 5 and explosive areas which are subject to existing notification in accordance with DSA03 OME Part 2. The Authorising Engineer (Electrical) is to approve the notification regime to ensure control and co-ordination is achieved on current and planned works requiring the application of these Safety Rules and Procedures. The regime is to be formally agreed by the MMO and Area Custodian. Details of the regimes are to be held in the ESDR.

338. In advance of isolating equipment in a Hazardous Area and before issuing a Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area. The Authorised Person (Electrical) is to explain the purpose of and procedure for the work or

test to the Area Custodian, or Operating Authority and Authorised Person (Petroleum), or Explosives Safety Representative. The Area Custodian or Operating Authority and Authorised Person (Petroleum) or Explosives Safety Representative as appropriate is to complete and sign Part 1 of the Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area before it is issued.

339. Except where paragraphs 359.b.(1), 359.b.(2) or 359.b.(3) apply, all working on Low Voltage Equipment within a Hazardous Area, except for work to be undertaken within a Category C and D explosive storage facilities (non-processing), as defined by DSA03 OME PART 2, is to be authorised by a Permit to Work (Electrical) Hazardous Area. The Authorised Person (Electrical) is to follow the procedures set out in Table HAZ1 of these Rules and Procedures as appropriate. For work to be undertaken within a Category C or D explosive storage facility (non-processing), as defined by DSA03 OME Part 2, the Authorised Person (Electrical) may alternatively issue a Standing Instruction.

340. Notwithstanding the issue of a Permit to Work (Electrical) Hazardous Area, Sanction to Test (Electrical) Hazardous Area or a Standing Instruction, any work or test shall cease immediately if the Hazardous Area Manager, Area Custodian, Explosives Safety Representative, or Authorised Person (Petroleum) so instructs. The Person in Charge is to report such cessation of work or test to the Authorised Person (Electrical), who is to take appropriate action.

341. All tools, hand lamps, test equipment and materials taken into a Hazardous Area are to be of good condition, maintained and of a type complying with the requirements of the DSEAR hazardous area plans.

342. Safety Locks are to be applied wherever practicable at points of isolation to prevent unauthorised operation or re-connection.

343. Temporary Safety Signs shall be fixed and displayed in accordance with paragraph 353.

344. Where required by paragraph 352 an Accompanying Safety Person is to be appointed before work or tests are commenced.

345. Only Voltage Test Indicators suitable for the purpose are to be used to prove equipment dead. Voltage Test Indicators are to be tested against a Low Voltage test supply immediately before being taken into a Hazardous Area. The Authorised Person (Electrical) is to agree with the Hazardous Area Manager or, where appropriate, the Authorised Person (Petroleum), where proving units may be used. A Multi-meter shall not to be used to prove equipment dead.

346. Equipment within the hazardous area is to be confirmed dead once the area has an LEL of 1% or lower for vapours and gases or is free from dust which could give raise to explosion at which point covers can be removed to expose conductors to confirm dead.

347. No earth connection shall be made until equipment and conductors have been proved dead and discharged.

348. Where the procedures involve the application of Temporary Earths the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of Safety Locks.

349. Prior to the issue of a Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area, the Authorised Person (Electrical) is to show the prospective Person in Charge the electrical diagram(s) on the Safety Programme. The safety arrangements at the points of isolation and at the places of work or test and is to ensure that the prospective Person in Charge understands all the relevant safety procedures and precautions. If the prospective Person in Charge thereafter accepts the Permit or Sanction that person becomes the Person in Charge and is responsible for the defined work or test until the Permit or Sanction is cancelled.

350. Authorised Persons (Electrical) personally undertaking tasks requiring a Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area, and with the Authorising Engineers (Electrical) prior approval (see paragraphs 128 and 150), are to issue the Permit or Sanction to themselves. The Authorised Person (Electrical) then becomes the Person in Charge. (See paragraph 127 and 149).

351. Where it is not practicable to prove equipment dead until a Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area has been issued, one of the following sub-clauses is to apply:

- a. the Authorised Person (Electrical) is to instruct the Person in Charge, using appropriate tools, and protective equipment where necessary, to prove the equipment dead as soon as conductors have been made accessible to a voltage Test Indicator; or
- b. the Authorised Person (Electrical) is to remain with and supervise the Person in Charge until conductors have been made accessible to a voltage Test Indicator. The Equipment is to be proved dead to the satisfaction of the Authorised Person (Electrical) and the Person in Charge before the work or test proceeds.

352. Where a Permit to Work (Electrical) Hazardous Area is not required and isolation is achieved by the removal of fuses or links and it is not practicable to apply a Safety Lock, then the fuses or links are to be removed and securely retained in the possession of the Person in Charge responsible for the work.

353. The Identification and Spiking of Cables:

- a. before the conductors of a cable are cut or exposed, the cable to be worked on is to be identified with certainty;
- b. the identification may be regarded as clear and certain if one of the following conditions apply:
  - (1) where the cable is visible throughout its length; or
  - (2) where it is not visible throughout its length a rope loop is passed along those parts which are not visible; or
  - (3) where it can be visibly traced from one point of work or Test to a point where the cable is isolated and proved or confirmed dead and, where practicable, has a Temporary Earth applied.
- c. an appropriate cable identification instrument may be used to assist in identifying a cable when it is to be spiked. However, this instrument shall not be used as the sole means of identifying a cable;

- d. the spiking of cables in a Hazardous Area is to be considered only when all other means of cable identification have been exhausted. Before spiking a cable in a Hazardous Area, a Risk Assessment is to be undertaken by the Authorised Person (Electrical) in collaboration with the Area Custodian or Authorised Person (Petroleum) or Explosives Safety Representative. Where the decision is made to spike a cable, the Authorised Person (Electrical) is to have written permission from the Area Custodian or the Authorised Person (Petroleum) or Explosives Safety Representative before spiking the cable;
- e. cables without an earth bonded metallic sheath or armouring are not to be spiked;
- f. the working place is to be rendered non-hazardous whilst the spiking of the cable is carried out. The cable is to be spiked at the point of the work and thereafter identified by an appropriate procedure. Before spiking it may be necessary to undertake tests which are to be repeated after spiking and the results compared; and
- g. the spiking of cables is to be undertaken only by the Authorised Person (Electrical) and recorded in the Electrical Distribution Operating Record.

354. The Accompanying Safety Person is to be in attendance in the following circumstances:

- a. where working or testing in accordance with Tables HAZ1, HAZ2 or HAZ3 is to be undertaken, whilst the equipment is being proved dead;
- b. where working or testing in accordance with Tables HAZ1, HAZ2 or HAZ3 is to be undertaken, whilst the equipment is being earthed, other than by means of a switch or circuit breaker;
- c. where working or testing in accordance with Tables HAZ1, HAZ2 or HAZ3 is being undertaken on equipment which cannot be proved dead until the Person in Charge has made conductors accessible, an Accompanying Safety Person is to be in attendance until the equipment has been proved dead;
- d. where working in accordance with paragraph 359.b.(3). is undertaken whilst the equipment is being proved dead;
- e. whilst the Authorised Person (Electrical) is spiking a cable; or
- f. where the Operational Risk Assessment identifies it as necessary.

355. The Display of Temporary Safety Signs:

- a. Caution Signs are to be fixed at the points of isolation and prominently displayed before the start and for the duration of work, and before the issue and for the duration of any Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area;
- b. Skilled Persons shall obtain Caution Signs and Electrical Equipment Warning Signs as necessary before commencing work in accordance with paragraph 359.b.(3). Such Signs shall bear the Skilled Persons name;

- c. Skilled Persons may be issued on a permanent basis with their own Caution Signs and Electrical Equipment Warning Signs. Such Signs shall bear the Skilled Persons name;
- d. Electrical Equipment Warning Signs are to be prominently displayed on any equipment which remains live and is immediately adjacent to the equipment to be worked on or tested before the start and for the duration of work or testing and before the issue and for the duration of any Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area;
- e. Electrical Equipment Warning Signs are to be prominently displayed on any equipment that is accessible, both in or adjacent to a Hazardous Area where work other than electrical is to be done. These signs are to be prominently displayed on the equipment before the start and for the duration of any work;
- f. where work or testing is to be undertaken on any part of a multi-cubicle switchboard, Electrical Equipment Warning Signs shall be prominently displayed on the cubicles or compartments immediately adjacent to the part being worked on or tested. If the board has rear access Electrical Equipment Warning Signs shall similarly be displayed at both the front and rear of the board. In identifying parts at the rear of the board, reliance is not to be placed upon the switchboard labelling;
- g. before a Permit to Work (Electrical) Hazardous Area or a Sanction to Test (Electrical) Hazardous Area is issued the Authorised Person (Electrical) is to identify the equipment upon which the work or test is to be undertaken to the Skilled Person. If the work or test involves, or may involve, obtaining access to items of equipment over which confusion could occur, the Authorised Person (Electrical) is to identify such items to the Skilled Person and apply temporary marking to them; and
- h. Temporary Safety Signs are to be fixed in a secure manner that does not create a hazard.

#### 356. The Locking of Switchgear and Switch rooms:

- a. where it is necessary to prevent danger or where appropriate, injury, or prevent unauthorised operation, equipment cubicles and operating mechanisms are to be locked when the equipment is unattended; and
- b. any entrance to a room or enclosure containing a main intake switchboard, a battery system, a permanently connected uninterruptible power supply equipment or a generating set is to be closed and securely locked when the equipment is unattended.

#### 357. The Testing and Inspection of Equipment:

- a. Visual or Close inspections as defined within BS EN 60079 part 17 the Authorised Person (Electrical) shall issue a Standing Instruction to the Skilled Person. Prior to each inspection the Authorised Person (Electrical) will notify the Area Custodian in accordance with paragraph 332;
- b. Detailed Inspection and Testing as defined within BS EN 60079 part 17 and works as defined within BS EN 60079 part 14. Where there is clear and certain identity of the point of isolation of the equipment to be worked on and or tested is established, and where as a result of the joint risk assessment between the



Authorised Person (Electrical) and Area Custodian there is no foreseeable risk of ignition the inspection and testing shall be controlled using a Standing Instruction and following the control measured detailed within table HAZ 3 of this chapter. Prior to each inspection the Authorised Person (Electrical) will notify the Area Custodian in accordance with paragraph 332;

c. Detailed Inspection and Testing as defined within BS EN 60079 part 17 and works as defined within BS EN 60079 part 14, where the point of isolation is not clearly identified or there are more than one source of supply or external cable are to be controlled using Permit to Work Hazardous Areas or Sanction to Test Hazardous Areas issued by Authorised Person (Electrical) in accordance with tables HAZ 1 and HAZ 2 of this chapter. Prior to each inspection the Authorised Person (Electrical) will notify the Area Custodian in accordance with paragraph 332;

d. the Person in Charge is to carry out continues monitoring of atmosphere where the hazard is due to the presence or proximity of flammable vapours or gases. Works or tests are only to proceed when the flammable vapor or gas is below 1% LEL;

e. Before equipment in a Hazardous Area is energised or restored to an operational state, the Person in Charge is to provide the Authorised Person (Electrical) electrical test certificate in accordance with the requirements of the current DIO Practitioner Guide for electrical testing and inspection clearly stating any defects and whether the equipment is satisfactory or not satisfactory. The Authorised Person (Electrical) is to inform the Area Custodian of the intended action regarding restoration of equipment in accordance with paragraph 332;

f. within areas where the hazard is due to the presence or proximity of explosives, any electrical work or tests are to be undertaken in a manner which complies with these Rules and Procedures and any instructions issued by the Explosive Safety Representative responsible for the day to day operations of the area. For Explosives Hazardous Areas all work or testing requires the Explosive Safety Representative is to issue a Permit to Work (Explosives) or Certificate Free from Explosives; this is in addition to a Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area or Standing Instructions issued by the Authorised Person (Electrical). No work or testing are to be undertaken without the prior issue of a Permit to Work (Explosives) or Certificate Free from Explosives in accordance with DSA03 OME PART 2;

g. prior to any Sanction to Test (Electrical) Hazardous Area or a Standing Instruction is prepared, the Authorised Person (Electrical) is to undertake a Risk Assessment to establish whether any test currents flowing in the circuit protective conductor are likely to spread to other areas and introduce the possibility of incendive sparking in those areas. This risk assessment is to be carried out jointly with the Explosive Safety Representative;

h. Electrical Test which is to be conducted on equipment in a Hazardous Area, it is required that the Authorised Person (Electrical) is to explain the purpose of, the procedure for, and the effects of, the test to the Explosive Safety Representative. In particular, the Explosive Safety Representative is to be advised of any risk of incendive sparking at the place of testing and elsewhere. The Explosive Safety Representative is to be notified to the in accordance with this chapter;

i. Before any test is undertaken, the Authorised Person (Electrical) and the Person in Charge are to precede it by a visual check of the protective conductors

associated with the circuits to be tested. If the condition of any of the protective conductors appears to be unsatisfactory, the test is not to proceed;

j. high current continuity tests, prospective short circuit current tests or high voltage tests are not to be undertaken within a Hazardous Area, except where required by ESTC Standard No. 6 in the following areas:

- (1) in Category C and D explosive storage (non-processing) environments; or
- (2) in Category A, B, and C (processing environments) where the environment has been Certified Free from Explosive on the Permit to Work (Explosives) by the Explosive Safety Representative.

k. earth fault loop impedance tests on live circuits may be undertaken only after the Explosive Safety Representative has declared in writing that the places affected by the test are non-hazardous, and are to remain non-hazardous for the duration of the tests;

l. where the procedures involve the application of Removable Temporary Earths the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of padlocks. The keys of the padlocks are to be issued to the Person in Charge who is to retain control of them for the duration of the Tests;

m. Visual or Close inspections as defined within BS EN 60079 part 17 and ESTC 6 the Authorised Person (Electrical) shall issue a Standing Instruction to the Skilled Person. Prior to each inspection the Authorised Person (Electrical) will notify the Explosive Safety Representative in accordance with paragraph 332;

n. Detailed Inspection and Testing as defined within BS EN 60079 part 17, ESTC 6 and works as defined within BS EN 60079 part 14, where there is clear and certain identity of the point of isolation of the equipment to be worked on and or tested is established, and where as a result of the joint risk assessment between the Authorised Person (Electrical) and the Explosive Safety Representative there is no foreseeable risk of ignition the inspection and testing shall be controlled using a Standing Instruction and following the control measures detailed within table HAZ 3 of this chapter. Prior to each inspection or works the Authorised Person (Electrical) will notify the Explosive Safety Representative in accordance with paragraph 332; and

o. Detailed Inspection and Testing as defined within BS EN 60079 part 17, ESTC 6 and works as defined within BS EN 60079 part 14, where the point of isolation is not clearly identified or there are more than one source of supply or external cable are to be controlled using Permit to Work Hazardous Areas or Sanction to Test Hazardous Areas issued by Authorised Person (Electrical) in accordance with tables HAZ 1 and HAZ 2 of this chapter. Prior to each inspection or works the Authorised Person (Electrical) will notify the Explosive Safety Representative in accordance with paragraph 332.

### 358. Completion of the work or Test:

a. before equipment in a Hazardous Area is energised or restored to an operational state, the Person in Charge is to provide the Authorised Person (Electrical) electrical test certificate in accordance with the requirements of BS EN 60079 Part 17 and the current DIO Practitioner Guide for electrical testing and

inspection clearly stating any defects and whether the equipment is satisfactory or not satisfactory; and

b. the Authorised Person (Electrical) is to inform the Explosive Safety Representative of the intended action regarding restoration of equipment in accordance with paragraph 358 of this chapter.

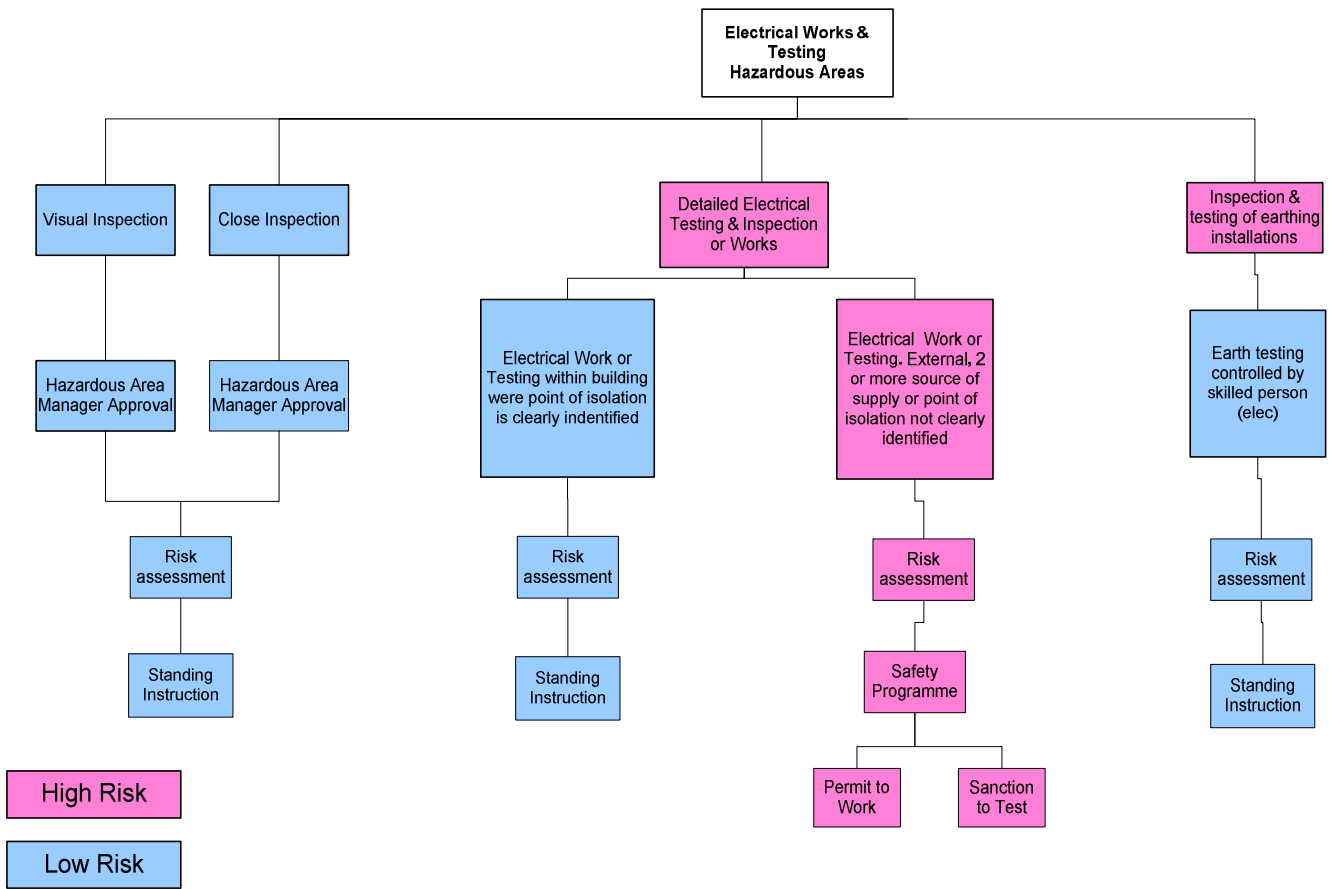
359. Hazards due to Flammable Vapour and Dust (excluding Petroleum, Oil, and Lubricants Installations, and military explosive facilities):

a. the control of electrical works within hazardous areas shall be in accordance with the following decision tree (Decision Tree 1) and provided that the hazards are not due to petroleum installation or military explosive facilities. (For Petroleum, Oil, and Lubricant Installations and Military Explosive Facilities. (See paragraph 358 and 359 respectively); and

b. electrical works and testing in hazardous areas is to be followed for the following areas (following example list is not inclusive):

- (1) surface finishing (paint spray facilities);
- (2) paint stores;
- (3) vehicle inspection pits;
- (4) LPG Compounds;
- (5) Battery Rooms; and
- (6) any facility which is declared a hazardous area in accordance with DSEAR but excluding explosive facilities and petroleum installations.

## Electrical Works & Testing within Hazardous Areas



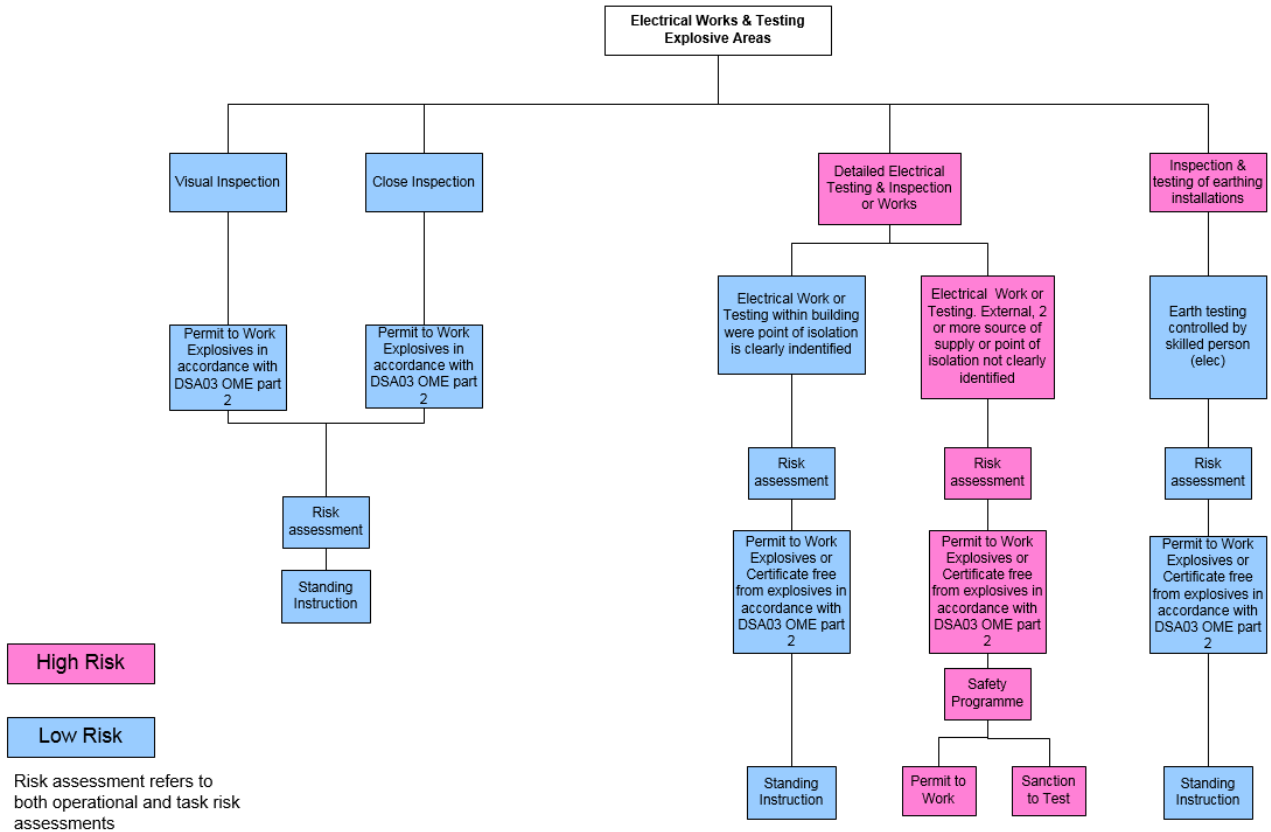
Risk assessment refers to both operational and task risk assessments

**Decision Tree 1**

360. Hazards due to Explosives. (See Decision Tree 2):

- a. within areas where the hazard is due to the presence or proximity of explosives, any electrical work or tests are to be undertaken in a manner which complies with these Rules and Procedures and any instructions issued by the Explosive Safety Representative responsible for the day to day operations of the area;
- b. for Explosives Hazardous Areas all work or testing requires the Explosive Safety Representative to issue a Permit to Work (Explosives) or Certificate Free from Explosives; this is in addition to a Permit to Work (Electrical) Hazardous Area or Sanction to Test (Electrical) Hazardous Area or Standing instructions issued by the Authorised Person (Electrical); and
- c. no work or testing is to be undertaken without the prior issue of a Permit to Work (Explosives) or Certificate Free from Explosives in accordance with DSA03 OME Part 2.

## Electrical Works and Testing within Explosive Areas



**Decision Tree 2**

361. Hazards due to Petroleum, Oil and Lubricants (See Decision Tree 3):

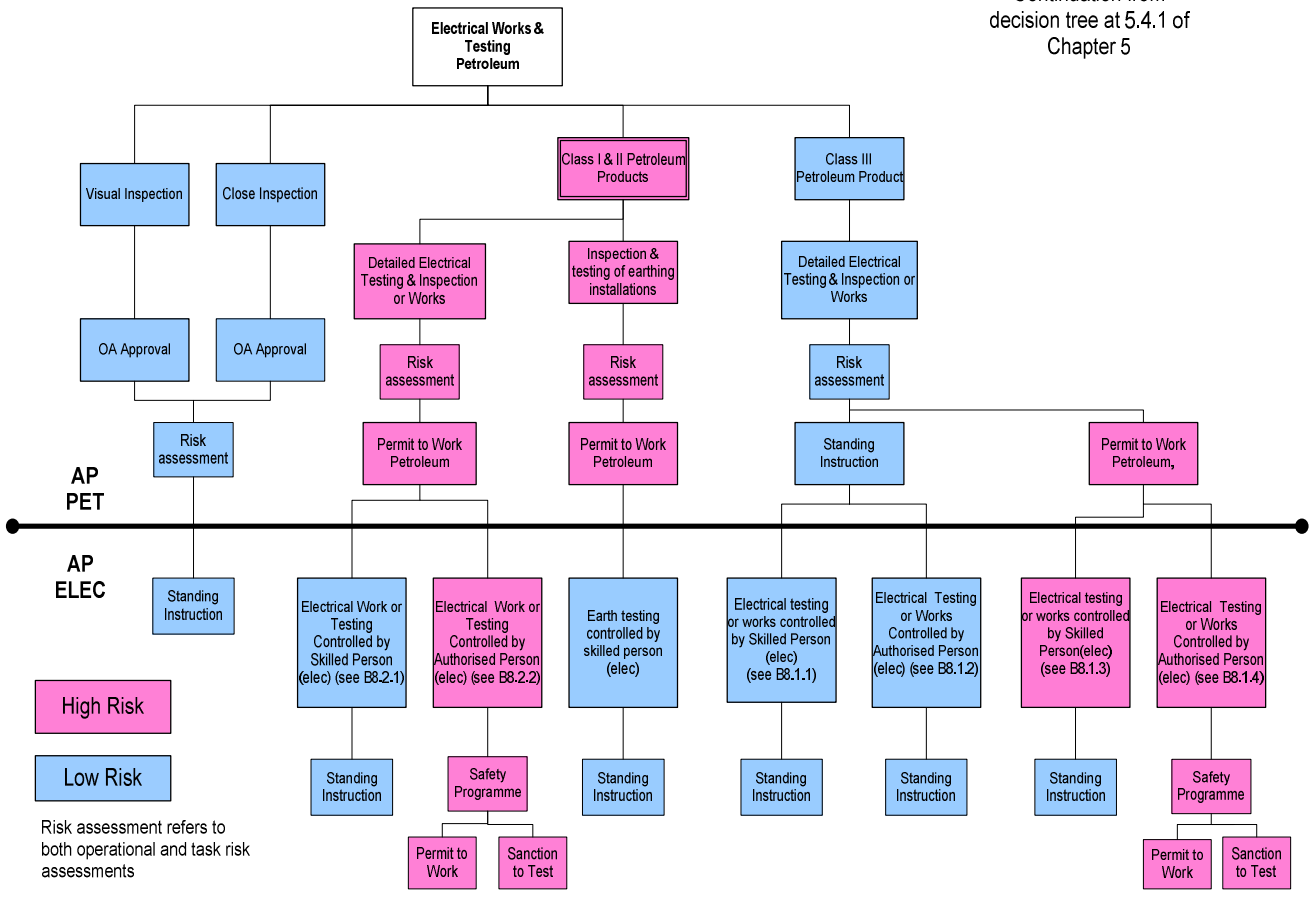
a. within areas where the hazard is due to the presence or proximity of Petroleum, emissions as a liquid or gas, or oils or lubricants, all persons required to work on or Test Electrical Equipment are to be familiar with, and comply with, JSP 375 Vol 3 Chapter 5 – Petroleum; and

b. the Authorised Person (Electrical) is to communicate with the Authorised Person (Petroleum) to enable the primary decision on the type of petroleum installation to ensure co-operation and co-ordinate when defining the task and deciding on the appropriate level of control. The Authorised Person (Petroleum) is to identify the potential for the following and which one of the following procedures is to be adopted in accordance with Decision Tree No 3:

- (1) product exposure;
- (2) product atomisation due to elevated pressures;
- (3) vapor drift from a higher classification fuel or other work activities;
- (4) elevated temperatures (either surface or ambient);
- (5) creation of an incendive spark; or
- (6) safety critical electrical installation.

# Electrical Works & Testing within Petroleum Installations

Continuation from decision tree at 5.4.1 of Chapter 5



**Decision Tree 3**



362. Electrical Testing, Inspection or works in a Class III installation:

- a. Standing Instruction (Petroleum) and Table HAZ 3 of this chapter. Electrical works and tests are to be controlled by a Standing Instruction (Petroleum) and Standing Instruction (Electrical), and Table HAZ 3 providing the following criteria are met:
  - (1) those undertaking the task are to confirm with OA the cessation of product receipt, transfer and dispense and be satisfied that the residual risk would not result in the ignition of product;
  - (2) Table HAZ 3 is used where the clear and certain identity of the points of isolation of the equipment to be worked on are established; and
  - (3) there is no foreseeable risk of ignition through:
    - (a) exposure of product, atomisation of product, vapor drift (from a higher classification product); or
    - (b) elevated temperatures (either surface or ambient), and a source of an incendive spark.
- b. Standing Instruction (Petroleum) and Table HAZ 1 and 2 of this chapter. Where it cannot be established that there is clear and certain identity of the point of isolation of the equipment to be worked on and whereas a result of the Authorised Persons (Petroleum) review there is no foreseeable risk of ignition the method of control is:
  - (1) the Authorised Person (Petroleum) is to issue a Standing Instruction (Petroleum);
  - (2) those undertaking the task are to confirm with OA the cessation of product receipt, transfer and dispense and be satisfied that the residual risk would not result in the ignition of product; or
  - (3) the Authorised Person (Electrical) is to control in accordance with Tables HAZ 1 and HAZ 2.
- c. Permit to Work (Petroleum) and Table HAZ 3 of this chapter. Where there is clear and certain identity of the point of isolation of the equipment to be worked on and or tested is established and whereas a result of the Authorised Person (Petroleum) review there is a foreseeable risk of ignition the method of control is:
  - (1) the Authorised Person (Petroleum) is to issue a Permit to Work (Petroleum) and carry out the initial gas monitoring checks in accordance with Annex C of JSP 375 Volume 3 Chapter 5. The Person in Charge will be responsible for the subsequent continuous gas monitoring and recording in accordance with Annex C of JSP 375 Volume 3 Chapter 5; or
  - (2) the Authorised Person (Electrical) to issue a Standing Instruction (Electrical); or
  - (3) the Person in Charge is to control in accordance with Table HAZ 3.
- d. Permit to Work (Petroleum) and Table HAZ 1 and 2 of this chapter. Where it cannot be established that there is clear and certain identity of the point of isolation of the equipment to be worked on and or tested cannot be established and where as a result

of the Authorised Person (Petroleum)'s review there is a foreseeable risk of ignition the method of control is:

- (1) the Authorised Person (Petroleum) is to issue a Permit to Work (Petroleum) and carry out the initial gas monitoring checks in accordance with Annex C of JSP 375 Vol 3 Ch 5. The Person in Charge will be responsible for the subsequent continuous gas monitoring and recording in accordance with Annex C of JSP 375 Vol 3 Chapter 5; or
- (2) the Authorised Person Electrical (Hazardous Areas) is to control in accordance with Tables HAZ 1 and HAZ 2.

363. Electrical Works in a Class I and II installation:

a. Permit to Work (Petroleum) and Table HAZ 3 of this chapter. Where clear and certain identity of the point of isolation of the equipment to be worked on and or tested is established and whereas a result of the Authorised Persons (Petroleum) review there is no foreseeable risk of ignition the control method is:

- (1) the Authorised Person (Petroleum) is to issue a Permit to Work (Petroleum) and carry out the initial gas monitoring checks in accordance with Annex C of JSP 375 Vol 3 Chapter 5. The Person in Charge will be responsible for the subsequent continuous gas monitoring and the recording in accordance with Annex C of JSP 375 Vol 3 Chapter 5; or
- (2) the Authorised Person (Electrical) to issue a Standing Instruction (Electrical); or
- (3) the Person in Charge is to control in accordance with Table HAZ 3.

b. Permit to Work (Petroleum) and Table HAZ 1 and 2 of this chapter. Where clear and certain identity of the point of isolation of the equipment to be worked on and or tested cannot be established and whereas a result of the Authorised Persons (Petroleum) review there is no foreseeable risk of ignition the method of control is:

- (1) the Authorised Person (Petroleum) is to issue a Permit to Work (Petroleum) and carry out the initial gas monitoring checks in accordance with Annex C of JSP 375 Vol 3 Chapter 5. The Person in Charge will be responsible for the subsequent continuous gas monitoring and the recording in accordance with Annex C of JSP 375 Vol 3 Chapter 5; or
- (2) the Authorised Person is to control in accordance with Tables HAZ 1 and HAZ 2.

c. Permit to Work (Petroleum) and Table HAZ 3 of this chapter. Where clear and certain identity of the point of isolation of the equipment to be worked on and or tested is established and whereas a result of the Authorised Persons (Petroleum) review there is foreseeable risk of ignition the control method is:

- (1) the Authorised Person (Petroleum) is to issue a Permit to Work (Petroleum) and carry out the initial gas monitoring checks in accordance with Annex C of JSP 375 Vol 3 Ch 5. The Person in Charge will be responsible for the subsequent continuous gas monitoring and the recording in accordance with Annex C of JSP 375 Vol 3 Chapter 5;

(2) the Authorised Person (Electrical) is to issue a Standing Instruction (Electrical);  
or

(3) the Person in Charge is to control in accordance with Table HAZ 3.

d. Permit to Work (Petroleum) and Table HAZ 1 and 2 of this chapter. Where clear and certain identity of the point of isolation of the equipment to be worked on and or tested cannot be established and whereas a result of the Authorised Persons (Petroleum) review there is a foreseeable risk of ignition the method of control is:

(1) the Authorised Person (Petroleum) is to issue a Permit to Work (Petroleum) and carry out the initial gas monitoring checks in accordance with Annex C of JSP 375 Vol 3 Chapter 5. The Person in Charge will be responsible for the subsequent continuous gas monitoring and recording in accordance with Annex C of JSP 375 Vol 3 Chapter 5; or

(2) the Authorised Person (Electrical) is to control in accordance with Tables HAZ 1 and HAZ 2.

## Table HAZ1 - For Working on Low Voltage Equipment in Hazardous Areas

364. Steps in Column 1 are to be undertaken in numerical order. Column 2 provides detail for the specified equipment.

365. The Authorised Person (Electrical) is to be in possession of a current Authorised Person's (Electrical) Certificate of Appointment appropriate to Hazardous Areas and the equipment being worked on and is responsible for all Steps with the exception of steps 7 and 8.

366. The Skilled Person is to be registered as appropriate and is competent to work on the equipment or installation, and is responsible for Steps 7 and 8

| Column 1  | COLUMN 2A Hazardous Areas  | COLUMN 2B Explosive Facilities  | COLUMN 2C Petroleum Installations  |
|---|--|---|--|
| EQUIPMENT   | All Low Voltage equipment including main intake switches and equipment on supply and load sides, (except where Table HAZ 3 applies and excluding generating sets and uninterruptible power supplies for which Table LV1 is to be consulted).   |   |  |
| STEP 1<br>OPERATIONAL RISK ASSESSMENT, DOCUMENT REVIEW AND NOTIFICATION   | <p><b>Comply with Any Particular Safety Procedures Applicable to the Location.</b><br/>Prepare the Operational Risk Assessment<br/>Review the planned work including task risk assessments &amp; method statements.<br/>Obtain permission from the Area Custodian, before proceeding to Step 2</p> | <p><b>Comply with any Particular Safety Procedures Applicable to the Location.</b><br/>Prepare the Operational Risk Assessment<br/>Review the planned work including task risk assessments &amp; method statements.<br/>Obtain permission from the Explosive Safety Representative, before proceeding to Step 2</p> | <p><b>Comply with any Particular Safety Procedures Applicable to the Location.</b><br/>Prepare the Operational Risk Assessment<br/>Review the planned work including task risk assessments &amp; method statements.<br/>Obtain permission from the Operating Authority, before proceeding to Step 2</p>  |
| STEP 2<br>PREPARE SAFETY PROGRAMME  | Prepare a Safety Programme (Electrical) and obtain a countersignature.   |   |  |
| STEP 3<br>ISSUE SAFETY DOCUMENTS BY AREA CUSTODIAN OR EXPLOSIVES SAFETY REPRESENTATIVE OR AUTHORISED PERSON (PETROLEUM) | Area Custodian to sign part 1 of Permit to Work (hazardous area electrical)  | Explosive Safety Representative will issue either issue Permit to Work (explosive) or Certificate Free from Explosives in accordance with DSA03 OME part 2.<br>Explosive Safety Representative to sign part 1 of Permit to Work (hazardous area electrical)   | <p>The Authorised Person (Petroleum) will issue one of the following documents depending on class of fuel:-</p> <p><b>Class III</b> – Standing Instruction (Petroleum) to the Person in Charge</p> <p><b>Class I &amp; II</b> – Permit to Work (Petroleum) to the Person in Charge. The Authorised Person (Petroleum) will carry out the initial gas monitoring checks in accordance with Annex C of JSP 375 Vol 3 Chapter 5. The Skilled Person (electrical) will be responsible for the continuous gas monitoring and the recording in accordance with Annex C of JSP 375 Vol 3 Chapter 5<br/>OA and AP (PET) to sign part 1 of Permit to Work (hazardous area electrical)</p> |

|  |   |  |  |
|--|---|--|--|
| STEP 4<br>ISOLATE AND<br>FIX SIGNS   | <b>Isolate from All Sources of Supply.</b><br>Where practicable, prevent unauthorised connection or operation by fixing Safety Locks at all the points of isolation, and visibly fix Caution Signs at all points of isolation.<br>Fix Caution Signs on motor starting Equipment.<br>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Work   |  |  |
| STEP 5<br>PROVE DEAD<br>AND EARTH  | <b>Ensure that the Equipment to be Worked on is the Equipment that has been Isolated.</b><br>Where practicable Prove Dead with a Potential Indicator at all the points of isolation and where practicable at the places of the work.<br>Where practicable earth conductors at points of isolation, and fix Safety Locks. Identify cables with certainty at the places of the Work.<br>In the absence of clear and certain identity, the cable is to be spiked<br>Earth overhead lines near the places of the Work   |  |  |
| STEP 6<br>ISSUE PERMIT<br>TO WORK  | The skilled person is to be shown the diagram on the Safety Programme and the safety arrangements at all the points of isolation and at the places of the work.<br>The Person in Charge's key to the Safety Key Box and the Permit to Work are issued to the Person in Charge.<br>After issuing the Permit the Mimic Diagram, if installed, is adjusted, the Electrical Distribution Operating Record is completed and the original of the safety programme is placed with the duplicate.<br>(Where the Authorised Person (Electrical) is to confirm dead in Step 7 the updating of: the Mimic Diagram; the Electrical Distribution Operating Record; and the Electrical Safety Documents Register is to be completed as soon as is practicable.) |  |  |
| STEP 7<br>CONFIRM DEAD   | Where it was not practicable in Step 5 to prove the Equipment dead, the Person in Charge or Authorised Person (Electrical) (as appropriate) , using appropriate tools, and Protective Equipment where necessary, is to confirm it dead at the places of the work as soon as conductors have been made accessible to a Potential Indicator. Where practicable, the conductors are to be earthed by the application of additional earths after they have been confirmed dead.   |  |  |
| STEP 8<br>UNDERTAKE<br>WORK  | The Person in is to undertake or provide Personal Supervision for the work and, on completion or when the work is stopped and made safe, checks the integrity of the explosion protection of all Equipment that may have been affected by the work, returns the original Parts 1 and 2 of the Permit to Work to the Authorised Person (Electrical) and completes and signs Part 3.  |  |  |
| STEP 9<br>CHECK WORK   | If the work has been completed, check that the work is satisfactory, that the Equipment has been restored to working order and that it may be safely energised. If the work was stopped in Step 8, check that the Equipment has been made safe. Check the integrity of the explosion protection of all Equipment that may have been affected by the Work  |  |  |
| STEP 10<br>CANCEL<br>PERMIT TO<br>WORK   | Cancel the Permit to Work by cancelling the original Parts 1 and 2 and completing and signing Part 4.<br>The Person in Charge's key to the Safety Key Box is returned to the Authorised Person (Electrical).  |  |  |
| STEP11<br>RETURN<br>EXPLOSIVES OR<br>PETROLEUM<br>SAFETY<br>DOCUMENTS TO<br>CANCEL PERMIT<br>TO WORK | Part 5 of the Permit to Work is to be completed by the Area Custodian. Where a test is required before the Equipment is energised, Steps 12 and 13 are omitted, and the procedures of Table HAZ2 are to be followed   | Return Permit to Work (explosive) or Certificate Free from Explosives to Explosive Safety Representative<br>Part 5 of the Permit to Work is to be completed by the Explosive Safety Representative<br>Where a test is required before the Equipment is energised, Steps 12 and 13 are omitted, and the procedures of Table HAZ2 are to be followed | Return Petroleum Safety Documents to Authorised Person (Petroleum) for Cancellation<br>Part 5 of the Permit to Work is to be completed by the OA and Authorised Person (Petroleum)<br>Where a test is required before the Equipment is energised, Steps 12 and 13 are omitted, and the procedures of Table HAZ2 are to be followed |
| STEP 12<br>REMOVE<br>EARTHS  |   | Remove the Safety Locks and earths applied in Steps 5 and 7  |  |
| STEP 13<br>MAKE  |   | Remove the Safety Locks and signs fixed in Step 3 and restore  |  |

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|---|--|--|
| EQUIPMENT OPERATIONAL                             |  | the Equipment to an operational state  |
| STEP 14<br>REVIEW TASK<br>AND COMPLETE<br>RECORDS |  | Adjust the Mimic Diagram if installed.<br>Complete the Electrical Distribution Operating Record and review task and complete the feedback report of JSP 375 Volume 3 Ch.2 as deemed necessary<br>Obtain electrical inspection and test reports as required by BS EN 60079 parts 14 & 17 or ESTC 6 with regards to explosive facilities |

## Table HAZ2 - For Testing Low Voltage Equipment in Hazardous Areas

367. Steps in column 1 are to be undertaken in numerical order. Column 2 provides detail for the specified equipment.

368. The Authorised Person (Electrical) is to be in possession of a current Authorised Persons (Electrical) Certificate of Appointment appropriate to Hazardous Areas and the equipment being tested and is responsible for all steps with the exception of steps 7 and 8.

369. The Skilled Person is to be registered as appropriate and is competent to test the equipment or installation and is responsible for Steps 7 and 8. Step 9 is to be carried out jointly with the Authorised Person (Electrical).

| Column 1  | Column 2A<br>Hazardous Areas   | Column 2B<br>Explosive Facilities   | Column 2C<br>Petroleum Installations   |
|---|--|---|--|
| EQUIPMENT   | All Low Voltage equipment including main intake switches and equipment on supply and load sides, (except where Table HAZ 3 applies and excluding generating sets and uninterruptible power supplies for which Table LV2 is to be consulted).   |   |  |
| STEP 1<br>PREPARE<br>OPERATIONAL RISK<br>ASSESSMENT,<br>REVIEW WORK, AND<br>NOTIFICATION  | <p><b>Comply with Any Particular Safety Procedures Applicable to the Location.</b><br/>Prepare the Operational Risk Assessment<br/>Review the planned work including task risk assessments &amp; method statements.<br/>Obtain permission from the Area Custodian, before proceeding to Step 2</p>   | <p><b>Comply with Any Particular Safety Procedures Applicable to the Location.</b><br/>Prepare the Operational Risk Assessment<br/>Review the planned work including task risk assessments &amp; method statements.<br/>Obtain permission from the Explosive Safety Representative, before proceeding to Step 2</p> | <p><b>Comply with Any Particular Safety Procedures Applicable to the Location.</b><br/>Prepare the Operational Risk Assessment<br/>Review the planned work including task risk assessments &amp; method statements.<br/>Obtain permission from the Operating Authority, before proceeding to Step 2</p>  |
| STEP 2<br>PREPARE SAFETY<br>PROGRAMME   | Prepare a Safety Programme (Electrical) and obtain a countersignature.   |   |  |
| STEP 3<br>ISSUE SAFETY<br>DOCUMENTS<br>PREPARED BY AREA<br>CUSTODIAN or<br>EXPLOSIVES SAFETY<br>REPRESENTATIVE or<br>AUTHORISED PERSON<br>(PETROLEUM) | <p>Area Custodian to sign part 1 of Sanction to Test (hazardous area electrical)</p> <p>Not Applicable</p>   | <p>Explosive Safety Representative will issue either issue Permit to Work (explosive) or Certificate Free from Explosives in accordance with DSA03 OME Part 2.<br/>Explosive Safety Representative to sign part 1 of Sanction to Test (hazardous area electrical)</p>   | <p>The Authorised Person (Petroleum) will issue one of the following documents depending on class of fuel:<br/><b>Class III</b> – Standing Instruction (Petroleum) to the Person in Charge<br/><b>Class I &amp; II</b> – Permit to Work (Petroleum) to the Person in Charge.<br/>The Authorised Person (Petroleum) will carry out the initial gas monitoring checks in accordance with annex C of JSP 375 Vol 3 Ch 5. The Skilled Person (electrical) will be responsible for the continuous gas monitoring and the recording in accordance with Annex C of JSP 375 Vol 3 Ch 5<br/>OA and AP (PET) to sign part 1 Sanction to Test (hazardous area electrical)</p> |
| STEP 4<br>ISOLATE AND FIX<br>SIGNS  | <p>ISOLATE FROM ALL SOURCES OF SUPPLY.<br/>Where practicable, prevent unauthorised connection or operation by fixing Safety Locks at all the points of isolation, and visibly fix Caution Signs at all points of isolation.<br/>Fix Caution Signs on motor starting Equipment.<br/>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Test</p> |   |  |
| STEP 5<br>PROVE DEAD AND  | <p>ENSURE THAT THE EQUIPMENT TO BE TESTED ON IS THE EQUIPMENT THAT HAS BEEN ISOLATED.<br/>Where practicable Prove Dead with a Potential Indicator at all the points of isolation and where</p>   |   |  |

|  |  |  |  |
|--|--|--|--|
| EARTH  | <p>practicable at the places of test.<br/>Where practicable earth conductors at points of isolation, and fix Safety Locks<br/>Earths which are required to be removed during testing are to be secured with a temporary Working Locks<br/>Identify cables with certainty at the places of test and at the distant end. In the absence of clear and certain identity, the cable is to be spiked<br/>Earth overhead lines near the places of the test</p>  |  |  |
| STEP 6<br>ISSUE SANCTION TO TEST   | <p>ENSURE THAT THE Equipment TO BE TESTED IS THE Equipment THAT HAS BEEN ISOLATED.<br/>Where practicable Prove Dead with a Potential Indicator at all the points of isolation and where practicable at the places of Test.<br/>Where practicable earth conductors at points of isolation, and fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths.<br/>Identify cables with certainty at the places of the test and at the distant end. In the absence of clear and certain identity, the cable is to be spiked<br/>Earth overhead lines near the places of the Test</p>   |  |  |
| STEP 7<br>CONFIRM DEAD   | <p>Where it was not practicable in Step 5 to prove the Equipment dead, the Person in Charge or Authorised Person (Electrical) (as appropriate) , using appropriate tools, and Protective Equipment where necessary, is to confirm it dead at the places of test as soon as conductors have been made accessible to a Potential Indicator. Where practicable, the conductors are to be earthed by the application of additional earths after they have been confirmed dead.</p>   |  |  |
| STEP 8<br>UNDERTAKE TEST   | <p>The Person in Charge is to undertake or provide Personal Supervision for testing and, on completion or when testing is stopped and made safe, checks the integrity of the explosion protection of all Equipment that may have been affected by tests, returns the original Parts 1 and 2 of the Sanction to Test, to the Authorised Person (Electrical) and completes and signs Part 3.</p>   |  |  |
| STEP 9<br>CHECK TEST   | <p>BEFORE ANY TEST IS UNDERTAKEN CARRY OUT A VISUAL CHECK OF THE PROTECTIVE CONDUCTORS ASSOCIATED WITH THE CIRCUITS TO BE TESTED. IF THE CONDITION OF ANY OF THE PROTECTIVE CONDUCTORS APPEARS TO BE UNSATISFACTORY, THE TEST IS NOT TO PROCEED.<br/>The Person in Charge is to undertake or provide Personal Supervision for the test, including the disconnection of any Removable Temporary Earths.<br/>On satisfactory completion of the test, or when the Test is stopped and made safe, the conductors are to be discharged and any Removable Temporary Earths restored.<br/>The Person in Charge checks the integrity of the explosion protection of all equipment that may have been affected by the test, returns the original Parts 1 and 2 of the Sanction to Test to the Authorised Person (Electrical) and completes and signs Part 3</p> |  |  |
| STEP 10<br>CANCEL SANCTION TO TEST   | <p>If the test has been completed, check that the result is satisfactory, that the Equipment has been restored to working order and that it may be safely energised. If the test was stopped in Step 8, check that the Equipment has been made safe. Check the integrity of the explosion protection of all Equipment that may have been affected by the Test</p>  |  |  |
| STEP11<br>RETURN EXPLOSIVES OR PETROLEUM SAFETY DOCUMENTS TO CANCEL PERMIT TO WORK | Part 5 of the Permit to Work is to be completed by the Area Custodian  | Return Permit to Work (explosive) or Certificate Free from Explosives to Explosive Safety Representative<br>Part 5 of the Permit to Work is to be completed by the Explosive Safety Representative | Return Petroleum Safety Documents to Authorised Person (Petroleum) for Cancellation<br>Part 5 of the Permit to Work is to be completed by the OA and Authorised Person (Petroleum) |
| STEP 12<br>REMOVE EARTHS   | <p>Cancel the Sanction to Test by cancelling the original Parts 1 and 2 and completing and signing Part 4.<br/>The Person in Charge's key to the Safety Key Box is returned to the Authorised Person (Electrical).<br/>Part 5 of the Sanction to Test is to be completed by the Hazardous Area Manager. Where the test was stopped in Step 6 and work is required before the Equipment is re-tested, Steps 9 and 10 are omitted and the procedures of Table HAZ1 are to be followed</p>  |  |  |
| STEP 13<br>MAKE EQUIPMENT OPERATIONAL  | <p>Remove the locks and earths applied in Steps 3 and 5</p>  |  |  |
| STEP 14<br>REVIEW TASK AND COMPLETE RECORDS  | <p>Remove the Safety Locks, barriers and signs fixed in Steps 2 and 4 and restore the Equipment to an operational state Adjust the Mimic Diagram if installed.<br/>Complete the Electrical Distribution Operating Record and review task and complete the feedback report of JSP 375 Volume 3 Ch.2 as deemed necessary<br/>Obtain electrical inspection and test reports as required by BS EN 60079 parts 14 &amp; 17 or ESTC 6 with regards to explosive facilities</p>   |  |  |



## Table HAZ3 - For Skilled Persons Working on Low Voltage Equipment in Hazardous Areas

370. Except where a Risk Assessment indicates that an explosion, electric shock or possibility of short circuit exists or where Clear and Certain identification of the Points of Isolation of the equipment to be worked on or tested cannot be established, then the Authorised Person (Electrical) is to issue a Permit to Work or Sanction to Test in accordance with Tables HAZ 1 or HAZ 2.

371. Equipment operating at Extra Low Voltage is exempt from these procedures.

372. The Skilled Person is to be registered as appropriate and is competent to work or test the equipment or installation.

| Column 1   | Column 2A<br>Hazardous Areas  | Column 2B<br>Explosive Facilities  | Column 2C<br>Petroleum Installations  |
|--|---|--|---|
| EQUIPMENT  | CABLES AND OTHER EQUIPMENT ON THE LOAD SIDE OF A MAIN INTAKE SWITCH <b>AND</b> WHERE CLEAR AND CERTAIN IDENTITY OF THE POINTS OF ISOLATION OF THE CIRCUIT TO BE WORKED ON IS ESTABLISHED.<br>But excluding generating sets, permanently connected uninterruptible power supply equipment and switchboards with more than one source of supply.  |  |   |
| <b>THE PERSON IN CHARGE IS RESPONSIBLE FOR ALL STEPS EXCEPT STEPS 2 and 3</b> which is undertaken by the Authorised Person |   |  |   |
| STEP 1<br>PREPARATION  | REVIEW TASK METHOD STATEMENT AND RISK ASSESSMENT AND COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION.<br>Before starting work the prospective Person in Charge is to ensure that the work and procedure have the agreement of the Authorised Person (Electrical)  |  |   |
| STEP 2<br>APPROVAL   | Notify Area Custodian in accordance with site notification procedure  | Notify Explosive Safety Representative in accordance with site notification procedure  | Notify Operating Authority in accordance with site notification procedure   |
| STEP 3<br>ISSUE SAFETY DOCUMENTS BY AREA CUSTODIAN or EXPLOSIVES SAFETY REPRESENTATIVE or AUTHORISED PERSON (PETROLEUM)    |   | Explosive Areas Explosive Safety Representative will issue either issue Permit to Work (explosive) or Certificate Free from Explosives in accordance with DSA03 OME Part 2 | The Authorised Person (Petroleum) will issues one of the following documents depending on class of fuel:-<br><br><b>Class III</b> – Standing Instruction (Petroleum) to the Person in Charge<br><br><b>Class I &amp; II</b> – Permit to Work (Petroleum) to the Person in Charge. The Authorised Person (Petroleum) will carry out the initial gas monitoring checks in accordance with annex C of JSP 375 Vol 3 Chapter 5. The Skilled Person (electrical) will be responsible for the continuous gas monitoring and the recording in accordance with annex C of JSP 375 Vol 3 Chapter 5 |
| STEP 4<br>ISOLATE AND FIX SIGNS  | ISOLATE FROM ALL SOURCES OF SUPPLY.<br>Make Equipment safe to work on (or test).<br>Where practicable, prevent unauthorised connection or operation by fixing Safety Locks at all the points of isolation, and visibly fix Caution signs at all points of isolation.<br>Fix Caution Signs on motor starting equipment.<br>Fix Electrical Equipment Warning Signs on adjacent live equipment at the places of work.  |  |   |
| STEP 5<br>PROVE DEAD AND EARTH   | ENSURE THAT THE EQUIPMENT TO BE WORKED ON (OR TESTED) HAS BEEN ISOLATED.<br>Where practicable prove dead with an voltage test indicator at all the points of isolation and where practicable at the working (or testing) places.<br>Where practicable earth the line and neutral conductors and, where practicable, fix Safety Locks to Temporary Earth's.<br>Identify with certainty cables at the places of work. |  |   |
| STEP 7<br>CONFIRM DEAD   | Where it was not practicable in Step 4 to prove the Equipment dead, the Person in Charge, using appropriate tools and equipment and an voltage test indicator, is to confirm it dead at the places of work (or test) as soon as conductors have been made accessible. Where practicable, earth the line and neutral conductors unless they were earthed in Step 4.  |  |   |

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|---|--|---|--|
| STEP 8<br>UNDERTAKE<br>WORK OR TEST                                   | The Person in Charge is to undertake or provide Personal Supervision for the work (or test).<br>(Any temporary earths removed to facilitate a test are to be replaced when the test is complete).  |   |  |
| STEP 9<br>CHECK WORK OR<br>TEST                                       | Check that the work (or test) has been satisfactorily completed.<br>Check the integrity of the explosion protection of all Equipment that may have been affected by the work (or test).<br>Check that the Equipment has been restored to working order, and that it may be safely energised. |   |  |
| STEP 10<br>REMOVE EARTHS  | Remove any earth's applied in Steps 4 or 5.  |   |  |
| STEP11<br>RETURN<br>EXPLOSIVES OR<br>PETROLEUM<br>SAFETY<br>DOCUMENTS | Notify Area Custodian works<br>or testing complete   | Return Permit to Work<br>(explosive) or Certificate Free<br>from Explosives to Explosive<br>Safety Representative | Return Petroleum Safety Documents<br>to Authorised Person (Petroleum) for<br>Cancellation        |
| STEP 12<br>MAKE<br>EQUIPMENT<br>OPERATIONAL                           | Remove the Signs and Locks fixed in Step 3 and restore the Equipment to an operational state.  |   |  |
| STEP 13<br>RESTORE<br>SUPPLY  | Issue test certificate and<br>advise the Area Custodian of<br>the intended action  | Issue test certificate and advise<br>the Explosive Safety<br>Representative of the intended<br>action             | Issue test certificate and advise the<br>Authorised Person (Petroleum) of the<br>intended action |

## **Working on and Testing High Voltage Equipment**

373. These Safety Rules and Procedures do not apply where high voltage equipment has been discharged, disconnected, removed from the system or installation and is not energised by other means.

374. High Voltage Equipment which is considered by the Authorised Person (Electrical) to be in a Dangerous Condition, or is subject to an extant Warning Notice, Safety Alert, or Policy Instruction that requires it to be immediately switched off, is to be remotely isolated and disconnected and action taken by the Authorised Person (Electrical) to prevent it being re-connected to the supply of electricity. The Authorised Person (Electrical) is to report the matter as soon as is reasonably practicable to the Authorising Engineer (Electrical).

375. Where work or tests are to be undertaken on Aeronautical Ground Lighting Primary Series Circuit Equipment and associated luminaires, the rules and procedures of the Section 'Working on and Testing Aeronautical Ground Lighting Primary Series Circuit Equipment and Associated Luminaires', commencing at paragraph 402 are to be followed.

376. The requirements of paragraph 404 are to be applied to all work activities on equipment that affects the functioning of aeronautical ground lighting systems.

377. Unless the provisions of paragraphs 373 and 374, or 391.a. apply, all working on or testing of High Voltage Equipment connected to a system is to follow the procedures set out in Tables HV1 or HV2 of these Safety Rules and Procedures as appropriate.

378. All working on or testing of High Voltage Equipment connected to a system is to be authorised by a Permit to Work or a Sanction to Test (Electrical).

379. Safety Locks are to be applied, where practicable, at points of isolation to prevent unauthorised operation or re-connection. A Caution Sign, as required by paragraph 394.a. should always accompany Safety Locks used for isolation. Where impracticable to fix a Safety Lock, a Caution Sign must be fitted.

380. Temporary Safety Signs shall be fixed and displayed in accordance with paragraph 394.

381. Where required by paragraph 393 an Accompanying Safety Person is to be appointed before work or tests are commenced. The Accompanying Safety Persons name shall be recorded on the original of the Safety Programme along with the time and date of the appointment.

382. A High Voltage Potential Indicator is to be tested immediately before and after use against a High Voltage Test Supply. Only the Authorised Person (Electrical), an Authorised Person (Electrical) Designate, an Authorising Engineer (Electrical), an Authorising Engineer (Electrical) Designate, or a Skilled Person acting on the instructions of and under the Personal Supervision of the Authorised Person (Electrical), is to use a High Voltage potential indicator to Prove Dead in accordance with these Rules and Procedures.

383. Where practicable equipment is to be proved dead prior to earthing. Where it is not practicable to Prove Dead any earth connection shall be made by means of a switch or circuit breaker. Other forms of earth connection shall not be used until the equipment and its conductors have been confirmed dead.

384. Where the procedures involve the application of Temporary Earths the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of Safety Locks. These Safety Locks are, where practicable, to be in addition to those required by paragraph 377.

385. Where the procedures involve the application of Removable Temporary Earths the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of padlocks. The keys of the padlocks are to be issued to the Person in Charge who is to retain control of them for the duration of the Tests.

386. Prior to the issue of a Permit to Work or Sanction to Test, the Authorised Person (Electrical) is to show the Skilled Person the electrical diagram(s) on the Safety Programme, the safety arrangements at the points of isolation and at the places of work or test and is to ensure that the person understands all the relevant safety procedures and precautions. If the Skilled Person thereafter accepts the Permit or Sanction that person becomes the Person in Charge and is responsible for the defined work or test until the Permit or Sanction is cancelled.

387. Authorised Persons (Electrical) personally undertaking tasks requiring a Permit to Work or Sanction to Test, and with the Authorising Engineers (Electrical) prior approval (see paragraph 128 and 150), are to issue the Permit to Work or Sanction to Test to themselves. The Authorised Person (Electrical) then becomes the Person in Charge. (See paragraph 127 and 149).

388. In cases when working or testing is to be undertaken on High Voltage Equipment where it is not practicable to prove the equipment dead prior to issuing a Permit to Work or Sanction to Test, the Authorised Person (Electrical) having issued the Permit or Sanction is to remain with and supervise the Person in Charge until conductors have been made accessible at the Point of Work or Test to a High Voltage Potential Indicator (or voltage Test Indicator for proving dead at the Low Voltage conductors of a High Voltage transformer). The Authorised Person (Electrical) is then to confirm the equipment dead before allowing the Person in Charge to assume control of the Work or Test.

389. The identification and Spiking of Cables:

- a. before the conductors of a cable are cut or exposed, the cable to be worked on is to be identified with certainty;
- b. the identification may be regarded as clear and certain if one of the following conditions apply;
  - (1) where the cable is visible throughout its length;
  - (2) where it is not visible throughout its length a rope loop is passed along those parts which are not visible; or
  - (3) where it can be visibly traced from one point of work or test to a point where the cable has a Temporary Earth applied.
- c. in the absence of clear and certain identification, the cable is to be spiked at the point of the work and thereafter identified by an appropriate procedure. Before spiking it may be necessary to undertake tests which are to be repeated after spiking and the results compared;

- d. an appropriate cable identification instrument may be used to assist in identifying a cable when it is to be spiked. However, this instrument shall not be used as the sole means of identifying a cable;
- e. cables without an earth bonded metallic sheath or armouring are not to be spiked; and
- f. the spiking of cables is to be undertaken only by the Authorised Person and is to be recorded in the Electrical Distribution Operating Record.

390. High Voltage Enclosures:

- a. a High Voltage Enclosure is to be opened only by the Authorised Person (Electrical), or a Skilled Person acting on the instructions of and personally supervised by the Authorised Person (Electrical);
- b. except in a High Voltage Enclosure, access to live High Voltage conductors is to be possible only by the use of a tool or key; and
- c. a High Voltage Enclosure is to be entered only by:
  - (1) the Authorised Person (Electrical);
  - (2) the Authorising Engineer (Electrical);
  - (3) a Skilled Person acting on the instructions of and personally supervised by the Authorised Person (Electrical);
  - (4) the Person in Charge in receipt of a Sanction to Test, when the High Voltage Enclosure is created as part of the test procedure;
  - (5) a Skilled Person acting on the instructions of and personally supervised by the Person in Charge in receipt of a Sanction to Test, when the High Voltage Enclosure is created as part of the test procedure;
  - (6) an Accompanying Safety Person rendering immediate assistance to the Person in Charge in connection with their safety role; or
  - (7) an Authorised Person Designate or Authorising Engineer Designate acting on the instructions and personally supervised by the Authorised Person when the operation is part of the Authorised Person Designate or Authorising Engineer Designate training programme.

391. The Operation of High Voltage Switchgear:

- a. in an emergency High Voltage switchgear in service may be switched off or tripped off by any person. The person is then without delay and with some urgency, to advise the Authorised Person (Electrical) of the action taken. In normal circumstances High Voltage switchgear is to be operated only by:
  - (1) the Authorised Person (Electrical);
  - (2) a Person in Charge who has been issued with a Standing Instruction giving authority for the operation;

- (3) a Person in Charge who has been issued with a Specific Written Instruction giving authority for the operation;
- (4) a Skilled Person acting on the instructions and personally supervised by the Authorised Person (Electrical);
- (5) the Person in Charge in receipt of a Sanction to Test, when the operation is part of the test procedure;
- (6) a Skilled Person acting on the instructions of and personally supervised by the Person in Charge in receipt of a Sanction to Test, when the operation is part of the test procedure; or
- (7) an Authorising Engineer (Electrical), Authorised Person (Electrical) Designate or Authorising Engineer (Electrical) Designate acting on the instructions and under the Personal Supervision of the Authorised Person (Electrical) when the operation is part of the Authorised Person (Electrical) Designate or Authorising Engineer (Electrical) Designate training programme.

### 392. Testing at High Voltage:

- a. where High Voltage tests are to be undertaken on High Voltage Equipment a Sanction to Test is to be issued to the prospective Person in Charge who, on acceptance, becomes the Person in Charge who is to be present throughout the duration of the Tests;
- b. the areas containing exposed live High Voltage conductors, Test Equipment and any High Voltage connection are to be regarded as High Voltage Enclosures; and
- c. unauthorised access to such areas is to be prevented by, as a minimum, yellow and black striped tape, not less than 25mm wide, suspended on posts, and by the display of High Voltage Enclosure Signs in accordance with paragraph 394.b.

### 393. Live Voltage and Phasing Tests:

- a. live voltage and phasing tests on High Voltage Equipment may be undertaken provided adequate precautions are taken to prevent accidental contact with, and prevent injury from, live High Voltage conductors. Test Equipment for live voltage and phasing tests is to be tested immediately before and after use against a Test Supply. Live voltage and phasing tests on High Voltage Equipment are to be undertaken by the Authorised Person, with assistance, if necessary, from a Skilled Person acting on verbal instructions from the Authorised Person (Electrical), with an Accompanying Safety Person in attendance. (See paragraph 394.b.);
- b. live voltage and phasing tests may also be undertaken by:
  - (1) an Authorised Person (Electrical) Designate, or Authorising Engineer (Electrical) Designate acting on the instructions and under the Personal Supervision of the Authorised Person (Electrical) when the operation is part of the Authorised Person (Electrical) Designates or Authorising Engineer (Electrical) Designates training programme: or
  - (2) an Authorising Engineer (Electrical) acting on the instructions and under the Personal Supervision of the Authorised Person (Electrical).

(3) Note - Neither a Permit to Work nor a Sanction to Test is appropriate to this activity.

c. an Authorised Person (Electrical) carrying out or personally supervising live voltage and phasing tests is to undertake the test under a Specific Written Instruction and recorded in the Electrical Distribution Operating Record.

394. Standing and Specific Written Instructions:

a. an Authorised Person (Electrical) is to give a Standing Instruction to a named Skilled Person for defined operations or sequence of operations in respect of specific items of High Voltage Equipment where the defined operations do not give rise for the need to issue a Permit to Work, Sanction to Test, or a Certification of Isolation and Earthing. If the Skilled Person accepts the Standing Instruction that person becomes the Person in Charge and is responsible for carrying out the defined tasks as required until the Standing Instruction is cancelled; and / or

b. the Authorised Person (Electrical) may give a Specific Written Instruction to a named Skilled Person or to an Authorised Person (Electrical) for defined switching or phasing operations in respect of specific items of High Voltage switchgear. If the Skilled Person or an Authorised Person (Electrical) thereafter accepts the Specific Written Instruction that person becomes the Person in Charge and is responsible for the defined switching operations.

395. The Accompanying Safety Person is to be in attendance:

a. where working or testing in accordance with Tables HV1 or HV2 is to be undertaken, whilst the equipment is being proved dead;

b. where working or testing in accordance with Tables HV1 or HV2 is to be undertaken, whilst the equipment is being earthed, other than by means of a switch or circuit breaker;

c. where it is not practicable to prove the equipment dead until conductors have been made accessible in accordance with paragraph 386; this is in addition to the Authorised Person (Electrical), Person in Charge and any Skilled Persons involved in making the conductors accessible;

d. whilst any person is opening or working in a High Voltage Enclosure;

e. whilst a High Voltage potential indicator is in use;

f. whilst voltage and phasing tests are being undertaken at High Voltage;

g. whilst testing is being undertaken at High Voltage;

h. whilst the Authorised Person (Electrical) is spiking a cable; or

i. where the Operational Risk Assessment identifies it as necessary.

396. The Display of Temporary Safety Signs:

a. Caution Signs are to be fixed at the points of isolation and prominently displayed before the start and for the duration of work or testing, and before the issue and for the duration of any Permit to Work or Sanction to Test;

- b. High Voltage Enclosure Signs are to be prominently displayed so that they are visible from every angle of approach to a High Voltage Enclosure, before the issue and for the duration of a Sanction to Test;
- c. Electrical Equipment Warning Signs are to be prominently displayed, on any equipment which remains live and immediately adjacent to the equipment to be worked on or tested, before the start and for the duration of work or testing and before the issue and for the duration of any Permit to Work or a Sanction to Test;
- d. Electrical Equipment Warning Signs are to be prominently displayed on any live equipment which is accessible, either in or adjacent to an area that is to be the subject of an Authority for Access, before the issue and for the duration of any Authority for Access;
- e. where work or testing is to be undertaken on any part of a multi-cubicle switchboard, Electrical Equipment Warning Signs are to be prominently displayed on the cubicles or compartments immediately adjacent to the part being worked on or tested. If the board has rear access Electrical Equipment Warning Signs shall similarly be displayed at both the front and rear of the board. In identifying parts at the rear of the board, reliance is not to be placed upon the switchboard labelling;
- f. before a Permit to Work or a Sanction to Test is issued the Authorised Person is to identify the equipment upon which the work or test is to be undertaken to the Skilled Person. If the work or test involves, or may involve, obtaining access to items of equipment over which confusion could occur, the Authorised Person is to identify such items to the Skilled Person and apply temporary marking to them: and
- g. Temporary Safety Signs are to be fixed in a secure manner that does not create a hazard.

#### 397. The Locking of Switchgear and Switch rooms:

- a. where it is necessary to prevent danger or, where appropriate, injury, or prevent unauthorised operation, equipment cubicles and operating mechanisms are to be locked when the Equipment is unattended; and
- b. any entrance to a room or enclosure containing High Voltage Equipment is to be closed and securely locked when the equipment is unattended.



## Table HV1 - For Working on High Voltage Equipment

398. Steps in Column 1 are to be undertaken in numerical order. Columns 2, 3 and 4 provide detail for the specified equipment.

399. The Authorised Person (Electrical) is to be in possession of a current Authorised Persons (Electrical) Certificate of Appointment appropriate to the equipment being worked on and is responsible for steps 1, 2, 3, 4, 5, 6, and 8, 9, 10, 11, 12.

400. The Person in Charge is to hold an extant appointment as a Skilled Person appropriate to the equipment being worked on and is responsible for step 7.

| COLUMN 1                                     | COLUMN 2  | COLUMN 3  | COLUMN 4  |
|--|---|---|---|
| EQUIPMENT                                    | Cables, and overhead lines  | Generating sets   | Equipment other than cables, overhead lines and generating sets.  |
| STEP 1<br>PREPARE<br>SAFETY<br>PROGRAMM<br>E | COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION.<br>Review planned work including any method statement and prepare, (or review) the Operational Risk Assessment.<br>Prepare a Safety Programme (Electrical) and obtain a countersignature before proceeding to Step 2.  |   |   |
| STEP 2<br>ISOLATE AND<br>FIX SIGNS           | ISOLATE FROM ALL SOURCES OF SUPPLY.<br>Prevent unauthorised connection or unauthorised operation by fixing Safety Locks and Caution Signs at all the points of isolation. Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Work.  | INHIBIT ENGINE START, ISOLATE GENERATOR.<br>Prevent unauthorised connection, or unauthorised operation or unauthorised starting by fixing Safety Locks.<br>Fix Caution Signs at all the points of isolation and, clearly visible, on the engine start panel. Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Work. | ISOLATE FROM ALL SOURCES OF SUPPLY.<br>Prevent unauthorised connection or unauthorised operation by fixing Safety Locks and Caution Signs at all the points of isolation.<br>Fix Caution Signs on motor starting Equipment.<br>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Work. |
| STEP 3<br>PROVE DEAD                         | ENSURE THAT THE EQUIPMENT TO BE WORKED ON IS THE EQUIPMENT THAT HAS BEEN ISOLATED.<br>Prove dead, with a High Voltage potential indicator, at all accessible points of isolation and, except for cables and cable end boxes, at accessible places of the work (and, where appropriate, prove dead on the low voltage side of the transformer) (refer to clause 3.5.3.11). |   |   |
| STEP 4<br>EARTH                              | Earth conductors at all the points of isolation and, where practicable, fix Safety Locks.<br>Identify cables with certainty at the places of the work. In the absence of clear and certain identity, the cable is to be spiked. (See Clause <b>Error! Reference source not found.</b> )<br>Earth overhead lines near the places of the work                               | Where practicable, earth the line and neutral generator output terminals or conductors and, where practicable, fix Safety Locks.  | Earth conductors at all the points of isolation and, where practicable, fix Safety Locks.<br>Where practicable, earth conductors at the places of the work  |

|  |   |
|--|---|
| <p><b>STEP 5<br/>ISSUE<br/>PERMIT<br/>TO WORK</b></p>              | <p>Review the method statement and Task Risk Assessment prior to issuing the Permit to Work. (This may be undertaken in association with Step 1.)<br/>The Skilled Person is to be shown the diagram on the Safety programme and the safety arrangements at all the points of isolation and at the places of the Work; the Person in Charge's key to the Safety Key Box and the Permit to Work are issued to the Person in Charge. After issuing the Permit the Mimic Diagram, if installed, is adjusted, the Electrical Distribution Operating Record completed and the original of the Safety Programme is placed with the duplicate.<br/>(Where the Authorised Person (Electrical) is to Confirm Dead in Step 6 the updating of: the Mimic Diagram; the Electrical Distribution Operating Record; and the Electrical Safety Documents Register is to be completed as soon as is practicable.)</p> |
| <p><b>STEP 6<br/>CONFIRM<br/>DEAD</b></p>                          | <p>Where conductors are to be exposed as part of the Work and it was not practicable to Prove Dead in Step 3, (except cables and cable end boxes):</p> <ol style="list-style-type: none"> <li>1. The Authorised Person is to remain with and supervise the Person in Charge until the conductors have been made accessible to a High Voltage Potential Indicator, and</li> <li>2. The Authorised Person is to confirm the equipment dead to the satisfaction of the Person in charge.</li> </ol>  |
| <p><b>STEP 8<br/>UNDERTAKE<br/>WORK</b></p>                        | <p>The Person in Charge is to undertake or provide Personal Supervision for the Work and, on completion or when the Work is stopped and made safe, returns the original Parts 1 and 2 of the Permit to Work to the Authorised Person and completes and signs Part 3.</p>  |
| <p><b>STEP 8<br/>CHECK WORK</b></p>                                | <p>If the work has been completed, check that the Work is satisfactory, that the Equipment has been restored to working order and that it may be safely energised.<br/>If the Work was stopped in Step 7, check that the Equipment has been made safe.</p>  |
| <p><b>STEP 9<br/>CANCEL<br/>PERMIT<br/>TO WORK</b></p>             | <p>Cancel the Permit to Work by cancelling the original Parts 1 and 2 and completing and signing Part 4. The Person in Charge's key to the Safety Key Box is returned to the Authorised Person.<br/>Where a test is required before the Equipment is energised, Steps 10 and 11 are omitted, and the procedures of Table HV2 are to be followed.<br/>Where other Permits relate to the Equipment and have not been cancelled, Steps 10 and 11 are omitted.</p>  |
| <p><b>STEP 10<br/>REMOVE<br/>EARTHS</b></p>                        | <p>Remove the Safety Locks and earths applied in Step 4.</p>  |
| <p><b>STEP 11 MAKE<br/>EQUIPMENT<br/>OPERATIONAL</b></p>           | <p>Remove the Safety Locks and signs fixed in Step 2 and restore the Equipment to an operational state.</p>   |
| <p><b>STEP 12<br/>REVIEW TASK<br/>AND COMPLETE<br/>RECORDS</b></p> | <p>Adjust the Mimic Diagram if installed.<br/>Complete the Electrical Distribution Operating Record and review task and complete the feedback report of JSP 375 Vol 3 Ch 2 — Common Requirements as deemed necessary.</p>   |

## Table HV2 - For Testing High Voltage Equipment

401. Steps in Column 1 are to be undertaken in numerical order. Columns 2, 3 and 4 provide detail for the specified equipment.

402. The Authorised Person (Electrical) is to be in possession of a current Authorised Persons (Electrical) Certificate of Appointment appropriate to the equipment being tested and is responsible for steps 1, 2, 3, 4, 5, 6, and 8, 9, 10, 11, 12.

403. The Person in Charge is to hold an extant appointment as a Skilled Person appropriate to the equipment under test and is responsible for step 7.

| COLUMN 1                                 | COLUMN 2  | COLUMN 3   | COLUMN 4  |
|--|---|--|---|
| EQUIPMENT                                | Cables, and overhead lines  | Generating Sets  | Equipment other than cables, overhead lines, and generating sets  |
| STEP 1<br>PREPARE<br>SAFETY<br>PROGRAMME | COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION.<br>Review the planned test including any method statement and prepare, (or review) the Operational Risk Assessment.<br>Prepare a Safety Programme (Electrical) and obtain a countersignature before proceeding to Step 2.  |  |   |
| STEP 2<br>ISOLATE AND<br>FIX SIGNS       | ISOLATE FROM ALL SOURCES OF SUPPLY.<br>Prevent unauthorised connection or unauthorised operation by fixing Safety Locks and Caution Signs at all the points of isolation.<br>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Test.   | INHIBIT ENGINE START, ISOLATE GENERATOR.<br>Prevent unauthorised connection, or unauthorised operation or unauthorised starting by fixing Safety Locks.<br>Fix Caution Signs at all the points of isolation and, clearly visible, on the engine start panel.<br>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Test. | ISOLATE FROM ALL SOURCES OF SUPPLY.<br>Prevent unauthorised connection or unauthorised operation by fixing Safety Locks and Caution Signs at all the points of isolation.<br>Fix Caution Signs on motor starting Equipment.<br>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Test. |
| STEP 3<br>PROVE DEAD                     | ENSURE THAT THE EQUIPMENT TO BE TESTED IS THE EQUIPMENT THAT HAS BEEN ISOLATED.<br>Prove dead, with a High Voltage potential indicator, at all accessible points of isolation and at the accessible places of the test (and, where appropriate, prove dead on the low voltage side of the transformer).(refer to clause 3.7.69).  |  |   |
| STEP 4<br>EARTH                          | Where practicable, earth conductors at all the points of isolation and, where practicable fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths. Identify cables with certainty at the places of the test and at the distant end.<br>In the absence of clear and certain identity, the cable is to be spiked. (See Clause 3.7.75.c).<br>Earth overhead lines near the places of the Test. | Where practicable, earth the line and neutral generator output terminals or conductors and, where practicable, fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths.  | Where practicable. Earth conductors at all the points of isolation and, where practicable, fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths. Where practicable, earth conductors at the places of the Test.  |

|   |   |
|---|---|
| <p>STEP 5<br/>ISSUE<br/>SANCTION<br/>TO TEST</p>                | <p>Review the method statement and Task Risk Assessment prior to issuing the Sanction to Test. (This may be undertaken in association with Step 1.)<br/>The Skilled Person is to be shown the diagram on the Safety Programme and the safety arrangements at all the points of isolation and at the places of the Test.<br/>If a High Voltage Enclosure is to be set up, fix High Voltage Enclosure Signs and barriers.<br/>The Person in Charge's key to the Safety Key Box and the Sanction to Test are issued to the Person in Charge.<br/>After issuing the Sanction the Mimic Diagram, if installed, is adjusted, the Electrical Distribution Operating Record completed and the original of the safety programme is placed with the duplicate.<br/>(Where the Authorised Person (Electrical) is to Confirm Dead in Step 6 the updating of: the Mimic Diagram; the Electrical Distribution Operating Record; and the Electrical Safety Documents Register is to be completed as soon as is practicable.)</p> |
| <p>STEP 6<br/>CONFIRM DEAD</p>                                  | <p>Where conductors are to be exposed as part of the Test and it was not practicable to Prove Dead in Step 3, (except cables and cable end boxes):<br/>1. The Authorised Person (Electrical) is to remain with and supervise the Person in Charge until the conductors have been made accessible to a High Voltage Potential Indicator, and<br/>2. The Authorised Person (Electrical) is to confirm the equipment dead to the satisfaction of the Person in charge.</p>   |
| <p>STEP 7<br/>UNDERTAKE<br/>TEST</p>                            | <p>The Person in Charge is to undertake or provide Personal Supervision for the Test, including the disconnection of any Removable Temporary Earths.<br/>On satisfactory completion of the Test, or when the Test is stopped and made safe, the conductors are to be discharged and any Removable Temporary Earths restored.<br/>The Person in Charge then returns the original Parts 1 and 2 of the Sanction to Test to the Authorised Person (Electrical) and completes and signs Part 3.</p>   |
| <p>STEP 8<br/>CHECK TEST</p>                                    | <p>If the test has been completed, check that the result is satisfactory, that the Equipment has been restored to working order and that it may be safely energised. If the Test was stopped in Step 7, check that the Equipment has been made safe.</p>  |
| <p>STEP 9<br/>CANCEL<br/>SANCTION TO<br/>TEST</p>               | <p>Cancel the Sanction to Test by cancelling the original Parts 1 and 2 and completing and signing Part 4.<br/>The Person in Charge's key to the Safety Key Box is returned to the Authorised Person (Electrical).<br/>Where the test was stopped in Step 7 and work is required before the Equipment is re-tested, Steps 10 and 11 are omitted and the procedures of Table HV1 are to be followed.</p>   |
| <p>STEP 10<br/>REMOVE EARTHS</p>                                | <p>Remove locks and earths applied in Step 4</p>  |
| <p>STEP 11<br/>MAKE<br/>EQUIPMENT<br/>OPERATIONAL</p>           | <p>Remove the Safety Locks, barriers and signs fixed in Steps 2 and 5 and restore the Equipment to an operational state</p>   |
| <p>STEP 12<br/>REVIEW TASK<br/>AND<br/>COMPLETE<br/>RECORDS</p> | <p>Adjust the Mimic Diagram if installed.<br/>Complete the Electrical Distribution Operating Record and review task and complete the feedback report of JSP 375 Vol 3 Ch 2 – Common Requirements, as deemed necessary.</p>  |

## **Working on and Testing Aeronautical Ground Lighting Primary Series Circuit Equipment and Associated Luminaires**

404. These Safety Rules and Procedures do not apply where equipment has been discharged, disconnected, removed from the system or installation and is not energised by other means.

405. Any equipment covered by this section which is considered by the Authorised Person (Electrical) to be in a Dangerous Condition, or is subject to an extant Warning Notice, Safety Alert, or Policy Instruction that requires it to be immediately switched off, is to be remotely isolated and disconnected and action taken by the Authorised Person (Electrical) to prevent it being re-connected to the supply of electricity. The Authorised Person (Electrical) is to report the matter as soon as is reasonably practicable to the Authorising Engineer (Electrical).

406. All persons, required to carry out work activities on equipment that affects the functioning of aeronautical ground lighting systems or, required to work on or test aeronautical ground lighting equipment are to be familiar with, and comply with, these Rules and Procedures and any instructions issued by the Duty Air Traffic Control Officer. If any doubt arises as to the interpretation of such instructions, the decision of the Duty Air Traffic Control Officer is to be obtained before any work or test proceeds.

407. The Authorised Person (Electrical) or a Skilled Person in receipt of a Standing Instruction is to co-ordinate work and testing aeronautical ground lighting equipment in co-operation with the Duty Air Traffic Control Officer and where local control of the aeronautical ground lighting is required the established standard MOD procedures are to be followed. Where work or tests are to be undertaken on aeronautical ground lighting equipment other than that covered by this section, the Rules and Procedures of paragraphs 289 to 312 (LV Non-Haz) or paragraphs 371 to 395 (HV) as applicable are to be followed. The requirements of paragraph 404 are to be applied to all work on or testing of equipment that affects the functioning of aeronautical ground lighting systems.

408. Unless the provisions of paragraph 418.a. and 419.e. apply, all work or testing of Aeronautical Ground Lighting Primary Series Circuit Equipment is to follow the procedures set out in Tables AGL1 or AGL2 of these Safety Rules and Procedures as appropriate.

409. Skilled Persons working on or testing equipment covered by this section are to hold an extant appointment as a Skilled Person appropriate to Aeronautical Ground Lighting Primary Series Circuit Equipment being worked on or tested.

410. Safety Locks are to be applied at points of isolation to prevent unauthorised operation or re-connection.

411. Temporary Safety Signs shall be fixed and displayed in accordance with paragraph 427.

412. Where required by paragraph 426, an Accompanying Safety Person is to be appointed before work or tests are commenced. The Accompanying Safety Persons name shall be recorded on the original of the Safety Programme along with the time and date of the appointment.

413. A Voltage Test Indicator is to be tested immediately before and after use against an appropriate Test Supply. A multi-meter or a Clip-On Ammeter is not to be used to prove equipment dead.

414. Where practicable equipment is to be proved dead prior to earthing. Where it is not practicable to Prove Dead any earth connection shall be made by means of a switch or circuit breaker. Other forms of earth connection shall not be used until the equipment and its conductors have been proved dead.

415. Where the procedures involve the application of Temporary Earths the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of Safety Locks. These Safety Locks are, where practicable, to be in addition to those required by paragraph 408.

416. Where the procedures involve the application of Removable Temporary Earths the unauthorised removal of such earth connections is to be prevented wherever practicable by the application of padlocks. The keys of the padlocks are to be issued to the Person in Charge who is to retain control of them for the duration of the tests.

417. Prior to the issue of a Permit to Work or Sanction to Test, the Authorised Person (Electrical) is to show the prospective Person in Charge the electrical diagram(s) on the Safety Programme, the safety arrangements at the points of isolation and at the places of work or test and is to ensure that the person understands all the relevant safety procedures and precautions. If the prospective Person in Charge thereafter accepts the Permit or Sanction that person becomes the Person in Charge and is responsible for the defined work or test until the Permit or Sanction is cancelled.

418. Authorised Persons (Electrical) personally undertaking tasks requiring a Permit to Work or Sanction to Test, and with the Authorising Engineers prior approval (see paragraph 128 and 150), are to issue the Permit to Work or Sanction to Test to themselves. The Authorised Person (Electrical) then becomes the Person in Charge. (See paragraphs 127 and 128).

419. No person shall be engaged in any work activity on or so near any live conductor (other than one suitably covered with insulating material so as to prevent danger) that danger may arise.

420. Power Supply Regulation Equipment;

a. Potentiometer adjustments and setting-up procedures may be undertaken on live power supply regulation Equipment provided that:

(1) a suitable and sufficient written Risk Assessment has been undertaken that deems it is safe to do so on the specific power supply regulation equipment. The Risk Assessment is to be retained within the Electrical Safety Documents Register;

(2) direct contact with live parts is prevented by the construction of the equipment that is suitable for the use for which it is provided and maintained in a condition suitable for that use, and that is properly used; and

(3) Test Equipment and all tools in use shall be, suitable for the use for which they are provided and, maintained in a condition suitable for that use and, properly used.

421. Primary Series Circuit Cables:

a. where work or testing is to be undertaken on a primary series circuit cable, the origin and the destination of the cable to be worked on or tested are to be positively identified

before the Permit to Work, Sanction to Test, or Certificate of Isolation and Earthing is issued. Reliance is not to be placed upon colour identification alone;

b. primary series circuit cables are not to be spiked. They are to be proved dead by the use of suitable voltage Test Indicator (Annex C, Test Equipment for Aeronautical Ground Lighting Primary Series Circuit Cables, 3.C.12. and 3.C.13);

c. where tests are to be carried out on primary series circuits, the applied Test voltage must not exceed the manufacturers recommendations for the cables and the series circuit transformers under test;

d. with the written approval of the Authorising Engineer (Electrical) fault finding on primary series circuits may be considered solely as a test procedure with all the associated work and testing involved performed under a Sanction to Test. Fault finding may only be carried where a Risk Assessment indicates that it is safe to do so and in accordance with a standard procedure that is issued with the Sanction to Test to the Person in Charge; and

e. Insulation Resistance and Continuity testing of primary series cables may be undertaken using a Standing Instruction where the test process is conducted in a B Centre and the Task Risk Assessment indicates that it is safe to do so.

#### 422. The Positive Identification of Series Circuit Cables:

a. prior to undertaking any work or Test involving a series circuit, the series circuit shall be positively identified at each point of work or Test by one of the methods identified below. When conducting these Tests, the series circuits are to be hand-operated under local control and not by the Duty Air Traffic Control Officer:

(1) the Authorised Person (Electrical) is to positively identify the series circuit with a clip-on Ammeter to at least three pre-determined brilliancy levels and observe the current drop to zero when the circuit is switched off; or

(2) where the test involves locating an open circuit, the Authorised Person (Electrical) is to positively identify the series circuit to be tested by eliminating all of the other series circuit cables with a clip-on Ammeter to at least three pre-determined brilliancy levels then observe the current drop to zero when the series circuit is switched off.

#### 423. Luminaires Connected by Series Circuit Transformers to an AGL Field Circuit:

a. before working on or testing a luminaire, the power supply to the AGL Field Circuit connected to the respective series circuit transformer is to be isolated. This isolation is to precede and be augmented by local disconnection by unplugging or other means provided by the manufacturer.

424. Note: - High external surface and internal component temperatures may exist with recently energised luminaires; due account of these are to be taken in the method of working on or testing of luminaires that is adopted.

#### 425. Testing at High Voltage:

- a. where High Voltage Tests are to be undertaken on aeronautical ground lighting equipment covered by this section, a Sanction to Test is to be issued to the prospective Person in Charge who, on acceptance, becomes the Person in Charge who is to be present throughout the duration of the tests. For Aeronautical Ground Lighting primary series circuits specific attention is to be paid to compliance with the relevant MOD criteria relating to Insulation Resistance requirements;
- b. the areas containing exposed live conductors, Test Equipment and any High Voltage connection are to be regarded as High Voltage Enclosures; and
- c. unauthorised access to such areas is to be prevented by, as a minimum, yellow and black striped tape, not less than 25mm wide, suspended on posts, and by the display of High Voltage Enclosure Signs in accordance with paragraph 427.d.

426. High Voltage Enclosures:

- a. a High Voltage Enclosure is to be opened only by the Authorised Person (Electrical), or a Skilled Person acting on the instructions of and personally supervised by the Authorised Person (Electrical);
- b. except in a High Voltage Enclosure, access to live conductors is to be possible only by the use of a tool or key; and
- c. a High Voltage Enclosure is to be entered only by:
  - (1) the Authorised Person (Electrical);
  - (2) the Authorising Engineer (Electrical);
  - (3) a Skilled Person acting on the instructions of and personally supervised by the Authorised Person (Electrical);
  - (4) the Person in Charge in receipt of a Sanction to Test, when the High Voltage Enclosure is created as part of the test procedure;
  - (5) a Skilled Person acting on the instructions of and personally supervised by the Person in Charge in receipt of a Sanction to Test, when the High Voltage Enclosure is created as part of the test procedure;
  - (6) an Accompanying Safety Person in connection with his or her safety role; or
  - (7) an Authorised Person (Electrical) Designate or an Authorising Engineer (Electrical) Designate acting on the instructions and personally supervised by the Authorised Person (Electrical) when the operation is part of the Authorised Person (Electrical) or Authorising Engineer (Electrical) Designate training programme.

427. Standing Instructions and Specific Written Instructions:

- a. where another safety document is not appropriate, an Authorised Person (Electrical) is to give a Standing Instruction to a named Skilled Person for defined tasks and switching operations on Aeronautical Ground Lighting Primary Series Circuit Equipment and Associated Luminaires, or for setting-up and adjusting procedures of power supply regulation Equipment in accordance with paragraph 417.a., or conducting insulation



resistance and continuity tests in accordance with paragraph 418.e. If the Skilled Person thereafter accepts the Standing Instruction that person becomes the Person in Charge and is responsible for carrying out the defined tasks as required until the Standing Instruction is cancelled.; or

b. the Authorised Person may give a Specific Written Instruction to a named Skilled Person or to an Authorised Person for defined switching operations in respect of specific items of Aeronautical Ground Lighting Primary Series Circuit Equipment. If the Skilled Person thereafter accepts the Specific Written Instruction that person becomes the Person in Charge and is responsible for the defined switching operations.

428. An Accompanying Safety Person is to be in attendance in the following circumstances:

a. where working or testing in accordance with Tables AGL1 or AGL2 is to be undertaken, whilst the equipment is being proved dead;

b. where working or testing in accordance with Tables AGL1 or AGL2 is to be undertaken, whilst the equipment is being earthed, other than by means of a switch or circuit breaker;

c. where working or testing in accordance with Tables AGL1 or AGL2 is being undertaken on equipment which cannot be proved dead until the Person in Charge has made conductors accessible, an Accompanying Safety Person is to be in attendance until the equipment has been proved dead;

d. whilst testing is being undertaken at High Voltage;

e. whilst any person is working within a High Voltage Enclosure; and

f. where the Operational Risk Assessment identifies it as necessary.

429. The Display of Temporary Safety Signs:

a. Caution Signs are to be fixed at the points of isolation and prominently displayed before the start and for the duration of work or testing, and before the issue and for the duration of any Permit to Work or Sanction to Test;

b. Skilled Persons shall obtain Caution Signs and Electrical Equipment Warning Signs as necessary before commencing work in accordance with a Standing Instruction. Such Signs shall bear the Skilled Person's name;

c. Skilled Persons may be issued on a permanent basis with their own Caution Signs and Electrical Equipment Warning Signs. Such Signs shall bear the Skilled Persons name;

d. High Voltage Enclosure Signs are to be prominently displayed so that they are visible from every angle of approach to a High Voltage Enclosure, before the issue and for the duration of a Sanction to Test;

e. Electrical Equipment Warning Signs are to be prominently displayed, on any equipment which remains live and is immediately adjacent to the equipment to be worked on or tested, before the start and for the duration of work or testing and before the issue and for the duration of any Permit to Work, a Sanction to Test or a Sanction for Work on or near Live Electrical Equipment;

- f. Electrical Equipment Warning Signs are to be prominently displayed on any live equipment which is accessible, either in or adjacent to an area that is to be the subject of an Authority for Access, before the issue and for the duration of any Authority for Access;
- g. where work or testing is to be undertaken on any part of a cable termination panel or equipment, Electrical Equipment Warning Signs are to be prominently displayed on the cubicles or compartments immediately adjacent to the part being worked on or tested. If the panel or equipment has rear access Electrical Equipment Warning Signs shall similarly be displayed at both the front and rear of the board or equipment. In identifying parts at the rear of the board or equipment, reliance is not to be placed upon the panel or equipment labelling;
- h. before a Permit to Work or a Sanction to Test is issued the Authorised Person (Electrical) is to identify the equipment upon which the work or test is to be undertaken. If the work or test involves, or may involve, obtaining access to items of equipment over which confusion could occur, the Authorised Person is to identify such items to the Skilled Person and apply temporary marking to them; and
- i. Temporary Safety Signs are to be fixed in a secure manner that does not create a hazard.

#### 430. The Locking of Switchgear and Switch rooms:

- a. where it is necessary to prevent danger or, where appropriate, injury, or prevent unauthorised operation, equipment cubicles and operating mechanisms are to be locked when the equipment is unattended; and
- b. any entrance to a room or enclosure containing Aeronautical Ground Lighting primary series circuit Equipment is to be closed and securely locked when the equipment is unattended. The Co-ordinating Authorised Person is to undertake a suitable and sufficient written Risk Assessment of any enclosure containing an unprotected run of primary series circuit cable to determine the need to secure access to the unprotected cables by a lock or other suitable means. The Risk Assessment is to be placed in the Electrical Safety Documents Register.

**Table AGL1 - For Working on Aeronautical Ground Lighting Primary Series Circuit Equipment.**

431. For working on associated luminaires refer to paragraph 421.

432. Steps in Column 1 are to be undertaken in numerical order. Columns 2 and 3 provide detail for the specified equipment.

433. The Authorised Person (Electrical) is to be in possession of a current Authorised Persons Electrical) Certificate of Appointment appropriate to Aeronautical Ground Lighting Primary Series Circuit Equipment, and is responsible for steps 1, 2, 3, 4, 5 and 7, 8, 9, 10, 11.

434. The Person in Charge is to hold an extant appointment as a Skilled Person appropriate to Aeronautical Ground Lighting Primary Series Circuit Equipment being worked on and is responsible for step 6.

| COLUMN 1   | COLUMN 2  | COLUMN 3   |
|--|---|--|
| EQUIPMENT  | AGL Field Circuit.  | Primary Series Circuit Equipment (other than an AGL Field Circuit).  |
| STEP 1<br>PREPARE A<br>SAFETY<br>PROGRAMME<br>AND OBTAIN<br>PERMISSION | <p>COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION. Review the planned work including any method statement and prepare, (or review) the Operational Risk Assessment.</p> <p>Prepare a Safety Programme (Electrical) and obtain a countersignature.</p> <p>Obtain permission from the Duty Air Traffic Control Officer in accordance with established standard MOD procedures before proceeding to Step 2.</p> <p>When undertaking work on a Field Circuit, the Field Circuit is to be positively identified at the point(s) of work prior to undertaking any isolation.</p> |  |
| STEP 2<br>ISOLATE AND<br>FIX SIGNS                                     | <p>ISOLATE FROM ALL SOURCES OF SUPPLY.</p> <p>Where practicable prevent unauthorised connection or unauthorised operation by fixing Safety Locks at all the points of isolation.</p> <p>Fix Caution Signs at all the points of isolation.</p> <p>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Work.</p> <p>(Where the point of isolation and the Temporary Earth are located in the same enclosure the Safety Lock is to be applied in Step 3.)</p>   | <p>ISOLATE FROM ALL SOURCES OF SUPPLY.</p> <p>Prevent unauthorised connection or unauthorised operation by fixing Safety Locks and Caution Signs at all the points of isolation.</p> <p>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Work.</p> <p>(Where the point of isolation and the Temporary Earth are located in the same enclosure the Safety Lock is to be applied in Step 3.)</p>         |
| STEP 3<br>PROVE<br>DEAD AND<br>EARTH                                   | <p>ENSURE THAT THE AGL FIELD CIRCUIT TO BE WORKED ON IS THE CABLE THAT HAS BEEN ISOLATED.</p> <p>Prove the conductor is dead with a Voltage Test Indicator and/or Test Lamp (as applicable) at each end of the circuit.</p> <p>Earth the conductor at accessible points at each end of the circuit and, where practicable, fix Safety Locks.</p> <p>Where practicable Prove dead with Voltage Test Indicator at the place(s) of the Work.</p> <p>Primary series circuit cables are not to be spiked.</p>  | <p>ENSURE THAT THE EQUIPMENT TO BE WORKED ON IS THE EQUIPMENT THAT HAS BEEN ISOLATED.</p> <p>Where practicable Prove Dead with a Voltage Test Indicator and/or Test Lamp (as applicable) at all the points of isolation and where practicable at the place(s) of the Work.</p> <p>Where practicable earth conductors at points of isolation and fix Safety Locks.</p> <p>Where practicable earth conductors at the place(s) of the Work.</p> |

| COLUMN 1   | COLUMN 2  | COLUMN 3 |
|--|---|----------|
| STEP 4<br>ISSUE<br>PERMIT<br>TO WORK                 | <p>Review the method statement and Task Risk Assessment prior to issuing the Permit to Work. (This may be undertaken in association with Step 1.)</p> <p>The Skilled Person is to be shown the diagram on the Safety programme and the safety arrangements at all the points of isolation and at the place(s) of the Work; the Person in Charge's key to the Safety Key Box and the Permit to Work are issued to the Person in Charge. After issuing the Permit, the Electrical Distribution Operating Record is to be completed and the original of the Safety Programme is substituted for the duplicate.</p> <p>(Where the Authorised Person is to confirm dead in Step 5 the updating of: the Electrical Distribution Operating Record; and the Electrical Safety Documents Register is to be completed as soon as is practicable.)</p> |          |
| STEP 5<br>CONFIRM<br>DEAD                            | <p>Where conductors are to be exposed as part of the Work and it was not practicable to Prove Dead at the place(s) of Work in Step 3:</p> <ol style="list-style-type: none"> <li>1. The Authorised Person (Electrical) is to remain with and supervise the Person in Charge until the conductors have been made accessible; and</li> <li>2. The Authorised Person (Electrical) is to confirm the Equipment dead to the satisfaction of the Person in Charge; and</li> <li>3. Where practicable the conductors are to be earthed after they have been confirmed dead and, where practicable, fix Safety Locks.</li> </ol>  |          |
| STEP 6<br>UNDERTAKE<br>WORK                          | <p>The Person in Charge is to undertake or provide Personal Supervision for the Work and, on completion or when the Work is stopped and made safe, returns the original Parts 1 and 2 of the Permit to Work to the Authorised Person (Electrical) and completes and signs Part 3.</p>   |          |
| STEP 7<br>CHECK<br>WORK                              | <p>If the Work has been completed, check that the Work is satisfactory, that the Equipment has been restored to working order and that it may be safely energised.</p> <p>If the work was stopped in Step 5, check that the Equipment has been made safe.</p>   |          |
| STEP 8<br>CANCEL<br>PERMIT<br>TO WORK                | <p>Cancel the Permit to Work by cancelling the original Parts 1 and 2 and completing and signing Part 4. The Person in Charge's key to the Safety Key Box is returned to the Authorised Person.</p> <p>Inform Duty Air Traffic Control Officer of the status of the Equipment.</p> <p>Where a Test is required before the Equipment is energised, Steps 9 and 10 are omitted, and the procedures of Table AGL2 are to be followed.</p> <p>Where other Permits relate to the Equipment and have not been cancelled, Steps 9 and 10 are omitted.</p>  |          |
| STEP 9<br>REMOVE<br>EARTHS                           | <p>Remove the Safety Locks and earths applied in Step 3 and 5.</p>  |          |
| STEP 10<br>MAKE<br>EQUIPMENT<br>OPERATIONAL          | <p>Remove the Safety Locks and signs fixed in Step 2.</p> <p>Obtain permission from the Duty Air Traffic Control Officer in accordance with established MOD procedures before proceeding to restore the Equipment to an operational state.</p>  |          |
| STEP 11<br>REVIEW<br>TASK AND<br>COMPLETE<br>RECORDS | <p>Complete the Electrical Distribution Operating Record and review task and complete the feedback report of JSP 375 Vol 3 Ch 2 — Common Requirements, as deemed necessary.</p>   |          |

**Table AGL2 - For Testing Aeronautical Ground Lighting Primary Series Circuit Equipment.**

435. For testing associated luminaires refer to paragraph 421.

436. Steps in Column 1 are to be undertaken in numerical order. Columns 2 and 3 provide detail for the specified equipment.

437. The Authorised Person (Electrical) is to be in possession of a current Authorised Persons (Electrical) Certificate of Appointment appropriate to Aeronautical Ground Lighting Primary Series Circuit Equipment, and is responsible for steps 1, 2, 3, 4, 5, and 7, 8, 9, 10, 11.

438. The Person in Charge is to hold an extant appointment as a Skilled Person appropriate to Aeronautical Ground Lighting Primary Series Circuit Equipment under test and is responsible for step 6.

| COLUMN 1   | COLUMN 2  | COLUMN 3  |
|--|---|---|
| EQUIPMENT  | AGL Field Circuit   | Primary Series Circuit Equipment (other than an AGL Field Circuit).   |
| STEP 1<br>PREPARE A<br>SAFETY<br>PROGRAMME<br>AND OBTAIN<br>PERMISSION | <p>COMPLY WITH ANY PARTICULAR SAFETY PROCEDURES APPLICABLE TO THE LOCATION.<br/>Review the planned test including any method statement and prepare, or review) the Operational Risk Assessment.<br/>Prepare a Safety Programme (Electrical) and obtain a countersignature.<br/>Obtain permission from the Duty Air Traffic Control Officer in accordance with established standard MOD procedures before proceeding to Step 2.<br/>When testing a Field Circuit, the Field Circuit is to be positively identified at the point(s) of test prior to undertaking any isolation.</p> |   |
| STEP 2<br>ISOLATE AND<br>FIX SIGNS                                     | <p>ISOLATE FROM ALL SOURCES OF SUPPLY.<br/>Where practicable prevent unauthorised connection or unauthorised operation by fixing Safety Locks at all the points of isolation.<br/>Fix Caution Signs at all the points of isolation.<br/>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Test.<br/>(Where the point of isolation and the Temporary Earth are located in the same enclosure the Safety Lock is to be applied in Step 3.)</p>   | <p>ISOLATE FROM ALL SOURCES OF SUPPLY.<br/>Prevent unauthorised connection or unauthorised operation by fixing Safety Locks and Caution Signs at all the points of isolation.<br/>Fix Electrical Equipment Warning Signs on adjacent live Equipment at the places of the Test.<br/>(Where the point of isolation and the Temporary Earth are located in the same enclosure the Safety Lock is to be applied in Step 3.)</p>   |
| STEP 3<br>PROVE<br>DEAD AND<br>EARTH                                   | <p>ENSURE THAT THE AGL FIELD CIRCUIT TO BE WORKED ON IS THE CABLE THAT HAS BEEN ISOLATED.<br/>Prove Dead with Voltage Test Indicator and/or Test Lamp (as applicable) at each end of the loop.<br/>Earth the conductor at accessible points at each end of the circuit and, where practicable, fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths.<br/>Where practicable, Prove Dead with Voltage Test Indicator at the place(s) of the Test</p> <p>Primary series circuit cables are not to be spiked.</p>  | <p>ENSURE THAT THE EQUIPMENT TO BE WORKED ON IS THE EQUIPMENT THAT HAS BEEN ISOLATED.<br/>Where practicable Prove Dead with a Voltage Test Indicator and/or Test Lamp (where applicable) at all the points of isolation and where practicable at the places of the Test.<br/>Where practicable earth conductors at points of isolation and fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths.<br/>Where practicable earth conductors at the places of the Test.</p> |

|   |   |
|---|---|
| <p>STEP 4<br/>ISSUE<br/>SANCTION<br/>TO TEST</p>                | <p>Review the method statement and Task Risk Assessment prior to issuing the Sanction to Test. (This may be undertaken in association with Step 1.)<br/>The skilled person is to be shown the diagram on the Safety Programme and the safety arrangements at all the points of isolation and at the places of the Test.<br/>If a High Voltage Enclosure is to be set up, fix High Voltage Enclosure Signs and barriers.<br/>The Person in Charge's key to the Safety Key Box and the Sanction to Test are issued to the Person in Charge.<br/>After issuing the Sanction, the Electrical Distribution Operating Record is completed and the original of the Safety Programme is substituted for the duplicate.</p> <p>(Where the Authorised Person (Electrical) is to confirm dead in Step 5 the updating of: the Electrical Distribution Operating Record; and the Electrical Safety Documents Register is to be completed as soon as is practicable.)</p> |
| <p>STEP 5<br/>CONFIRM<br/>DEAD</p>                              | <p>Where conductors are to be exposed as part of the Test and it was not practicable to Prove dead in Step 3:</p> <ol style="list-style-type: none"> <li>1. The Authorised Person (Electrical) is to remain with and supervise the Person in Charge until the conductors have been made accessible; and</li> <li>2. The Authorised Person (Electrical) is to confirm the Equipment dead to the satisfaction of the Person in Charge; and</li> <li>3. Where practicable, the conductors are to be earthed after they have been confirmed dead and, where practicable, fix Safety Locks to Temporary Earths and padlocks to Removable Temporary Earths.</li> </ol>  |
| <p>STEP 6<br/>UNDERTAKE<br/>TEST</p>                            | <p>The Person in Charge is to undertake or provide Personal Supervision for the test, including the disconnection of any Removable Temporary Earths.<br/>On satisfactory completion of the Test, or when the test is stopped and made safe, the conductors are to be discharged and any Removable Temporary Earths restored.<br/>The Person in Charge then returns the original Parts 1 and 2 of the Sanction to Test to the Authorised Person (Electrical) and completes and signs Part 3.</p>   |
| <p>STEP 7<br/>CHECK<br/>TEST</p>                                | <p>If the test has been completed, check that the result is satisfactory, that the Equipment has been restored to working order and that it may be safely energised.<br/>If the Test was stopped in Step 6, check that the Equipment has been made safe.</p>  |
| <p>STEP 8<br/>CANCEL<br/>SANCTION<br/>TO TEST</p>               | <p>Cancel the Sanction to Test by cancelling the original Parts 1 and 2 and completing and signing Part 4.<br/>The Person in Charge's key to the Safety Key Box is returned to the Authorised Person (Electrical).<br/>Inform Duty Air Traffic Control Officer of the status of the Equipment.<br/>Where the test was stopped in Step 5 and work is required before the Equipment is re-tested, Steps 9 and 10 are omitted, and the procedures of Table AGL1 are to be followed.</p>  |
| <p>STEP 9<br/>REMOVE<br/>EARTHS</p>                             | <p>Remove the Locks and earths applied in Steps 3 and 6.</p>  |
| <p>STEP 10<br/>MAKE<br/>EQUIPMENT<br/>OPERATIONAL</p>           | <p>Remove the Safety Locks and signs fixed in Step 2.<br/>Obtain permission from the Duty Air Traffic Control Officer in accordance with established MOD procedures before proceeding to restore the Equipment to an operational state.</p>   |
| <p>STEP 11<br/>REVIEW TASK<br/>AND<br/>COMPLETE<br/>RECORDS</p> | <p>Remove the Safety Locks and signs fixed in Step 2.<br/>Obtain permission from the Duty Air Traffic Control Officer in accordance with established MOD procedures before proceeding to restore the Equipment to an operational state.</p>   |

## The Acceptance of New Works

1. Before appointing Authorised Persons (Electrical) to be responsible for significant new or refurbished electrical works the Authorising Engineer (Electrical) is to comply with this Section of these Safety Rules and Procedures.
2. The Authorising Engineer is to ensure that there is a Health and Safety File holding sufficient information to enable operation and maintenance to be safely undertaken.
3. Having visited the site of the new works, the Authorising Engineer is to be satisfied that:
  - a. there is adequate space and suitable access to enable maintenance and operation to be safely undertaken;
  - b. the installation is of an acceptable standard;
  - c. the equipment is suitable for its intended purpose;
  - d. compatible design philosophies have been applied to the entire electrical installation for the new works; and
  - e. the new works do not compromise the integrity of the existing electrical installation.
4. The Authorising Engineer (Engineer) may, at his own discretion, accept an installation that does not satisfy paragraph 1 of this Annex subject to the issue of an Operational Restriction.
5. Where it is known that the Ministry of Defence is to accept control of the danger, the Authorising Engineer is to nominate an Authorised Person (Electrical) Designate for the new systems or installation. The Authorising Engineer (Electrical) is to ensure appropriate familiarisation and on-site training is given to the Authorised Person (Electrical) Designate.
6. The prospective Authorised Person (Electrical) for the new system or installation is to communicate and co-operate with the person or persons nominated by the Contractor in order to become familiar with the system or installation for which responsibility is to be taken. Familiarisation and On-site Training is to be in accordance with JSP 375 Vol 3 Chapter 2 — Common Requirements, where the role of experienced Authorised Person is taken by the person or persons nominated by the Contractor.

## Model Safety Forms

### Model Form Numbers

| Number | Description  |
|--------|--|
| 1      | Safety Programme (Electrical), printed in black on pale green paper.   |
| 1a     | Safety Programme (Electrical), supplementary sheet for additional electrical diagram, printed in black on pale green paper.  |
| 1b     | Safety Programme (Electrical), supplementary sheet for additional Sequence of Operations, printed in black on pale green paper.                                      |
| 2      | Permit to Work (Electrical) Non-hazardous Area printed in black on pale blue paper.  |
| 3      | Permit to Work (Electrical) Hazardous Area printed in black on pale blue paper.  |
| 4      | Sanction to Test (Electrical) Non-Hazardous Area printed in black on pale yellow paper.  |
| 5      | Sanction to Test (Electrical) Hazardous Area printed in black on pale yellow paper.  |
| 6      | Sanction for Work on or near Live Electrical Equipment printed in black on pale pink paper.  |
| 7      | Certificate of Isolation and Earthing.   |
| 8      | Standing Instruction for Electrical Equipment in a Non-hazardous Area printed in black on off-white paper.   |
| 9      | Specific Written Instruction for Particular Switching Operations in Respect of Specific Items of High and Low Voltage Equipment printed in black on off-white paper. |
| 10     | Authority for Access (Electrical) printed in black on off-white paper.   |



**MODEL FORM NO 1**

Establishment \_\_\_\_\_

Programme Serial Number  
(Pre-Printed) \_\_\_\_\_

**SAFETY PROGRAMME (ELECTRICAL)**

**(Complete precisely and legibly in BLOCK CAPITALS)**

---

**To be completed by the originating Authorised Person (Electrical):**

Purpose of the proposed work or test \_\_\_\_\_  
\_\_\_\_\_

Equipment which the proposed sequence of operations \_\_\_\_\_  
will make safe to work on or test \_\_\_\_\_  
\_\_\_\_\_

Location of equipment \_\_\_\_\_  
\_\_\_\_\_

Details of other safety procedures or documents that relate to the proposed work or test \_\_\_\_\_  
\_\_\_\_\_

Details of work or test to be done \_\_\_\_\_  
\_\_\_\_\_

Date on which countersigned programme is required to commence \_\_\_\_\_

Special instructions and / or safety measures to be included on the Permit to Work or Sanction to Test:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signed \_\_\_\_\_

Time and Date \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Address \_\_\_\_\_

In the employ of \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

**To be completed by the Countersigning Authorised Person (Electrical) or the appointed Authorising Engineer (Electrical)**

- I have checked the above safety programme and am satisfied that, to the best of my knowledge, it will enable the proposed work or test and restoration of the system to be carried out safely and in accordance with the Electricity Safety Rules and Procedures;
- I have knowledge of the system and installation concerned, and have access to a current diagram.

Signed \_\_\_\_\_

Time and Date \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Address \_\_\_\_\_

In the employ of \_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_

**MODEL FORM NO 1**

Establishment \_\_\_\_\_

Programme Serial Number  
(Pre-Printed) \_\_\_\_\_

**SAFETY PROGRAMME (ELECTRICAL)**

**Electrical Diagram of Isolating and Earthing Arrangements**

|                               |
|-------------------------------|
| Signed _____ Person in Charge |
|-------------------------------|

|   |   |
|---|---|
| Originating Authorised Person (Electrical) Initials, Time and Date. | Countersigning Authorised Person (Electrical) or Authorising Engineer (Electrical) Initials, Time and Date. |
|---|---|

**MODEL FORM NO 1**

Establishment \_\_\_\_\_

Programme Serial Number  
(Pre-Printed) \_\_\_\_\_

**SAFETY PROGRAMME (ELECTRICAL)**

Sequence of Operations (Consult any relevant Operating and Maintenance Instructions before completing this part)

| Entry Number | Location and Identity of Equipment | Operation and Reason (Rule off each entry) | Items Required | Date and Time of Operation |
|--------------|------------------------------------|--|----------------|----------------------------|
|              |                                    |  |                |                            |

|   |   |
|---|---|
| Originating Authorised Person (Electrical) Initials, Time and Date. | Countersigning Authorised Person (Electrical) or Authorising Engineer (Electrical) Initials, Time and Date. |
|---|---|

**MODEL FORM NO 1**

Establishment \_\_\_\_\_

Programme Serial Number  
(Pre-Printed) \_\_\_\_\_

**SAFETY PROGRAMME (ELECTRICAL)**

Sequence of Operations (Consult any relevant Operating and Maintenance Instructions before completing this part)

| Entry Number | Location and Identity of Equipment | Operation and Reason<br>(Rule off each entry) | Items Required | Date and Time of Operation |
|--------------|------------------------------------|---|----------------|----------------------------|
|              |                                    |   |                |                            |

|   |   |
|---|---|
| Originating Authorised Person (Electrical) Initials, Time and Date. | Countersigning Authorised Person (Electrical) or Authorising Engineer (Electrical) Initials, Time and Date. |
|---|---|

**MODEL FORM NO 1a**

Establishment \_\_\_\_\_

Programme Serial Number \_\_\_\_\_

**SAFETY PROGRAMME (ELECTRICAL) – SUPPLEMENTARY SHEET**

**Electrical Diagram of Isolating and Earthing Arrangements**

|                               |
|-------------------------------|
| Signed _____ Person in Charge |
|-------------------------------|

|   |   |
|---|---|
| Originating Authorised Person (Electrical) Initials, Time and Date. | Countersigning Authorised Person (Electrical) or Authorising Engineer (Electrical) Initials, Time and Date. |
|---|---|

**MODEL FORM NO 1b**

Establishment \_\_\_\_\_

Programme Serial Number \_\_\_\_\_

**SAFETY PROGRAMME (ELECTRICAL) – SUPPLEMENTARY SHEET**

Sequence of Operations (Consult any relevant Operating and Maintenance Instructions before completing this part)

| Entry Number | Location and Identity of Equipment | Operation and Reason (Rule off each entry) | Items Required | Date and Time of Operation |
|--------------|------------------------------------|--|----------------|----------------------------|
|              |                                    |  |                |                            |

|   |   |
|---|---|
| Originating Authorised Person (Electrical) Initials, Time and Date. | Countersigning Authorised Person (Electrical) or Authorising Engineer (Electrical) Initials, Time and Date. |
|---|---|

**MODEL FORM NO 2**

Establishment \_\_\_\_\_

**PERMIT TO WORK (ELECTRICAL)  
Non-hazardous Area**

Permit Serial Number  
(Pre-printed) \_\_\_\_\_

Safety Key Box No and Location \_\_\_\_\_

**(Complete precisely and legibly in BLOCK CAPITALS)**

**PART 1 - To be completed by the Authorised Person (Electrical)**

- (1) I declare it is safe to work on the equipment listed below, which has been made dead, isolated and earthed in accordance with the Electricity Safety Rules and Procedures, and I have physically identified the equipment and explained the extent of the work to the prospective Person in Charge who is to be responsible for the work.
- (2) I have shown the prospective Person in Charge the electrical diagram on the Safety Programme and the safety arrangements at the points of isolation and the places of work, and I have explained all the relevant safety procedures and precautions.

Safety Programme serial number: \_\_\_\_\_

Equipment to be worked on \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Location of equipment \_\_\_\_\_

Details of other safety procedures or documents that relate to the proposed work  
 \_\_\_\_\_  
 \_\_\_\_\_

Details of work to be done \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Specific points where equipment is isolated \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Specific points where equipment is earthed \_\_\_\_\_  
 \_\_\_\_\_

**SAFETY CHECK LIST: (tick the applicable box)**

|   |   |     |                          |   |   |  |     |                          |                  |                          |   |
|---|---|-----|--------------------------|---|---|--|-----|--------------------------|------------------|--------------------------|---|
| 1 | Has permission for the intended work been confirmed?  | Yes | <input type="checkbox"/> |   | 6   | Are Safety Locks fixed to secure Temporary Earths?   | Yes | <input type="checkbox"/> | Not* practicable | <input type="checkbox"/> |   |
| 2 | Is the equipment isolated from all sources of supply? | Yes | <input type="checkbox"/> |   | 7   | Are the conductors, to be worked on earthed?   | Yes | <input type="checkbox"/> | No*              | <input type="checkbox"/> |   |
| 3 | Are Caution Signs fixed at all points of isolation?   | Yes | <input type="checkbox"/> |   | 8   | Are Electrical Equipment Warning Signs fixed on live equipment adjacent to the places of the work? | Yes | <input type="checkbox"/> | Not Applicable   | <input type="checkbox"/> |   |
| 4 | Are Safety Locks fixed at all points of isolation?    | Yes | <input type="checkbox"/> | Not* practicable <input type="checkbox"/> | 9   | Where the work involves a cable, has it been identified with certainty?                            | Yes | <input type="checkbox"/> | No*              | <input type="checkbox"/> | Not Applicable <input type="checkbox"/> |
| 5 | Has the equipment been proved dead?                   | Yes | <input type="checkbox"/> | No* <input type="checkbox"/>              | * (requires special instructions and safety measures) |  |     |                          |                  |                          |   |

**SPECIAL INSTRUCTIONS AND SAFETY MEASURES**

\_\_\_\_\_  
 Signed \_\_\_\_\_ (Person in Charge)

Signed \_\_\_\_\_ (Authorised Person (E)) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No \_\_\_\_\_

**THIS PERMIT IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED**

**MODEL FORM NO 2**

Establishment

\_\_\_\_\_

**PERMIT TO WORK (ELECTRICAL)  
Non-hazardous Area**

Permit Serial Number

(Pre-printed) \_\_\_\_\_

---

**PART 2 - To be completed by the prospective Person in Charge:**

- (1) I acknowledge receipt of this Permit and of the key to the Safety Key Box.
- (2) I understand and have signed any special instructions and safety measures noted in Part 1 of this Permit.
- (3) I have been shown the equipment to be worked on, and the safety arrangements at the points of isolation and places of Work.
- (4) I have been shown the electrical diagram on the Safety Programme.
- (5) (a)\* The Authorised Person (Electrical) has demonstrated to my satisfaction that the equipment is dead and safe to work on.  
OR  
(b)\* (For Low Voltage equipment only) It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Permit.  
I will confirm the equipment dead to my satisfaction as soon as conductors have been made accessible to a suitable test indicator.  
OR  
(c)\* It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Permit.  
I understand that the Authorised Person (Electrical) will confirm the equipment dead to my satisfaction as soon as conductors have been made accessible to a suitable test indicator.  
\* (delete as appropriate)
- (6) I accept responsibility for carrying out the work listed in Part 1 of this Permit.
- (7) No work other than that listed in Part 1 of this Permit, will be attempted by me or by any person working under my control whilst this Permit is in force.
- (8) Unless it is unavoidable, I will not leave the place of work whilst the work described in Part 1 of this Permit is in progress.
- (9) If I have to leave the place of work temporarily, I will suspend the work, and ensure that suitable safety measures are taken until the work is resumed upon my return.
- (10) I will retain this Permit while the work described in Part 1 is in progress, and will return it to the Authorised Person (Electrical) when the work is completed or stopped.

Signed \_\_\_\_\_ (Person in Charge) Time \_\_\_\_\_

Name \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**THIS PERMIT IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED**



**MODEL FORM NO 2**

Establishment \_\_\_\_\_

**PERMIT TO WORK (ELECTRICAL)  
Non-hazardous Area**

Permit Serial Number  
(Pre-printed) \_\_\_\_\_

---

**PART 3 - To be completed by the Person in Charge:**

(1) I confirm that the work described in Part 1 of this Permit has been:

(a)\* Satisfactorily completed and that all persons, tools and instruments under my control have been accounted for and withdrawn;

OR

(b)\* stopped for the reasons given below, and that all persons, tools and instruments under my control have been accounted for and withdrawn, and that the equipment has been made safe.

\*(delete as appropriate)

(2) I have warned all persons under my control that it is no longer safe to work on the equipment.

Reason for stopping the work and action taken (if applicable):

Signed \_\_\_\_\_ (Person in Charge)

Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date \_\_\_\_\_

---

**PART 4 - To be completed by the Authorised Person (Electrical):**

(1) I confirm that the work described in Part 1 of this Permit has been:

(a)\* satisfactorily completed;

OR

(b)\* stopped and made safe.

\*(delete as appropriate)

(2) This Permit is cancelled.

(3) The Original Parts 1 and 2 of the Permit have been returned to me for retention.

Comments (if applicable)

Signed \_\_\_\_\_ (Authorised Person (Electrical)) Time: \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date: \_\_\_\_\_

MODEL FORM NO 3

Establishment

\_\_\_\_\_

PERMIT TO WORK (ELECTRICAL)  
Hazardous Area

Permit Serial Number  
(Pre-printed) \_\_\_\_\_

**(Complete precisely and legibly in BLOCK CAPITALS)**

**PART 1 - To be completed by the Authorised Person (Electrical):**

Low Voltage equipment to be worked on

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Location of Equipment

\_\_\_\_\_

Details of other safety procedures or documents that relate to the proposed work \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Details of work to be done \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**To be completed by the Hazardous Area Manager:**

- (1) The purpose of, and procedure for, the Work detailed above have been explained to me.
- (2) I hereby give permission for the above equipment to be isolated, and for a Permit to be issued for the Work to proceed.

The nature of the hazard is \_\_\_\_\_

Special instructions and safety measures \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Signed: \_\_\_\_\_ (Hazardous Area Manager)

Time: \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date: \_\_\_\_\_

In the employ of \_\_\_\_\_

Contact Tel. No. \_\_\_\_\_

**To be completed by the Authorised Person (Petroleum) if applicable:**

I declare that for the Work detailed above:

- (a) A Permit to Work (Petroleum) Hazardous Areas No \_\_\_\_\_ has been issued.

Special instructions or safety measures

\_\_\_\_\_  
\_\_\_\_\_

Signed \_\_\_\_\_ (Authorised Person (Petroleum))

Time: \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date: \_\_\_\_\_

In the employ of \_\_\_\_\_

Contact Tel. No. \_\_\_\_\_

MODEL FORM NO 3

Establishment

PERMIT TO WORK (ELECTRICAL)
Hazardous Area

Permit Serial Number
(Pre-printed)

Safety Key Box No and Location

PART 1 - continued

To be completed by the Authorised Person (Electrical):

- (1) I declare it is safe to work on the equipment listed below, which has been made dead, isolated and earthed in accordance with the Electricity Safety Rules and Procedures, and I have physically identified the equipment and explained the extent of the work to the prospective Person in Charge who is to be responsible for the work.
(2) I have shown the prospective Person in Charge the electrical diagram on the Safety Programme and the safety arrangements at the points of isolation and the places of work, and I have explained all the relevant safety procedures and precautions.

Safety Programme serial number:

Specific points where equipment is isolated

Three horizontal lines for writing specific points where equipment is isolated.

Specific points where equipment is earthed

Three horizontal lines for writing specific points where equipment is earthed.

SAFETY CHECK LIST: (tick the applicable box)

SAFETY CHECK LIST table with 8 rows and 4 columns of questions and checkboxes. Questions include: 'Is the equipment isolated from all sources of supply?', 'Are Caution Signs fixed at all points of isolation?', 'Are Safety Locks fixed at points of isolation?', 'Has the equipment been proved dead?', 'Are Safety Locks fixed to secure Temporary Earths?', 'Are the conductors, within the equipment earthed?', 'Are Electrical Equipment Warning Signs fixed on live equipment adjacent to the places of the work?', 'Has the cable been identified with certainty?'.

\* (requires special instructions and safety measures)

SPECIAL INSTRUCTIONS AND SAFETY MEASURES

Five horizontal lines for writing special instructions and safety measures.

Signed (Person in Charge)

Signed (Authorised Person (Electrical)) Time:

Name (Capitals) Date:

In the employ of Contact Tel. No:

THIS PERMIT IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED

MODEL FORM NO 3

Establishment

PERMIT TO WORK (ELECTRICAL)
Hazardous Area

Permit Serial Number
(Pre-printed)

PART 2 - To be completed by the prospective Person in Charge:

- (1) I acknowledge receipt of this Permit and of the key to the Safety Key Box.
(2) I understand and have signed any special instructions and safety measures noted in Part 1 of this Permit.
(3) I have been shown the equipment to be worked on, and the safety arrangements at the points of isolation and places of Work.
(4) I have been shown the electrical diagram on the Safety Programme.
(5) (a)\* The Authorised Person (Electrical) has demonstrated to my satisfaction that the equipment is dead and safe to work on.
OR
(b)\* (For Low Voltage equipment only) It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Permit.
I will confirm the equipment dead to my satisfaction as soon as conductors have been made accessible to an intrinsically safe voltage test indicator.
OR
(c)\* It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Permit.
I understand that the Authorised Person (Electrical) will confirm the equipment dead to my satisfaction as soon as conductors have been made accessible to an intrinsically safe voltage test indicator.
\* (delete as appropriate)
(6) I accept responsibility for carrying out the work listed in Part 1 of this Permit.
(7) No work other than that listed in Part 1 of this Permit, will be attempted by me or by any person working under my control whilst this Permit is in force.
(8) I note that the Hazardous Area Manager, and (if applicable) the Authorised Person (Petroleum), have the authority to stop the work.
(9) Unless it is unavoidable, I will not leave the place of work whilst the work described in Part 1 of this Permit is in progress.
(10) If I have to leave the place of work temporarily, I will suspend the work, and ensure that suitable safety measures are taken until the work is resumed upon my return.
(11) I will retain this Permit while the work described in Part 1 is in progress, and will return it to the Authorised Person when the work is completed or stopped.

Signed (Person in Charge) Time
Name (Capitals) Date
(Capitals)
In the employ of Contact Tel. No.

THIS PERMIT IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED

**MODEL FORM NO 3**

Establishment

\_\_\_\_\_

**PERMIT TO WORK (ELECTRICAL)  
Hazardous Area**

Permit Serial Number

(Pre-printed) \_\_\_\_\_

---

**PART 3 - To be completed by the Person in Charge:**

- (1) I confirm that the work described in Part 1 of this Permit has been:
- (a)\* satisfactorily completed and that all persons, tools and instruments under my control have been accounted for and withdrawn;
- OR
- (b)\* stopped for the reasons given below, and that all persons, tools and instruments under my control have been accounted for and withdrawn, and that the equipment has been made safe.
- \*(delete as appropriate)
- (2) Any explosion protection enclosures that were opened during the work have been replaced, and I am satisfied with the integrity of the protection now provided.
- (3) I have warned all persons under my control that it is no longer safe to work on the equipment.
- (4) I note that only the Authorised Person (Electrical) is permitted to re-energise the equipment and return it to an operational state.

Reason for stopping the work and action taken (if applicable):

Signed \_\_\_\_\_ (Person in Charge)

Time: \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date: \_\_\_\_\_

---

**PART 4 - To be completed by the Authorised Person (Electrical):**

- (1) I confirm that the work described in Part 1 of this Permit has been:
- (a)\* satisfactorily completed;
- OR
- (b)\* stopped and made safe.
- \*(delete as appropriate)
- (2) I have checked the integrity of the explosion protection of all equipment that may have been affected by the work.
- (3) This Permit is cancelled.
- (4) The Original Parts 1 and 2 of the Permit have been returned to me for retention.

Comments (if applicable)

Signed \_\_\_\_\_ (Authorised Person (Electrical))

Time \_\_\_\_\_

Name (capitals) \_\_\_\_\_

Date \_\_\_\_\_

---

**PART 5 - To be completed by the Hazardous Area Manager:**

- (1) I note that the work described in Part 1 of this Permit has been satisfactorily completed\* / stopped and made safe\*.
- (2) (a)\* I note that another Permit to Work\* / a Sanction to Test\* is now proposed.
- OR
- (b)\* I hereby give my permission for the equipment to be energised and returned to an operational state.
- \*(delete as appropriate)

Signed \_\_\_\_\_ (Hazardous Area Manager)

Time: \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date: \_\_\_\_\_

**MODEL FORM NO 4**

Establishment \_\_\_\_\_

**SANCTION TO TEST (ELECTRICAL)  
Non-hazardous Area**

Sanction Serial Number  
(Pre-printed) \_\_\_\_\_

Safety Key Box No and Location \_\_\_\_\_

**(Complete precisely and legibly in BLOCK CAPITALS)**

**PART 1 - To be completed by the Authorised Person (Electrical):**

- (1) I declare it is safe to test the equipment listed below, which has been made dead, isolated and earthed in accordance with the requirements of the Electricity Safety Rules and Procedures, and I have physically identified the equipment and explained the extent of the tests to the prospective Person in Charge who is to be responsible for the testing.
- (2) I have shown the prospective Person in Charge the electrical diagram on the Safety Programme and the safety arrangements at the points of isolation, at the places of test and at other places affected by the tests, and I have explained all the relevant safety procedures and precautions.

Safety Programme serial number: \_\_\_\_\_

Equipment to be tested \_\_\_\_\_

Location of equipment \_\_\_\_\_

Details of other safety procedures or documents that relate to the proposed test \_\_\_\_\_

Details of testing to be done \_\_\_\_\_

Specific points where equipment is isolated \_\_\_\_\_

Specific points where equipment is earthed \_\_\_\_\_

Earths which can be removed during testing \_\_\_\_\_

**SAFETY CHECK LIST: (tick the applicable box)**

|  |   |
|--|---|
| <p>1 Has permission for the intended work been confirmed? Yes <input type="checkbox"/></p> <p>2 Is the equipment isolated from all sources of supply? Yes <input type="checkbox"/></p> <p>3 Are Caution Signs fixed at all points of isolation? Yes <input type="checkbox"/></p> <p>4 Are Safety Locks fixed at all points of isolation? Yes <input type="checkbox"/> Not* practicable <input type="checkbox"/></p> <p>5 Has the equipment been proved dead? Yes <input type="checkbox"/> No* <input type="checkbox"/></p> | <p>6 Are Safety Locks fixed to secure Temporary Earths? Yes <input type="checkbox"/> Not* practicable <input type="checkbox"/></p> <p>7 Are padlocks fixed to secure Removable Temporary Earths? Yes <input type="checkbox"/> Not* practicable* <input type="checkbox"/></p> <p>8 Are the conductors, to be tested, earthed? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>9 Are Electrical Equipment Warning Signs fixed on live equipment adjacent to the places of test? Yes <input type="checkbox"/> No* <input type="checkbox"/> Not Applicable <input type="checkbox"/></p> <p>10 Where the test involves a cable has it been identified with certainty? Yes <input type="checkbox"/> No <input type="checkbox"/> Not Applicable <input type="checkbox"/></p> |
|--|---|

\* (requires special instructions and safety measures)

**SPECIAL INSTRUCTIONS AND SAFETY MEASURES**

\_\_\_\_\_  
Signed \_\_\_\_\_ (Person in Charge)

Signed \_\_\_\_\_ (Authorised Person (Electrical)) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No \_\_\_\_\_

**THIS SANCTION IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED**

MODEL FORM NO 4

Establishment \_\_\_\_\_

**SANCTION TO TEST (ELECTRICAL)  
Non-hazardous Area**

Sanction Serial Number  
(Pre-printed) \_\_\_\_\_

**PART 2 - To be completed by the prospective Person in Charge:**

- (1) I acknowledge receipt of this Sanction and of the key to the Safety Key Box.
- (2) I understand and have signed any special instructions and safety measures noted in Part 1 of this Sanction.
- (3) I have been shown the equipment to be tested and understand the extent of the tests.
- (4) I have been shown the electrical diagram on the relevant Safety Programme and the safety arrangements at the points of isolation, and at places affected by the test.
- (5) (a)\* The Authorised Person (Electrical) has demonstrated to my satisfaction that the equipment is dead and safe to test.  
OR  
(b)\* (For Low Voltage equipment only) It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Sanction. I will confirm the equipment dead to my satisfaction as soon as conductors have been made accessible to a suitable test indicator.  
OR  
(c)\* It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Sanction. I understand that the Authorised Person (Electrical) will confirm the equipment dead to my satisfaction as soon as conductors have been made accessible to a suitable voltage test indicator.

\* (delete as appropriate)

- (6) I accept responsibility for carrying out the tests listed in Part 1 of this Sanction.
- (7) No test, other than that listed in Part 1 of this Sanction, will be attempted by me or by any person working under my control whilst this Sanction is in force.
- (8) Unless it is unavoidable, I will not leave the place of test whilst the testing described in Part 1 of this Sanction is in progress.
- (9) If I have to leave the place of test temporarily, I will suspend the test and ensure that suitable safety measures are taken until the testing is resumed upon my return.
- (10) I will retain this Sanction while the tests described in Part 1 are in progress, and will return it to the Authorised Person when the testing is completed or stopped.

Signed \_\_\_\_\_ (Person in Charge) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No \_\_\_\_\_

**THIS SANCTION IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED.**





MODEL FORM NO 5

Establishment \_\_\_\_\_

**SANCTION TO TEST (ELECTRICAL)  
Hazardous Area**

Sanction Serial Number  
(Pre-printed) \_\_\_\_\_

**(Complete precisely and legibly in BLOCK CAPITALS)**

**PART 1 -**

**To be completed by the Authorised Person (Electrical):**

Low Voltage equipment to be tested \_\_\_\_\_

Location of equipment \_\_\_\_\_

Details of other safety procedures or documents that relate to the proposed test \_\_\_\_\_

Details of testing to be done \_\_\_\_\_

(High current continuity tests, prospective short circuit current tests or High Voltage tests are PROHIBITED)

**To be completed by the Hazardous Area Manager:**

- (1) The purpose of the procedure for, and the effects of the tests detailed above have been explained to me.
- (2) I hereby give permission for the above equipment to be isolated and for a Sanction to Test to be issued to enable the tests to proceed.

The nature of the hazard is \_\_\_\_\_

Special instructions and safety measures \_\_\_\_\_

Signed \_\_\_\_\_ (Hazardous Area Manager) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**To be completed by the Authorised Person (Petroleum) if applicable:**

I declare that for the tests detailed above:

- (a) A Permit to Work (Petroleum) Hazardous Areas No \_\_\_\_\_ has been issued

Special instructions and safety measures \_\_\_\_\_

Signed \_\_\_\_\_ (Authorised Person (Petroleum)) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**MODEL FORM NO 5**

Establishment \_\_\_\_\_

**SANCTION TO TEST (ELECTRICAL)  
Hazardous Area**

Sanction Serial Number  
(Pre-printed) \_\_\_\_\_

Safety Key Box No and Location \_\_\_\_\_

**PART 1 - continued**

**To be completed by the Authorised Person (Electrical):**

- (1) I declare it is safe to test the equipment listed below, which has been made dead, isolated and earthed in accordance with the requirements of the Electricity Safety Rules and Procedures, and I have physically identified the equipment and explained the extent of the tests to the prospective Person in Charge who is to be responsible for the testing.
- (2) I have shown the prospective Person in Charge the electrical diagram on the Safety Programme and the safety arrangements at the points of isolation, at the places of test and at other places affected by the tests, and I have explained all the relevant safety procedures and precautions.

Safety Programme serial number: \_\_\_\_\_

Specific points where equipment is isolated \_\_\_\_\_

\_\_\_\_\_

Specific points where equipment is earthed \_\_\_\_\_

\_\_\_\_\_

Earths which can be removed during testing \_\_\_\_\_

\_\_\_\_\_

**SAFETY CHECK LIST: (tick the applicable box)**

|  |  |
|--|--|
| <p>1 Has permission for the intended test been confirmed? Yes <input type="checkbox"/></p> <p>2 Is the equipment isolated from all sources of supply? Yes <input type="checkbox"/></p> <p>3 Are Caution Signs fixed at all points of isolation? Yes <input type="checkbox"/></p> <p>4 Are Safety Locks fixed at points of isolation? Yes <input type="checkbox"/> Not* practicable <input type="checkbox"/></p> <p>5 Has the equipment been proved dead? Yes <input type="checkbox"/> No* <input type="checkbox"/></p> | <p>6 Are Safety Locks fixed to secure Temporary Earths? Yes <input type="checkbox"/> Not* practicable <input type="checkbox"/></p> <p>7 Are padlocks fixed to secure Removable Temporary Earths? Yes <input type="checkbox"/> Not* practicable <input type="checkbox"/></p> <p>8 Are conductors within the equipment earthed? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>9 Are Electrical Equipment Warning Signs fixed on live equipment adjacent to the places of the work? Yes <input type="checkbox"/> No* <input type="checkbox"/> Not Applicable <input type="checkbox"/></p> <p>10 Has the cable been identified with certainty? Yes <input type="checkbox"/> No* <input type="checkbox"/> Not Applicable <input type="checkbox"/></p> |
|--|--|

\* (requires special instructions and safety measures)

**SPECIAL INSTRUCTIONS AND SAFETY MEASURES**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Signed \_\_\_\_\_ (Person in Charge)

Signed \_\_\_\_\_ (Authorised Person (Electrical)) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No \_\_\_\_\_

**THIS SANCTION IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED**

MODEL FORM NO 5

Establishment

SANCTION TO TEST (ELECTRICAL)
Hazardous Area

Sanction Serial Number
(Pre-printed)

PART 2 - To be completed by the prospective Person in Charge:

- (1) I acknowledge receipt of this Sanction and of the key to the Safety Key Box.
(2) I understand and have signed any special instructions and safety measures noted in Part 1 of this Sanction.
(3) I have been shown the equipment to be tested and understand the extent of the tests.
(4) I have been shown the electrical diagram on the relevant Safety Programme and the safety arrangements at the points of isolation, and at places affected by the tests.
(5) I have visually checked the protective conductors associated with the circuits to be tested and am satisfied with their condition.
(6) (a)\* The Authorised Person (Electrical) has demonstrated to my satisfaction that the equipment is dead and safe to test.
OR
(b)\* (For Low Voltage equipment only) It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Sanction.
I will confirm equipment dead to my satisfaction as soon as conductors have been made accessible to a suitable voltage test indicator.
OR
(c)\* It was not practicable for the Authorised Person (Electrical) to prove the equipment dead prior to the issue of this Sanction. I understand that the Authorised Person (Electrical) will confirm the equipment dead to my satisfaction as soon as conductors have been made accessible to a suitable voltage test indicator.
\* (delete as appropriate)
(7) I accept responsibility for carrying out the tests described in Part 1 of this Sanction.
(8) No test, other than that described in Part 1 of this Sanction, will be attempted by me or by any person under my control whilst this Sanction is in force.
(9) I note that the Hazardous Area Manager, and (if applicable) the Authorised Person (Petroleum) have the authority to stop the tests.
(10) Unless it is unavoidable, I will not leave the place of test whilst the testing described in Part 1 of this Sanction is in progress.
(11) If I have to leave the place of test temporarily, I will suspend the tests and ensure that suitable safety precautions are taken until the tests are resumed upon my return.
(12) I will retain this Sanction while the tests described in Part 1 are in progress and will return it to the Authorised Person (Electrical) when the testing is satisfactorily completed or stopped and made safe.

Signed \_\_\_\_\_ (Person in Charge) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

THIS SANCTION IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED

**MODEL FORM NO 5**

Establishment \_\_\_\_\_

**SANCTION TO TEST (ELECTRICAL)  
Hazardous Area**

Sanction Serial Number  
(Pre-printed) \_\_\_\_\_

---

**PART 3 - To be completed by the Person in Charge:**

- (1) I confirm that the testing described in Part 1 of this Sanction has been:
- (a)\* satisfactorily completed and that all persons, tools and instruments under my control have been accounted for and withdrawn;
- OR
- (b)\* stopped for the reasons given below, and that all persons, tools and instruments under my control have been accounted for and withdrawn, and that the equipment has been made safe.

\*(delete as appropriate)

- (2) Any explosion protection enclosures that were opened during the testing have been replaced, and I am satisfied with the integrity of the protection now provided.
- (3) I have warned all persons under my control that it is no longer safe to test the equipment.
- (4) I note that only the Authorised Person (Electrical) is permitted to re-energise the equipment and return it to an operational state.

Reason for stopping the tests and action taken (if applicable):

Signed \_\_\_\_\_ (Person in Charge) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

---

**PART 4 - To be completed by the Authorised Person (Electrical):**

- (1) I confirm that the tests described in Part 1 of this Sanction have been:
- (a)\* satisfactorily completed;
- OR
- (b)\* stopped and made safe.
- \*(delete as appropriate)
- (2) I have checked the integrity of the explosion protection of all equipment that may have been affected by the tests.
- (3) This Sanction is cancelled.
- (4) The Original Parts 1 and 2 of the Sanction have been returned to me for retention.

Comments (if applicable)

Signed \_\_\_\_\_ (Authorised Person (Electrical)) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

---

**PART 5 - To be completed by the Hazardous Area Manager:**

- (1) I note that the tests described in Part 1 of this Sanction have been satisfactorily completed\* / stopped and made safe\*.
- (2) (a)\* I note that another Sanction to Test\* / a Permit to Work\* is now proposed.
- OR
- (b)\* I hereby give my permission for the equipment to be energised and returned to an operational state.

\*(delete as appropriate)

Signed \_\_\_\_\_ (Hazardous Area Manager) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

MODEL FORM NO 6

Establishment \_\_\_\_\_

Sanction Serial Number \_\_\_\_\_

**SANCTION FOR WORK ON OR NEAR LIVE ELECTRICAL EQUIPMENT (Pre-printed) \_\_\_\_\_**  
**Non-hazardous Area**

**(Complete precisely and legibly in BLOCK CAPITALS)**

**PART 1 - To be completed by the Authorised Person (Electrical) and the prospective Person in Charge:**

(1) This Sanction for Work on or near Live Electrical Equipment permits \_\_\_\_\_, the Person in Charge, to work on or near the equipment specified below.

(2) The Person in Charge is to be attended by \_\_\_\_\_ as Accompanying Safety Person whilst the work is in progress.

Equipment to be worked on or near \_\_\_\_\_

\_\_\_\_\_ Operating at \_\_\_\_\_ Volts ac rms\* / dc nominal\*

(delete as appropriate)

Location of equipment \_\_\_\_\_

Details of other safety procedures or documents that relate to the proposed work \_\_\_\_\_

\_\_\_\_\_

Details of work to be undertaken \_\_\_\_\_

\_\_\_\_\_

Protective Equipment to be provided \_\_\_\_\_

\_\_\_\_\_

Precautions to be taken \_\_\_\_\_

\_\_\_\_\_

Work on or near Live Equipment Signs are displayed on \_\_\_\_\_

\_\_\_\_\_

Electrical Equipment Warning Signs are displayed on \_\_\_\_\_

\_\_\_\_\_

I, the Authorised Person (Electrical), hereby declare that:

1. it is reasonable in all the circumstances for the Person in Charge to be at work on or near the Equipment while it is live; **and**
2. suitable precautions have been specified (including, where necessary, the provision of suitable Protective Equipment) to be taken to prevent injury;
3. the Authorising Engineer (Electrical) has signed a document (filed in the Electrical Safety Documents Register) consenting to work on or near the equipment.

Signed \_\_\_\_\_ (Authorised Person (Electrical)) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**To be approved by the Authorising Engineer (Electrical) by signature or reference:**

I declare that it is unreasonable in all circumstances for the equipment specified above to be dead; **and** it is reasonable in all circumstances for the prospective Person in Charge to be at work on or near the equipment while it is live; **and** suitable precautions (including where necessary the provision of suitable protective equipment) have been specified to be taken to prevent injury; **and** I hereby give permission for the specified work to proceed.

Signed \_\_\_\_\_ Date and Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Approval Reference \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**MODEL FORM NO 6**

Establishment \_\_\_\_\_

Sanction Serial Number \_\_\_\_\_

**SANCTION FOR WORK ON OR NEAR LIVE ELECTRICAL EQUIPMENT (Pre-printed) \_\_\_\_\_**  
**Non-hazardous Area**

**PART 2 - To be completed by the prospective Person in Charge:**

- (1) I acknowledge receipt of this Sanction For Work on or near Live Electrical Equipment and accept the responsibility for personally undertaking the defined work.
- (2) The Equipment to be worked on or near has been physically identified to me.
- (3) I will only work while accompanied by \_\_\_\_\_ (Capitals) and will follow the safety precautions specified in Part 1 of this Sanction for Work on or near Live Electrical Equipment.
- (4) I have examined the Protective Equipment listed in Part 1, am satisfied with its condition and will use it while undertaking the work.
- (5) I accept responsibility for carrying out the work listed in Part 1 of this Sanction for Work on or near Live Electrical Equipment.
- (6) No work other than that listed in Part 1 of this Sanction for Work on or near Live Electrical Equipment will be attempted by me.
- (7) Unless it is unavoidable I will not leave the place of work whilst the work described in Part 1 of this Sanction for Work on or near Live Electrical Equipment is in progress.
- (8) If I or the Accompanying Safety Person have to leave the place of work temporarily I will suspend the work and ensure suitable safety measures are taken, in particular the prevention of access to live conductors, until the work is resumed on my return.
- (9) I will retain this Sanction for Work on or near Live Electrical Equipment whilst the work described in Part 1 is in progress, and will return it to the Authorised Person (Electrical) when the work is satisfactorily completed or stopped and made safe.

Signed \_\_\_\_\_ (Person in Charge)

Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date \_\_\_\_\_

In the employ of \_\_\_\_\_

Contact Tel No \_\_\_\_\_

**To be completed by the nominated Accompanying Safety Person:**

- (1) I acknowledge that I have been instructed to keep watch and prevent interruption and, in the event of an accident, to disconnect the equipment, apply first-aid and summon help.
- (2) Unless it is unavoidable I will not leave the place of work whilst the work described in Part 1 of this Sanction for Work on or near Live Electrical Equipment is in progress.
- (3) If I have to leave the place of work temporarily I will advise the Person in Charge who will stop work until my return.

Signed \_\_\_\_\_ (Accompanying Safety Person)

Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date \_\_\_\_\_

In the employ of \_\_\_\_\_

(

**THIS SANCTION FOR WORK ON OR NEAR LIVE ELECTRICAL EQUIPMENT IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED**

MODEL FORM NO 6

Establishment \_\_\_\_\_

Sanction Serial Number \_\_\_\_\_

**SANCTION FOR WORK ON OR NEAR LIVE ELECTRICAL EQUIPMENT  
Non-hazardous Area**

(Pre-printed) \_\_\_\_\_

**PART 3 - To be completed by the Person in Charge:**

(1) I hereby declare that the Work described in Part 1 of this Sanction for Work on or near Live Electrical Equipment has been:

(a)\* satisfactorily completed and that all persons, tools and instruments under my control have been accounted for and withdrawn, and that the equipment has been left in a safe condition;

OR

(b)\* stopped for the reasons given below, and that all persons, tools and instruments under my control have been accounted for and withdrawn, and that the equipment has been made safe.

\* (delete as appropriate)

Reason for stopping the live work and action taken (if applicable):

Signed \_\_\_\_\_ (Person in Charge)

Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date \_\_\_\_\_

In the employ of \_\_\_\_\_

Contact Tel No \_\_\_\_\_

**PART 4 - To be completed by the Authorised Person (Electrical):**

(1) I declare that the work described in Part 1 of this Sanction for Work on or near Live Electrical Equipment has been:

(a)\* satisfactorily completed

OR

(b)\* stopped and made safe

\* (delete as appropriate)

(2) This Sanction for Work on or near Live Electrical Equipment is cancelled.

(3) The Original Parts 1 and 2 of the Sanction for Work on or near Live Electrical Equipment have been returned to me for retention.

(4) The Work on or near Live Equipment and Electrical Equipment Warning Signs detailed in Part 1 have been removed.

Comments (if applicable)

Signed \_\_\_\_\_ (Authorised Person (Electrical))

Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date \_\_\_\_\_

**MODEL FORM NO 7**

Establishment \_\_\_\_\_

Certificate of Isolation and Earthing Serial Number  
(Pre-printed) \_\_\_\_\_

**CERTIFICATE OF ISOLATION AND EARTHING**

Safety Key Box No and Location \_\_\_\_\_

**(Complete precisely and legibly in BLOCK CAPITALS**

**PART 1 ISSUE (To be completed by the Authorised Person (Electrical))**

Issued to: \_\_\_\_\_

In the employ of: \_\_\_\_\_

This is to certify that the electrical equipment listed below has been ISOLATED and EARTHED\*. No attempt will be made to remove the safety locks until Part 3 'Clearance' of this Certificate has been signed by the person above.

Safety Programme Serial Number \_\_\_\_\_

Location/site: \_\_\_\_\_

Equipment: \_\_\_\_\_

Specific points where equipment is isolated \_\_\_\_\_

\_\_\_\_\_

Specific points where equipment is earthed \_\_\_\_\_

\_\_\_\_\_

Special Instructions or Safety Measures: \_\_\_\_\_

\_\_\_\_\_

Signed: \_\_\_\_\_ (Authorised Person(Electrical)) Employed by: \_\_\_\_\_

Name (Capitals): \_\_\_\_\_ Time and Date: \_\_\_\_\_ Contact Tel. No \_\_\_\_\_

**PART 2 RECEIPT**

Signed: \_\_\_\_\_ Employed by: \_\_\_\_\_

Name (Capitals): \_\_\_\_\_ Time and Date: \_\_\_\_\_ Contact Tel. \_\_\_\_\_

**PART 3 CLEARANCE**

I hereby declare that all persons under my control have been withdrawn from the work/test area and have been warned that it is no longer safe to continue with their activities. I confirm that all tools, equipment and any Temporary Earths and Additional Earths that I have applied have been removed and the Equipment described in Part 1 of this Certificate can be re-energised

Signed: \_\_\_\_\_ Employed by: \_\_\_\_\_

Name (Capitals): \_\_\_\_\_ Time and Date \_\_\_\_\_ Contact Tel. \_\_\_\_\_

**PART 4 CANCELLATION (To be completed by the Authorised Person (Electrical))**

I hereby declare that this Certificate of Isolation and Earthing\* is CANCELLED and the original has been returned to me for retention.

Signed: \_\_\_\_\_ Employed by: \_\_\_\_\_

Name (Capitals): \_\_\_\_\_ Time and Date: \_\_\_\_\_

\* When this document is used as a Certificate of Isolation only, delete and initial references to EARTHED



**MODEL FORM NO 8**

Establishment \_\_\_\_\_

Standing Instruction Serial Number \_\_\_\_\_

**STANDING INSTRUCTION** (Pre-Printed) \_\_\_\_\_  
**(Hazardous and Non-Hazardous Areas)**

**(Complete precisely and legibly in BLOCK CAPITALS)**

Name of Person in Charge: \_\_\_\_\_ Employed by \_\_\_\_\_

Issue date: \_\_\_\_\_ Expiry date: \_\_\_\_\_ (not more than 3 years from date of issue)

Location and identity of the equipment to which this Standing Instruction refers:-

\_\_\_\_\_ Operating at \_\_\_\_\_ Volts ac rms\* / dc nominal\*  
(delete as appropriate)

Tasks or switching operations to be undertaken on the equipment specified above (to be carried out in the order in which they are listed):-

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_

Circumstances under which the above tasks or switching operations are to be undertaken, and special instructions and safety measures:-

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signed \_\_\_\_\_ (Originating Authorised Person (Electrical)) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No \_\_\_\_\_

**For Live Working this document must be approved by the Authorising Engineer (Electrical) by signature or Reference.:**

I declare that it is unreasonable for the purposes of inspection, fault finding, and testing of Equipment and topping-up of batteries, for the equipment specified above to be dead; **and** it is reasonable in the circumstances for the prospective Person in Charge to be at work on or near the equipment while it is live; **and** suitable precautions (including where necessary the provision of suitable protective equipment) have been specified to be taken to prevent injury; **and** I hereby give permission for the specified tasks to proceed.

Signed \_\_\_\_\_ (Authorising Engineer (Electrical)) Date & Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Approval Reference \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**Signature and name of all other Authorised Persons appointed for the system or installation of which the equipment forms part:-**

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

Signature: \_\_\_\_\_ Name: \_\_\_\_\_

I (the Person in Charge named above) acknowledge receipt of this Standing Instruction, have been shown and have had explained to me the equipment to which the Instruction refers, and confirm that I fully understand the tasks or switching operations listed above and the circumstances under which they are to be undertaken.

Signed \_\_\_\_\_ (Person in Charge) Date \_\_\_\_\_

Issue recorded in EDOR by \_\_\_\_\_ (Authorised Person (Electrical)) Date \_\_\_\_\_

**MODEL FORM NO 8**

Establishment \_\_\_\_\_

Standing Instruction Serial Number \_\_\_\_\_

**STANDING INSTRUCTION** (Pre-Printed) \_\_\_\_\_  
(Hazardous and Non-Hazardous Areas)

**(Complete precisely and legibly in BLOCK CAPITALS)**

**ANNUAL REVIEW OF STANDING INSTRUCTION**

I confirm that as the originating Authorised Person (Electrical), or his representative, this Standing Instruction has been reviewed and is still required. The details on this document are still valid and correct and will be reviewed again in 12 Months time or formally cancelled.

|                 |            |            |
|-----------------|------------|------------|
| Reviewed by:    |            |            |
| Signature _____ | Name _____ | Date _____ |
| Signature _____ | Name _____ | Date _____ |

**CANCELLATION CERTIFICATE:**

I, the originating Authorised Person (Electrical), hereby declare that this Standing Instruction is now cancelled. All Authorised Persons (Electrical) are to annotate below that they are aware of this Cancellation.

|  |                      |            |
|--|----------------------|------------|
| Signed _____ (Originating Authorised Person(Electrical))           |                      |            |
| Name (Capitals) _____  | Date _____           |            |
| In the employ of _____   | Contact Tel No _____ |            |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Signature _____  | Name _____           | Date _____ |
| Cancellation recorded in EDOR by _____ (Capitals)      Date: _____ |                      |            |

MODEL FORM NO 9

Establishment \_\_\_\_\_

Standing Instruction Serial Number \_\_\_\_\_

**SPECIFIC WRITTEN INSTRUCTION** (Pre-Printed) \_\_\_\_\_  
**(For Particular Switching Operations in respect of  
Specific Items of High and Low Voltage Equipment  
And Phasing Tests)**

**(Complete precisely and legibly in BLOCK CAPITALS)**

Name of Person in Charge: \_\_\_\_\_

Employed by \_\_\_\_\_

Location and identity of the equipment to which this Specific Written Instruction refers:  
\_\_\_\_\_  
\_\_\_\_\_

Switching operations and/or phasing tests to be undertaken on the equipment specified above  
(to be carried out in the order in which they are listed):

Time and Date for each  
operation and/or test.  
(To be recorded by the  
Person in Charge)

|     |       |       |
|-----|-------|-------|
| 1)  | _____ | _____ |
| 2)  | _____ | _____ |
| 3)  | _____ | _____ |
| 4)  | _____ | _____ |
| 5)  | _____ | _____ |
| 6)  | _____ | _____ |
| 7)  | _____ | _____ |
| 8)  | _____ | _____ |
| 9)  | _____ | _____ |
| 10) | _____ | _____ |

Circumstances under which the above switching operations and/or phasing tests are to be undertaken, and special instructions and safety measures:  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signed \_\_\_\_\_ (Authorised Person ) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No \_\_\_\_\_

I (the Person in Charge named above) acknowledge receipt of this Specific Written Instruction and have had explained to me the switching operations and/or phasing tests required to which the Instruction refers, and confirm that I fully understand the switching operations and/or phasing tests listed above and the circumstances under which they are to be undertaken.

I will record the time and date for each operation and/or test on this form in the space provided.  
Upon completion of the switching operations and/or phasing tests, I will return the Specific Written Instruction to the Authorised Person (Electrical).

Signed \_\_\_\_\_ (Person in Charge) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel No \_\_\_\_\_

**MODEL FORM NO 10**

Establishment \_\_\_\_\_

**AUTHORITY FOR ACCESS (ELECTRICAL)**

Authority for Access Serial Number \_\_\_\_\_  
(Pre-printed)

**(Complete precisely and legibly in BLOCK CAPITALS)**

**PART 1 - To be completed by the Authorised Person (Electrical):**

Name of the prospective Person in Charge \_\_\_\_\_

Location of work activity: \_\_\_\_\_

Details of work activities to be done: \_\_\_\_\_

**SPECIAL INSTRUCTIONS AND SAFETY MEASURES**

\_\_\_\_\_ Signed \_\_\_\_\_ (Person in Charge)

I confirm that permission for the intended work activities has been obtained.

I declare that at the Location I have verified with the prospective Person in Charge the extent of and limits to the work activities detailed above.

I have explained to the prospective Person in Charge any special instructions or safety measures indicated above.

I have shown the prospective Person in Charge the safety measures that I have installed.

Signed \_\_\_\_\_ (Authorised Person (Electrical) ) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**PART 2 - To be completed by the prospective Person in Charge**

- (1) I acknowledge receipt of this Authority and understand the scope and limits of the work activities detailed in Part 1.
- (2) I understand and have signed any special instructions and safety measures indicated in Part 1.
- (3) I have been shown the Location of the work activity; I have been shown and am satisfied with the safety arrangements at the places of work activities.
- (4) I accept responsibility for ensuring that the work activities detailed in Part 1 are undertaken safely.
- (5) No attempt will be made by myself, or any person working under my control, to undertake any work activities other than that detailed in Part 1.
- (6) I note that the Authorised Person (Electrical) has the authority to stop the work activities.
- (7) Unless it is unavoidable, I will not leave the Location whilst the work activities are in progress.
- (8) If I have to leave the Location temporarily, I will suspend the work activities and ensure suitable safety measures are taken until the work activities are resumed upon my return.
- (9) I will retain this Authority for Access while the work activity described in Part 1 is in progress, and I will return this Authority to the Authorised Person (Electrical) when the work activities are satisfactorily completed or stopped and made safe.

Signed \_\_\_\_\_ (Person in Charge) Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_ Date \_\_\_\_\_

In the employ of \_\_\_\_\_ Contact Tel. No. \_\_\_\_\_

**THIS AUTHORITY IS NOT VALID UNTIL PARTS 1 AND 2 HAVE BEEN SIGNED**

**MODEL FORM NO 10**

Establishment \_\_\_\_\_

**AUTHORITY FOR ACCESS (ELECTRICAL)**

Authority for Access Serial Number  
(Pre-printed) \_\_\_\_\_

**PART 3 - To be completed by the Person in Charge:**

- (1) I confirm that the work activities described in Part 1 of this Authority been:
- (a)\* satisfactorily completed and that all persons, tools and instruments under my control have been accounted for and withdrawn;
  - OR
  - (b)\* stopped for the reasons given below, and that all persons, tools and instruments under my control have been accounted for and withdrawn, and that the location of the work activity has been made safe.
- \* (delete as appropriate)
- (2) I have warned all persons under my control that authority for access is suspended and is to be terminated.

Reason for stopping the work activity and action taken (if applicable):

Signed \_\_\_\_\_ (Person in Charge)

Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date \_\_\_\_\_

**PART 4 - To be completed by the Authorised Person (Electrical):**

- (1) I confirm that the work activities described in Part 1 of this Authority has been:
- (a)\* completed;
  - OR
  - (b)\* stopped and made safe.
- \* (delete as appropriate)
- (2) The location has been secured to prevent unauthorised access.
- (3) This Authority is cancelled.
- (4) The Original Parts 1 and 2 of the Authority have been returned to me for retention.

Comments (if applicable)

Signed \_\_\_\_\_ (Authorised Person (Electrical))

Time \_\_\_\_\_

Name (Capitals) \_\_\_\_\_

Date \_\_\_\_\_

## Model Safety Signs

### General

1. The display of Permanent Safety Signs is dealt with in Section 9 of these Rules and Procedures. The display of Temporary Safety Signs is dealt with in the appropriate clauses of this chapter titled Safety Rules and Procedures

### Permanent Safety Signs

2. The following permanent Safety Signs are included in this Annex:

|  |    |
|--|----|
| Danger Sign  | P1 |
| Combined Danger Sign and Notice                          | P2 |
| Main Intake Switch Sign                                  | P3 |
| Multiple Supplies Sign                                   | P4 |
| Supply to Hazardous Area Sign                            | P5 |
| Remote / Automatically Controlled<br>Generating Set Sign | P6 |
| Remote / Automatically Controlled<br>Machine Sign        | P7 |

### Temporary Safety Signs

3. The following temporary Safety Signs are included in this Annex:

|                                     |    |
|-------------------------------------|----|
| Caution Sign                        | T1 |
| High Voltage Enclosure Sign         | T2 |
| Electrical Equipment Warning Sign   | T3 |
| Work on or near Live Equipment Sign | T4 |

### Design Specification

4. All signs, except Signs P1 and T4, shall be to the sizes indicated. The sizes indicated for Signs P1 and T4 are minimum sizes.

5. Sign P1 (and where combined into P2) to be designed to the proportions prescribed in the Electricity Safety, Quality and Continuity Regulations 2002.

6. The design and colours of the signs shall be to British Standards 5378: 1980. Colours shall be to British Standard 5252: 1976 as follows:

|        |       |
|--------|-------|
| Yellow | 08E51 |
| Blue   | 18E53 |

7. Signs shall be manufactured from laminated plastic, 3 mm thickness; or other similar non metallic weather resistant material, thickness appropriate to the intended location and application.

8. Non-corrosive materials are to be used when fixing permanent Safety Signs.
9. All temporary signs shall be provided with two 5mm diameter holes for a suspending cord. The holes shall be 10mm from the top edge and 30mm from each end for 150mm wide signs, and 50mm from each end for 200mm wide signs.
10. Model sign images are provided for guidance only and are not drawn to scale.

### **Permanent Safety Signs**

11. The design, colours, and proportions of the Safety Signs P1 and P2 are to be as follows:
  - a. The sign shall incorporate a design, and shall be of the proportions, as shown in the diagrams below, except that the height of the text may be increased to a maximum of  $0.12 \times L.^{*1}$
  - b. The triangle, symbol and text shall be shown in black on a yellow background.
  - c. The symbol shall not occupy more than 50 per cent of the area within the triangle.
  - d. The safety sign may include additional text but any such text:
    - (1) shall be in black; and
    - (2) shall be the same size as the text used on the safety sign, and no part of any additional text shall appear on the sign higher than the base of the triangle.

Permanent Safety Signs



SAFETY SIGN P1



**Permanent Safety Signs**



**SAFETY SIGN ADDITIONAL NOTICE**  
**Model Sign P2**

**(\* INSERT SPECIFIC LOCATION AND EMERGENCY TELEPHONE NUMBER)**

**Permanent Safety Signs**



**MINISTRY of DEFENCE  
DSS "A" \*  
IN CASE OF EMERGENCY  
PHONE : 01234 567890**

**SAFETY SIGN WITH SEPARATE ADDITIONAL NOTICE  
Model Sign P2 (ALTERNATIVE ARRANGEMENT)**

**(\*INSERT SPECIFIC LOCATION AND EMERGENCY TELEPHONE NUMBER)**

## Permanent Safety Signs

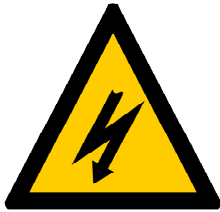


**Main Intake  
Switch**



Before working on or testing this  
switch obtain a Permit or Sanction  
from the Authorised Person  
(Electrical)

**MAIN INTAKE SWITCH SIGN**  
Model sign P3 200 x 150 mm



**This equipment has  
more than one source of  
supply**



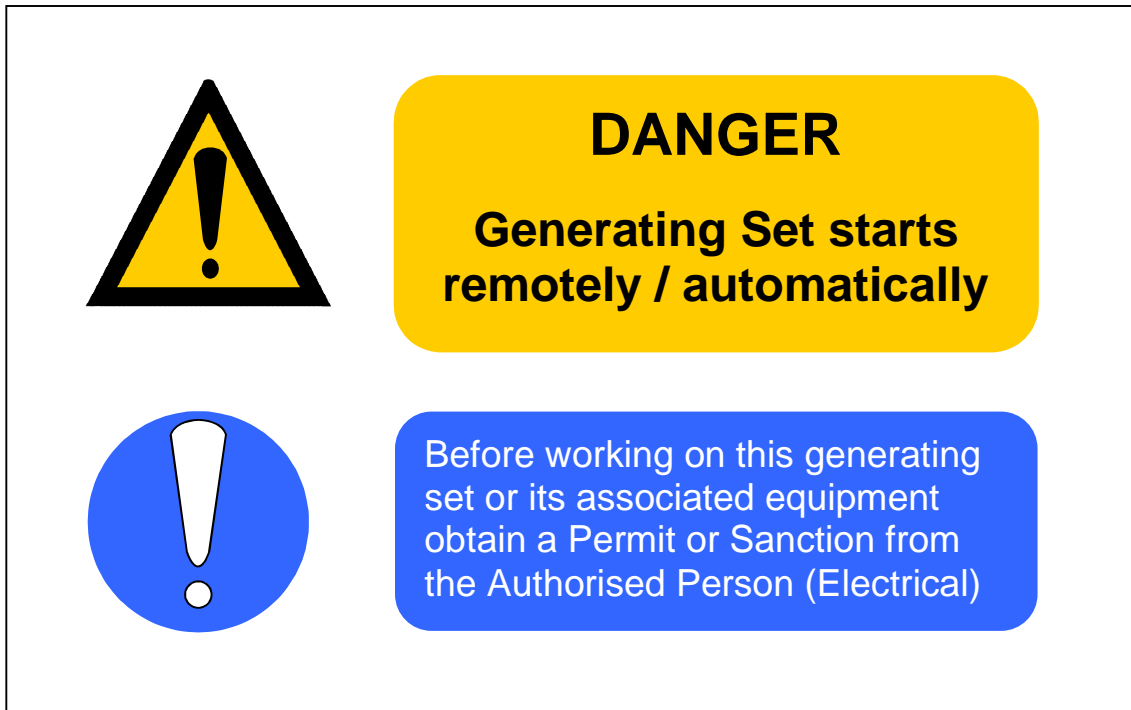
Before working on or testing this  
equipment obtain a Permit or Sanction  
from the Authorised Person (Electrical)

**MULTIPLE SUPPLIES SIGN**  
Model sign P4 200 x 150 mm

## Permanent Safety Signs

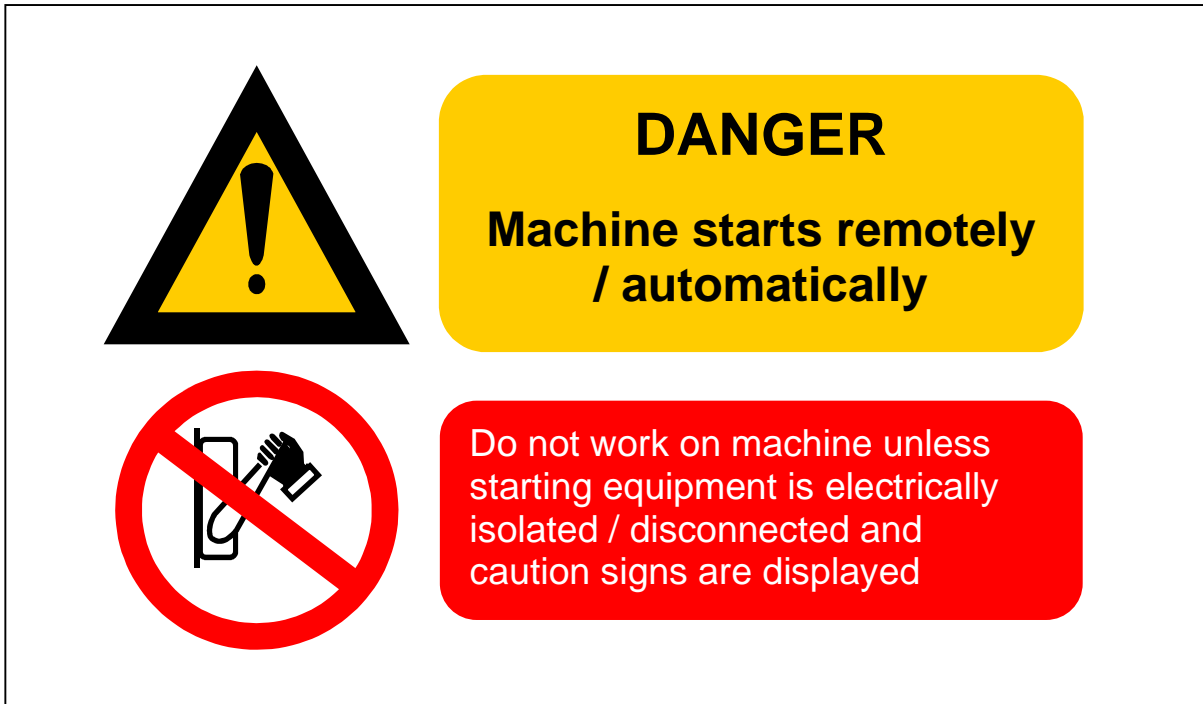


**SUPPLY TO HAZARDOUS AREA SIGN**  
Model Sign P5 300 x 200 mm



**REMOTE / AUTOMATICALLY CONTROLLED GENERATING SET SIGN**  
Model Sign P6 300 x 200 mm

## Permanent Safety Signs

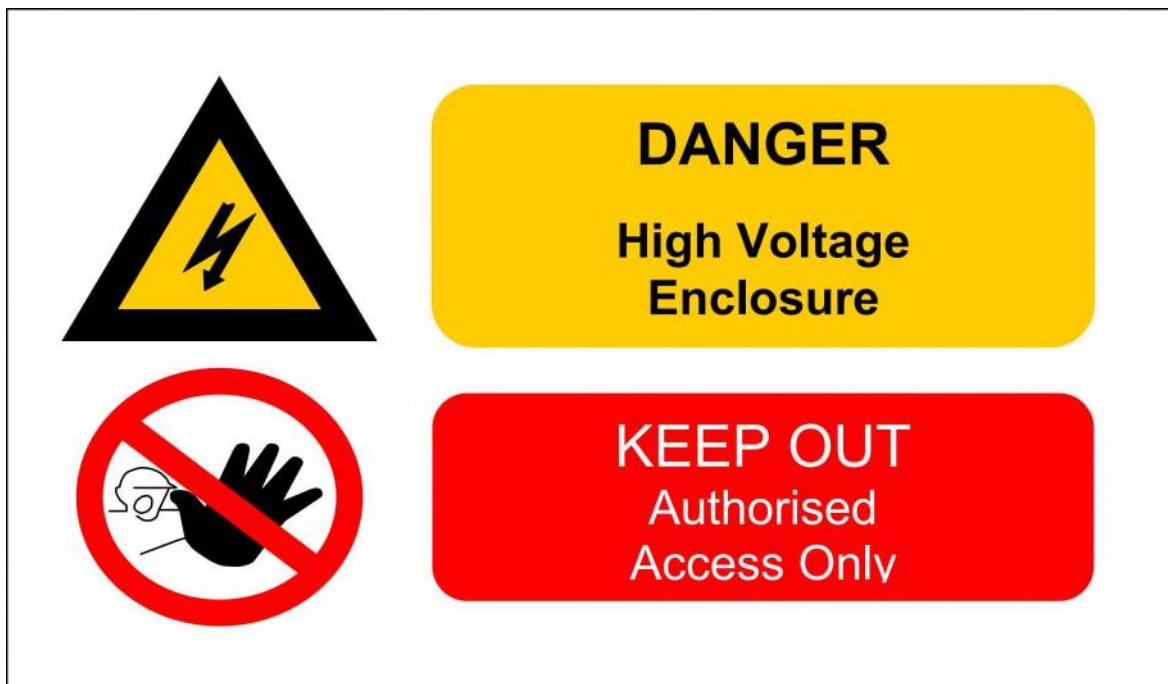


**REMOTE / AUTOMATICALLY CONTROLLED MACHINE SIGN**  
**Model Sign P7 300 x 200 mm**

## Temporary Safety Signs

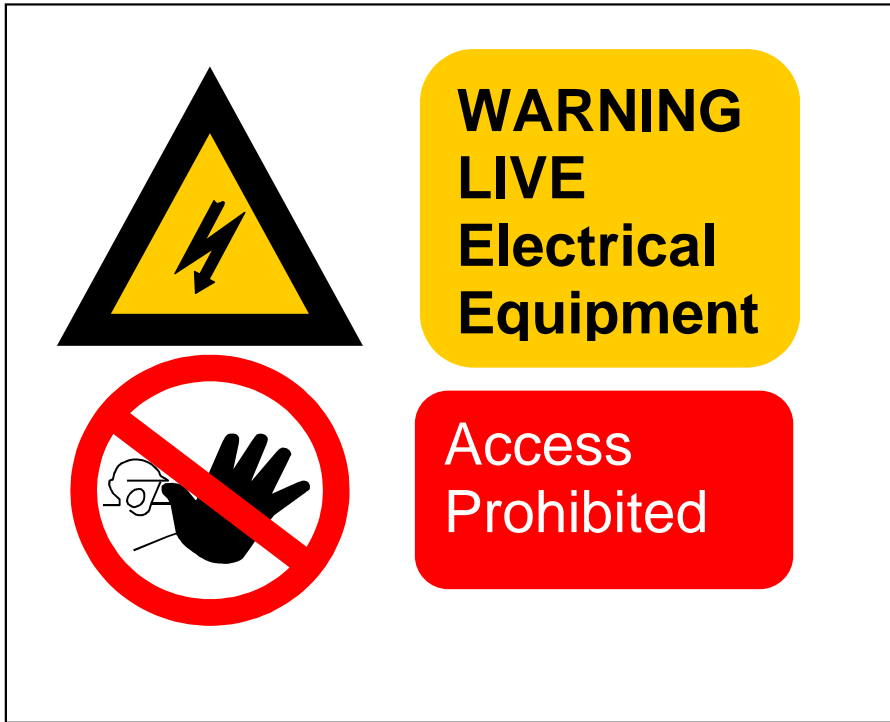


**CAUTION SIGN**  
Model Sign T1 200 x 150 mm



**HIGH VOLTAGE ENCLOSURE SIGN**  
Model Sign T2 200 x 150 mm

Temporary Safety Signs



**ELECTRICAL EQUIPMENT WARNING SIGN**  
Model Sign T3 150 x 200 mm



**WORK ON OR NEAR LIVE EQUIPMENT SIGN**  
Model Sign T4 150 x 150 mm

## Standards for Protective, Test, and Earthing Equipment

### Protective Equipment

1. The display of Permanent Safety Signs is dealt with in Section 9 of these Rules and Procedures. The display of Temporary Safety Signs is dealt with in the appropriate clauses of this chapter titled Safety Rules and Procedures.

### Protective Equipment

2. These Rules and Procedures require Skilled Persons, Persons in Charge and Authorised Persons to use appropriate Protective Equipment when the circumstances require it. Items of Protective Equipment held or used within a site should comply with any relevant extant British or International Standards and should be kite marked or CE marked as appropriate. The following list is not exhaustive and should be taken as guidance only and it is the duty of the authority issuing the protective, test or earthing equipment to ensure that it meets all appropriate standards and is fit for the purpose intended.

### Protective Equipment covered by British or European Standard

3. The following items are likely to be used within Ministry of Defence establishments:
- a. hand tools for live working up to 1000 V ac and 1500 V dc (BS EN 60900);
  - b. Live working. Gloves of insulating material. (BS EN 60903);
  - c. Live working. Gloves and mitts with mechanical protection (BS IEC 61942);
  - d. rubber mats for electrical purposes (BS 921);
  - e. personal eye protection (BS EN 166);
  - f. Personal Protective Equipment against falls from a height. General requirements for instructions for use and for marking. (BS EN 365);
  - g. electrical insulating protective clothing for low-voltage installations (BS EN 50286);
  - h. Live working. Voltage detectors. Two-pole low voltage type (BS EN 61243-3);
  - i. blankets of insulating material for electrical purposes (BS IEC 61112);
  - j. rigid protective covers for live working on ac installations (BS EN 61229);
  - k. specification for sleeves of insulating material for live working (BS EN 60984);
  - l. matting of insulating material for electrical purposes (BS IEC 61111);
  - m. Live working. Voltage detectors. Resistive type to be used for voltages of 1kV to 36 kV ac. (BS EN 61243-2);
  - n. Live working. Voltage detectors. Capacitive type to be used for voltages exceeding 1 kV ac (BS EN 61243-1);



- o. hydraulic cable cutting devices. Devices to be used on electrical installations with nominal voltage up to AC 30 kV (BS EN 50340); and
  - p. hydraulic cable cutting devices. Devices to be used on electrical installations with nominal voltage up to AC 30 kV (BS EN 50340).
4. Rubber mats to BS 921, BS IEC 61111 or BS IEC 61112, as appropriate should be available to persons working on or near live Low Voltage equipment.
  5. Face shields and visors to BS EN 166 should provide protection against electrical flash, impact and molten metal particles. They should be available to persons who may be at risk from the effects of electric arcs.
  6. Many different types of safety belts and harnesses are available, each intended for a particular purpose. Safety belts and harness to BS EN 365, and of the correct type, should be available to persons working in insecure locations, for example, on overhead lines.
  7. Cable spiking equipment is available in two forms of operation; hydraulically or by explosive cartridge. When using cartridge operated equipment on small cables there is a danger of severing the cable, leading to a dangerous situation. Hydraulic operation allows the user to observe the progress of the work piece into the cable.
  8. Insulating material for temporary screening may be required when working on or near live equipment or to separate isolated equipment from adjacent live equipment. Flexible insulating material may be used to prevent breakdown between conductors during high voltage tests. The material used should be suitable for the purpose and comply with BS IEC 61111 or BS IEC 61112, as appropriate.
  9. Insulating rubber boots to BS EN 50321 are to be used as part of a safety system, reliance is not to be placed upon insulating rubber boots alone. There is a danger of metallic objects becoming embedded in the soles without this becoming apparent during inspection.

### **Voltage Test Indicators**

10. These Rules and Procedures require Authorised Persons (Electrical), Skilled Persons and Persons in Charge to prove or confirm equipment dead by using a Voltage Test Indicator.
11. In non-hazardous areas a voltage test indicator should be used; devices should comply with the recommendations of GS38 - Electrical Test Equipment for use by Electricians, published by the Health and Safety Executive and or BS EN 61243 as appropriate. Test indicators for use on 230 / 400 volts systems should be suitable for use up to 500 volts and should indicate a live supply down to 50 volts.
12. In non-hazardous areas test indicators should be proved before and after use from a known supply.

## **Test Equipment for Aeronautical Ground Lighting Primary Series Circuit Cables**

13. Test Equipment for aeronautical ground lighting primary series circuit equipment must be suitable for use at the maximum system rated voltage and should indicate a live supply down to 50 volts.

14. A clip-on Ammeter is used to detect the flow of current in an unscreened single core cable. Ammeters are to be proved on a known current carrying cable before and after use.

## **High Voltage Test Equipment**

15. High Voltage Potential Indicators and Proving Units should comply with Electricity Association Engineering Recommendation G9 / 6 -Voltage Testing Devices or BS EN 61243 as appropriate. Extension rods, end adaptors, and other fittings should be available to suit the equipment on which work is to be undertaken.

## **Cable Locating Devices**

16. When selecting a cable locating device for a particular task or location consideration of the guidance given in the National Joint Utilities Group Publications No.3 and No.8 and by the manufacturer or supplier of the cable locating equipment, is to be made.

17. Cable locating devices should, as a minimum, be rugged and weatherproof to NEMA 3S, comply with NJUC 8 and EMC standards, and be produced by BS5750 / IS09001 / EN29001 accredited manufacturers.

18. A cable locating device that combines all three principles of operation, hum detector (power), radio frequency detector (radio) and transmitter / receiver locator (signal generator), into one instrument has much to commend its selection, subject to the operator being competent to use it.

## **Earthing Equipment**

19. High and Low voltage cables and equipment may be earthed by the use of integral or portable proprietary earthing devices operating within the equipment enclosure on which the earth is to be applied. An earthing device shall be suitable for the use for which it is provided, be maintained in a condition suitable for that use, and be properly used.

20. Where no proprietary earthing device is available, equipment may be purpose made. The design must ensure that conductors are suitable for making the prospective fault current and of carrying the current for the time required for back-up fault clearance, without creating danger or, where appropriate, injury or damage to equipment.

21. Overhead lines should be earthed by the use of equipment complying with Electricity Supply Industry Standard 41-21 - Portable Earthing Equipment for Open Type High Voltage Apparatus in Substations. This earthing equipment should be capable of making the prospective fault current and of carrying the current for the time required for back-up fault clearance, without creating danger or causing damage.

## **Arc Flash**

### **Introduction**

1. Arc Flash is the result of insulation failure within electrical switchgear during a switching / maintenance operation. Arc Flash is the incident energy as a function of short circuit current and the protective device clearing time which includes the up-stream breaker opening.

### **Use of this Annex**

2. This Annex is to be used when the Authorising Engineer (Electrical), Authorised Person (Electrical) or Skilled Person believe that there is a hazard which is associated from Arc Flash, which may present itself during a switching / maintenance operation, either from:

- a. known Safe Operating Practice (SOP) Notice; or
- b. known Dangerous Incident Notice (DIN); or
- c. known National Equipment Defect Report (NEDeR); or
- d. known Manufactures Safety Notices; or
- e. known DIO Safety Alert; or
- f. Maintenance Records; or
- g. specialist contractor reports or statement.

3. It is the responsibility of the Authorising Engineer (Electrical), Authorised Person (Electrical), and Skilled Persons to ensure they have conducted the required research into the equipment to be operated.

### **Risk Management**

4. The Authorising Engineer (Electrical), Authorised Person (Electrical), and Skilled Person must follow all relevant clauses in this document and the hierarchy of hazard prevention;

- a. elimination hazard;
- b. reduction;
- c. information and training;
- d. control the risk; and
- e. Personnel Protective Equipment.

5. The following five items are to be considered in the prevention of Arc Flash during the Risk Assessment process:

6. Note - these items listed below are not an extensive list and the Authorising Engineer (Electrical), Authorised Person (Electrical) and Skilled Person must use their own engineering knowledge and expertise to develop the required risk assessment:

a. elimination of hazard;

(1) operate the equipment in a de-energised state prior to commencement of activities; and

(2) designers of the electrical systems should consider the need to eliminate Arc Flash hazard as part of the overall system design.

b. reduction of hazard;

(1) evaluating the protective devices sizes, settings and time current curves and make suitable adjustment for work to be carried out;

(2) Note - Caution should be exercised, lowering a devices trip setting as it can create a safety / reliability issue by compromising selective coordination with other devices and the protection must be returned to normal service prior to normal operation;

(3) carry out an Arc flash calculation in line with IEEE1584 or other similar standard;

(4) use of Lanyards and remote switching technology;

(5) installation of additional shielding and barriers; and

(6) ensure all enclosures are in place and correctly fitted and fixed into place.

c. information and training;

(1) in-service verification of the electrical equipment prior to operation;

(2) partial discharge monitoring;

(a) Ultra-Sound; or

(b) Thermal Imaging.

(3) competency and training of personnel undertaking the activity to be reviewed;

(4) a review of electrical procedures;

(5) toolbox talks prior to work being undertaken; and

(6) warning notices.

- d. control the risk;
  - (1) where live working / switching cannot be avoided, this Safe System of Work shall be applied;
  - (2) previous maintenance records are to be reviewed to ensure that there were no defects or wear issues or any outstanding actions;
  - (3) ensure personnel know how to operate the equipment correctly and safely;
  - (4) limit the number of personnel present during the operation; and
  - (5) emergency planning and actions to be taken.
- e. Personnel Protective Equipment (PPE);
  - (1) PPE is the last line of defence and shall only be considered as a plausible safety measure if:
    - (a) an Arc flash calculation in line with IEEE1584 or another similar standard has been conducted and implemented;
    - (b) calorific incident energy is known; and
    - (c) boundaries can be identified.
  - (2) If PPE is to be used then the PPE shall be:
    - (a) correctly sized for person;
    - (b) correct level of PPE in Cals / CM<sup>2</sup>;
    - (c) checked for condition;
    - (d) laundry management review; and
    - (e) PPE has not exceeded expiry dates.

7. Note: only cotton and natural fibre clothing shall be worn under the Arc Flash rated PPE.

## **Training**

### **Introduction**

1. The requirements for general training for Authorising Engineers (Electrical) and Authorised Persons (Electrical) are given elsewhere in JSP 375 Volume 2 and are not discussed further within this Section.

### **Authorising Engineers (Electrical)**

2. Authorising Engineers (Electrical) for the Electrical discipline must achieve the same technical training standards as the Authorised Persons (Electrical) below.

3. The Authorising Engineer (Electrical) for a site is to be involved in the selection and training requirements of Authorised Person (Electrical) intended for duty on that site.

### **Authorised Persons (Electrical)**

4. The Electrical Course is designed to teach Authorised Person (Electrical) how to implement the Safety Rules and Procedures (Electrical) and also provides a grounding in the management of risks.

5. The Authorised Person (Electrical) is required to satisfactorily complete the necessary training prior to his appointment to enable him to carry out the role. The Authorised Persons (Electrical) training must allow the individual to demonstrate learning suitable for appointment:

6. Low Voltage and High Voltage;

- a. an understanding that compliance with the statutory regulations and MOD Electrical Safety Rules (hereafter referred to as the SRP) is mandatory;
- b. an understanding of the minimum statutory requirements for new installations before handover to MOD;
- c. an understanding that where there are conflicting requirements between the SRP and Statutory Regulations, Statutory Regulations take priority and conflicts are to be referred to the SAA (electrical);
- d. an understanding of the difference between Permit to Work Systems, Safe Systems of Work and Risk Assessment;
- e. identify the need for demarcation agreements and an understanding of their purpose;
- f. identify what types of procedures may be used on sites where demarcation agreements exist;
- g. an understanding of the need to liaise with the other user(s) to ensure that they are fully aware of the work in hand and any impact their part of the system;
- h. identify that there may be local variations to the SRP to comply with host nation statutory regulations for overseas use;

- i. an understanding that every skilled person must be assessed and that every electrical skilled person issued with a copy of the relevant Safety Rule Book;
- j. an understanding of the limits of the scope of the SRP to specific areas and safety aspects;
- k. an understanding why a record of all safety related information given to third parties or assessed shall be kept on file for reference;
- l. an understanding of the correct procedure for record keeping and ensuring the accuracy of the system operating records;
- m. identify typical equipment all indoor substations and switch rooms might have available and identify which mandatory and optional posters should be displayed;
- n. an understanding why LV and HV equipment and switch rooms must be kept locked when left unattended;
- o. an understanding that switchgear and equipment forming part of an isolation and earthing arrangement must be locked off, wherever practicable, to prevent un-authorised operation;
- p. correctly identify where tables HV1 and HV2 should be applied;
- q. identify the appropriate documentation for different operational scenarios;
- r. identify that for operational and emergency switching a safety programme is not required but that the EDOR should be completed;
- s. the correct procedures for making safe, for work or test, and thereafter re-instating supplies part of an HV network using switching programs and permit / sanction procedures as appropriate;
- t. an understanding of the correct use and positioning of safety warning signs and notices;
- u. an understanding of the use of special instructions and safety measures;
- v. identify which other documents should be reviewed, and why, prior to the production of any work related safety documentation;
- w. correctly assess the suitability of and comment on sample contractor's method statements and risk assessments;
- x. define an area of work as hazardous or non-hazardous, identify where tables LV1, LV2, LV3, HV1 and HV2 should be applied;
- y. the correct procedures for making safe, for work or test, and thereafter re-instating supplies part of an LV network using switching programs and permit / sanction procedures as appropriate;
- z. an understanding of the correct use and positioning of safety warning signs and notices;

- aa. an understanding of the use of special instructions and safety measures;
- bb. identify which other documents should be reviewed, and why, prior to the production of any work related safety documentation;
- cc. an understanding that for non-hazardous there are two possible working procedures;
- dd. correctly assess and comment on a method statement and risk assessment for live work;
- ee. an understanding of the procedure for authorising live working;
- ff. identify situations where live working is potentially unavoidable (as defined by the Electricity at Work Regulations 1989 and any subsequent amendments) and identify appropriate safety precautions;
- gg. an understanding that all safety precautions for live working must be clearly explained to and agreed with the prospective Person in Charge prior to carrying out the work and that the prospective Person in Charge must be satisfied with the precautions;
- hh. an understanding that the sanction for live working will only permit live working within a clearly defined area and live working is prohibited in surrounding areas;
- ii. an understanding that an accompanying safety person must be present for the duration of any live working and that they must know what steps to take in the event of an accident or dangerous occurrence;
- jj. an understanding that only one AP per discipline is to be on duty for each location at any given time;
- kk. define the recipient of a PTW, STT, SI, SWI, and STWL as a skilled person and Person in Charge and an understanding that a duty AP is not a Person in Charge until they have issued themselves with a PTW, STT, SI, SWI, STWL;
- ll. an understanding that a permit / sanction must clearly and unambiguously defined, as appropriate;
- mm. any relationship between the permit / sanction and other safety documentation in use at the same location;
- nn. an understanding that the prospective Person in Charge must be shown all safety precautions and be made aware of the limitations of the work area, prior to the issue of a PTW or STT;
- oo. an understanding that any switching operation, prior to the issue of a PTW or STT, must follow a safety programme written on a controlled form and countersigned by another Authorised Person (Electrical) or Authorising Engineer (Electrical);
- pp. identify that originals and or copies of all safety documentation, as defined in the SRP, must be retained with the ESDR;
- qq. an understanding that where more than one permit is required for a given task, each permit must be endorsed with a reference to the existence of the other permits and an



understanding of any procedures which must be followed as a result of the use of multiple permits;

- rr. identify sources of operational restrictions and an understanding of their purpose;
- ss. an understanding of the roles and duties of; Authorised Persons (Electrical), Authorising Engineers (Electrical), Skilled Persons, Persons in Charge and Accompanying Safety Person;
- tt. identify the requirement or otherwise for a STT for different operational scenarios;
- uu. correctly identify and use appropriate test equipment whilst observing ALL of the relevant safety procedures INCLUDING STT where appropriate;
- vv. identify appropriate testing procedure and associated safety precautions for use on both HV and LV systems;
- ww. an understanding of appropriate methods for testing and commissioning of HV and LV electrical distribution equipment;
- xx. an understanding that where HV testing is carried out on either HV or LV equipment, the test area is to be designated a HV enclosure for the duration of the test;
- yy. an understanding of cable location and identification procedures including spiking;
- zz. an understanding of the procedures for inhibiting standby supply systems for making them safe for work or test;
- aaa. an understanding of the mode of operation of the electrical interlocks Mk III or similar interlocking system and defines its failsafe operation;
- bbb. an understanding of the requirements for standby generator earthing;
- ccc. an understanding of the different modes of operation for rotary and static based UPS systems and the procedures for making them safe for work or test;
- ddd. an understanding of the modes of protection for rotary and static UPS and standby generator systems and the meaning of the operating indicators in the event of a fault;
- eee. an understanding of the basic maintenance requirements for rotary and static UPS and standby generator systems; and
- fff. correctly assess and comment on a method statement and risk assessment for UPS / generator maintenance work.

## 7. Low Voltage (Hazardous):

- a. an understanding that there is a need for special precautions in hazardous areas and that live working is not permitted;
- b. identify typical warning signs and notices which warn of Hazardous Areas;
- c. an understanding of the categories of explosive storage facilities with respect to electrical works as defined in JSP482;

- d. an understanding of the categories of hazardous places as defined in the Dangerous Substances and Explosive Atmosphere Regulations;
- e. an understanding of areas typically classified as hazardous;
- f. an understanding of typical equipment classifications used in hazardous areas and where they might be installed;
- g. define an area of work as hazardous or non-hazardous, identify where tables LV1, LV2, LV3, HAZ1, HAZ2, HV1, HV2, AGL1 and AGL2 should be applied;
- h. an understanding of the temperature classifications for explosive storage facilities as defined in DSA03 OME Part 2;
- i. an understanding of the requirements before electrical testing can be carried out in an explosive storage area;
- j. an understanding of appropriate additional qualifications for a skilled person working in a hazardous area;
- k. an understanding of the different safety documents and issuing authorities for hazardous areas;
- l. an understanding that only tools and test equipment which are certified and approved for use in the hazardous area are to be used;
- m. an understanding of the hazardous area manager's options with respect to the control of work within a hazardous area;
- n. an understanding of the application of hazardous area safety documentation with respect to explosives, petroleum and flammable areas;
- o. an understanding of the procedure for posting suitable warning notices before carrying out any electrical tests;
- p. correctly assess and comment on a method statement and risk assessment for hazardous area work;
- q. an understanding that all protection, both electrical and hazard, must be checked for integrity before the area is restored to normal operational usage;
- r. an understanding that there is a need for special precautions in hazardous areas and that live working is not permitted;
- s. an understanding that it is preferable to make an area non-hazardous for duration of the test / work if possible; and
- t. an understanding that all protective conductors are to be visibly inspected for integrity before any electrical tests are carried; high current tests such as earth fault loop, high current continuity and prospective short circuit tests are NOT to be carried out in hazardous areas unless appropriate precautions are in place and appropriate safety documentation has been raised.

8. Aeronautical Ground Lighting;
  - a. identify AGL equipment and their sources of supply;
  - b. demonstrate switching, isolation, earthing and proving dead on AGL circuits and equipment using switching programs and permit / sanction procedures as appropriate;
  - c. demonstrate an understanding of AGL cable identification techniques;
  - d. demonstrate an understanding of the specific electrical hazards associated with AGL primary series circuits both faulted and un-faulted;
  - e. demonstrate an understanding of AGL fault location techniques;
  - f. demonstrate an understanding of the specific risks and procedures associated with airside working;
  - g. correctly identify where tables AGL1 and AGL2 should be applied; and
  - h. correctly assess and comment on a method statement and risk assessment for airside work.
9. An Authorised Person (Electrical) will have additional training in the particular fields required to enable the individual to manage the 'High' Risk Systems under his control. The Authorising Engineer (Electrical) must be in a position to ensure that such training has taken place.

### **Assessment**

10. On completion of the above training, candidates are to be assessed. The assessment will include:
  - a. an open book (clean SRP and supporting literature) examination, covering the topics identified above; and
  - b. a practical exercise involving the preparation of an Isolation Risk Assessment, Safety Programme and Statement of Isolation, and PTW (up to issue stage) and the review of the prospective Person in Charge; all for a given scenario.
11. No specific time limit shall be given for the conduct of the practical exercise. This is to be regarded as coursework to be completed before the end of the training course.
12. On completion of the assessment, candidates will be graded as either, "Satisfactory" or "Unsatisfactory" and a certificate issued to that effect.
13. Candidates who gain an unsatisfactory grading shall resubmit themselves for re-assessment of the failed element(s), in order to have their grading reviewed. There is no requirement, to re-attend the entire course unless deemed necessary by the Training Provider in conjunction with the individual's Authorising Engineer (Electrical) (or Senior Authorising Authority (Electrical) in the case of an Authorising Engineer (Electrical)). The 're-assessment' is to be undertaken within three months of initially attending the course.

## **Skilled Persons (Electrical)**

14. To be eligible for appointment, prospective Skilled Persons (Electrical) are to meet the requirements of JSP 375 Volume 3 Chapter 3 and are to have an appropriate qualification in a relevant discipline. Skilled Persons (Electrical) are required to have successfully undertaken technical training as determined by the AP to meet the needs of their site and the task.

15. The suitability of a specific qualification will depend on:

- a. the work to be undertaken; and
- b. the type of electrical equipment / system.