WESTERN POWER DISTRIBUTION

Serving the Midlands, South West and Wales

THESE DISTRIBUTION SAFETY RULES HAVE BEEN MADE FOR THE PROTECTION OF EMPLOYEES AND THE SAFETY OF ALL WHO MAY WORK ON DISTRIBUTION NETWORK OPERATORS SYSTEMS

Golden Distribution Safety Rule

If you're not sure, stop and ask for help.

Golden Distribution Safety Rule

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WESTERN POWER DISTRIBUTION

DISTRIBUTION SAFETY RULES

2017 EDITION

(Based on Model Rules 2016)

FOR THE CONTROL, OPERATION AND MAINTENANCE OF HIGH AND LOW VOLTAGE APPARATUS

I acknowledge receipt of this copy

..... (Signed)

..... (Print Name)

..... (Date)

Golden Distribution Safety Rule

If you’re not sure, stop and ask for help.

WESTERN POWER DISTRIBUTION

DISTRIBUTION SAFETY RULES

2017 EDITION
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FOREWORD

These Distribution Safety Rules (DSRs) are based on the National Model Distribution Safety Rules and provide a set of generic Rules that Western Power Distribution uses as the foundation of its safety management system for operations on its network.

The National Model Distribution Safety Rules is a copyrighted document and has been produced and approved by the Safety, Health and Environment Committee of the Energy Networks Association.

The Distribution Safety Rules were originally written using experience gained over many years of operating electricity networks and are now regularly reviewed in the light of recent events and the introduction of updated equipment and new technology. Where practical, revisions have been included as a result of pro-active risk assessments of new circumstances in addition to lessons learned reactively.

These Distribution Safety Rules are written to fulfil a number of extremely important roles:

- By documenting generic safe systems of work, these Distribution Safety Rules, in conjunction with approved procedures produced following risk assessments by individual companies of their own circumstances, fulfil a variety of legal obligations placed on Electricity Companies by legislation such as the Health and Safety at Work (etc) Act 1974 and the Management of Health and Safety at Work Regulations 1999;
- They provide a common framework that allows co-operation and safe movement of staff and contractors throughout the country;
- They allow best practicable safety standards to be known and shared throughout the industry; and
- More importantly, they provide guidance to staff and contractors working in the industry to ensure that they are able to work safely and reduce the risk of serious injury to themselves and their colleagues.

POLICY

P1

The design of Regional Electricity Companies' **Systems** and associated **Plant** and **Apparatus** for the distribution of electrical energy, at voltages up to and including 132kV, is such that they may be operated safely when **Approved** operational procedures are followed correctly. However, when **Switching** for operational purposes, or when work such as maintenance, testing and repair has to be carried out or when, particularly, **Systems** and associated **Plant** and **Apparatus** have to be taken temporarily out of normal operational use, it is necessary for these Distribution Safety Rules and related documents and procedures to be applied so as to ensure the health and safety of all who are liable to be affected by any **Danger** that might arise. These Distribution Safety Rules, as read with related documents and procedures, are based on the principle that they should state what should be done to ensure that specified work or activity may be carried out without **Danger** so far as is reasonably practicable. The **Dangers** that can arise are two-fold:

(i) inherent **Dangers** from distribution **Systems**, **Plant** and **Apparatus**, which are covered by the Distribution Safety Rules;

(ii) general **Dangers** associated with the work as it proceeds including, in addition to the work process, **Dangers** from access and egress, the place of work and the working environment. (These **Dangers** may be of a different kind, and under different control, from the inherent **Dangers** in (i) above and may not be specifically covered by these Distribution Safety Rules).

P2

In the implementation of these Distribution Safety Rules, related documents and procedures, specified methods of work, and other forms of local instruction, management **Shall** allocate responsibility for the achievement of health and safety from the inherent **Dangers** mentioned in (i) above during the various stages of work or activity.

Management **Shall** also carry out a suitable and sufficient risk assessment, issue instructions and allocate responsibility for dealing with the general **Dangers** mentioned in (ii) above where such **Dangers** are not already specifically covered in these Distribution Safety Rules or associated **Approved** procedures or Codes of Practice.

P3

It is the policy of Western Power Distribution that the **Persons** in charge of the various stages of the work or activity **Shall** have the appropriate competence and written authority and **Shall** understand these Distribution Safety Rules, related documents and procedures, the methods of work and any local instructions. Such persons **Shall** understand the **Dangers** that might arise and the precautions to be taken over the whole period of the work or activity. The policy of Western Power Distribution requires that all persons at work are adequately instructed and supervised and are competent to avoid **Danger**, according to the circumstances of the work they are doing. It is also the policy of Western Power Distribution that the relevant legal requirements, these Distribution Safety Rules and other required health and safety precautions are observed at all times.

SECTION 1

GENERAL PROVISIONS

SECTION 1: GENERAL PROVISIONS

1.1 SCOPE AND APPLICATION OF THE DISTRIBUTION SAFETY RULES

These Distribution Safety Rules apply to distribution **Systems** up to and including 132kV and to associated **Plant** and **Apparatus** under the ownership or control of Western Power Distribution under whose authority they have been issued. They, or equivalent Safety Rules, **Shall** normally be the only Rules applicable to such **Systems, Plant** and **Apparatus** and **Shall** be applied, in accordance with management instructions, together with related documents and procedures, for the whole course of the work for which they are intended.

1.2 OTHER SAFETY RULES, RELATED DOCUMENTS AND PROCEDURES

In addition, or as an alternative, to the application of these Distribution Safety Rules and related documents and procedures, other Rules, documents and procedures issued by Western Power Distribution or by other authorities, **Shall** be complied with in accordance with management instructions. Whereas the Appendices to these Safety Rules are not in themselves individual Distribution Safety Rules, they **Shall** be read in conjunction with the Rules to which they relate. As such, the Appendices form important supporting information for the implementation of the Distribution Safety Rules.

Where an appropriate written agreement exists between Western Power Distribution and a third party, the employees of that third party may carry out work and operate on the Distribution **System** which is under the control and ownership of Western Power Distribution**.** The employees of the third party may carry out work and operate in accordance with other Rules and procedures, provided that this approach complies fully with the detail of the written agreement between Western Power Distribution and the third party.

Safety precautions required across control/ ownership boundaries **Shall** be carried out and documented in accordance with **Approved** procedures. Such procedures **Shall** be agreed between the controller/ owner of the other **System** and Western Power Distribution and **Shall** be made known to the staff concerned. In all cases these Distribution Safety Rules, related documents and procedures **Shall** be used as a guide to safe working.

1.3 INFORMATION, INSTRUCTION AND TRAINING

Arrangements **Shall** be made by Western Power Distribution to ensure:

(i) that all employees and contractors concerned are adequately informed as to:-

- the risks to their health and safety as identified by risk assessment;
- the preventative and protective measures to be taken;
- the procedures to be followed in the event of serious and imminent **Danger**; and
- the potential for risks arising from the activities of any other employer in the workplace.

(ii) that adequate levels of supervision of its employees and those under its control are provided.

(iii) that all employees and contractors concerned are adequately informed and instructed as to the **Systems, Plant** and **Apparatus** which are affected by a particular operation or work (whether or not they are owned or operated by Western Power Distribution) and which legal requirements, Safety Rules, related documents and procedures **Shall** apply;

(iv) that, where reasonably practicable, other persons who are not employees, but who may be exposed to **Danger** by the operations or work of Western Power Distribution, also receive adequate information and instruction.

(v) that the capabilities of employees are taken into account in allocating tasks; and

(vi) that employees and contractors are provided with adequate health and safety training;

1.4 ISSUE OF DISTRIBUTION SAFETY RULES

A copy of these Distribution Safety Rules and, as appropriate, related documents **Shall** be issued to such employees of Western Power Distribution and such other persons as the **Designated Person** may determine. Such employees and other persons **Shall** sign a receipt for a copy of these Distribution Safety Rules, related documents and procedures (and any amendments thereto) and **Shall** keep them in good condition and have them available for reference as necessary when work is being carried out under these Distribution Safety Rules.

1.5 VARIATION OF DISTRIBUTION SAFETY RULES

In exceptional or special circumstances these Distribution Safety Rules may be varied to such an extent as is necessary and **Approved** by a **Designated Person** or another officer specially authorised in writing to do so. Such variations **Shall** ensure that safety requirements are satisfied in some other way.

1.6 SPECIAL PROCEDURES

Work on or testing of **Apparatus, Conductors** or **Plant** to which these Distribution Safety Rules cannot be applied, or for special reasons should not be applied, **Shall** be
AP14 carried out in accordance with an **Approved** procedure. Such procedure **Shall** ensure that the safety requirements of these Distribution Safety Rules are satisfied in some other way.

1.7 OBJECTIONS

When any person receives instructions regarding the operation of or work upon Western Power Distribution's **System**, and associated **Plant** and **Apparatus**, they **Shall** report any objections on safety grounds to the carrying out of such instructions to the **Persons** issuing them, who **Shall** then have the matter investigated and, if necessary, referred to a higher authority for a decision before proceeding.

1.8 REPORTING OF ACCIDENTS AND DANGEROUS OCCURRENCES

All **Persons Shall** comply with Western Power Distribution procedures for the statutory reporting of accidents and dangerous occurrences. In addition, all electrical accidents, electrical dangerous occurrences and such other accidents and dangerous occurrences as may be specified by the appropriate **Designated Person** involving Western Power Distributions' **High Voltage System** or associated **Plant** or **Apparatus**, **Shall** be reported immediately to the appropriate **Control**
AP4 **Engineer** in accordance with **Approved** procedures. In the case of accidents and dangerous occurrences involving the **Low Voltage System** or associated **Plant** or **Apparatus**, these **Shall** be reported immediately to the
AP4 appropriate person in accordance with **Approved** procedures.

1.9 DUTIES

Western Power Distribution as an employer has a duty to comply with the provisions of the Health and Safety at Work etc Act 1974, the Electricity at Work Regulations 1989, and other relevant statutory provisions. Additionally, authoritative guidance is available from the Health and Safety Executive and other sources.

Employees and contractors of Western Power Distribution also have a duty to comply with certain provisions of the Health and Safety at Work etc Act 1974, the Electricity at Work Regulations 1989 and with other relevant statutory provisions.

In addition to these statutory duties and any other duties separately allocated to them, all **Persons** who may be concerned with the operation of, or work upon, distribution and transmission **Systems** and associated **Plant** and **Apparatus Shall** be conversant with, and comply with, those Distribution Safety Rules relevant to their duties and related documents and procedures. Ignorance of legal requirements or of Distribution Safety Rules and related documents and procedures, **Shall** not be accepted as an excuse for neglect of such duties.

If any **Person** has any doubt as to any of these duties they **Shall** report the matter to a higher authority for advice before proceeding with work, i.e. if you are not sure, stop and ask for help.

1.10 USE AND WEARING OF SAFETY EQUIPMENT AND PROTECTIVE CLOTHING

AE1 AE2 AE3 AE4 AE5

Where any work under these Distribution Safety Rules and related documents and procedures takes place, appropriate safety equipment and protective clothing of an **Approved** type **Shall** be issued and used in accordance with management instructions. At all times employees are expected to wear sensible clothing and footwear having regard to the work being carried out.

1.11 TREATMENT FOR ELECTRIC SHOCK

All **Persons** who may be concerned with the operation of, or work upon, Western Power Distributions' **Systems**, and associated **Plant** and **Apparatus**, **Shall** be trained in and be conversant with the treatment of electric shock. Information regarding such treatment is given in Appendix E.

SECTION 2

DEFINITIONS

SECTION 2: DEFINITIONS

D1. Apparatus

Any item of electrical machinery or equipment in which **Conductors** are used, or supported, or of which they form part.

D2. Approved

Sanctioned by the **Designated Person** in order to satisfy in a specified manner the requirements of any or all of these Distribution Safety Rules.

D3. Designated Person

The person appointed by Western Power Distribution to be responsible for the application of these Distribution Safety Rules.

D4. Conductor

An electrical conductor arranged to be electrically connected to a **System.**

D5. Control Engineer

A **Control Engineer** or an appropriate 'Control Person' recognised by Western Power Distribution as being one of the following:

(i) Distribution Control Engineer

In the case of a centrally controlled **System** the **Control Engineer** at Western Power Distribution‘s Control Centre.

(ii) Field Control Engineer

In the case of a locally controlled **System**, the engineer specifically deputed to exercise the function of control of such a **System** in accordance with an **Approved** procedure.

D6. Danger

A risk to health or of bodily injury.

D7. Dead

At or about zero voltage and disconnected from any **Live System.**

D8. Earth

The conductive mass of the Earth, whose electric potential at any point is conventionally taken at zero.

D9. Earthed

Connected to **Earth** through switchgear with an adequately
AE8 rated earthing capacity or by **Approved** earthing leads.

D10. Circuit Main Earth

AE8 Earthing equipment of **Approved** type applied before the issue of, and at a position recorded in, a **Safety Document.**

D11. Additional Earth

AE8 Earthing equipment of **Approved** type which is applied after the issue of a **Safety Document** (for example an earth applied at a point of work).

D13. High Voltage Live Line Work

AP11 Work in an **Approved** manner on the **Conductors** or **Apparatus** of a **High Voltage** overhead line with the **Conductors Live.**

D14. Isolated

Disconnected from associated **Plant**, **Apparatus** and **Conductors** by an **Isolating Device** in the isolating position, or by adequate physical separation, or sufficient gap.

D15. Isolating Device

A device for rendering **Plant** and **Apparatus Isolated**.

D16. **Key Safe**

AE9 A device of an **Approved** type for the secure retention of keys.

D17. **Live**

Electrically charged.

D18. **Caution Notice**

AE9 A notice in **Approved** form prohibiting unauthorised interference, with such additional **Approved** words as Western Power Distribution may determine.

D19. **Danger Notice**

AE9 A notice in **Approved** form reading "**Danger**", with such additional **Approved** words as Western Power Distribution may determine.

D20. **Persons,** being one of the following:

(i) **Competent Person**

A **Person** appointed in writing by Western Power Distribution who is recognised as having sufficient technical knowledge and experience to enable them to avoid **Danger** and who may be nominated to receive and clear specified **Safety Documents**.

(ii) **Authorised Person**

A **Competent Person** over 18 years of age who has been appointed in writing by Western Power Distribution to carry out specified duties which may include authority to issue and cancel **Limitations-of-Access** and/or to receive **Sanctions-for-Test**.

(iii) **Senior Authorised Person**

An **Authorised Person** who has been appointed in writing by Western Power Distribution to carry out specified duties, including the issue and cancellation of **Safety Documents**.

D21. Plant

Mechanical plant including all machinery and equipment not elsewhere defined as **Apparatus**.

D22. Safety Distance

The distance from the nearest **High Voltage** exposed **Conductor** not **Earthed** or from an insulator supporting a **High Voltage Conductor**, which must be maintained to avoid **Danger** (See Diagram 1 in Rule 4.4.1).

D23. Working and Access Clearance

The distance to be maintained from the nearest **Live** exposed **High Voltage Conductor** as specified in these Distribution Safety Rules to ensure observance of the **Safety Distance** for work on **Systems**.

D24. Safety Documents, being one of the following:

(i) **Limitation-of-Access**

A **Safety Document** of a format indicated in these Distribution Safety Rules which defines the limits and nature of work which may be carried out when verbal instructions are not considered sufficient for that purpose, and where a **Permit-to-Work** or **Sanction-for-Test** is not applicable.

(ii) **Permit-to-Work**

A **Safety Document** of a format indicated in these Distribution Safety Rules specifying the **High Voltage Apparatus** which has been made safe to work on and the work which is to be carried out.

(iii)**Sanction-for-Test**

A **Safety Document** of a format indicated in these Distribution Safety Rules specifying the **High Voltage Apparatus** which has been made safe for the testing described in the **Safety Document** to proceed and the conditions under which the testing is to be carried out.

N.B. Specimen **Safety Documents** are reproduced in Appendices A, B & C.

D25. Safety Lock

AP1 A lock used exclusively for **Approved** purposes (such as for locking off the points at which the circuit can be energised) that lock being different from all other standard locks used on **Systems**.

D26. Supervision, being one of the following:

(i) **Immediate Supervision**

Supervision by a **Person** (having adequate technical knowledge, experience and competence) who is continuously available at the location where work or testing is in progress and who attends the work area as is necessary for the safe performance of the work or testing.

(ii) **Personal Supervision**

Supervision by a **Person** (having adequate technical knowledge, experience and competence) such that they are at all times during the course of the work or testing, continuously observing and in the presence of the person(s) being supervised, with the ability and competence to directly intervene.

Supervision at ground level provided for **Persons** positioned at height is considered to be **Personal Supervision** when the supervisor at ground level maintains verbal and visual communication with the **Person(s)** being supervised.

D27. Switching

The operation of circuit breakers, isolators, disconnectors, fuses or other methods of making or breaking an electrical circuit and/or the application and removal of **Circuit Main Earths**.

D28. System

An electrical system in which **Conductors** and **Apparatus** are electrically connected to a common source of supply.

Voltage Categories:

(Based on the Electricity Safety, Quality and Continuity Regulations 2002).

D29. Low Voltage (LV)

A voltage not exceeding 1,000 volts AC or 1500 volts DC.

D30. High Voltage (HV)

A voltage exceeding 1,000 volts AC or 1500 volts DC.

D31. Working Party

Either the persons under the **Immediate Supervision** of a **Competent** or **Authorised Person** (who **Shall** themselves be a member of the working party) or a **Competent** or **Authorised Person** when working alone.

D32. Shall

Where **Shall** is used in these Distribution Safety Rules with no qualification, this indicates a mandatory requirement with no discretion permitted and no judgement to be made.

The term **Shall** can be qualified by:

‘where practicable’
If **Shall** is qualified by the words ‘where practicable’ a slightly less strict standard is imposed. It means that where it is possible to achieve in the light of current knowledge and invention, but bearing in mind the hazards associated with the work to be undertaken, then the requirement must be met. One is not allowed to avoid the requirement on the grounds of difficulty, inconvenience or cost.

‘where reasonably practicable’
When ‘**Shall** where reasonably practicable’ is used to qualify a requirement then a judgement must be made as to

what is reasonable, taking into account the magnitude of the risk on one hand and the cost, time and trouble, or effort necessary for averting the risk on the other hand.

D33. General Safety

The control and management of risks posed by hazards in the working environment which are not covered by these Distribution Safety Rules.

SECTION 3

GENERAL SAFETY PRECAUTIONS

SECTION 3: GENERAL SAFETY PRECAUTIONS

3.0 GENERAL SAFETY

In addition to all other requirements specified in these Distribution Safety Rules the safety of persons at work **Shall** also be achieved by maintaining at all times **General Safety** at and in the vicinity of the place of work. Before work or testing commences the **Person** in charge of the **Working Party** must ensure that safety precautions are taken to establish **General Safety** at and in the vicinity of the workplace. This **Person** must ensure that at all times during the work or testing that **General Safety** arrangements are maintained and that other work areas are not adversely affected by the activities for which they are responsible. The discharging of responsibilities for **General Safety** will be achieved as part of the normal pattern of management delegation and control by ensuring that all activities are carried out in accordance with appropriate instructions and guidance.

3.1 ACCESS TO AND WORK IN OPERATIONAL PREMISES, UNDERGROUND CHAMBERS, CONFINED SPACES AND VESSELS CONTAINING OIL OR OTHER FLAMMABLE OR TOXIC SUBSTANCES

3.1.1 No person **Shall**, without proper authority, enter or have
AP1 access to any operational premises such as any control room, substation, switching station or underground chamber belonging to, or wholly under the control of, Western Power Distribution.

3.1.2 Access to confined spaces such as underground chambers, cable tunnels and indoor substations with restricted access or egress **Shall** be gained in accordance
AP2 with an **Approved** procedure.

3.1.3 Access to vessels recently emptied of flammable or toxic substances, **Shall** only be allowed in accordance with an
AP2 **Approved** procedure which includes provision to expel all dangerous vapours and substances.

3.1.4 Work involving the application of heat or the use of exposed flames in the vicinity of open vessels containing, or having recently contained, flammable substances, **Shall** be prohibited until all practicable steps have been taken in
AP2 accordance with an **Approved** procedure to prevent **Danger.**

3.2 ACCESS TO AND WORK IN FIRE PROTECTED AREAS

3.2.1 Automatic Control

AP2 Unless alternative **Approved** procedures apply because of special circumstances then before access to, or work or other activities are carried out in, any enclosure protected by automatic fire extinguishing equipment;

(a) the automatic control **Shall** be rendered inoperative and the equipment left on hand control and where the facility exists locked. A **Caution Notice Shall** be attached.

(b) precautions taken to render the automatic control inoperative and the conditions under which it may be restored **Shall** be noted on any **Safety Document** or written instruction issued for access, work or other activity in the protected enclosure; and

(c) the automatic control **Shall** be restored immediately after the persons engaged on the work, or other activity, have withdrawn from the protected enclosure.

3.2.2 Portable Fire Extinguishers

AE10 Only **Approved** portable fire extinguishers **Shall** be available and used in the vicinity of **Live Apparatus** and **Conductors**. In the handling of fire extinguishers the appropriate **Safety Distances** specified in Rule 4.4 **Shall** be maintained. After the discharge of portable fire extinguishers in an enclosed space, personnel **Shall** leave the space until the precautions set out in Rule 3.2.3 have been taken.

3.2.3 General

After any explosion or fire, or after the discharge of fire extinguishers in an enclosed space, either the space **Shall**

be adequately ventilated before the entry of personnel, or
AE6 **Approved** breathing apparatus and, where necessary,
AE5 **Approved** safety harnesses **Shall** be worn by persons specially trained in their use. Such breathing apparatus and safety harnesses **Shall** be worn in any case of doubt.

3.3 ACCESS TO, OR WORK ON POLES, TOWERS AND HIGH STRUCTURES

3.3.1 Before any pole is climbed it **Shall** be tested in an
AP2 **Approved** manner. No pole badly impaired by decay or damage or whose stability is in doubt **Shall** be climbed
AP2 until it has been supported by **Approved** means. The pole **Shall** then either be climbed by only one person at a time
AP2 or access to the top of such pole **Shall** be by **Approved** means independent of the pole.

3.3.2 All **Persons** gaining access to and during work on towers, poles and high structures **Shall** make proper use of
AE1 **Approved** safety equipment and **Shall** be in visual range
AE5 of another **Person**. All **Persons** concerned **Shall** be fully
AP3 conversant with **Approved** rescue procedures. Unaccompanied access is allowed for switching or testing when it is of limited duration and is covered by an
AP2 **Approved** procedure.

3.3.3 Gates and devices to prevent climbing of towers and gantries supporting **High Voltage Conductors Shall**
AP1 always be kept secured in an **Approved** manner and access **Shall** be controlled by an **Authorised Person** or **Competent Person** in receipt of an appropriate **Safety Document**.

3.4 ACCESS TO HIGH VOLTAGE APPARATUS AND CONDUCTORS

3.4.1 High Voltage Structures and Outdoor Compounds

Guards on access ladders and barriers, doors or gates on or in outdoor compounds preventing access to **Live High Voltage Conductors**, **Shall** be kept secured in an
AP1 **Approved** manner and access **Shall** be in accordance
AP2 with **Approved** procedures.

3.4.2 **High Voltage Chambers, Cubicles and Cells**

Barriers, doors or gates preventing access to totally enclosed chambers, cubicles and cells containing **Live High Voltage Conductors, Shall** where the facility exists be kept locked and the keys **Shall** be accessible only to an **Authorised Person**.

3.4.3 **Spout Shutters on High Voltage Switchgear**

All spout shutters not required for immediate work or operation **Shall**, if the spouts are not otherwise made inaccessible, be locked shut, the keys **Shall** only be accessible to an **Authorised Person.**

3.5 HIGH VOLTAGE SWITCHING

3.5.1 No **High Voltage Switching Shall** be carried out other than by an **Authorised Person** or by a **Competent Person** acting under the **Personal Supervision** of the **Authorised Person**. No such **Switching Shall** be carried out without the authority of the appropriate **Control Engineer**, except in cases of emergency, or other
AP4 **Approved** cases, which may include **Switching** by remote control by a **Control Engineer**.

3.5.2 When a **Control Engineer** gives authority for **High Voltage Switching** to be carried out they **Shall** communicate directly with the **Person** who is to carry out the **Switching**. Where, for special reasons, direct
AP4 communication is not possible, an **Approved** procedure **Shall** be followed. Any **Person** who is to carry out **High Voltage Switching Shall** have an **Approved** record of the **Switching** instruction available at the point of **Switching**. A verbal **Switching** instruction given by a **Control Engineer Shall** be written down/ recorded by **Approved** means and read back to the **Control Engineer** before undertaking the **Switching** operation.

3.5.3 Before any **High Voltage Switching** is carried out on any **System** which may affect another **System**, the **Control Engineer** authorising the **Switching Shall** communicate

with the **Control Engineer** of the other **System** and the **Switching Shall** be agreed between them and recorded by all **Control Engineers** concerned.

3.5.4 Where **High Voltage Switching** is to be carried out for the purpose of issuing a **Safety Document** and there are two or more control functions involved, then in the absence of a standing agreement for such matters, the **Control Engineers** concerned **Shall** agree on the **Person** who **Shall** be in control of the part of the **System** in the **Isolated** state and who **Shall** be responsible for giving consent to the issuing of a **Safety Document**. Such agreement between the **Control Engineers Shall** be recorded by each **Control Engineer.**

3.5.5 Where special requirements are to be complied with before, during or after **High Voltage Switching** AP4 operations, **Approved** procedures **Shall** apply and special provision **Shall** be made to ensure that the **Control Engineers**, the operators and others affected are aware of their responsibilities.

3.5.6 **High Voltage Switching** with the **Control Engineer's** authority **Shall** be carried out without unnecessary delay. Completed **Switching** operations **Shall** be confirmed to the **Control Engineer** as agreed and without unnecessary delay.
Emergency **Switching** (in accordance with DSR 3.5.1) **Shall** be reported to the **Distribution Control Engineer** without unnecessary delay. The circumstances necessitating such **Switching Shall** be explained at that time.

3.5.7 All switchgear operations **Shall,** so far as reasonably practicable, be planned and completed in accordance with the following hierarchy:

(i) Remotely via remote control facilities;

(ii) Remotely on site via control panels in a different room to the switchgear being operated;

(iii) Remotely via a control panel in the same room as the

switchgear being operated;

(iv) Remotely via an **Approved** umbilical device or similar; or

(v) via the operating facilities on the switchgear.

Switchgear (including associated equipment) which is to be operated locally on site **Shall** be visually inspected immediately before any **Switching** operation to check its condition is satisfactory. The switch to be operated **Shall** be visually checked to ensure that it is in the expected position prior to operating.

Following the intended operation, switchgear **Shall** be visually checked to ensure the anticipated position has been achieved and it has operated fully and correctly.

When switchgear shows any signs of distress, its condition **Shall** be reported immediately to the **Control Engineer** and it **Shall** be examined before a decision is made about further operation.

3.5.8 When operating switchgear mounted on a pole or other structure from ground level, the operator **Shall** wear **Approved** personal protective equipment including insulating gloves and use such other equipment as may be **Approved**.

AE1 AE2 AE3 AE11

3.5.9 It is forbidden to undertake **Switching** by signal or pre-arranged understanding after an agreed period of time.

3.6 RECORDS

3.6.1 Messages

Verbal messages by telephone or otherwise, relating to the operation of any **High Voltage System**, **Shall** be written down/ recorded by **Approved** means. Every such message **Shall** be read back to the sender to ensure that it has been accurately received.

3.6.2 Recording of Switching

The **Control Engineer Shall** ensure that a record is made of the time and particulars of all **High Voltage Switching**

including any carried out by the **Control Engineer** by remote control.

3.7 FAILURE OF SUPPLY

A failure of supply, from whatever cause, to or from any part of the **High Voltage System Shall** be immediately reported to the **Distribution Control Engineer**. During failures of supply all **Apparatus** and **Conductors Shall** be regarded as being **Live** unless **Isolated** and proved **Dead**
AE7 by **Approved** means.

3.8 USE OF VOLTAGE TESTING DEVICES

Where voltage testing devices are used they **Shall** be of
AE7 **Approved** type and such use **Shall** be in accordance with
AP7 **Approved** procedures. Such devices **Shall** be tested in
AP7 an **Approved** manner immediately before and after use or, where this is not reasonably practicable; they **Shall** be
AP7 tested in accordance with **Approved** procedures.

3.9 EXCAVATION NEAR LIVE CABLES

All damaged cables or cables with exposed **Conductors Shall** be treated as **Live** until identified and proved **Dead**
AP6 by an **Approved** procedure. When excavation work is carried out in proximity to **Live** cables by Western Power Distribution employees or contractors, the work **Shall** be
AP2 carried out in accordance with an **Approved** procedure.

3.10 USE OF MOBILE PLANT AND EQUIPMENT NEAR OVERHEAD LINES

When Western Power Distribution employees or contractors are working adjacent to overhead lines with mobile **Plant** and equipment which is capable of reaching within the **Safety Distance** of a **Live High Voltage Conductor**, or touching a **Live LV Conductor** the work
AP2 **Shall** be done in accordance with an **Approved** procedure.

SECTION 4

SAFETY PRECAUTIONS FOR WORK ON OR NEAR HIGH VOLTAGE SYSTEMS

SECTION 4: SAFETY PRECAUTIONS FOR WORK ON OR NEAR HIGH VOLTAGE SYSTEMS

4.1 GENERAL REQUIREMENTS

All **High Voltage Apparatus** and **Conductors**, including those that are damaged or have faulted, **Shall** be treated as **Live** unless they have been made safe in accordance with Rule 4.1.1.

4.1.1 Subject to the exceptions stated below and those expressly permitted by individual Rules, no person **Shall** undertake any repair, maintenance, cleaning, alteration or such work, on or within the **Safety Distance** of an exposed **Conductor** or on any part of a **High Voltage System** unless such parts of the **System** are:

(a) **Dead**;

AP10 (b) **Isolated** and all practicable steps taken to lock off from all points of supply, including voltage and auxiliary transformers, common neutral earthing equipment and other sources from which the **Apparatus** and **Conductors** may become **Live**, and **Caution Notices** fixed at all points of isolation;

AP8 (c) connected to **Earth** by **Approved** means at all points of disconnection of **High Voltage** supply from the **System** or between such points and the point(s) of work;

(d) screened where necessary to prevent **Danger** and **Danger Notices** attached to **Apparatus** containing **Live Conductors** and attached adjacent to other **Live Conductors**;

AP6 (e) identified at the point of work by **Approved** means; and

(f) released for work and the measures taken under this Rule are formally communicated to the **Working Party** using an **Approved** procedure which involves the issue of appropriate **Safety Documents** which **Shall** not be issued unless the issuer and the recipient are fully conversant with the precise parts of the **Systems,**

Apparatus and **Conductors** to be worked upon, the nature and also the extent of the work to be done and the safety precautions to be taken.

It is the duty of the **Person** issuing the appropriate **Safety Document** to ensure compliance with the foregoing provisions in the correct sequence.

EXCEPTIONS:

(i) Cleaning and painting of **Earthed** metal enclosures, connections or disconnections of circuits to or from **Live High Voltage Systems**, **Live** line testing and **Live** insulator washing may be carried out but only in accordance with **Approved** procedures.

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(ii) **High Voltage Live Line Work** on **High Voltage** overhead lines may be carried out but only in accordance with Section 6 of these Distribution Safety Rules.

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(iii) Where the design of **Apparatus** precludes strict compliance with all the requirements of Rule 4.1.1 the work **Shall** be carried out in accordance with an **Approved** procedure or to the special instructions of a **Senior Authorised Person**, and after agreement with the **Distribution Control Engineer**, to ensure that safety is achieved in another way. Such work **Shall** be carried out under the **Personal Supervision** of a **Senior Authorised Person**.

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(iv) Where work is carried out on a **High Voltage** overhead **System** and where it is not reasonably practicable to isolate all connected customers in accordance with Rule 4.1.1(b) an **Additional Earth Shall** be provided and maintained between those customers and the point of work unless a **Circuit Main Earth** is provided in that position.

4.2 ISOLATION OF APPARATUS AND CONDUCTORS

4.2.1 No isolation or re-connection of **High Voltage Apparatus** or **Conductors Shall** be initiated except with the sanction of the **Control Engineer.**

4.2.2 **Safety Locks**

(a) Where a locking facility exists **Safety Locks Shall** be used to lock open all switchgear at points where the circuit on which work is to be carried out could be energised. The keys for such locks **Shall** be kept in a **Key Safe,** in the possession of a **Senior Authorised Person** or in accordance with an **Approved** procedure.

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(b) Details of the isolation referred to in Rule 4.2.1 and deposit of **Safety Lock** keys associated with the isolation **Shall** be recorded at centres specified in **Approved** procedures.

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4.2.3 **Fuses or Links**

When the circuit on which work is to be carried out is controlled only by fuses or links, the fuses or links (and carriers) **Shall** be removed and kept in a safe place which may include custody by the **Person** responsible for issuing the **Safety Document**. Where such removal is not practicable, **Approved** procedures to ensure safety **Shall** be followed.

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4.2.4 **Caution Notices**

Caution Notices Shall be fixed at all points of isolation and secured with a **Safety Lock** where reasonably practicable.

4.3 EARTHING

4.3.1 When **High Voltage Apparatus** and **Conductors** are to be discharged and **Earthed** in accordance with Rule 4.1.1 (c) it **Shall** be done:

(a) where reasonably practicable by the use of a circuit
AP8 breaker or earthing switch provided for the purpose to make the earthing connection. When a circuit breaker is used, the trip feature **Shall** be rendered inoperative before closing, unless this is not practicable when it **Shall** be done afterwards. After closing, the circuit breaker or earthing switch **Shall** be **Safety Locked** in the **Earthed** position, so that it remains inoperative while it is the **Circuit Main Earth**;

(b) where (a) is not reasonably practicable or not applicable, the **High Voltage Apparatus** and **Conductors Shall** be checked by means of an
AE7 **Approved** voltage testing device or other **Approved**
AP7 means to verify that they are not **Live**, and may then be discharged and **Earthed** by an earthing lead
AE8 applied by means of an **Approved** earthing pole or
AP8 other **Approved** appliance.

(c) in addition to the requirements in sections (a) and (b) above, the first earth applied to, and the last earth removed from a circuit, **Shall** where reasonably practicable be achieved using a circuit breaker or earthing switch provided for that purpose.

4.3.2 Earthing Leads and Connections

Earthing leads and associated clamps **Shall** be of
AE8 **Approved** type and of adequate capacity for the duty at the point of application. They **Shall** be adequately maintained and always examined immediately prior to use.

4.3.3 Procedure for the Use of Earthing Leads

Subject to Rule 4.3.1 the general procedure to be followed when using earthing leads **Shall** be as follows:

(a) the circuit **Shall** be verified that it is not **Live** and, where practicable, checked by means of an
AE7 **Approved** voltage testing device or other **Approved**
AP7 means;

(b) earthing leads **Shall** be connected to **Earth** before being connected to the phase **Conductors**. They **Shall** only be connected to the phases by means of
AE8 an **Approved** earthing pole or other **Approved**
AP8 appliance. Care **Shall** be taken to ensure that good contact is made and that earthing leads are clearly visible;

(c) all phases **Shall** be **Earthed**, even if work is to be carried out only on one phase;

(d) earthing leads **Shall** not be applied in any cell or compartment in which there is any exposed metal **Live** at **High Voltage** which may be a source of **Danger.** Earthing leads **Shall** be applied in such a manner that they remain clearly visible so far as is reasonably practicable;

(e) when earthing leads are being removed, each one **Shall** be disconnected from the phase **Conductor**
AE8 by means of an **Approved** earthing pole or other
AP8 **Approved** appliance before it is removed from the **Earth** connection;

(f) for the purpose of earthing on spout contacts of
AE8 metal-enclosed switchgear, only **Approved** appliances **Shall** be used. The insertion of the hand or any tool into contact spouts for this purpose is forbidden.

4.3.4 Circuit Main Earths

(a) **Operation**

No **High Voltage** earthing switch **Shall** be operated or **Circuit Main Earth** connected or disconnected except with the consent of the **Control Engineer** (or under the terms of a **Sanction-for-Test** or under Rules 5.1.2 or 5.5.4(i)).

Where a locking facility exists **Circuit Main Earths Shall** be secured by a **Safety Lock**.

(b) **Recording of Circuit Main Earths**
Completed earthing operations **Shall** be confirmed to the **Control Engineer** as agreed and without unnecessary delay. The location of each **Circuit Main Earth Shall** be recorded on the **Safety Document.**

(c)The **Control Engineer Shall** record in their log the time of application and the location of each **Circuit Main Earth** connection and the time of its removal except where it has been removed under the terms of a **Sanction-for-Test** or Rules 5.1.2 or 5.5.4(i).

4.3.5 **Additional Earths**

(a) **Additional Earths** applied after the issue of a **Permit-to-Work** or **Sanction-for-Test** may only be
AP8 attached or removed by the recipient of the **Safety Document** or a **Competent Person** under their **Personal Supervision**.

(b) When the recipient of a **Permit-to-Work** clears and returns the **Permit-to-Work** to a **Senior Authorised Person** they **Shall** ensure that the **Senior Authorised Person** is aware of the position of any **Additional Earths** that have not been removed.

4.4 APPROACH TO EXPOSED LIVE HIGH VOLTAGE CONDUCTORS OR INSULATORS SUPPORTING THEM

4.4.1 **Safety Distances**

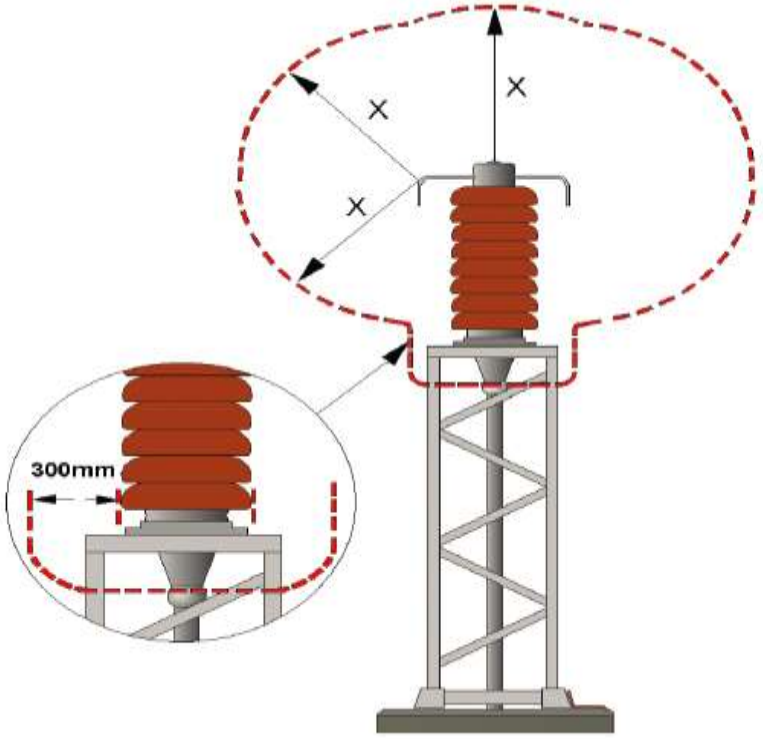
(a) The **Safety Distance** (designated 'X' in Table 1 and Diagram 1) **Shall** be maintained at the respective **System** voltages between any part of a person or object and the nearest exposed **Live High Voltage Conductor**.

(b) A distance of 300mm **Shall** also be maintained, at all **System** voltages, from the portion of insulators supporting **Live High Voltage Conductors** which is outside the appropriate **Safety Distance** from the **Conductors**.

Table 1 - Safety Distances

Nominal System Voltage		Safety Distance 'X'
Up to and including	33kV	0.8m
Exceeding 33kV but not exceeding	66kV	1.0m
Exceeding 66kV but not exceeding	132kV	1.4m
Exceeding 132kV but not exceeding	275kV	2.4m
Exceeding 275kV but not exceeding	400kV	3.1m

Diagram 1
Safety Distance 'X' (from live high voltage conductors)



4.4.2 Approach of Persons

(a) Subject to the provisions of Rule 4.4.2(b) and 4.4.2(c), no **Person Shall** allow any part of their body to approach exposed **High Voltage Conductors**, or insulators supporting such **Conductors**, within the **Safety Distance** specified in Rule 4.4.1 unless the **Conductors** have been made safe for work and a **Safety Document** issued as required by Rule 4.1.1.

AE7 (b) When a **Person** is applying an **Approved** voltage testing device to **High Voltage Conductors** contained within the open spouts of metal enclosed switchgear, it is allowable for those parts of the body required to perform the task to approach within the **Safety Distances** specified in Rule 4.4.1 subject to AP7 **Approved** procedures. **Approved** insulating gloves AE3 **Shall** be worn.

(c) When **High Voltage Live Line Work** is being carried out in accordance with **Approved** Hot Glove Procedures, it is allowable for the body to approach within the **Safety Distances** specified in Rule 4.4.1.

4.4.3 Objects Being Handled

(a) When exposed **High Voltage Conductors** are not **Isolated** the only objects which **Shall** be caused to approach them, or insulators supporting them, within the **Safety Distances** specified in Rule 4.4.1 **Shall** be AE11 those **Approved** for **High Voltage Live Line Work** AE7 and **Approved** voltage testing devices.

(b) When exposed **Conductors** are **Isolated** but not proved **Dead**, the only objects which **Shall** be caused to approach them, or insulators supporting them within the **Safety Distances** specified in Rule 4.4.1 **Shall** be insulated devices **Approved** for **High Voltage Live** AE7 **Line Work** and **Approved** voltage testing devices.

4.4.4 Working and Access Clearances

Taking account of the nature and location of the work, the hazards and the presence of persons, the **Senior Authorised Person** or the **Person** in charge of the work as listed below, **Shall** establish **Working and Access Clearances** such as to ensure that the **Safety Distances** specified in Rule 4.4.1 are maintained both in respect of those persons present and the objects being handled.

N.B. Recommended **Working and Access Clearances** for the guidance of **Senior Authorised Persons** are specified in Appendix D.

The following **Persons** may also establish **Working and Access Clearances** provided that the **Working and Access Clearances** are not less than those recommended in Appendix D:

(a) An **Authorised Person** responsible for the **Personal Supervision** of **Live Line Work**.

(b) An **Authorised Person** with authority to issue **Limitation-of-Access** documents.

(c) A **Competent Person** when responsible for the **Personal Supervision** of work in accordance with Rule 5.10.5.2.

4.5 WORK IN SUBSTATIONS AND SWITCHING STATIONS CONTAINING EXPOSED LIVE HIGH VOLTAGE CONDUCTORS

4.5.1 Zone of Work

(a) When work is to be carried out in a substation or switching station in proximity to exposed **Live High Voltage Conductors**, the zone of work **Shall** be properly identified by a **Senior Authorised Person**. The zone of work **Shall** then be defined as far as possible by the use of **Approved** barriers, chains or by other **Approved** means. These **Shall** be so arranged that the specified **Working and Access Clearances**, from the nearest exposed **Live Conductors** or supporting insulator, to ground level,

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or platform or access way which may be required to be used, are established.

(b) The zone of work to be defined at ground level **Shall** only be that in which the work is to be carried out.

(c) If the work cannot be carried out without leaving ground level or a platform or access way, the **Working and Access Clearances Shall** also be obtained from the nearest exposed **Live High Voltage Conductor** to the points from which work is actually carried out. In such cases access **Shall** only be by means of an **Approved** ladder or other **Approved** means in accordance with Rules 4.5.4 and 4.5.5. The climbing of structures to gain access is forbidden. In the case of terminal poles or towers in substations, access **Shall** be in accordance with an **Approved** procedure.

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AP2

(d) If the work is such that the specified **Working and Access Clearances** are not sufficient to avoid **Danger** other suitable arrangements **Shall** be made.

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(e) The **Approved** barriers or chains **Shall** be clearly visible, so far as is reasonably practicable, and **Shall** not be supported by any structure carrying electrical **Apparatus** or **Conductors** and **Shall** not carry any notice. At ground level the section so defined **Shall** be clearly distinguished in accordance with an **Approved** procedure. **Danger Notices Shall** be attached to adjoining **Apparatus** containing **Live Conductors** or adjacent **Conductor** supports at the limits of the zone of work.

AP2

4.5.2 **Access to Zone of Work**

Where necessary to prevent **Danger** the access and egress ways to and from the zone of work **Shall** be clearly defined in an **Approved** manner.

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4.5.3 **Working and Access Clearances**

The **Working and Access Clearances** required at the

zone of work under Rule 4.5.1 **Shall** be as specified in Rule 4.4.4 (See also Appendix D - Diagram 4).

4.5.4 Use of Portable Ladders and Long Objects where there are Exposed Live Conductors

AE12 (a) Portable ladders **Shall** be of **Approved** type and of no greater length than is required for the work involved.

(b) Portable ladders and other long objects **Shall** not be used without the permission of a **Senior Authorised Person**, who **Shall** define the conditions of use to the **Authorised Person** in charge of the work. The movement and erection of such ladders and objects **Shall** then be carried out only under the **Personal Supervision** of the **Authorised Person** in charge of the work, and when moved at ground level they **Shall** be carried only in a horizontal position and as near to the ground as reasonably practicable.

(c) Portable ladders provided to allow access to fixed ladders which terminate above ground level, and to
AP2 provide access in other **Approved** cases, **Shall** be padlocked in position or otherwise secured by an **Authorised Person** while work is being carried out.

(d) All portable ladders within substations or switching stations **Shall** be securely locked to a suitable anchorage when not in use.

4.5.5 The Movement and Use of Cranes, Scaffolds, Mobile Elevated Work Platforms and Other Equipment

(a) When cranes, scaffolds, mobile elevated work platforms and other equipment and materials transported by vehicles or otherwise are taken into or
AP2 out of a substation the route to be followed **Shall** be agreed by a **Senior Authorised Person**. Cranes or other equipment **Shall** be connected to the substation earthing system as soon as reasonably practicable.

(b) The limits of operation of such equipment **Shall** be
AP2 defined by a **Senior Authorised Person** to an **Authorised Person** who **Shall** be in charge of the work and thereafter the equipment **Shall** be erected or moved only within these limits under the **Personal Supervision** of the **Authorised Person**.

4.5.6 Danger Notices, Barriers and Screens

Danger Notices, barriers and screens **Shall** be fixed or moved only by, or under the **Personal Supervision** of, a **Senior Authorised Person**.

4.5.7 Adverse Weather Conditions

In the event of or near approach of a lightning storm, work on exposed **Conductors** in outdoor substations or outdoor switching stations, or on **Apparatus** directly connected to exposed **Conductors, Shall** cease immediately where necessary to prevent **Danger** and the **Control Engineer Shall** be informed.

4.6 PERMITS-TO-WORK

4.6.1 Authority for Issue

(a) A **Permit-to-Work Shall** be issued by a **Senior Authorised Person** before any work is carried out on any **Apparatus** or **Conductor**.

(b) A **Permit-to-Work Shall** only be issued with the authority of the **Control Engineer**, who **Shall** maintain an **Approved** record of the issue and cancellation of each **Permit-to-Work.**

4.6.2 Procedure for Issue and Receipt

(a) A **Permit-to-Work Shall** be explained and issued to the **Person** in direct charge of the work, who after reading its contents and confirming that they understand it and are conversant with the nature and extent of the work to be done, **Shall** sign its receipt and its duplicate. The recipient **Shall** confirm their understanding by explaining the safe working area,

the work to be carried out and precautions required. The recipient **Shall** also ensure that the **Permit-to-Work** is effectively explained to the other members of
AP5 the **Working Party** in accordance with an **Approved** procedure.

(b) The recipient of a **Permit-to-Work Shall** be a **Competent Person** who **Shall** retain the **Permit-to-Work** in their possession at all times whilst work is being carried out.

(c) Where more than one **Working Party** is involved a **Permit-to-Work Shall** be issued to the **Competent Person** in direct charge of each **Working Party** and these **Shall** at the time of issue, be cross-referenced with each other.

4.6.3 Procedure for Clearance and Cancellation

(a) A **Permit-to-Work Shall** be cleared and cancelled:

(i) when work on the **Apparatus** or **Conductor** for which it was issued has been completed;

(ii) when it is necessary to issue a **Sanction-for-Test**, in which case all **Permits-to-Work** that are associated with the **Apparatus** and **Conductors** to be tested **Shall** be cancelled;

(iii) when it is necessary to change the **Person** in charge of the work detailed on the **Permit-to-Work**;

(iv) at the discretion of a **Senior Authorised Person** when it is necessary to interrupt or suspend the work detailed on the **Permit-to-Work**.

(b) The recipient **Shall** sign the clearance and return the **Permit-to-Work** to a **Senior Authorised Person** who **Shall** cancel it and inform the **Control Engineer**. In all cases the recipient **Shall** indicate in the clearance section whether **Additional Earths** have been “removed” or “accounted for”, whether the work is "complete" or "incomplete" and that all gear and tools "have" or "have not" been removed.

(c) Where more than one **Permit-to-Work** has been issued for work on **High Voltage Apparatus** or **Conductors** associated with the same **Circuit Main Earths**, the **Control Engineer Shall** ensure that all such **Permits-to-Work** have been cancelled before those **Circuit Main Earths** are removed.

4.6.4 Procedure for Temporary Withdrawal or Suspension

Although this Rule appears in the National Model Distribution Safety Rules there is no such **Approved** procedure within Western Power Distribution.

4.6.5 Procedure for Transfer

Although this Rule appears in the National Model Distribution Safety Rules there is no such **Approved** procedure within Western Power Distribution.

4.6.6 Minor Testing Under A Permit-To-Work

Where there is a requirement for minor testing to be carried out under a **Permit-to-Work**, this **Shall** be in
AP5 accordance with an **Approved** procedure.

4.7 SANCTIONS-FOR-TEST

4.7.1 Authority for Issue

(a) A **Sanction-for-Test Shall** be issued by the **Senior Authorised Person** initiating the testing under these Distribution Safety Rules before any testing is carried out on any **Apparatus** or **Conductors**.

(b) A **Sanction-for-Test Shall** only be issued with the authority of the **Control Engineer**, who **Shall** maintain an **Approved** record of the issue and cancellation of each **Sanction-for-Test.**

4.7.2 Procedure for Issue and Receipt

(a) A **Sanction-for-Test Shall** be explained and issued to the **Authorised Person** in direct charge of the testing, who after reading its contents and confirming that they understand it and are conversant with the nature and extent of the testing to be done, **Shall** sign its' receipt

and its' duplicate. The recipient **Shall** confirm their understanding by explaining the safe working area, the testing to be carried out and precautions required. The recipient **Shall** also ensure that the **Sanction-for-Test** is effectively explained to other members of the Testing Party in accordance with an **Approved** procedure.

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(b) The recipient of a **Sanction-for-Test Shall** be an **Authorised Person** who **Shall** retain the **Sanction-for-Test** in their possession at all times whilst tests are being done.

4.7.3 Procedure for Clearance and Cancellation

When testing on **Apparatus** for which a **Sanction-for-Test** has been issued is suspended or completed the recipient **Shall** sign the clearance and return the **Sanction-for-Test** to a **Senior Authorised Person** who **Shall** cancel it and inform the **Control Engineer**.

4.7.4 Procedure for Temporary Withdrawal or Suspension

Although this Rule appears in the National Model Distribution Safety Rules there is no such **Approved** procedure within Western Power Distribution.

4.7.5 Minor Work Under A Sanction-for-Test

Where there is a requirement for minor work under a **Sanction-for-Test**, this **Shall** be in accordance with an **Approved** procedure.

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4.8 LIMITATIONS-OF-ACCESS

4.8.1 Authority for Issue

(a) A **Limitation-of-Access Shall** be issued by a **Senior Authorised Person** or an **Authorised Person** specially authorised to do so when it is considered necessary to have written instructions to avoid **Danger** and when a **Permit-to-Work** or a **Sanction-for-Test** is not applicable.

(b) In particular a **Limitation-of-Access** may be issued

for the following types of activity when there is **Danger**:

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(i) work in proximity to, but outside the **Working and Access Clearance** from, exposed **Live High Voltage Conductors**;

(ii) work on **Plant** operated by or containing compressed air or other gases;

(iii) such other access or work as specified by an **Approved** procedure.

4.8.2 Procedure for Issue and Receipt

(a) A **Limitation-of-Access Shall** be explained and issued to the **Person** in direct charge of the work who after reading its contents and confirming that they understand it and are conversant with the nature and extent of the work to be done, **Shall** sign its receipt and its duplicate. The recipient **Shall** confirm their understanding by explaining the safe working area, the work to be carried out and precautions required. The recipient **Shall** also ensure that the **Limitation-of-Access** is effectively explained to the other members of the **Working Party** in accordance with an **Approved** procedure.

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(b) The recipient of a **Limitation-of-Access Shall** be a **Competent Person** who **Shall** retain the **Limitation-of-Access** in their possession at all times whilst work is being carried out.

(c) Where more than one **Working Party** is involved, a **Limitation-of-Access Shall** be issued to the **Competent Person** in direct charge of each **Working Party**.

4.8.3 Procedure for Clearance and Cancellation

A **Limitation-of-Access Shall** be cleared by the recipient signing the clearance and then returning the **Limitation-of-Access** for cancellation to a **Senior Authorised Person** or **Authorised Person** specially authorised to do so.

Golden Distribution Safety Rule

If you’re not sure, stop and ask for help.

SECTION 5

PROCEDURES FOR WORK ON PARTICULAR ITEMS OF PLANT, APPARATUS OR CONDUCTORS

SECTION 5: PROCEDURES FOR WORK ON PARTICULAR ITEMS OF PLANT, APPARATUS OR CONDUCTORS

5.1 GENERAL SAFETY PRECAUTIONS

5.1.1 The safety precautions detailed in Section 4 for work on or near **High Voltage Systems Shall** apply.

5.1.2 **Zone of Work**

When, in order to work on particular items of **Plant**, **Apparatus** or **Conductors**, a section of the **System** larger than the zone of work is **Isolated** and **Earthed** (as for example, in the case of work on ring main units) the Safety Rules specified in Section 5 relating to isolation, earthing and the requirements for **Personal Supervision** by the **Senior Authorised Person**, for such work may be waived in **Approved** circumstances provided that:

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(a) before the waiver the normal requirements of Rule 4.1.1 are applied in full;

(b) all **High Voltage Apparatus** and **Conductors** within the zone of work are connected to the **Circuit Main Earths** at the time when the specified **Apparatus** or **Conductors** are released for work or testing by the issue of a **Safety Document**; and

(c) an **Approved** procedure applies.

In these circumstances, the recipient of the **Safety Document** may, in the course of work or testing, disconnect from the **Circuit Main Earths** as required any **Apparatus** or **Conductors** within the zone of work.

The **Senior Authorised Person Shall**, at the time of issue of the **Safety Document**, demonstrate to the recipient by **Approved** means that the **Apparatus** or **Conductors** are **Dead**.

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The **Apparatus** and **Conductors Shall** be reconnected to the **Circuit Main Earths** before the **Safety Document** is cleared, unless the **Circuit Main Earths,** the **Apparatus** or the **Conductors** have been permanently removed from the **System**.

Precautions **Shall** be taken to avoid **Danger** from potential differences arising from remote **Earth** points,
AP8 by bonding and earthing **Conductors** in an **Approved** manner at a point as near as possible to the point of work.

5.2 REMOTELY AND AUTOMATICALLY CONTROLLED EQUIPMENT

Before work is carried out on remotely or automatically controlled equipment such as circuit breakers, isolators, tap changing gear or air compressors, all remote control and automatic features **Shall** first be rendered inoperative and, where the facility exists, **Safety Locked** off and **Caution Notices** posted. Whilst such work is in progress no work **Shall** be carried out on the controlling equipment and associated wiring or relays, except by an **Authorised Person** or a **Competent Person** acting under their **Personal Supervision**. In this case the **Distribution Control Engineer Shall** be informed but no work of this kind **Shall** be carried out if it could restore the remote control or automatic features.

5.3 WITHDRAWABLE APPARATUS

5.3.1 When withdrawable **High Voltage Apparatus** has been disconnected from all supplies and removed from its normal housing, its **Conductors Shall** be discharged to **Earth**, but need not remain connected to **Earth**. Where a
AP5 risk assessment shows there is no **Danger** from stored electrical energy, it is not necessary to discharge the withdrawable **Apparatus**.

5.3.2 All spout shutters not required to be opened for immediate work or operation **Shall** where practicable be

locked shut or otherwise made inaccessible.

5.3.3 Work, at the location, on withdrawable **High Voltage Apparatus** that has been disconnected in accordance with Rule 5.3.1 **Shall** be carried out under a **Limitation-of-Access**.

5.4 BUSBAR SPOUTS, BUSBARS AND BUSBAR CONNECTIONS OF MULTI-PANEL SWITCHBOARDS

5.4.1 Isolation

When work is to be carried out on busbar spouts, busbars and busbar connections, all of the following isolation procedures **Shall** be carried out:

(a) the section of the busbars on which work is to be carried out **Shall** be **Isolated** from all points of supply from which it can be made **Live**;

(b) the isolating arrangements **Shall** be locked so that they cannot be operated and, where practicable the shutters of **Live** spouts locked shut. Where duplicate circuit breakers or switches in one tank or on-load selectors are installed, and it is not possible to isolate them from all points of supply, then all circuit breakers or switches that can be closed on to the busbars on which work is to be carried out **Shall** have their mechanisms locked in the open position and the closing mechanism **Shall** be made inoperative;

(c) **Caution Notices Shall** be attached at all points where the busbars can be made **Live**; and

(d) **Danger Notices Shall** be attached on or adjacent to Apparatus containing **Live Conductors** at the limits of the zone of work.

5.4.2 Earthing

(a) Where practicable the section of busbar on which work is to be carried out **Shall** be checked by means of an **Approved** voltage testing device to verify that it is not **Live**. The checking with the voltage testing device **Shall** be done on the panel at which the **Circuit Main Earth** is to be applied.

AE7

AE8 (b) **Circuit Main Earths** of **Approved** type **Shall** be applied at a panel, other than that at which work is to be undertaken, on the **Isolated** section of busbars. The insertion of the hand or any tool into contact spouts for this purpose is forbidden.

5.4.3 A **Permit-to-Work** or **Sanction-for-Test Shall** be issued in accordance with Rules 4.6 or 4.7.

5.4.4 **Work**

Before obtaining the receipt signature on the **Permit-to-Work** the **Senior Authorised Person** who is issuing the **Permit-to-Work Shall**, at the point of work, satisfy themselves that the recipient is aware of the location of all adjacent **Live High Voltage Apparatus** and of the safety precautions to be taken by the recipient.

Immediately after the **Senior Authorised Person** has obtained the receipt signature on the **Permit-to-Work** and before any work is carried out, then:

(i) Where work is to be carried out on busbar spouts it **Shall** be carried out under the **Personal Supervision** of the **Senior Authorised Person** who **Shall** identify the busbar spouts to be worked on and where necessary provide access by removing any locks applied to such spout shutters. They **Shall** then prove that each spout is **Dead** by means of an **Approved** voltage testing device or other **Approved** means before any work is undertaken on the spout.

AE7
AP7

(ii) Where work is to be carried out on busbars or busbar connections the **Senior Authorised Person Shall** identify in an **Approved** manner where access is to be made. Access **Shall** then be made, by the removal of the appropriate cover plates, under the **Personal Supervision** of the **Senior Authorised Person** who **Shall** not leave site until they are satisfied that no further access is required to complete the work and that they have taken such action to prove, where practicable, that each busbar or busbar connection in the working area is **Dead** by means of testing with an

AP2

AE7 AP7 **Approved** voltage testing device or other **Approved** means. No further access **Shall** be made to other parts of the switchboard during the course of the work.

5.5 FEEDER SPOUTS AND CONNECTIONS, VOLTAGE TRANSFORMER SPOUTS AND CONNECTIONS, AND SINGLE PANEL BUSBAR SPOUTS AND CONNECTIONS

5.5.1 Isolation

When work is to be carried out on feeder and voltage transformer spouts or connections, or on the busbar spouts or connections of a single panel, the following procedures **Shall** be carried out:

(a) the spouts or connections on which work is to be carried out **Shall** be **Isolated** from all points of supply from which they can be made **Live**;

(b) the isolating arrangements **Shall** be locked so that they cannot be operated and the shutters of **Live** spouts **Shall** be locked shut;

(c) **Caution Notices Shall** be attached at all points where the circuit can be made **Live**; and

(d) **Danger Notices Shall** be attached, where applicable, on or adjacent to the **Apparatus** containing **Live Conductors** at the limits of the zone of work.

5.5.2 Earthing

(a) Where practicable the spout contacts or connections
AE7 **Shall** be checked by means of an **Approved** voltage testing device to verify that they are not **Live**.

AE8 (b) The circuit **Shall** be **Earthed** with **Approved** earthing equipment at the point of work and, where reasonably practicable, at all points of isolation from the supply. Any special appliances used for the purposes of earthing metal-enclosed switchgear **Shall** also be
AE8 **Approved** but the insertion of the hand or any tool into contact spouts for this purpose is forbidden.

(c) Where the spouts are connected to an overhead line circuit a **Circuit Main Earth** or **Additional Earth Shall** be applied at a point nearest to the point of work where access to the **Conductors** can safely be obtained.

5.5.3 A **Permit-to-Work** or **Sanction-for-Test Shall** be issued in accordance with Rules 4.6 or 4.7. Where the work to be done requires removal of the **Circuit Main Earths** at the point of work the **Permit-to-Work Shall** state that this is permitted under Rule 5.5.4 (i).

5.5.4 **Work**

Before obtaining the receipt signature on the **Permit-to-Work** the **Senior Authorised Person** who is issuing the **Permit-to-Work Shall**, at the point of work, satisfy themselves that the recipient is aware of the location of all adjacent **Live High Voltage Apparatus** and of the safety precautions to be taken by the recipient.

Immediately after the **Senior Authorised Person** has obtained the receipt signature on the **Permit-to-Work** and before any work is carried out, then:

(i) where the work is to be carried out on the feeder, voltage transformer or busbar spouts on a single panel unit, it **Shall** be carried out under the **Personal Supervision** of a **Senior Authorised Person** who, notwithstanding the requirements of Rule 4.3.4(a) may, where necessary, remove the **Circuit Main Earths** at the point of work and provide access by removing any locks applied to such spout shutters. They **Shall** then prove that each spout is **Dead** by
AE7 means of an **Approved** voltage testing device or other
AP7 **Approved** means before any work is undertaken on the spout. On completion of the work, the **Circuit Main Earths Shall** be re-applied, if necessary, before the **Permit-to-Work** is cancelled.

If the only earthing devices that can be applied to the circuit are those applied to the spouts and are **Circuit**

Main Earths then, while the work is in progress no other work **Shall** be carried out on the circuit connected to those spouts.

(ii) where work is to be carried out on feeder or voltage transformer connections and single panel busbars or connections the **Senior Authorised Person Shall** AP2 identify in an **Approved** manner where access is to be made. Access **Shall** then be made by the removal of the appropriate cover plates under the **Personal Supervision** of the **Senior Authorised Person** who **Shall** not leave site until they are satisfied that no further access is required to complete the work and that they have taken such action to prove, where practicable, that each connection or busbar in the working area is **Dead** by means of testing with an AE7 **Approved** voltage testing device or other **Approved** AP7 means. No further access **Shall** be made to other parts of the switchboard during the course of the work.

5.6 HIGH VOLTAGE APPARATUS AND PLANT OPERATED BY OR CONTAINING COMPRESSED AIR OR OTHER GASES OR OPERATED BY HYDRAULIC POWER

5.6.1 Compressed Air

All of the following precautions **Shall** be taken before any work other than operating adjustments is carried out:

(a) if the zone of work includes the compressor plant, then the supply to the prime mover of the compressor **Shall** be switched off and any such switch and/or control handle **Safety Locked** in the off or neutral position as appropriate. A **Caution Notice Shall** be attached at each such position;

(b) all valves positioned between the part of the system to remain in service and the zone of work **Shall** be closed and locked in the closed position by **Safety Locks**, and a **Caution Notice Shall** be attached at each such position.

In addition, the supply to any such valve that is power operated **Shall** be rendered inoperative and where the facility exists the power supply **Safety Locked** in the off position, a **Caution Notice Shall** be fitted;

(c) the compressed air in any zone of work **Shall** be released before work commences, and **Approved** methods **Shall** be used to ensure that the equipment or pipes concerned remain open to atmosphere for the duration of the work; and

AP15

(d) all keys for **Safety Locks** fitted under the provisions of this Rule **Shall** be placed in a **Key Safe**, in the possession of a **Senior Authorised Person** or in accordance with an **Approved** procedure.

AP10

5.6.2 **Operating Adjustments**

Notwithstanding the requirements of Rule 5.6.1, operating adjustments on equipment operated by or containing compressed air, which require the normal air supply, may be carried out but only under the **Personal Supervision** of an **Authorised Person**.

5.6.3 **Equipment Containing SF6**

Access to or work on equipment containing SF6 **Shall** be carried out in accordance with an **Approved** procedure.

AP15

5.6.4 Where the additional safety precautions required for work on associated **Apparatus** are not detailed on a **Permit-to-Work**, then a **Limitation-of-Access Shall**, where necessary, be used in accordance with Rule 4.8.

5.7 TRANSFORMERS

5.7.1 **Isolation**

(a) When work within the terms of Rule 4.1 is to be carried out on the connections to, or the windings of a transformer, the switchgear or fuse-gear controlling all windings **Shall** be opened or the windings or connections **Isolated** by other **Approved** means from **Live Conductors**.

AP10

(b) Additionally, to prevent the possibility of the transformer being made **Live** by back-feed, all **Low Voltage** fuses or links on associated voltage and auxiliary transformers **Shall** be withdrawn and a **Caution Notice** attached. Where the facility exists a **Safety Lock Shall** be applied to the fuse and link carriers, or the voltage and auxiliary transformers **Shall** be **Isolated**.

(c) The transformer **Shall** be **Isolated** from all common neutral earthing equipment from which it may become **Live**. Except for the isolation of transformers supplying traction loads, which **Shall** be in accordance with an
AP10 **Approved** procedure, this does not require the disconnection of solidly **Earthed** neutrals or neutral equipment connected solely to the transformer on which work is to be done.

(d) Where work is to be carried out on a **High Voltage** to **Low Voltage** transformer and the **Low Voltage** windings of the transformer are controlled by a switch or isolator, the switch or isolator **Shall** be secured
AP10 open in an **Approved** manner.

In other cases arrangements **Shall** be made to ensure that the **Low Voltage** windings are **Isolated** from all sources of **Low Voltage** supply.

(e) Before any withdrawable voltage transformer is **Isolated** or re-connected the associated **High Voltage** connections **Shall**, where reasonably practicable, be made **Dead**. If it is suspected that a voltage transformer is faulty the associated busbars or feeder connections **Shall** be made **Dead** before it is **Isolated**.

AE19 (f) **Caution Notices Shall** be attached at all points of isolation including those of **Low Voltage**.

(g) All keys for **Safety Locks** fitted under the provisions of this Rule **Shall** be placed in a **Key Safe**, in the possession of a **Senior Authorised Person** or in
AP 10 accordance with an **Approved** procedure.

5.7.2 The transformer **Shall** be **Earthed** in accordance with Rule 4.1.1 (c).

5.7.3 Before a **Permit-to-Work** or **Sanction-for-Test** is issued the **Senior Authorised Person Shall**, at the point of work, identify the transformer to be worked on, in accordance with Rule 4.1.1 (e).

5.7.4 A **Permit-to-Work** or **Sanction-for-Test Shall** be issued in accordance with Rules 4.6 or 4.7.

5.8 HIGH VOLTAGE STATIC CAPACITORS

5.8.1 Isolation

Static capacitors **Shall**, in accordance with Rule 4.1.1 be **Isolated** from all **Live Conductors**, locked off where practicable and **Caution Notices** fixed.

5.8.2 Earthing

After the **Circuit Main Earths** have been applied to the instructions of the **Control Engineer**, the following earthing operations **Shall** be carried out under the **Personal Supervision** of a **Senior Authorised Person** in the following sequence:

AE8 (i) Apply **Approved** capacitor earthing devices to the capacitor frames;

AE8 (ii) Apply **Approved** capacitor earthing devices to the common connections of each group of capacitors. (See Rule 5.8.4 (b)).

5.8.3 A **Permit-to-Work** or **Sanction-for-Test Shall** then be issued in accordance with Rule 4.6 or 4.7.

5.8.4 Work

AE8 (a) **Approved Additional Earths Shall** then be applied to the capacitor units at the point of work. These **Additional Earths Shall** be applied or removed only under the **Personal Supervision** of a **Senior Authorised Person**.

(b) Capacitor units **Shall** be short-circuited and remain

short-circuited when removed from the circuit or in cases where earthing in accordance with Rule 5.8.2(ii) is impracticable.

5.9 HIGH VOLTAGE CABLES

5.9.1 All cables **Shall** be treated as **Live** (especially cables which are either damaged, or have exposed **Conductors**), until proved **Dead** by an **Approved** procedure. No **Person Shall** touch the insulation which covers any **Conductor** subject to **High Voltage** unless the **Conductor** has been made safe in accordance with Rule 4.1.1.

AP6

5.9.2 Before issuing a **Permit-to-Work** for work on a **High Voltage** cable, the **Senior Authorised Person**, in addition to the procedure of Rule 4.1.1 **Shall**, at the point of work, identify the cable to be worked on, then by the use of an **Approved** spiking procedure, or other **Approved** means, prove it **Dead**. The **Distribution Control Engineer Shall** be informed before and immediately after any cable is spiked.

AE16
AP6

5.9.3 Where work is to be carried out on the insulated sheath system of a **High Voltage** cable route, additional precautions to prevent **Danger** from any sheath voltages **Shall** be taken in accordance with an **Approved** procedure.

AP12

5.9.4 Where work is to be carried out on any cable or ancillary equipment associated with a **High Voltage** cable route which may be subjected to induced voltages from other **Live** circuits in their proximity, then such work **Shall** only be carried out in accordance with **Approved** procedure. (See also Rule 8.3.2).

AP12

5.9.5 A **Permit-to-Work** or **Sanction-for-Test Shall** be issued in accordance with Rule 4.6 or 4.7.

5.10 HIGH VOLTAGE OVERHEAD LINES – GENERAL

Before issuing a **Permit-to-Work** for work on a **High Voltage** overhead line, in accordance with Rule 4.1.1.

the **Conductors Shall** be bonded together and connected to **Earth**. Where **Earthed** metalwork is present, the metalwork **Shall** be bonded to the **Conductors** and **Earth.**

No **Person Shall** access any pole, tower or structure subject to a **Safety Document** unless:

(i) they have confirmed that the poles, towers or supports are those detailed on the **Safety Document**;

(ii) they have also identified the pole, tower or support by any additional means provided e.g. circuit designation colours;

(iii) The **Apparatus** as defined on the **Safety Document** at the intended point of work, can be seen from ground level, to be connected to **Earth** with **Approved** earthing equipment, located not more than two spans away from the intended point of work. If not, then before work commences the line **Shall** be checked to verify that it is not **Live** and an **Additional Earth Shall** be applied in accordance with Rule 5.10.3; and.

AP8

(iv) they are instructed to do so by the recipient of the **Safety Document**. All instructions given by the recipient **Shall** be in the presence of all members of the **Working Party** who are providing assistance to the **Person** accessing the pole and who **Shall** remain in visual contact with them for the duration of the work.

LINES IN PROXIMITY

If there are other overhead lines in proximity to the one to be worked on, the recipient of the **Safety Document Shall** ensure that the **Working Party** are warned of the additional **Danger**.

5.10.1 **Safe Access**

(a) Access arrangements **Shall** be in accordance with Rule 3.3.

(b) Where ladders are used they **Shall** be of an AE12 **Approved** type.

(c) **Caution Notices**, **Danger Notices**, barriers and screens **Shall** be fixed or moved only under the **Personal Supervision** of an **Authorised Person**.

(d) No **Person Shall**, at a point more than 3.7 metres from ground level, touch any unearthed pole or structure supporting **Live High Voltage Apparatus** unless adequate precautions have been taken to prevent **Danger** from leakage currents in accordance AP2 with an **Approved** procedure.

5.10.2 **Use of Circuit Colours, Numbers or Symbols**

When circuit colours, numbers or symbols are used as part of the identity of a circuit the following Rules **Shall** apply:

(a) the **Senior Authorised Person Shall** inform and agree the circuit colours, numbers or symbols with the **Control Engineer**;

(b) the **Senior Authorised Person Shall** write the circuit colours, numbers or symbols on the **Safety Document**. The recipient of the **Safety Document Shall** check that they are the correct colours, numbers or symbols and initial the statement of circuit colours, numbers or symbols in the presence of the **Senior Authorised Person** issuing the **Safety Document.** The **Senior Authorised Person Shall** provide the recipient of the **Safety Document** with sufficient numbers of wristlets; and

(c) each **Person** who will work on **Apparatus** for which a AP2 **Safety Document** has been issued, which includes circuit colours or symbols, **Shall** be provided with a AE13 wristlet by the document recipient, marked with the circuit colours or symbols and **Shall** wear it in such manner that it will be readily visible to the user during the whole period that they are engaged on the work. On conclusion of the work the wristlets **Shall** be returned by the recipient of the **Safety Document** to the **Senior Authorised Person**;

5.10.3 **Additional Earths**

(a) When required and before work commences on a **High Voltage** overhead line, **Additional Earths Shall** be applied at or as near as practicable to the points of work in accordance with an **Approved** procedure. All **Conductors Shall** be bonded together and connected to **Earth**. Where **Earthed** metalwork is present, the metalwork **Shall** also be bonded to the **Conductors** and **Earth**.

AP8

(b) The number and position of **Additional Earths** applied after a **Permit-to-Work** is issued **Shall** be the responsibility of the recipient of the **Permit-to-Work**. Where special precautions have to be taken, the point of application of **Additional Earths Shall** be specified by the **Senior Authorised Person** in accordance with an **Approved** procedure.

AP8

(c) Where line **Conductors** are to be disconnected, **Approved** earthing devices **Shall** be applied on each side of the intended break before the **Conductors** are disconnected. Where **Conductors** are to be reconnected across an existing break, **Approved** earthing devices **Shall** be applied on each side of the break before the **Conductors** are connected.

AE8

AE8

(d) **Additional Earths** may only be applied by the recipient of a **Permit-to-Work** or **Sanction-for-Test** or by a **Competent Person** under their **Personal Supervision**.

(e) The **Additional Earths Shall** remain in position during the progress of the work and may only be removed by a **Competent Person** after all other members of the **Working Party** have descended the pole or tower on completion of the work.

(f) When painting towers the **Additional Earths** and pennants may be removed by a **Competent Person** in sequence as work proceeds down the tower.

(g) **Additional Earths** used by a **Working Party Shall** be issued by and **Shall** be returned to the recipient of the **Permit-to-Work** who **Shall** ascertain that all the

Additional Earths issued have been returned or accounted for before the **Permit-to-Work** is cleared. When the recipient of a **Permit-to-Work** clears and returns the **Permit-to-Work** to a **Senior Authorised Person** they **Shall** ensure that the **Senior Authorised Person** is aware of the position of any **Additional Earths** that have not been removed.

5.10.4 Suspension of Work

If a **Working Party** leaves a line at any time then, before work is restarted, the **Competent Person** in receipt of the **Permit-to-Work Shall** re-identify the line in accordance with Rule 5.11.1, **Shall** verify that all **Earths** adjacent to the point of work are still in position and **Shall** re-instruct the **Working Party** on the work covered by the **Permit-to-Work**.

5.10.5 Work on Overhead Lines Carrying Live High Voltage Conductors

5.10.5.1 Live Line Work on High Voltage Overhead Lines

High Voltage Live Line Work, connections to or disconnections from a **High Voltage** overhead line, or **Live Line** testing, may be carried out with the **Conductors Live**, but only in accordance with Section 6 of these Distribution Safety Rules.

5.10.5.2 Access to Poles or Towers by a Competent Person

General access below any **Conductor** may be permitted to a **Competent Person** on any pole or tower supporting
AP 2 **Live High Voltage Conductors** provided that the requirements of Rule 4.4 and 5.10.1(d) are observed. Where appropriate, a marker or markers **Shall** be placed on the pole or tower, as an indication of the safe **Working and Access Clearance** (Appendix D - Diagrams 2 & 3).

5.10.6 Work on Upper Portions of Towers Carrying Live Conductors

(a) When work is to be carried out on towers with all

Conductors Live, above the position specified in 5.10.5.2, the zone of work and / or route for climbing **Shall** be established by a **Senior Authorised Person** and a **Limitation-of-Access Shall** be issued and the **Control Engineer** notified.

(b) Where reasonably practicable work **Shall** be carried out from within the body of the tower where the design of the tower permits. Work and climbing on the outside faces of a tower **Shall** be in accordance with an **Approved** procedure. No part of a **Persons** body or tool that is being carried or used **Shall** at any time encroach the **Safety Distance** surrounding a **Live Conductor.**

AP2

(c) **Danger Notices**, barriers and screens **Shall** be fixed or moved only under the **Personal Supervision** of an **Authorised Person**.

5.10.7 **Running Out or Lowering of Overhead Conductors**

When any overhead line **Conductor** is to be raised or lowered or otherwise held on temporary supports / connections, **Approved** procedures **Shall** be followed to ensure that no **Danger** is caused at locations such as road / railway crossings, where other persons may be present. Where the overhead line **Conductors** pass over or under, or are in close proximity to a **High Voltage** overhead line, a **Senior Authorised Person Shall** determine whether the overhead line is to be made **Dead** or whether other **Approved** procedures are to be applied to adequately avoid **Danger**. When the **High Voltage** overhead line has been made **Dead** the requirements of Rule 4.1.1 **Shall** apply and a **Permit-to-Work Shall** be issued.

AP9

When other **Approved** procedures are to be applied the work **Shall** either be supervised by a **Senior Authorised Person** or a **Limitation-of-Access Shall** be issued. In all instances the **Control Engineer** responsible for the existing overhead line **Shall** be informed of the work and where appropriate, auto-reclosing facilities on the circuit concerned **Shall** be temporarily suspended.

5.10.8 **Work on Auxiliary Cables Suspended on Catenary below High Voltage Overhead Lines**

Where work is to be carried out on auxiliary cables suspended on a catenary below a **Live High Voltage** overhead line, the same clearances as specified in Rule 4.4.4 must be observed and the work must not be carried out at a distance of more than 3m from a supporting pole or tower when the **High Voltage** line is **Live**.

5.10.9 **Adverse Weather Conditions**

(a) On the near approach of a lightning storm all work on overhead lines **Shall** cease immediately and the **Control Engineer Shall** be informed.

(b) No person **Shall** patrol an overhead line alone across country during the hours of darkness or when visibility is dangerously impaired as by fog or snow or when snow drifts or similar hazards exist.

(c) If overhead lines are to be patrolled during the hours of darkness suitable lighting equipment **Shall** be used.

5.11 SINGLE OR MULTIPLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES, WITHOUT KEYED FLAG BRACKETS AND WITH ALL CONDUCTORS DEAD

5.11.1 **Preparation for a Permit-to-Work**

The **Senior Authorised Person**, in addition to the procedures of Rules 4.1.1 and 5.10 **Shall** ensure that the
AP6 line to be worked upon is identified in an **Approved** manner at the point of work and, where practicable, **Shall** ensure that the line is checked by means of an
AE7 **Approved** voltage testing device or other **Approved**
AP7 means to verify that the line is not **Live**. If from the point of work the **Conductors** can be seen to be **Earthed**, the use of a voltage testing device may be dispensed with.

5.11.2 A **Permit-to-Work Shall** be issued.

5.12 DOUBLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES WITHOUT KEYED FLAG BRACKETS AND WITH ONE CIRCUIT LIVE

5.12.1 Preparation for a Permit-to-Work

(a) Where work is to be carried out on double circuit overhead lines with one circuit **Live** the following precautions in addition to the provision of Rule 5.11 **Shall** be taken.

(b) The **Senior Authorised Person** in charge **Shall** ensure that at the point of work the circuit to be
AP6 worked upon is identified in an **Approved** manner.

5.12.2 A **Permit-to-Work Shall** be issued.

5.12.3 **Work**

(a) Before commencing work and during the course of the work, the **Senior Authorised Person** in charge **Shall** at the point of work take steps, in accordance with an
AP8 **Approved** procedure, to avoid **Danger** from steelwork being **Live** or becoming **Live**.

(b) A green flag **Shall** be affixed near ground level on the **Dead** circuit side of the pole or tower under the **Immediate Supervision** of a **Senior Authorised Person**. Similarly, a **Danger Notice Shall** be affixed on the **Live** circuit side. Before any **Person** is allowed access, a **Competent Person** or **Competent Persons** at the point of work **Shall** climb the pole or tower on the **Dead** side, check that the overhead line
AE7 is not **Live** using an **Approved** voltage testing device
AP7 or other **Approved** means and **Shall** connect to **Earth** all three **Conductors** on that side.

Red pennants or **Danger Notices Shall** be affixed by a **Competent Person** to the crossarms drawing attention to the **Danger** of the **Live** circuit and, in the case of lattice steel towers, **Shall** be affixed at the junction of the tower with the crossarms carrying the **Live** circuit.

(c) The **Conductors Shall** remain **Earthed** and the green flags, **Danger Notices** and the red pennants **Shall** remain in position throughout the progress of the work. All **Earths**, **Danger Notices** and pennants **Shall** be removed by a **Competent Person** or **Competent Persons** only after all other members of the **Working Party** have descended the pole or tower on completion of the work.

5.13 SINGLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES WITH KEYED FLAG BRACKETS

5.13.1 In addition to the requirements of Rules 4.1.1 and 5.10 the following Rules **Shall** also apply.

5.13.2 The recipient of the **Permit-to-Work** who is also in charge of the **Working Party Shall** personally identify at the point(s) of work the circuit to be worked upon by reference to the route identification, the circuit colours and pole or tower number(s).

5.13.3 The recipient of the **Permit-to-Work Shall** be provided with green flag(s) that fit the keyed flag bracket(s) for the circuit on the pole or tower on which work is to be done, and **Shall** place the green flag in position on the tower before allowing any **Person** to climb the pole or tower. The recipient of the **Permit-to-Work** or the **Competent Person** who is to apply the **Additional Earths Shall** then climb the tower and apply **Additional Earths** in accordance with Rule 5.10.3.

5.14 DOUBLE CIRCUIT HIGH VOLTAGE OVERHEAD LINES WITH KEYED FLAG BRACKETS AND WITH ONE CIRCUIT LIVE

5.14.1 In addition to the requirements of Rules 5.10 and 5.13, the following Rules **Shall** also apply.

5.14.2 The recipient of the **Permit-to-Work** or the **Competent Person** who is to apply the **Additional Earths Shall** then climb the pole or tower on the side indicated by the green flag, apply **Additional Earths** in accordance with Rule 5.10.3 and then affix red pennants to the crossarms

supporting the circuit not being worked on. The red pennants **Shall** be positioned at the junction of the crossarms and the pole or tower body. The **Person** doing this **Shall** be under **Personal Supervision** of the document recipient from ground level. Pennants **Shall** be removed by a **Competent Person** only after all other members of the **Working Party** have descended the pole or tower on completion of work.

5.14.3 When work is to be done on terminal, tee-off or heavy angle poles or towers of a double circuit line with one circuit **Live, Danger** may occur due to reduced clearances. The work **Shall** be done under the **Personal Supervision** of a **Senior Authorised Person** at ground level unless special precautions are taken in accordance with an **Approved** procedure.

AP 2

5.15 HIGH VOLTAGE OVERHEAD LINES WITH MORE THAN TWO CIRCUITS WITH ONE OR MORE CIRCUITS LIVE

5.15.1 When work is to be done on multiple circuit **High Voltage** overhead lines with one or more circuits **Live**, Rules 4.1.1, 5.15.2, 5.15.3 and 5.15.4, in addition to either Rules 5.10 and 5.12 or 5.13 and 5.14 **Shall** apply.

5.15.2 **Preparation for a Permit-to-Work**

The **Senior Authorised Person** in charge of the work **Shall** at the point of work identify the circuit to be worked on.

5.15.3 A **Permit-to-Work Shall** be issued after the zone of work has been checked and the precautions to be observed have been verified with the recipient of the **Permit-to-Work**.

5.15.4 **Work**

Work on one circuit of multiple circuit lines with one or more other circuits still **Live Shall** not be carried out except under the following conditions:

(a) separate means of access **Shall** be provided to the circuit to be worked on;

(b) the **Conductors** of each circuit **Shall** be adequately screened to prevent **Danger** or the **Working and Access Clearance** from the nearest point of work to the remaining **Live** circuits **Shall** be those specified in Rule 4.4.4.

(c) Rule 5.12 **Shall** apply where appropriate. The fixing of green flags or red pennants and **Additional Earth** connections **Shall** be carried out under the **Personal Supervision** of a **Senior Authorised Person** from ground level.

SECTION 6

SAFETY PRECAUTIONS FOR HIGH VOLTAGE LIVE LINE WORK ON HIGH VOLTAGE OVERHEAD LINES

SECTION 6: SAFETY PRECAUTIONS FOR HIGH VOLTAGE LIVE LINE WORK ON HIGH VOLTAGE OVERHEAD LINES

6.1 AUTHORISATION

6.1.1 AP11 No **High Voltage Live Line Work Shall** be carried out except in accordance with **Approved** procedures.

6.1.2 All staff engaged on **High Voltage Live Line Work Shall** have received appropriate training and **Shall** possess written authorisation from Western Power Distribution to undertake **High Voltage Live Line Work**.

6.1.3 **High Voltage Live Line Work Shall** only be undertaken under the **Personal Supervision** of an **Authorised Person** who **Shall** have received training in the procedures and is authorised in writing by Western Power Distribution to act in this capacity. They **Shall** be present throughout the whole of the **High Voltage Live Line Work**.

6.1.4 AE11 Only **Approved** tools and equipment **Shall** be used for **High Voltage Live Line Work**.

6.2 LIVE LINE TOOLS AND EQUIPMENT

6.2.1 Live line tools and equipment **Shall** be kept in a clean and dry condition and before use **Shall** be inspected by the **Authorised Person** referred to in Rule 6.1.3 to ensure that they are clean and dry and in sound condition. If any live line tool or piece of equipment is suspected to be defective it **Shall** not be used.

6.2.2 Where **Approved** procedures for **High Voltage Live Line Work** are based on the use of insulating rods, a clear mark **Shall** be maintained on every live line tool and piece of equipment, where appropriate, indicating the limit of the safe handling position which **Shall** be not less than the following:

Table II - Live Line Tools Safe Handling Limits

Nominal System Voltage	Minimum Effective Length
Not exceeding 11kV	0.9m
Exceeding 11kV but not exceeding 33kV	1.1m
Exceeding 33kV but not exceeding 66kV	1.3m
Exceeding 66kV but not exceeding 132kV	1.7m

6.3 GENERAL SAFETY PRECAUTIONS

6.3.1 Subject to the conditions allowed by this section 6 for **High Voltage Live Line Work** the safety precautions detailed in Section 4 for work on or near **High Voltage Systems Shall** apply.

6.3.2 **High Voltage Live Line Work Shall** not take place on any section of **High Voltage** overhead line where the failure of any component, **Conductor** or tool could energise an associated or adjacent overhead line which is **Dead** and **Earthed** and subject to a **Permit-to-Work** or **Sanction-for-Test**.

6.3.3 Work **Shall** not commence until the **Authorised Person** in charge of the **High Voltage Live Line Work** has advised the appropriate **Control Engineer** of the nature and location of the work to be carried out.

If the circuit on which work is being carried out becomes **Dead** owing to the operation of protective equipment or for any other reason, the **Control Engineer Shall** not sanction the circuit to be re-energised without reference to the **Authorised Person** in charge of the **High Voltage Live Line Work**. Auto-reclose and protection equipment controlling the line **Shall** be managed in accordance with

AP11 an **Approved** procedure.

6.3.4 No **High Voltage Live Line Work Shall** commence in unfavourable weather. If in the course of work unfavourable weather develops, work **Shall** be suspended.

6.3.5 If it is necessary to suspend **High Voltage Live Line Work** for any reason, the line and equipment **Shall** be left in a safe condition and the **Control Engineer** informed.

6.3.6 Before work commences, all **Conductors** and associated pole top, line and tower fittings, steelwork and insulators **Shall** be thoroughly examined at the point of work for signs of incipient failure, through binoculars if necessary, so as to minimise the possibility of failure of these parts during **High Voltage Live Line Work**. The examination **Shall** extend to include the adjacent spans and poles or towers on all sides of the point of work.

6.3.7 Before displacing **Live Conductors** adequate precautions **Shall** be taken to avoid **Danger** and to ensure safety including that of members of the public. Safe **Working and Access Clearances**, in accordance with **Approved** procedures **Shall** also be maintained between the line and other **Apparatus** and objects.

AP11

6.3.8 No vehicle, or person other than a member of the team doing the work, **Shall** be allowed in the near vicinity of the point of work while work is in progress without the sanction of the **Authorised Person** in charge of the **High Voltage Live Line Work**. Where mobile platforms etc. are used for access, the limits of movement of the platform **Shall** be established by the **Authorised Person** in charge of the **High Voltage Live Line Work** and strictly controlled so as to ensure that no metalwork, or any part of the platform, places any person in a position of **Danger**.

6.3.9 AP2 AP2 AP2 Before any pole is climbed it **Shall** be tested in an **Approved** manner. No pole badly impaired by decay or damage or whose stability is in doubt **Shall** be climbed until it has been supported by **Approved** means. The pole **Shall** then either be climbed by only one **Person** at a time or access to the top of the pole **Shall** be by **Approved** means independent of the pole.

6.3.10 AP11 Before any pole is climbed and during the course of **High Voltage Live Line Work** the **Authorised Person** in charge **Shall** take all reasonably practicable steps to avoid **Danger** from steelwork being **Live** or becoming **Live**, in accordance with **Approved** procedures.

6.3.11 AE11 Where **Approved** procedures for **High Voltage Live Line Work** are based on the use of insulating rods, no **Person Shall** climb, move or work in such a position as to bring any part of their body, clothing or any working tool (other than insulated **High Voltage Live Line Work** tools or equipment **Approved** for those procedures) within the safe handling limits referred to in rule 6.2.2, from **Live** exposed **High Voltage Apparatus** and, where appropriate, a marker or markers **Shall** be placed on the pole or tower as an indication. (See also Appendix D – Diagrams 5, 6 and 7).

6.3.12 On completion of the **High Voltage Live Line Work**, the **Distribution Control Engineer Shall** be informed when all **Persons** and tools have been withdrawn from the point of work.

Golden Distribution Safety Rule

If you’re not sure, stop and ask for help.

SECTION 7

SAFETY PRECAUTIONS FOR THE TESTING OF HIGH VOLTAGE APPARATUS

SECTION 7: SAFETY PRECAUTIONS FOR TESTING OF HIGH VOLTAGE APPARATUS

7.1 GENERAL

Testing of **High Voltage Apparatus** may involve a change of state from a condition of **Dead** to **Live Conductors**, possibly involving the issue and cancellation of a **Permit-to-Work** prior to the issue of a **Sanction-for-Test**. It is the duty of the issuer of the **Sanction-for-Test** to ensure that controls are put in place to avoid **Danger** during the testing, by undertaking a risk assessment and identifying appropriate control measures that will be implemented by the **Person** carrying out the testing. This should take due account of the types of test being carried out, the location of the **Apparatus** being tested and its accessibility to Western Power Distribution staff, contractors, members of the public, etc. To allow reasonable flexibility during testing and to ensure the maintenance of appropriate safety standards, the following Rules of this section require that an **Authorised Person Shall** assume special responsibility in this respect.

AP5

7.2 WORK UNDER THE TERMS OF A SANCTION-FOR-TEST

Any **Apparatus** which has been **Isolated** and **Earthed** for testing under the terms of a **Sanction-for-Test Shall** not be connected to the **System** until such **Apparatus** has passed the **Approved** tests and then connected only with the sanction of the **Control Engineer**. The recipient of the **Sanction-for-Test Shall** be responsible for co-ordinating all testing operations on the **Isolated** equipment and for ensuring safety during the tests. They may, without further reference to the **Control Engineer**, remove and replace **Circuit Main Earths** as necessary and carry out tests including making **Live** the **Apparatus** concerned from a testing supply. The recipient of the **Sanction-for-Test Shall** either make the tests personally or such tests **Shall** be carried out under their **Supervision** so as to ensure the tests are conducted in a

AP5

safe manner. The re-application of the **Circuit Main Earth**s at the end of testing may not be necessary. If an AP5 **Approved** procedure applies, they can be left removed and reported to the **Control Engineer** as exceptions on the **Sanction-for-Test**. Otherwise each **Circuit Main Earth** removed by the recipient of the **Sanction-for-Test Shall** be replaced before signing the clearance section of the **Sanction-for-Test**.

7.3 TESTING OF HIGH VOLTAGE APPARATUS

7.3.1 When any **High Voltage Apparatus** is to be subjected to test voltage before being connected or reconnected to the **High Voltage System**, the **Authorised Person** responsible for applying the test voltage **Shall** ensure that such **Apparatus** and the associated test equipment, leads and connections are adequately guarded to prevent **Danger**. **Danger Notices Shall** be attached in conspicuous positions during the period the **Apparatus** may be subject to voltage. All cables and capacitors **Shall** be discharged before and after the application of test voltage.

7.3.2 Temporary **Conductors** used for testing purposes **Shall** be of an adequate size and be easily visible.

7.3.3 Test connections **Shall** not be applied in a cell or compartment in which there is any exposed metal **Live** at **High Voltage**. (This Rule does not preclude the use of AE7 **Approved** voltage testing devices or other **Approved** AP7 devices for testing and phasing out circuits in an **Approved** manner).

7.3.4 The requirements of Rule 4.4 **Shall** be observed in respect of access or work in the proximity of **Live** test leads and connections and in respect of testing in the vicinity of **Live Conductors**.

Golden Distribution Safety Rule

If you’re not sure, stop and ask for help.

SECTION 8

SAFETY PRECAUTIONS AND PROCEDURES FOR WORK ON LOW VOLTAGE SYSTEMS

SECTION 8: SAFETY PRECAUTIONS AND PROCEDURES FOR WORK ON LOW VOLTAGE SYSTEMS

8.1 General

8.1.1 The term **Low Voltage System** and this section of the Distribution Safety Rules apply to Western Power Distributions' distributing **System** operating at **Low Voltage**.

8.1.2 When work or testing is carried out on or near **Low Voltage Apparatus** and **Conductors** precautions **Shall** be taken to prevent **Danger** from burn injury due to electric arc and from electric shock if the **Conductors** are exposed. These precautions are necessary to prevent **Danger** to **Competent Persons** and, so far as reasonably practicable, **Danger** to Third Parties, i.e. persons that may not have sufficient technical knowledge and/ or experience to enable them to maintain safety from the **System**.

If the **Conductors** are covered with insulation and screening, the adequacy of these materials to prevent **Danger Shall** be assessed with regard to the nature of the work or testing. Where necessary the precautions appropriate to work on or near exposed **Conductors Shall** be applied. **Danger** may arise in the following circumstances:

(a) a **Person** confuses **Apparatus** and **Conductors** which have been made **Dead** with those that remain **Live**;

(b) **Dead Apparatus** and **Conductors** are accidentally or inadvertently made **Live**;

(c) a **Person** accidentally or inadvertently makes contact with adjacent **Live Conductors**; or

(d) inadequate precautions are taken during **Live** work or testing.

8.1.3 The term ‘earthed’ when applied to the **Low Voltage System** will mean the bonding of all the phase **Conductors** (including any switch or earthwire) to the neutral **Conductor** by means of an **Approved** device or
AE8 **Approved** leads.

8.1.4 Control and operation of **Low Voltage Systems Shall** be
AP13 in accordance with an **Approved** procedure. Only
AP13 **Persons** appointed in accordance with an **Approved** procedure **Shall** have authority to carry out **Switching** and the **Live** testing of **Low Voltage Systems**.

8.1.5 Work on, or testing of **Low Voltage Apparatus** and **Conductors Shall** only be carried out by a **Competent Person**. Where working arrangements so require,
AP13 **Approved** procedures for the control of work, including the issue of a **Safety Document**, **Shall** apply.

8.1.6 Where work or testing involves the initial connection, or the re-arrangement of **Conductors** to a customer, supply **Shall** not be commenced or recommenced to that customer until checks have been carried out at an appropriate point on the **System** to ensure the polarity, phase rotation and earthing arrangements are acceptable.

8.1.7 No **Low Voltage** overhead line **Shall** be erected or dismantled under a **Live High Voltage** line without the authority of a **Senior Authorised Person** who **Shall** ensure that when necessary, for example because of insufficient clearance, the **High Voltage** line is made **Dead** and a **Permit-to-Work** issued. The **Permit-to-Work Shall** reference the **Low Voltage** work to be carried out. When a **Low Voltage** overhead **Conductor** is to be raised or lowered or otherwise held on temporary supports / connections **Approved** procedures **Shall** be followed to ensure that no **Danger** is caused at locations such as road / rail crossings etc. where other persons may be present.

8.1.8 When work or testing of the **Low Voltage System** is planned, precautions **Shall** be taken to safeguard the integrity of the **Low Voltage System** and in the process prevent, so far as is reasonably practicable, **Danger** to Third Parties i.e. persons that may not have sufficient technical knowledge and/ or experience to enable them to maintain safety from the **System**.

8.2 GENERAL REQUIREMENTS FOR WORK ON DEAD LOW VOLTAGE APPARATUS AND CONDUCTORS

8.2.1 When work is to be carried out on **Dead Low Voltage Apparatus** the **Conductors Shall** be **Isolated** from all sources of supply from the **System**. Where the **Isolating Devices** are lockable, **Safety Locks Shall** be applied. If components such as fuses and links are removable they **Shall** be removed. **Caution Notices Shall** be securely fixed at all points of isolation. Keys and removed components **Shall** be kept in a secure place.

8.2.2 AE8 The **Conductors Shall** be **Earthed** where an earthing device or earthing leads are **Approved** for use on the **Conductors** concerned.

8.2.3 Unless work is being carried out on **Low Voltage Apparatus** as part of an **Approved High Voltage Live Line** procedure the following requirements **Shall** apply:

(a) If it is appropriate to establish a point of **Isolation** on **High Voltage Apparatus** in order to make **Low Voltage Apparatus Dead** for work to take place on that **Low Voltage Apparatus,** a **Limitation-of-Access Shall** be issued and the **Control Engineer** of the **High Voltage System** advised**.**

(b) If **Persons** working on **Low Voltage Apparatus** could encroach within the **Working and Access Clearance** of exposed **Live High Voltage Conductors** then the **High Voltage Conductors Shall** be made safe in accordance with Rule 4.1.1 and a **Permit-to-Work** issued.

(c) If work is to be carried out on **Low Voltage Apparatus** in conjunction with work on **High Voltage Apparatus** which has been made safe in accordance with Rule 4.1.1, then unless the **Low Voltage** work is included on the **Permit-to-Work** issued for **High Voltage** work, a separate **Safety Document** for the **Low Voltage** work **Shall** be issued, with the consent of the **Control Engineer** of the **High Voltage System**.

8.2.4 AE 14 Suitable precautions **Shall** be taken by **Approved** screening or other **Approved** means to avoid **Danger** from inadvertent contact with adjacent **Live Conductors** including, where necessary, the fixing of **Danger Notices** to **Apparatus** containing **Live Conductors**, adjacent to other **Live Conductors** and at the limits of the zone in which the work may be carried out.

8.2.5 AP13 Where **Conductors** may become **Live** due to the operation of a customer's generator, one or more of the following precautions **Shall** be taken to prevent **Danger;**

(a) the **Conductors Shall** be **Isolated** from the customer's **System**;

(b) the **Conductors Shall** be **Earthed** or an **Earth** provided between the point of work and the customer's **System**;

(c) the work **Shall** be carried out in accordance with Rule 8.5 and Rules 8.6 and 8.7 as appropriate.

8.2.6 AE7 Before work commences the **Apparatus** and **Conductors Shall** be identified and proved **Dead** at the point of work by means of an **Approved** voltage testing device. Whilst work is in progress any **Live** working methods that can reasonably be applied to minimise the risk of **Danger** from the **Conductors** being accidentally or inadvertently made **Live Shall** be used.

8.3 ADDITIONAL PRECAUTIONS FOR WORK ON DEAD LOW VOLTAGE CABLES

8.3.1 AP13 The cable to be worked on **Shall** be identified in accordance with an **Approved** procedure which **Shall** include the following:

(a) AP13 all damaged cables **Shall** be treated as **Live** until identified and proved **Dead** by an **Approved** procedure;

(b) AE7 unless the point of work can be physically traced from a point where the **Conductors** are accessible and have been proved **Dead** at that point, it will normally be necessary to open the cable as if it is **Live** and test each **Conductor** with an **Approved** voltage testing device; or

(c) AP13 if the cable has been damaged or is faulty this test **Shall** be made at a safe distance from the suspected point of damage / fault, unless an **Approved** procedure has specific provisions which allow testing at the point of damage. The cable **Shall** then be physically traced from the point of test to the suspect point of damage / fault. Appropriate precautions **Shall** be taken to avoid **Danger** from electric shock and explosive arcing until the point of damage / fault is located and the cable made **Dead**.

8.3.2 AP12 When work is to be carried out on an auxiliary cable which may be subject to induced voltage from a **High Voltage** circuit, additional precautions to prevent **Danger** from these voltages **Shall** be taken in accordance with **Approved** procedures.

8.4 ADDITIONAL PRECAUTIONS FOR WORK ON DEAD LOW VOLTAGE OVERHEAD LINES

8.4.1 AE8 Bare open-wire **Low Voltage Conductors Shall** be **Earthed** using **Approved** earthing leads. Where insulated but unscreened **Conductors** are present the requirements for **Live** working **Shall** be observed until the **Conductors** have been proved **Dead**.

8.4.2 Any unearthed steelwork such as an offset bracket or the upper portions of stay wires above the insulator **Shall** be treated as **Live** until it or the **Conductors** have been proved **Dead**.

8.5 WORK ON LIVE LOW VOLTAGE APPARATUS AND CONDUCTORS

8.5.1 AP13 AE14 AE17 No **Low Voltage Live** work **Shall** be carried out except in accordance with an **Approved** procedure. This **Approved** procedure **Shall** adequately prevent **Danger** from electric shock and inadvertent short-circuiting of the **Conductors**.

8.5.2 AP13 Where **Live** work is to be carried out under an **Approved** procedure, the **Authorised Person** in charge of the **Working Party Shall** make an assessment of the site conditions. **Live** work **Shall** only be commenced where site conditions enable the work to be done safely. If the site conditions become unfavourable **Live** working **Shall** be suspended. In particular the following requirements **Shall** be assessed:

(a) the **Apparatus** to be worked upon **Shall** be visually inspected to see that it is in a satisfactory condition;

(b) there **Shall** be adequate working space and safe means of egress;

(c) the working space and the **Apparatus** to be worked on **Shall** be adequately illuminated; and

(d) if the work is outdoors the weather conditions **Shall** not be unduly adverse.

All **Persons** who carry out **Live** working **Shall** be **Authorised Persons** and **Shall** have received appropriate training in the particular **Approved** procedure. They **Shall** be adequately instructed by the **Authorised Person** in charge of the **Working Party.**

8.5.3 AE20 Only tools and equipment **Approved** for that purpose **Shall** be used for work on, or the testing of, **Live Low Voltage Apparatus** and **Conductors**.

8.5.4 No **Person Shall** carry out work which involves, or is equivalent to, the manipulation of bare **Live Conductors** unless accompanied by another **Person** who **Shall** be available to render or obtain assistance in an emergency.

8.6 ADDITIONAL PRECAUTIONS FOR WORK ON LIVE LOW VOLTAGE CABLES

8.6.1 The cable to be worked on **Shall** be identified by an
AP6 **Approved** means. All metalwork adjacent to the point of
AE14 work **Shall** be adequately shrouded with **Approved** insulating material to prevent inadvertent contact. The metallic sheaths of cables **Shall** be bonded to each other
AE18 with an **Approved** insulated **Conductor** before jointing and before cutting to ensure the continuity of the electrical circuit through the sheath.

8.6.2 Unless alternative **Approved** procedures allow, during all
AP13 work, including the change of cut-outs, only one
AE3 **Conductor Shall** be bared at a time and as a minimum **Approved** insulating gloves **Shall** be used.

8.7 ADDITIONAL PRECAUTIONS FOR WORK ON LIVE LOW VOLTAGE OVERHEAD LINES

8.7.1 Where work is to be carried out on **Live** overhead lines, any unearthed steelwork such as offset brackets or the upper portions of stay wires above the insulator **Shall** be
AE7 proved **Dead** using an **Approved** voltage testing device.

8.7.2 When work is carried out on insulated but unscreened
AE3 **Live Low Voltage Conductors**, **Approved** insulated
AE17 gloves **Shall** be worn and **Approved** insulated tools used, to prevent **Danger** that may arise if the insulation has deteriorated or is damaged.

8.8 APPLICATION OF HIGH VOLTAGE RULES TO WORK ON LOW VOLTAGE APPARATUS AND CONDUCTORS

8.8.1 Where Distribution Safety Rules applicable to work on **High Voltage Systems**, **Apparatus** and **Conductors** are applied to **Low Voltage Systems**, **Apparatus** and
AP13 **Conductors**, this **Shall** be in accordance with **Approved** procedures.

8.9 TESTING AND ADJUSTMENT OF LIVE LOW VOLTAGE APPARATUS

8.9.1 Testing and adjustment, including functional testing, may be made with the **Low Voltage Apparatus Live** provided
AE17 that **Approved** insulated tools and instruments are used.

8.9.2 If the testing or adjustment requires covers to be removed so that terminals or connections that are **Live**, or can be made **Live**, are exposed or temporarily disconnected, then precautions **Shall** be taken to prevent unauthorised access to, or interference with, the **Apparatus**. Such precautions **Shall** include, where necessary, **Personal Supervision** and / or the erection of suitable barriers or screening and the display of **Danger Notices**.

8.9.3 If the **Conductors** are to be made **Dead** in order to avoid **Danger**, the appropriate requirements of Rules 8.2, 8.3 and 8.4 **Shall** be applied.

Golden Distribution Safety Rule

If you’re not sure, stop and ask for help.

SECTION 9

RESPONSIBILITIES OF PERSONS

SECTION 9: RESPONSIBILITIES OF PERSONS

9.1 GENERAL

9.1.1 It is the duty of all **Persons** who may be concerned with the control, operation, work or testing, on or in the near vicinity of **Apparatus** and **Plant** to which these Distribution Safety Rules apply, to implement the Distribution Safety Rules and to comply with them and with related codes and procedures. Ignorance of the relevant legal requirements, Distribution Safety Rules, codes or procedures **Shall** not be accepted as an excuse for neglect of duty.

9.1.2 The responsibilities placed upon **Persons** may include all or part of those detailed in this section, depending on the role of the **Persons**.

9.1.3 Any written authorisation given to **Persons** to perform their designated role in implementing the Distribution Safety Rules **Shall** indicate the class of operation and / or work permitted and the section of **System** to which the authorisation applies.

9.1.4 **Persons** involved in achieving safety from the inherent dangers of the **System** to allow work or testing to commence on **Apparatus** and **Plant** and its subsequent restoration to service, will be concerned in separate broadly identifiable areas of responsibility, as follows:

(i) control - including (before work commences) instructing actions to implement precautions and sanctioning the issue of **Safety Documents** and (after completion of work) acknowledging cancellation of **Safety Documents** and instructing actions to restore **Apparatus** and **Plant** to service;

(ii) making safe or restoration of **Apparatus** and **Plant** - including (before work commences) taking action to make **Apparatus** and **Plant** safe for work and issuing **Safety Documents** and (after completion of work) cancelling **Safety Documents** and taking action to restore **Apparatus** and **Plant** to service;

(iii) work - which includes receipt of a **Safety Document**, execution of the required work to its completion or termination and clearance of the **Safety Document**.

9.2 COMPETENT PERSONS

9.2.1 The responsibilities of **Competent Persons** include those specified below. **Competent Persons** must ensure that their responsibilities are implemented.

9.2.2 **Competent Persons Shall** comply with these Distribution Safety Rules when carrying out work whether instructions are issued orally or in writing.

9.2.3 **Competent Persons Shall** use safe methods of work, safe means of access and the personal protective equipment and clothing provided for their safety.

9.2.4 **Competent Persons** when responsible for the **Supervision** of a **Working Party Shall**:

(i) be responsible for establishing and maintaining the general safety of the **Working Party**;

(ii) be fully conversant with the nature and the extent of the work to be done;

(iii) read the contents and confirm to the **Person** issuing any **Safety Document** that they are fully understood;

(iv) during the course of the work, adhere to, and instruct others under their charge to adhere to, any conditions, instructions or limits specified on any **Safety Document**;

(v) retain any **Safety Document** and (where appropriate) keys in safe custody and correctly implement **Approved** procedures to achieve this;

(vi) provide **Immediate** or **Personal Supervision** as required; and

(vii) warn all persons as quickly as possible to withdraw from and not to work on the **Apparatus** and **Plant** concerned until further notice, if during the course of work a hazard which could result in **Danger** arises or is suspected. The situation **Shall** be reported immediately by the **Competent Person** to a **Senior Authorised Person** or **Control Engineer**.

9.2.5 **Competent Persons Shall** not start or restart work under a **Safety Document** issued to another **Competent Person** without the permission of that other **Competent Person**.

9.2.6 **Competent Persons** clearing a **Safety Document Shall** do so only after all **Persons** working under the **Safety Document** have been withdrawn from, and warned not to work on, the **Apparatus** and **Plant** concerned. Where appropriate, they **Shall** ensure that all tools, gear and loose materials have been removed, guards and access doors replaced and the workplace left tidy. Where appropriate they **Shall** also return, or account for, the correct number of **Additional Earths**, circuit identification flags and wristlets and associated keys and documents.

9.3 AUTHORISED PERSONS

9.3.1 In addition to responsibilities as **Competent Persons**, **Authorised Persons Shall** have some or all of the following responsibilities within the limits imposed by their Certificates of Authorisation.

9.3.2 When participating in achieving safety from the inherent **Dangers** of the **System**, **Authorised Persons Shall** correctly implement specified procedures before work commences, including all of the following:

(i) the keeping of an **Approved** record of all messages, passed by telephone or otherwise, relating to the operation of the **High Voltage System**;

(ii) the reading back to the sender of every verbal message relating to the operation of the **High Voltage System** to ensure that the message has been accurately received; and

(iii) carrying out operations instructed by the **Control Engineer** without unnecessary delay, the implementation of the instructions to be reported back to the **Control Engineer** as soon as possible after completion.

9.3.3 As the recipient of a **Sanction-for-Test** an **Authorised Person** is responsible for all of the following:

(i) meeting the particular requirements of Section 7 of these Distribution Safety Rules;

(ii) being present during the testing, being responsible for co-ordinating all testing operations on the **Isolated** equipment and for ensuring safety during the tests. Such tests may include making **Live** the **Apparatus** and **Plant** from a testing supply; and

(iii) carrying out the temporary removal and re-application of **Earths** as necessary without further reference to the **Control Engineer**.

9.3.4 When given the authority to issue and cancel a **Limitation-of-Access**, to ensure that:

(i) the recipient of the **Limitation-of-Access** understands the nature and extent of the work to be undertaken and the safety precautions to be taken; and

(ii) where applicable, the authority of the **Control Engineer** has been obtained for the issue of the **Limitation-of-Access**.

9.4 SENIOR AUTHORISED PERSONS

9.4.1 In addition to responsibilities as **Authorised Persons**, **Senior Authorised Persons Shall** have some or all of the following responsibilities.

9.4.2 Correctly implementing **Approved** procedures to ensure that all precautions to achieve safety from the inherent **Dangers** of the **System** are completed, including:

(i) confirming through the **Control Engineer** that safety precautions at all locations are complete; and

(ii) meeting the requirements of the relevant sections of these Distribution Safety Rules.

9.4.3 Prior to the issue of a **Safety Document**, deciding where appropriate:

(i) whether **Additional Earths** are required, and if so, the number and points of application;

(ii) whether any action is required to contain or dissipate stored energy;

(iii) whether any additional precautions are necessary;

(iv) whether **Personal Supervision** is required;

and also ensuring that:

(v) safety from the inherent **Dangers** of the **System** has been achieved and will be maintained when the requirements of the **Safety Document** are completely implemented;

(vi) the contents of the **Safety Document** to be issued are correct and unambiguous; and

(vii) the authority of the **Control Engineer** has been obtained for the issue of a **Permit-to-Work** or **Sanction-for-Test**.

9.4.4 When issuing a **Safety Document**:

(i) fully explaining the contents of the **Safety Document** to the recipient and ensuring that the recipient understands the nature and extent of the work or testing to be done and the safety precautions to be taken;

(ii) issuing the **Safety Document** together with (as appropriate) any keys, circuit identification flags and wristlets and noting all **Additional Earths**.

9.4.5 When cancelling a **Safety Document**:

(i) ensuring that the requirements of the clearance section have been completed correctly;

(ii) checking that all items issued with the **Safety Document** have been returned or accounted for;

(iii) checking the operational state of the **Apparatus** and **Plant**; and

(iv) informing the **Control Engineer** of the cancellation of the document and confirming the operational state of the **Apparatus** and **Plant**.

9.4.6 When a **Senior Authorised Person** is in control of a **System** their responsibilities will be extended to embody those of a **Control Engineer** as set out in Rule 9.5 whilst they have control of that **System**.

9.5 CONTROL ENGINEERS

9.5.1 The responsibilities of **Control Engineers** within their sphere of operation which arise from the implementation of these Distribution Safety Rules include the following:

(i) giving authority for the release of **Apparatus** and **Plant** from service;

(ii) giving authority for all **High Voltage Switching** except in cases of emergency or in other **Approved** cases;

(iii) communicating directly via **Approved** means with the **Authorised Person** who is to carry out the **Switching**;

(iv) consulting with **Control Engineers** of other **Systems** to agree and initiate **Switching** where there is interconnection across control boundaries; also agreeing responsibility for control of circuits in the **Isolated** state preparatory to sanctioning the issue of **Safety Documents**;

(v) before giving authority for the issue of a **Safety Document** to ensure that the necessary operations to obtain safety from the inherent **Dangers** of the **System** are carried out;

(vi) giving authority for the issue, and acknowledging cancellation of, **Permits-to-Work** and **Sanctions-for-Test**; and

(vii) maintaining an **Approved** record of all **High Voltage Switching**, application and removal of **Circuit Main Earths** and the issue and cancellation of **Permits-to-Work**, **Sanctions-for-Test** and, where applicable, **Limitations-of-Access.**

SECTION 10

APPENDICES

Golden Distribution Safety Rule

If you’re not sure, stop and ask for help.

APPENDIX A PERMIT-TO-WORK

1 ISSUE: **TO:** ..... …… **PERMIT No**: .....

This Permit-to-Work is cross-referenced to Permit-to-Work numbers;……..…….

Following an Assessment of the Electrical Risks, and the application of appropriate Control Measures, the following High Voltage Apparatus has been made safe in accordance with the Distribution Safety Rules:-

.....

.....

.....

For the following work only to be carried out:- …….

.....

.....

.....

For colour coded overhead lines	
State colour code	
Colour code checked	

Wristlets issued	
Earths issued	
Flags issued	

TREAT ALL OTHER APPARATUS AS LIVE

The following Control Measures have been applied:

POINTS OF ISOLATION are at:- .....

.....

……

……

……

CIRCUIT MAIN EARTHS are applied at:-.....

.....

. .....

……

..... ……

ADDITIONAL CONTROL MEASURES, INFORMATION OR SAFETY RULE REQUIREMENTS:- ……

.....

……

……

Safety Document Continuation Sheet Issued for Control Measures?	YES	NO

ISSUED BY

Signature ..... Date ..... Time.....

2 RECEIPT

I have read this Permit-to-Work and fully understand the details of the work, associated risks, and necessary control measures specified on it. I accept responsibility for carrying out this work and will ensure that I, and those in my charge as logged on the reverse and any attached continuation sheets, are effectively briefed and adhere to any conditions, instructions or limits that are required.

Signature ..... …… Date ..... Time.....

THIS DOCUMENT COVERS ELECTRICAL RISKS ONLY – YOU MUST ALSO CARRY OUT A GENERAL SITE SPECIFIC RISK ASSESSMENT BEFORE STARTING WORK AND WHEN CONDITIONS CHANGE

3 WORKING PARTY BRIEFING LOG

- I have received and understand the briefing given by the recipient of this Permit-to-Work.
- I will adhere to any conditions, instructions or limits related to the work.
- On leaving the Working Party I understand that I cannot re-join until I have received and logged another briefing on this schedule.

Name	Signed	Joining Working Party		Leaving Working Party	
		Date	Time	Date	Time

Safety Document Continuation Sheet used for Working Party Briefing Log? | YES | NO |

Continuation sheet, to be retained and attached to this document, as required.

ADDITIONAL INFORMATION

4 CLEARANCE

I can confirm that all persons under my charge, as listed above, and on any continuation sheets, have been withdrawn and warned that it is no longer safe to work on the Apparatus detailed on this Permit-to-Work.

I confirm that:

The work is complete/ incomplete *

All gear and tools have/have not * been removed

Additional Earths have been removed/ accounted for *

***** Delete words not applicable

Signature..... Date ..... Time.....

5 CANCELLATION - This Permit-to-Work is cancelled.

Signature ..... Date ..... Time.....

THIS DOCUMENT COVERS ELECTRICAL RISKS ONLY – YOU MUST ALSO CARRY OUT A GENERAL SITE SPECIFIC RISK ASSESSMENT BEFORE STARTING WORK AND WHEN CONDITIONS CHANGE

APPENDIX B SANCTION-FOR-TEST

1 ISSUE: **TO:** ..... **SANCTION No**: .....

Following an Assessment of the Electrical Risks, and the application of appropriate Control Measures, the following High Voltage Apparatus has been made safe in accordance with the Distribution Safety Rules:-

.....

.....

.....

For the following testing only to be carried out:-

.....

.....

.....

.....

TREAT ALL OTHER APPARATUS AS LIVE

The following Control Measures have been applied:

POINTS OF ISOLATION are at:- .....

.....

.....

.....

.....

CIRCUIT MAIN EARTHS are applied at:-.....

.....

.....

.....

.....

.....

ADDITIONAL CONTROL MEASURES, INFORMATION OR SAFETY RULE REQUIREMENTS:-

.....

.....

.....

Safety Document Continuation sheet issued for Control Measures?

YES	NO

ISSUED BY:

Signature ..... Date ..... Time.....

2 RECEIPT

I have read this Sanction-for-Test and fully understand the details of the testing, associated risks, and necessary control measures specified on it. I accept responsibility for carrying out this testing and will ensure that I, and those in my charge as logged on the reverse and any attached continuation sheets, are effectively briefed and adhere to any conditions, instructions or limits that are required.

Signature ..... …… Date ..... Time.....

THIS DOCUMENT COVERS ELECTRICAL RISKS ONLY – YOU MUST ALSO CARRY OUT A GENERAL SITE SPECIFIC RISK ASSESSMENT BEFORE STARTING WORK AND WHEN CONDITIONS CHANGE

3 TESTING PARTY BRIEFING LOG

- I have received and understand a briefing by the recipient of this Sanction-for-Test.
- I will adhere to any conditions, instructions or limits related to the testing.
- On leaving the Testing Party I understand that I cannot re-join until I have received and logged another briefing on this schedule.

Name	Signed	Joining Test Party		Leaving Test Party	
		Date	Time	Date	Time

Safety Document Continuation Sheet used for Testing Party Briefing Log? | YES | NO |

Continuation sheet, to be retained and attached to this document, as required.

ADDITIONAL INFORMATION

4 CLEARANCE

I can confirm that all persons under my charge as listed above, and on any continuation sheets, have been withdrawn and warned that it is no longer safe to carry out testing on the Apparatus detailed on this Sanction-for-Test.

I confirm that:

The testing is complete/ incomplete *

All gear, tools, test plugs and leads have/have not * been removed

Additional Earths have been removed/ accounted for *

***** Delete words not applicable

The operational state of the Apparatus is the same as at the time of issue of this Sanction-for-Test apart from the exceptions noted below:-

Exceptions (if none, state 'none')

.....

.....

.....

……

Signature ..... Date ..... Time.....

5 CANCELLATION - This Sanction-for-Test is cancelled.

Signature ..... Date .....Time.....

THIS DOCUMENT COVERS ELECTRICAL RISKS ONLY – YOU MUST ALSO CARRY OUT A GENERAL SITE SPECIFIC RISK ASSESSMENT BEFORE STARTING WORK AND WHEN CONDITIONS CHANGE

APPENDIX C LIMITATION-OF-ACCESS

1 ISSUE TO ……..Document No: …….

Following an assessment of the Electrical Risks involved, permission is given to carry out the work described below:

LOCATION:- ……

ACCESS TO:- ……

……

……

WORK TO BE DONE:- ……

……

……

Control Measures Applicable:

(a) PLANT AND APPARATUS:- ……..

……

……

……

……

……

(b) ENVIRONMENT:- ……..

……

……

……

(c) ACCESS/ GENERAL:- ……..

……

……

……

(d) AUTOMATIC FIRE PROTECTION RENDERED INOPERATIVE

YES	NO	N/A

If YES state conditions for restoration: ……

……

ISSUED BY

Signature…… Date ……Time ……..

2 RECEIPT

I have been informed of the risks and control measures that have been put in place and accept responsibility for carrying out the work in accordance with this Limitation-of-Access and no other work will be done by me or the persons under my charge at the above location.

Signature …… Date ……Time ……..

THIS DOCUMENT COVERS ELECTRICAL RISKS ONLY – YOU MUST ALSO CARRY OUT A GENERAL SITE SPECIFIC RISK ASSESSMENT BEFORE STARTING WORK AND WHEN CONDITIONS CHANGE

3 WORKING PARTY BRIEFING LOG

- I have received and understand a briefing by the recipient of this Limitation-of-Access.
- I will adhere to any conditions, instructions or limits related to the work.
- On leaving the Working Party I understand that I cannot re-join until I have received and logged another briefing on this schedule.

Name	Signed	Joining Working Party		Leaving Working Party	
		Date	Time	Date	Time

Safety Document Continuation Sheet used for Working Party Briefing Log? | YES | NO |

Continuation sheet, to be retained and attached to this document, as required.

ADDITIONAL INFORMATION

4 CLEARANCE

I can confirm that all persons under my charge, as listed above, and on any continuation sheets, have been withdrawn and warned that it is no longer permitted to carry out the work detailed on this Limitation-of-Access.

Signature ..... Date ..... Time.....

5 CANCELLATION - This Limitation-of-Access is cancelled.

Automatic fire protection restored | YES | NO | N/A |

Signature ..... Date ..... Time.....

THIS DOCUMENT COVERS ELECTRICAL RISKS ONLY – YOU MUST ALSO CARRY OUT A GENERAL SITE SPECIFIC RISK ASSESSMENT BEFORE STARTING WORK AND WHEN CONDITIONS CHANGE

APPENDIX D

WORKING AND ACCESS CLEARANCES

1. The **Working and Access Clearances** contained in the following Diagrams and Tables are derived from the **Safety Distances** 'X' specified in Rule 4.4.1 (Table I) with the addition of "Application Factors" appropriate to the particular work activity.

2. **Diagram 1**

   Specifies the **Safety Distances** for work on overhead lines carrying **Live High Voltage Conductors** (Rules 4.4.4 and 5.10.5.2 refer).

   Diagrams 2 and 3

   Specify the **Working and Access Clearances** for work on overhead lines carrying **Live High Voltage Conductors** (Rules 4.4.4 and 5.10.5.2 refer).

   Diagram 4

   Specifies the **Working and Access Clearances** for work in substations and switching stations containing exposed **Live High Voltage Conductors**. (Rules 4.4.4 and 4.5.3 refer).

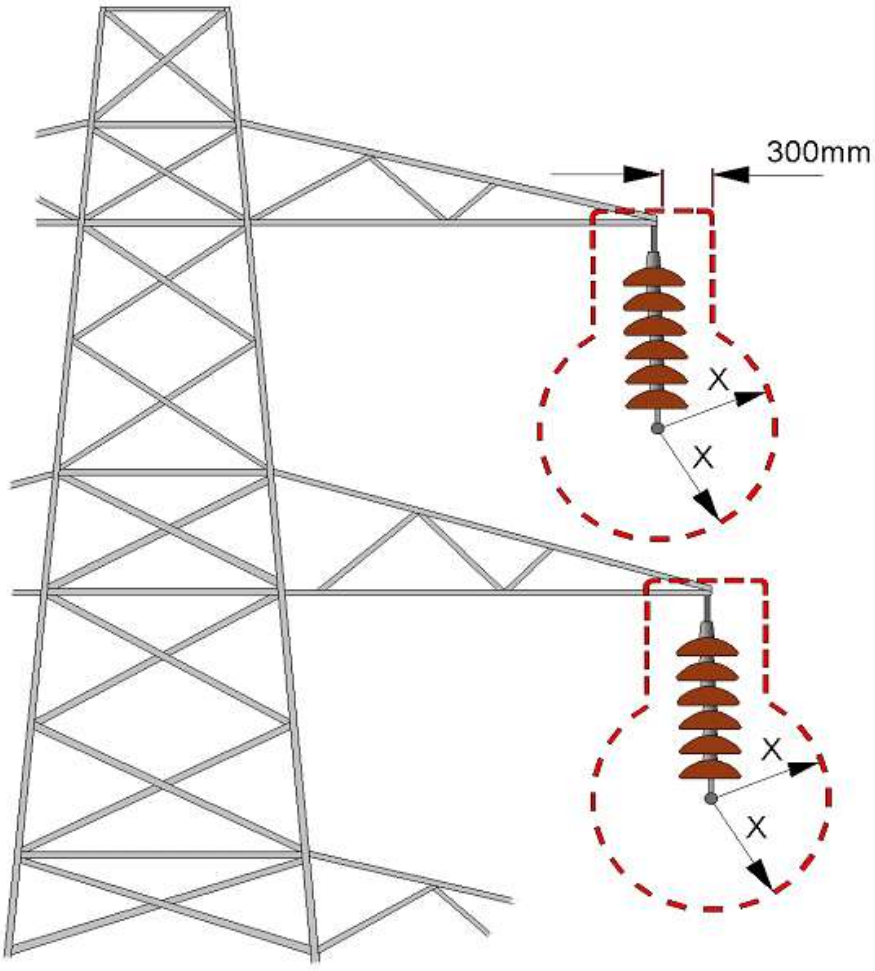
   Diagrams 5, 6 and 7

   Specify **Working and Access Clearances** for **High Voltage Live Line Work**. (Rules 4.4.4, 6.3.11 and 6.2.2 (Table II) refer).

   NOTE: **Approved** 'Hot Glove' **Live** working techniques are exempt from these requirements.

DIAGRAM 1 – STEEL TOWER (SAFETY DISTANCES)

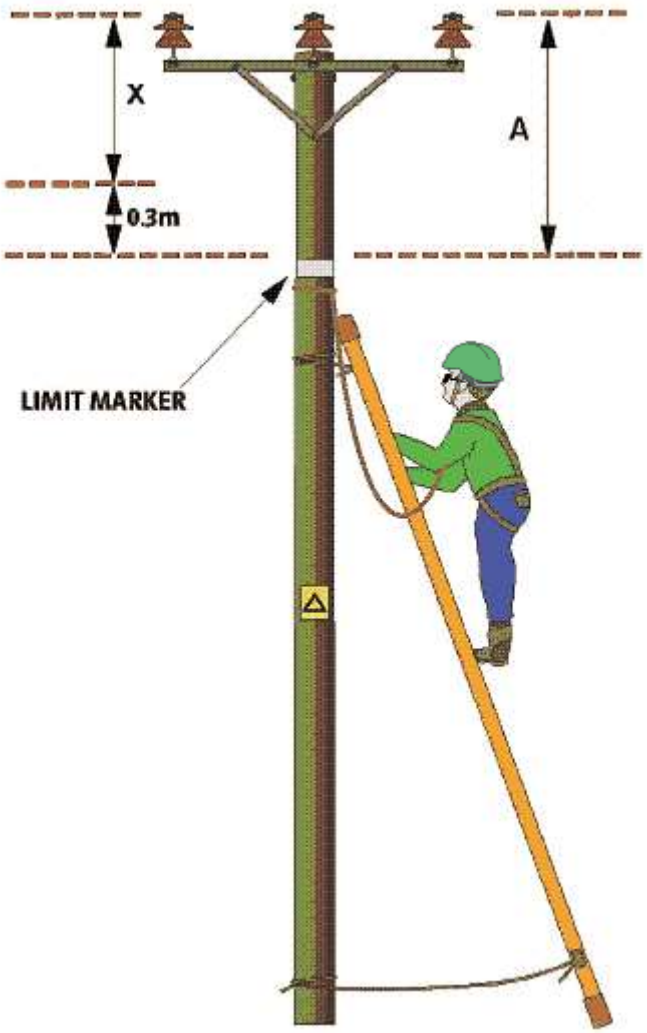
Safety Distances for Work on Overhead Lines Carrying **Live High Voltage Conductors**, (Rule 4.4.1).



Voltage	Safety Distance '**X**'
11kV	0.8 m
33kV	0.8 m
66kV	1.0 m
132kV	1.4 m

DIAGRAM 2 – LADDERS OR CLIMBING IRONS

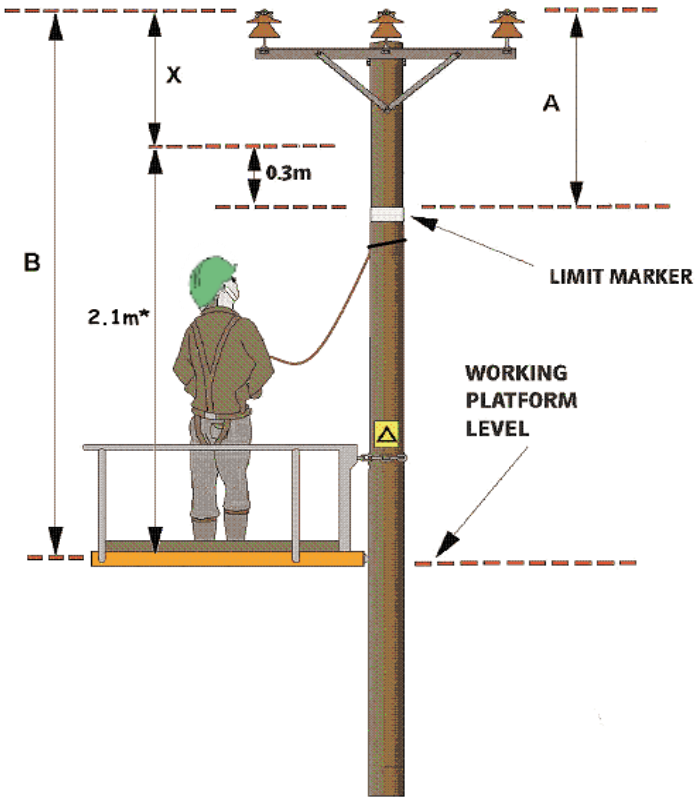
Working and Access Clearances for Work on Overhead Lines Carrying **Live High Voltage Conductors,** (Rules 4.4.4 / 5.10.5.2).



Voltage	Safety Distance '**X**'	Application Factor	Working and Access Clearance '**A**'
11kV	0.8 m	0.3 m	1.1 m
33kV	0.8 m	0.3 m	1.1 m
66kV	1.0 m	0.3 m	1.3 m
132kV	1.4 m	0.3 m	1.7 m

DIAGRAM 3 – POLE PLATFORM OR SCAFFOLDING

Working and Access Clearances for Work on Overhead Lines Carrying **Live High Voltage Conductors**, (Rules 4.4.4 / 5.10.5.2).

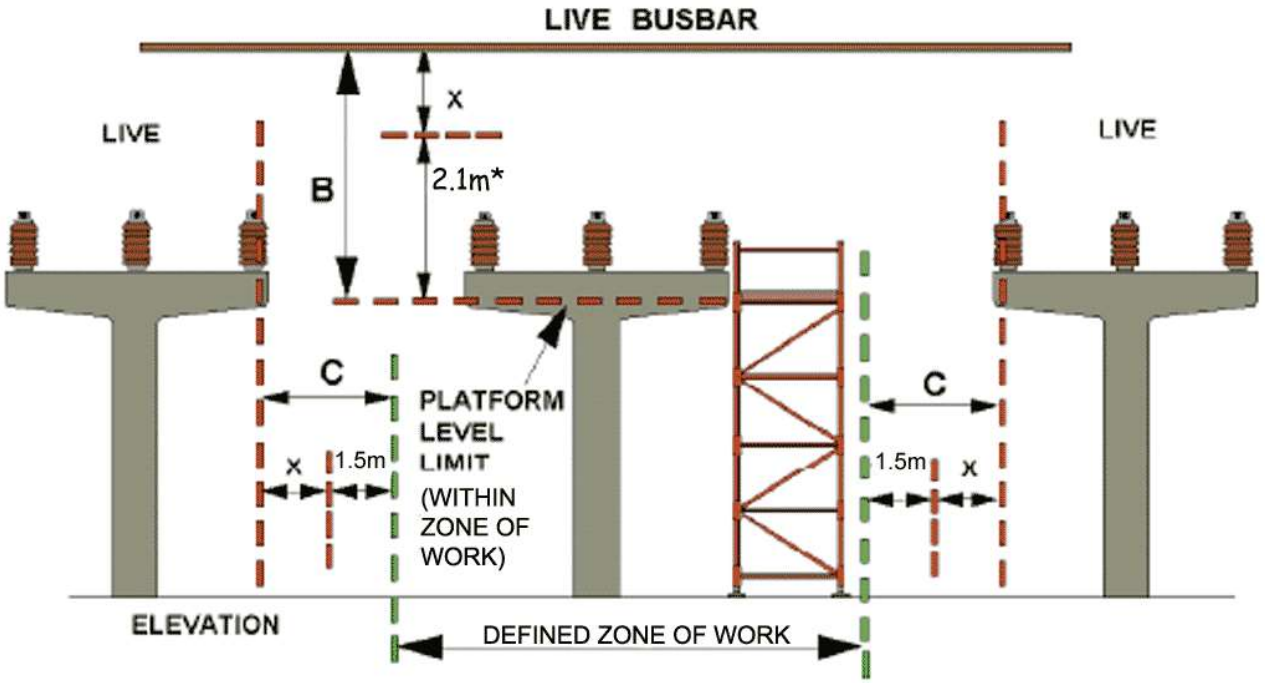


Voltage	Safety Distance '**X**'	Application Factor	Working and Access Clearance '**A**'	Platform Clearance '**B**' = Safety Distance '**X**' + 2.1m*****
11kV	0.8 m	0.3 m	1.1 m	2.9 m
33kV	0.8 m	0.3 m	1.1 m	2.9 m
66kV	1.0 m	0.3 m	1.3 m	3.1 m
132kV	1.4 m	0.3 m	1.7 m	3.5 m

* The Platform Application Factor of 2.1m is a recommended minimum. The platform **Shall** be positioned so as to ensure that the **Working and Access Clearance** 'A' can be maintained below the **Live Conductors**, taking into account; the height of the **Persons(s)** doing the work, the tools used and the nature of the work.

DIAGRAM 4 – SUBSTATIONS AND SWITCHING STATIONS

Working and Access Clearances for Work in Substations and Switching Stations Containing Exposed **Live High Voltage Conductors**, (Rules 4.4.4/4.5.3).

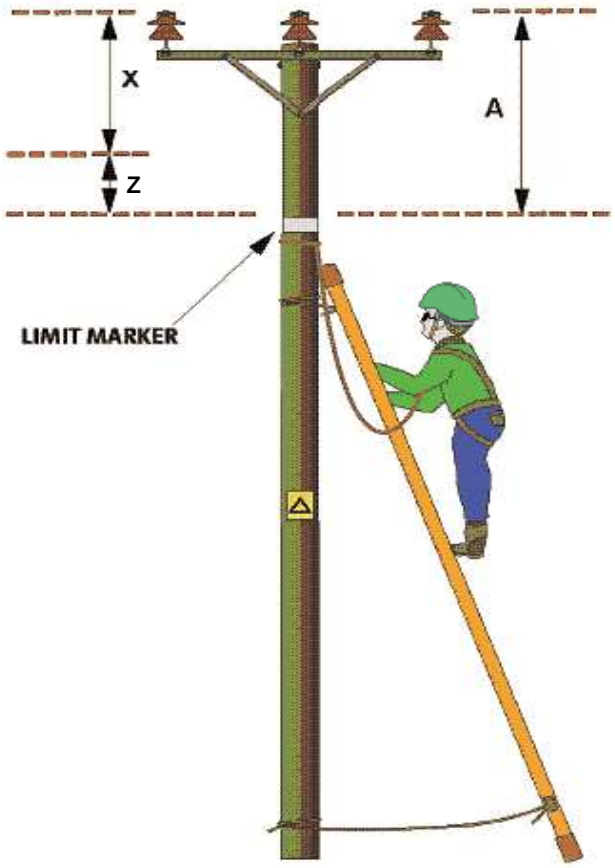


Voltage	Safety Distance '**X**'	Horizontal Application Factor	Horizontal Working and Access Clearance '**C**'	Platform Clearance '**B**' = Safety Distance '**X**' + 2.1m*
11kV	0.8 m	1.5 m	2.3 m	2.9 m
33kV	0.8 m	1.5 m	2.3 m	2.9 m
66kV	1.0 m	1.5 m	2.5 m	3.1 m
132kV	1.4 m	1.5 m	2.9 m	3.5 m
275kV	2.4 m	1.5 m	3.9 m	4.5 m
400kV	3.1 m	1.5 m	4.6 m	5.2 m

* The Platform Application Factor of 2.1m is a recommended minimum. The platform **Shall** be positioned so as to ensure that the **Working and Access Clearance** can be maintained below the **Live Conductors**, taking into account; the height of the **Persons(s)** doing the work, the tools used and the nature of the work.

DIAGRAM 5 – HV LIVE LINE WORK LADDERS OR CLIMBING IRONS

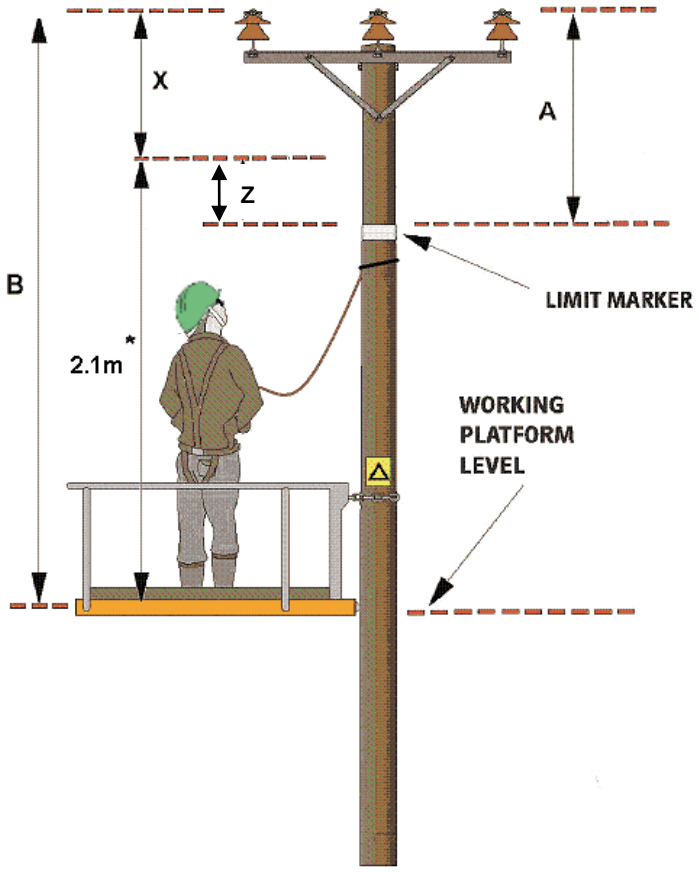
Working and Access Clearances for **High Voltage Live Line Work**, (Rules 4.4.4, 6.2.2 and 6.3.11).



Voltage	Safety Distance '**X**'	Application Factor '**Z**'	Working and Access Clearance '**A**'
11kV	0.8 m	0.1 m	0.9 m
33kV	0.8 m	0.3 m	1.1 m

DIAGRAM 6 – HV LIVE LINE WORK POLE PLATFORM OR SCAFFOLDING

Working and Access Clearances for **High Voltage Live Line Work**, (Rules 4.4.4, 6.2.2 and 6.3.11).

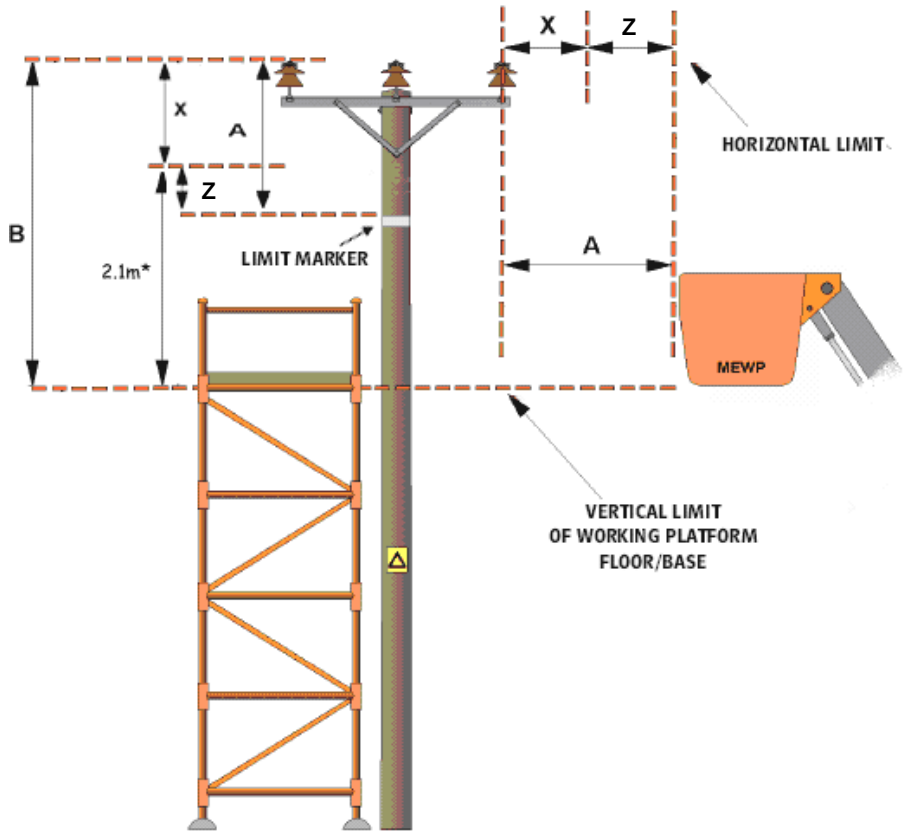


Voltage	Safety Distance '**X**'	Application Factor '**Z**'	Working and Access Clearance '**A**'	Platform Clearance '**B**' = Safety Distance '**X**' + 2.1m*
11kV	0.8 m	0.1 m	0.9 m	2.9 m
33kV	0.8 m	0.3 m	1.1 m	2.9 m

* The Platform Application Factor of 2.1m is a recommended minimum. The platform **Shall** be positioned so as to ensure that the **Working and Access Clearance** 'A' can be maintained below the **Live Conductors**, taking into account; the height of the **Persons(s)** doing the work, the tools used and the nature of the work.

DIAGRAM 7 – HV LIVE LINE WORK SCAFFOLDING OR MOBILE ELEVATED WORKING PLATFORM

Working and Access Clearances for **High Voltage Live Line Work**, (Rules 4.4.4, 6.3.11 and 6.2.2).



Voltage	Safety Distance '**X**'	Vertical & Horizontal Application Factor '**Z**'	Working and Access Clearance '**A**'	Platform Clearance '**B**' = Safety Distance '**X**' + 2.1m*****
11kV	0.8 m	0.1 m	0.9m	2.9 m
33kV	0.8 m	0.3 m	1.1 m	2.9 m

* The Platform Application Factor of 2.1m is a recommended minimum. The platform **Shall** be positioned so as to ensure that the **Working and Access Clearance** 'A' can be maintained below the **Live Conductors**, taking into account; the height of the **Persons(s)** doing the work, the tools used and the nature of the work.

APPENDIX E

TREATMENT FOR ELECTRIC SHOCK AND BASIC FIRST AID

ELECTRIC SHOCK

First make safe

- DO NOT touch the casualty with your unprotected hands.
- Make the electrical source dead immediately or send someone to do so.
- Do not attempt to remove a person from contact with high voltage unless a Senior Authorised Person confirms it is safe to do so.
- To free the casualty from contact with a live low voltage source wear insulating gloves to pull the casualty free; OR
- Stand on a dry insulating material, such as a wooden pallet or plastic mat, then use a dry wooden or plastic implement to free the casualty from the electrical source; OR
- If dry rope is available, without touching the casualty, loop it around the feet or under the arms and pull the casualty free.

AFTER REMOVING ANY ELECTRICAL HAZARD

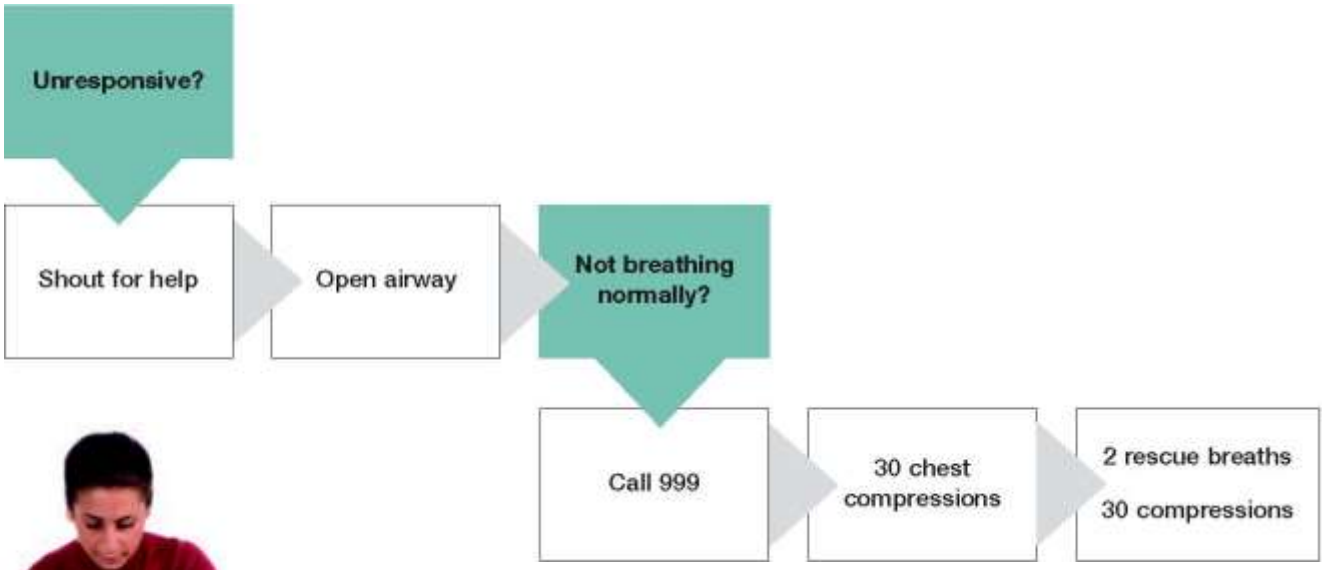
Don't delay - Your priorities are to:

- assess the situation – do not put yourself in danger;
- make the area safe;
- assess all casualties and attend first to any **unconscious** casualties;
- send for help – do not delay - call 999.

Check for a response

Gently shake the casualty's shoulders and ask loudly, 'Are you all right?' If there is no response, your priorities are to:

- shout for help;
- open the airway;
- check for normal breathing;
- take appropriate action.



A - AIRWAY

To open the airway:

- place your hand on the casualty's forehead and gently tilt the head back;
- lift the chin with two fingertips.

B - BREATHING

Look, listen and feel for normal breathing for no more than 10 seconds:

- look for chest movement;
- listen at the casualty's mouth for breath sounds;
- feel for air on your cheek.

If the casualty is breathing normally:

- place in the recovery position;
- get help;

- check for continued breathing

If the casualty is not breathing normally:

- get help; call 999
- start chest compressions (see CPR).

C - CPR

To start chest compressions:

- try to ensure that the casualty is on a firm, flat surface
- lean over the casualty and with your arms straight, press down on the centre of the breastbone 4-5 cm, then release the pressure;
- repeat at a rate of about 100 times a minute;
- after 30 compressions open the airway again;

- pinch the casualty's nose closed and allow the mouth to open;
- take a normal breath and place your mouth around the casualty's mouth, making a good seal;
- blow steadily into the mouth while watching for the chest rising;
- remove your mouth from the casualty and watch for the chest falling;

- give a second breath and then start 30 compressions again without delay;
- continue with chest compressions and rescue breaths in a ratio of 30:2 until qualified help takes over or the casualty starts breathing normally.

SEVERE BLEEDING

If there is severe bleeding:

- avoid direct contact with the casualty's blood. Use protective disposable gloves or a clean plastic bag, if these are available;
- apply direct pressure to the wound;
- raise and support the injured part (unless broken);
- apply a dressing and bandage firmly in place.

BROKEN BONES AND SPINAL INJURIES

If a broken bone or spinal injury is suspected, **obtain expert help. Do not move casualties** unless they are in immediate danger.

BURNS

Burns can be serious so if in doubt, seek medical help. Cool the affected part of the body with cold water until pain is relieved. Thorough cooling may take 10 minutes or more, but this must not delay taking the casualty to hospital.

Certain chemicals may seriously irritate or damage the skin. Avoid contaminating yourself with the chemical. Treat in the same way as for other burns but flood the affected area with water for 20 minutes. Continue treatment even on the way to hospital, if necessary. Remove any contaminated clothing which is not stuck to the skin.

EYE INJURIES

All eye injuries are potentially serious. If there is something in the eye, wash out the eye with clean water or sterile fluid from a sealed container, to remove loose material. **Do not attempt to remove anything that is embedded in the eye.**

IF CHEMICALS ARE INVOLVED, FLUSH THE EYE WITH WATER OR STERILE FLUID FOR AT LEAST 10 MINUTES, WHILE GENTLY HOLDING THE EYELIDS OPEN. ASK THE CASUALTY TO HOLD A PAD OVER THE INJURED EYE AND SEND THEM TO HOSPITAL.

Western Power Distribution requirements for the provision of equipment and training to staff to enable them to carry out emergency First Aid at work is detailed in Engineering Business Directive ST:HS1G.

APPENDIX F

INDEX OF APPROVED EQUIPMENT

APPROVED EQUIPMENT & RULE REFERENCES

GENERAL

All **Approved** equipment must be inspected before use and must not be used if a fault is found. All **Approved** equipment must be used in a fitting and correct manner. All documents referenced within this section are to the current versions.

AE 1 **Safety Helmets –** (Rules, 1.10, 3.3.2, 3.5.8).

Must conform to BS EN 397. Further information is contained in WPD Engineering Business Directive ST:HS8E.

AE 2 **Eye Protection –** (Rules, 1.10, 3.5.8).

The issue and wearing of eye protectors **Shall** be in accordance with the requirements of the Personal Protective Equipment at Work Regulations 1992 and must conform to the appropriate EN standard. Further information is contained in WPD Engineering Business Directive ST:HS8D.

AE 3 **Insulating Gloves –** (Rules, 1.10, 3.5.8, 8.6.2, 8.7.2).

Must conform to BS EN 60903. Details of the gloves to be used and the storage and use requirements are given in WPD Engineering Business Directive ST:HS8B.

AE 4 **Protective Equipment –** (Rule, 1.10).

Any item issued to personnel by Western Power Distribution for their personal protection, such as overalls, waterproofs, rubber boots, industrial gloves, ear defenders etc., as currently detailed in Company purchasing policy documents.

AE 5 **Safety Harnesses and Climbing Equipment -** (Rules, 1.10, 3.2.3, 3.3.2).

Must be test certificated and comply with the relevant BS EN Standard. Further information is given in WPD Engineering Business Directive ST:HS7A.

AE 6 **Breathing Apparatus –** (Rule, 3.2.3).

The only **Approved** breathing apparatus within WPD is that for which specific staff have had training for and hold a specific authorisation to use.

AE 7 **Voltage Testing Devices –** (Rules, 3.7, 3.8, 4.3.1(b), 4.3.3(a), 4.4.2(b), 4.4.3, 5.1.2, 5.4.2(a), 5.4.4(i), 5.5.2(a), 5.5.4(i), 5.11.1, 5.12.3(b), 7.3.3, 8.2.6, 8.7.1).

Information concerning **Approved** devices is provided in WPD Engineering Business Directive POL:OS8. Whilst the associated Standard Techniques include a list of **Approved** testers including advice on their maintenance and use.

AE 8 **Earthing Equipment –** (Rules, 2.D9, 2.D10, 2.D11, 4.3.1(b), 4.3.2, 4.3.3(b), 4.3.3(e), 4.3.3(f), 5.4.2(b), 5.5.2(b), 5.8.2, 5.8.4(a), 5.10.3(c), 8.1.3, 8.2.2, 8.3.1(b), 8.4.1).

WPD Engineering Business Directive POL:OS2 and associated Standard Techniques, details equipment to be used and gives advice on use, care and maintenance for the following applications:

a) Integral earthing switches when part of a switchgear unit.

b) Manufacturers' earthing attachments when used as directed by the supplier.

c) Portable earthing equipment as provided for application to substation **Apparatus** and outdoor air-insulated busbars up to and including 33kV.

d) Portable earthing equipment as provided for application to 11kV and 33kV overhead lines.

e) Manufacturers' equipment provided to earth static capacitors. This gear should provide for **Circuit Main Earths**, Post Earths and Rack Earths.

f) Portable earthing equipment as provided for application to **LV** overhead lines.

g) Special applications subject to approval by the **Designated Person.**

h) Advice on the equipment to be used on 132kV tower lines.

AE 9 **Substation Equipment –** (Rules, 2.D16, 2.D18, 2.D19, 4.5.1(a), 4.5.1(e)).

Is defined as that equipment which **Shall** be provided as necessary at a substation so that these Distribution Safety Rules may be complied with and safe working practices be adopted, e.g.:

a) Logbook,

b) **Caution** and **Danger Notices**,

c) **Approved** barriers and plastic chains, with supports,

d) Green flags together with supports,

e) Earthing equipment,

f) Circuit diagrams,

g) A **Key Safe.**

AE 10 **Fire Extinguishers –** (Rule, 3.2.2).

Must conform to BS EN 3. Further information including the location, issue, use and maintenance is given in WPD Engineering Business Directive POL:HS13 and associated Standard Techniques.

AE 11 **HV Live Line Equipment –** (Rules, 3.5.8, 4.4.3(a), 6.1.4, 6.3.11).

Approved equipment is detailed in WPD Engineering Business Directive POL:OH7 and associated Standard Techniques.

AE 12 **Ladders –** (Rules, 4.5.1(c), 4.5.4(a), 5.10.1(b)).

Comprehensive information on use and maintenance of ladders is given in WPD Engineering Business Directive ST:HS7B.

AE 13 **Wristlets** – (Rules, 5.10.2(c)).

Issued wristlets **Shall** have the same colours/ shapes as the circuit to be worked upon.

AE 14 **Shrouding and Screening Materials –** (Rules, 8.2.4, 8.5.1, 8.6.1).

a) The only materials **Approved** for screening and shrouding **HV Apparatus** are detailed in WPD Engineering Business Directive POL:OH7 and associated Standard Techniques.

b) Shrouding materials approved for **LV** work are listed in WPD Engineering Business Directives POL:OH14 (overhead lines), POL:CA1 (cable systems) and POL:SP8 (substation fuse boards) and their associated Standard Techniques.

AE 15 **Rubber Mats –**

Must conform to BS EN 61111.

AE 16 **Cable Spiking Gun** – (Rule, 5.9.2).

Details of the use and maintenance of the cable spiking gun is given in WPD Engineering Business Directive ST:OS8H.

AE 17 **Approved Insulated Tools –** (Rules, 8.5.1, 8.7.2, 8.9.1).

Equipment manufactured to ESI Standard 26-3 supplied to original specification and **Approved** by the **Designated Person**.

AE 18 **Insulated Earth Bonds –** (Rules, 8.6.1).

Equipment as specified in General Requirement 11 of WPD Engineering Business Directive ST:CA1C.

AE 19 **LV Caution Shrouds –** (Rule, 5.7.1(f)).

Specifications of the boxes and clip-on shrouds are given in WPD Engineering Business Directive POL:OS2 and associated Standard Techniques.

AE 20 **Approved Instruments –** (Rule, 8.5.3).

Instruments manufactured and marketed for the specific purpose of taking measurements on the distribution **System**. Flexible leads used with these instruments **Shall** conform to WPD Engineering Business Directive ST:OS8A.

APPENDIX G

INDEX TO APPROVED PROCEDURES

APPROVED PROCEDURES AND RULE REFERENCES

AP 1.0 SECURITY

1.1 **General -** (Rules, 2.D25, 3.1.1, 3.3.3, 3.4.1).

The procedures used to control access to all operational property, enclosures and electrical **Apparatus Shall** be as detailed in WPD Engineering Business Directive POL:OS3 and associated Standard Techniques.

AP 2.0 ACCESS

2.1 **General -** (Rules, 3.4.1, 4.5.1(e), 4.5.2, 4.5.4(c)).

Normal pedestrian access and egress at ground level to a zone of work or operation **Shall** be organised in accordance with WPD Engineering Business Directive ST:OS1S so that hazards to personnel are avoided.

2.2 **Confined Spaces and Ventilation -** (Rules, 3.1.2, 3.1.3, 3.2.1).

a) All **Persons** required to enter a confined space, underground chamber or emptied tank should be specifically authorised and aware of the precautions to be taken in accordance with WPD Engineering Business Directive ST:HS14A.

b) For confined spaces, e.g. oil circuit breaker tanks and underground chambers, adequate venting is necessary. Details of ventilation requirements and safe methods for work in confined spaces is contained in Engineering Business DirectiveST:HS14A.

c) For indoor ground mounted substations adequate natural ventilation will normally be provided by opening of the substation doors.

2.3 **Busbar Connections –** (Rules, 5.4.4(ii), 5.5.4(ii)).

Where work is to be done on busbar or feeder spouts and connections the **Senior Authorised Person Shall** identify the unit(s) to be worked on by reference to diagrams and labels. If there is a **Danger** that a **Person** may apply themselves to a position other than that identified, the unit(s) to be worked on must be indicated

by signs and the access and egress route **Shall** be defined by the **Senior Authorised Person** and, where necessary, the requirements of AP 2.1 above **Shall** be applied. Further details can be found in Engineering Business Directive ST:OS1G.

2.4 **Inspecting Wood Poles –** (Rules, 3.3.1, 6.3.9).

The inspection requirements required before a **Person** may use a wood pole as a means of access to a work position is detailed in WPD Engineering Business Directive ST:OH5D.

2.5 **Procedures for Climbing and Work at Height –** (Rule, 3.3.2).

Details of precautions to be taken and safe working methods are detailed in WPD Engineering Business Directive POL:HS7 and associated Standard Techniques.

2.6 **Safe Access to Poles Supporting Live HV Conductors –** (Rules, 4.8.1(b), 5.10.1(d), 5.10.5.2).

a) When work, other than **High Voltage Live Line Work**, is to take place on a pole carrying **Live High Voltage Conductors** a **Limitation-of-Access Shall** be issued for all work within 3 metres of the **Conductors**. A **Limitation-of-Access** is not required for the operation/ replacement of **Low Voltage** pole mounted fuse carriers provided **Safety Distances** (Distribution Safety Rules 4.4 and 5.10) are maintained. Where a ladder is used for access it must not extend beyond the fuse units or infringe **Safety Distances**.

b) The precautions required against leakage currents on unearthed poles is detailed in WPD Engineering Business Directive ST:OH5D.

2.7 **Vehicular Access to Substations –** (Rule, 4.5.5).

No vehicle **Shall** be allowed access to a substation enclosure except in accordance with WPD Engineering Business Directive ST:OS1T.

2.8 **Work on Terminal Poles and Towers in Substations-** (Rule, 4.5.1(c)).

Work **Shall** be carried out in accordance with Distribution Safety Rule 4.5.1(a) and WPD Engineering Business Directive ST:OS1E.

2.9 **Access to Towers Carrying Live Conductors –** (Rules, 5.10.6(b), 5.14.3).

A **Person** may climb on the outside face of a tower in accordance with Rule 5.10.5.2. To ascend higher they **Shall** either:

a) continue climbing inside the tower, or;

b) where there are no tee-off connections or line deviations greater than 30 degrees, climb on the outside face that is at right angles to the line **Conductors** and **Shall** ensure that no part of their body or tool that is being carried approaches any **Live Conductor** nearer than the requirements of Rule 4.4.4, or;

c) where it is necessary to climb the outside face of a terminal tower or tower that has a tee-off or deviation greater than 30 degrees, this **Shall** be carried out by a method and route agreed with a **Senior Authorised Person** who **Shall** provide **Personal Supervision** of the climbing activity from ground level.

2.10 **Excavation Work Near Live Cables –** (Rule, 3.9).

Excavation work **Shall** be carried out in accordance with WPD Engineering Business Directive ST:HS14B.

2.11 **Use of Mobile Plant Near Overhead Conductors –** (Rule, 3.10).

A range of WPD Engineering Business Directives have been prepared for the various types of equipment available for working at height. They include: ST:HS15K (Mobile Cranes), ST:HS15M (Lorry Loaders - HIAB Cranes), and ST:HS15N (Mobile Elevating Work Platforms – MEWPs).

2.12 **Circuit Identification –** (Rule, 5.10.2(c)).

Although **High Voltage** overhead lines are uniquely identified by letters and numbers this paragraph will only apply to tower lines having colour identification and other overhead lines which use black and white diamond identification.

AP 3.0 RESCUE

3.1 **Procedure –** (Rule, 3.3.2).

All personnel required to climb wood poles, steel lattice towers, telecommunications towers, substation plant or other high structures **Shall** be trained in rescue techniques as detailed in WPD Engineering Business Directive ST:HS7C.

AP 4.0 EMERGENCY PROCEDURE

4.1 **Emergency Switching –** (Rule, 3.5.1).

No **High Voltage Switching Shall** be carried out without the sanction of a **Control Engineer** unless it is necessary to save life, prevent injury or safeguard **Apparatus**.

4.2 **Communication Failure –** (Rule, 3.5.2).

Where normal communication between a Field Operator and the **Control Engineer** cannot be maintained, alternative means of communication **Shall** be set up or a programme of operations **Shall** be agreed directly between the **Control Engineer** and a **Senior Authorised Person** who **Shall Personally Supervise** or carry out the agreed programme.

4.3 **Special Switching Requirements –** (Rule, 3.5.5).

All **Switching** of the **High Voltage System** should be possible under these Distribution Safety Rules. Where this is not the case a **Switching** programme **Shall** be agreed between the Field Operator and the **Distribution Control Engineer**. This programme **Shall** then be endorsed by the **Designated Person** or their nominated representative before it is proceeded with.

4.4 **Reporting of Accidents/ Incidents –** (Rule, 1.8).

All staff **Shall** be familiar with the requirements of WPD Engineering Business Directive POL:HS5 and associated Standard Techniques which detail the procedures to be followed when reporting an accident and/or a dangerous occurrence.

AP 5.0 SAFETY DOCUMENTS

5.1 **Connection / Re-connection of Tested Apparatus –** (Rules, 7.1, 7.2).

a) All **HV Apparatus Shall** be tested as detailed in WPD Engineering Business Directive POL:OS10 and associated Standard Techniques before it is connected or re-connected to the **System**.

b) Where **Circuit Main Earths** are removed to allow tests to take place, they need not be replaced on completion of the tests, provided the **Control Engineer** is informed of the changed status of the Earthing by the **Senior Authorised Person** responsible for cancelling the **Sanction-for-Test.**

5.2 **Extended Use of Sanction-for-Test –** (Rules, 4.7.5).

To eliminate any confusion arising from the issue of both **Sanction-for-Test** and **Permit-to-Work** certificates during the process of testing, the following procedures **Shall** be adopted.

A **Sanction-for-Test Shall** be issued by a **Senior Authorised Person** to a **Senior Authorised Person** who **Shall Personally Supervise** the following operations:

5.2.1 - **Identifying, earthing and core identification of a HV cable**

a) Removal of **Circuit Main Earths**.

b) Injection tests by **Approved** methods.

c) Positive identification of the cable.

d) Re-application of the **Circuit Main Earths**.

e) Proving the cable **Dead** by **Approved** means.

f) Permitting a jointer to cut the cable and bare the core.

g) Removal of **Circuit Main Earths**, where necessary, to carry out core identification tests.

h) Replacement of the **Circuit Main Earths**.

Note: The order of d) and e) may be changed if post spike checks are to be carried out.

On completion of 5.2.1(h) all **Circuit Main Earths Shall** be re-applied before the **Sanction-for-Test Shall** be cancelled and a **Permit-to-Work** issued to cover the required work.

5.2.2 - **Disconnection and reconnection of cable terminations within the safe area for testing purposes**

a) Confirmation that all **Circuit Main Earths** are applied and the application of any **Additional Earths**, cross-bonding and other precautions to avoid **Danger** at the point of work, on each occasion prior to connections being handled or disturbed, to the same standards as if a **Permit-to-Work** were to be issued.

b) Permitting an operative access to the pole or transformer for a specified purpose.

c) Disconnection and/or reconnection of connections.

d) Removal of **Additional Earths**, cross bonding and any other precautions to prevent **Danger** at the point of work, prior to clearance of the **Sanction-for-Test**.

5.3 **Withdrawable Apparatus –** (Rule, 5.3.1).

Discharging of **Apparatus** disconnected from all supplies and removed from its normal housing can be dispensed with where no capacitive bushings are present.

5.4 **Issue of Safety Documents –** (Rules, 4.6.2(a), 4.7.2(a), 4.8.2(a)).

The procedures to be followed for the communication of risks and control measures using **Safety Documents** is detailed in WPD Engineering Business Directive POL:OS5 and associated Standard Techniques.

5.5 **Minor Testing under a PTW –** (Rule, 4.6.6).

Testing may be carried out where there is no requirement to remove any **Circuit Main Earths** and such testing is in accordance with WPD Engineering Business Directive ST:OS5A.

AP 6.0 IDENTIFICATION AND PROVING DEAD

6.1 **General –** (Rules, 3.9, 4.1.1(e), 5.1.2(c), 5.9.1, 5.9.2, 5.11.1, 5.12.1(b), 8.6.1).

Details of the identification and proving **Dead** procedures are given in WPD Engineering Business Directive POL:OS4 and associated Standard Techniques.

AP 7.0 VOLTAGE TESTING DEVICES

7.1 **General –** (Rules, 3.8, 4.3.3(a), 5.4.4, 7.3.3)

Advice on the use, care and maintenance of **Approved** equipment is given in WPD Engineering Business Directive POL:OS8 and associated Standard Techniques.

7.2 **Safety Distances –** (Rules, 4.4.2(b)).

When applying voltage testing devices to metal clad switchgear it may be necessary to infringe **Safety Distances**. When such testing is to be carried out, it is essential that only devices **Approved** specifically for use on metal clad switchgear are used and the tests **Shall** be carried out by an **Authorised Person** who is authorised for **Switching** on ground mounted switchgear at the appropriate voltage.

7.3 **Other Approved Means –** (Rules, 4.3.1(b), 4.3.3(a), 5.4.4, 5.5.4(i), 5.11.1, 5.12.3(b), 7.3.3).

In Western Power Distribution there are no other **Approved** means.

AP 8.0 EARTHING

8.1 **General –** (Rules, 4.1.1(c), 4.3.1(a), 4.3.1(b), 4.3.3(b), 4.3.3(e).

a) Where the earthing switch or Circuit Breaker being used to make an earthing connection is not rated for the duty it may be called upon to perform, the potentially **Live** connections **Shall** be proved **Dead** by means of an **Approved** voltage detecting device before the switchgear is operated. When isolators are fully interlocked with the associated Circuit Breaker, testing may be dispensed with, except in the case of line earthing switches.

b) Portable **Circuit Main Earths** may only be applied by or under the **Personal Supervision** of a **Senior Authorised Person**. All connection of **Apparatus** to **Earth** must be made using **Approved** tools, applicators and equipment as detailed in WPD Engineering Business Directive POL:OS2 and associated Standard Techniques.

c) When a **Circuit Main Earth** is required to be applied to upper **Conductors** any lower **Conductors** or **Apparatus** connected to **Earth** by **Approved** means may be approached within the **Safety Distance**

without the issue of a **Safety Document**. This is permissible only for the purpose of proving **Dead** and application of the **Circuit Main Earth** to the upper **Conductors**.

d) For the purpose of applying a **Circuit Main Earth** a point of disconnection of **High Voltage** supply **Shall** be taken as the point of isolation where the **System** remains **Live** at **High Voltage**.

e) Where portable **Circuit Main Earths** need to be applied on a pole or structure which also supports **Live Conductors**, both the application and removal **Shall** be under the **Personal Supervision** of a **Senior Authorised Person**, who **Shall** first assess that adequate **Working and Access Clearances** are available.

f) Where a portable **Additional Earth** needs to be applied on a pole or structure which also supports **Live Conductors**, and which could reach within the **Working and Access Clearance** of **Live Conductors** both the application and removal **Shall** be under the **Personal Supervision** of a **Senior Authorised Person.**

g) In outdoor substations with exposed **Live HV Conductors** any portable **Circuit Main Earth** application requires the **Senior Authorised Person** to be accompanied by a **Competent Person**. The **Conductors** to be **Earthed Shall** be proved **Dead** immediately before the application of the **Circuit Main Earth**.

8.2 **Overhead Lines –** (Rules, 4.3.5, 5.1.2, 5.10.3(a), 5.10.3(b), 5.12.3(a)).

Portable **Additional Earths** and cross bonding equipment **Shall** be applied and removed as required by WPD Engineering Business Directive POL:OS2 and associated Standard Techniques.

8.3 **Underground Systems –** (Rule, 5.1.2).

Portable **Additional Earths** and cross bonding equipment **Shall** be applied and removed as required by WPD Engineering Business Directive POL:OS2 and associated Standard Techniques.

8.4 **Application of Distribution Safety Rule 5.1.2-**

8.4.1 **General**

This will only be applied to underground **Systems** and **Apparatus** connected thereto where it is not practicable to carry out the safety precautions detailed in Section 5 of the Distribution Safety Rules.

Approved circumstances for the application of Distribution Safety Rule 5.1.2 exist when the **Apparatus** to be worked on is connected to **Earth** by means of one or more fully rated **Circuit Main Earths** placed between the **Apparatus** and each point of disconnection of supply from the **High Voltage System**.

8.4.2 **Lack of Earthing Facilities on 6.6kV and 11kV Non-isolatable Switchgear**

A number of non-isolatable free standing OFS units within the Company's area are equipped with one integral earthing switch only. This earth switch may be connected either to the load side or to the supply side of the OFS, so it is not always possible to apply a **Circuit Main Earth** to the **Apparatus** to be worked on or tested by means of the single earth switch locally provided.

Where work or testing is to be carried out on a free standing OFS and/or **Apparatus** controlled by a free standing OFS, and no earthing facility exists towards the **Apparatus**, Safety Rule 5.1.2 may be applied. In this case care must be taken to ensure that the remote **Circuit Main Earth** is transferred through the closed OFS before the **Permit-to-Work** or **Sanction-for-Test** is released.

AP 9.0 SPECIFIC TASKS

9.1 **Painting of Earthed Metal Enclosures –** (Rule, 4.1.1(i)).

The procedure to be followed is detailed in WPD Engineering Business Directive ST:SP2B.

9.2 **Live Insulator Washing –** (Rule, 4.1.1(i)).

The procedure to be followed is detailed in WPD Engineering Business Directive ST:SP2E.

9.3 **Secondary Wiring on Switchgear Panels -**

The procedure to be followed is detailed in WPD Engineering Business Directive POL:OC15 and associated Standard Techniques.

9.4 **Work on Over-Running Earth Conductors –** (Rule, 5.10.7).

Work as required in WPD Engineering Business Directive ST:OH2B may be carried out with one circuit **LIVE** on a double circuit overhead line.

AP 10.0 ISOLATION

10.1 **Fuse or Link Removal –** (Rule, 4.2.3).

Where **HV** fuses or links are used as a means of isolation, they **Shall** where practicable be physically removed. Where opened **HV** fuses or links cannot be removed, they may not be used as a point of isolation unless they are secured in the open position by means of a **Safety Lock** with a **Caution Notice** attached.
LV isolation **shall** be achieved per AP 10.4.

10.2 **Effective Disconnection –** (Rules, 5.7.1(a), 5.7.1(d)).

Normally a transformer is **Isolated** by operation of fuse or switchgear. On other occasions isolation is achieved using **HV Live Line Work** techniques. All other disconnections must be made under **Permit-to-Work** conditions. Where it is intended to isolate **Apparatus** for work under a **Permit-to-Work** or **Sanction-for-Test** the minimum separation required to comply with Rule

4.1.1(b) is:

a) A break in air as follows:

Voltage	Phase to Earth	Phase to Phase
11kV	178 mm	229 mm
33kV	380 mm	432 mm
66kV	685 mm	786 mm
132 kV	1270 mm	1473 mm

Unless tests to the appropriate BSEN have been carried out to establish that a smaller gap is acceptable on that particular **Apparatus**.

b) A fully open air-break switch of **Approved** design.

c) A clearance under insulating oil of 38mm for 11kV and 89mm for 33kV.

d) A fully open Metal Enclosed Switch or Fused Switch of **Approved** design.

e) A fully open and **Isolated** Oil, Gas, Vacuum or Air Circuit Breaker of **Approved** design. Isolation may be achieved by opening the associated isolator switches and securing them in the open position with a **Safety Lock** with a **Caution Notice** attached. Alternatively the Circuit Breaker must be racked out and the circuit and busbar shutters locked in the closed position with **Safety Locks**. **Caution** and **Danger Notices Shall** be applied as necessary.

f) Models of SF6 Circuit Breaker with independent manual mechanisms and no integral isolators **Shall** be secured in the open position with a **Safety Lock** and **Caution Notice** applied.

10.3 **Traction Loads –** (Rule, 5.7.1(c)).

No special procedures are currently required within the company for transformers supplying traction loads.

10.4 **Secondary Voltage Isolation –** (Rule, 5.7.1(d)).

Where work is to be carried out on an **Isolated** distribution transformer, or **Apparatus** connected to it, the **Senior Authorised Person** issuing the **Permit-to-**

Work must ensure that the **LV** isolation is effective and maintained.

This may be achieved by one of the following means:

a) A **Safety Lock** and **Caution Notice** applied to the cabinet or kiosk access.

b) An **Approved** Safety Locking Bar.

c) **LV** Caution clip-on shrouds as described in AE 19.

d) Removal of **LV** fuses and their retention in a place of safe keeping, with associated application of **Caution Notices**, or **Approved** dummy fuse holders.

10.5 **Recording of Isolation –** (Rule, 4.2.2(b)).

Details of isolation and the location of **Safety Lock** keys, not in a **Key Safe** or in the possession of a **Senior Authorised Person**, **Shall** be recorded by the **Control Engineer**.

10.6 **Retention of Safety Lock Keys** – (Rules, 4.2.2(a), 5.6.1(d), 5.7.1(g)).

Locations for the retention of **Safety Lock** Keys is detailed in WPD Engineering Business Directive ST:OS3C.

AP 11.0 HV LIVE LINE WORK

11.1 **Procedure –** (Rules, 2.D13, 6.1.1, 6.3.10).

HV Live Line Work Shall only be carried out by specifically authorised staff, trained in and using the techniques detailed in WPD Engineering Business Directive POL:OH7 and associated Standard Techniques.

11.2 **Clearances –** (Rule, 6.3.7).

In performing **Approved High Voltage Live Line Work,** safe **Working and Access Clearances Shall** be maintained as detailed in WPD Engineering Business Directive POL:OH7 and associated Standard Techniques.

11.3 **Auto Reclose Equipment Settings** – (Rule, 6.3.3).

The settings for auto reclose relays are detailed in WPD Engineering Business Directive ST:OH7A & ST:OH7J.

AP 12.0 INDUCED CABLE SHEATH VOLTAGE

12.1 **Additional Precautions –** (Rules, 5.9.3, 5.9.4, 8.3.2).

When work is to be carried out on cables which may be subject to induced voltages from adjacent **High Voltage** circuits, an **Earth** bond **Shall** be installed to connect any parts of the sheath/armouring which is to be connected/ disconnected, or will become separated by a cut. Specific guidance can be found in the associated WPD Engineering Business Directive Standard Technique for the activity being undertaken.

AP 13.0 LOW VOLTAGE WORK

13.1 **Additional Precautions –** (Rules, 8.1.4, 8.5.1, 8.5.2).

a) Staff required to work or carry out testing on **LV Apparatus Shall** be authorised in accordance with WPD Engineering Business Directive POL:OS7 and associated Standard Techniques. All operations and/or testing carried out on **LV Apparatus Shall** be in accordance with WPD Engineering Business Directive ST:OS2E.

b) Testing for correct polarity on **LV Apparatus Shall** be carried out in accordance with WPD Engineering Business Directive ST:OS10F.

c) Appropriate PPE, as specified in the relevant WPD Engineering Business Directive, **Shall** be worn during all work carried out on **Live LV Apparatus.** In addition adjacent **Live Conductors** and/or **Earthed** metalwork **Shall** be screened with **Approved** insulating material.

13.2 **Written Instructions –** (Rule, 8.1.5).

Where work is considered to be too complex for a

spoken instruction to be acceptable a written instruction **Shall** be given. Where it is necessary to identify hazards or to limit the work area to avoid risk the written instruction **Shall** be in the form of a **Safety Document**. A copy **Shall** be kept of any written instruction.

13.3 **Live Working on Cable Cut Outs –** (Rule, 8.6.2).

The changing of cut outs **Live Shall** not be carried out unless a risk assessment is carried out and the procedures in WPD Engineering Business Directive ST:CA ØB are followed.

13.4 **Low Voltage Work to High Voltage Rules –** (Rule, 8.8.1).

When work is to take place on **Low Voltage Apparatus** a **Senior Authorised Person** may, where it is considered necessary apply the **High Voltage** Distribution Safety Rules to provide a safe place of work. All **Safety Documents** issued **Shall** state that the Distribution Safety Rules are being used to regulate work on the **LV System**.

13.5 **Identification and Proving Dead of Low Voltage Cables –** (Rule, 8.3.1).

Shall be carried out in accordance with WPD Engineering Business Directive ST:OS4A.

13.6 **Working on Dead Low Voltage Cables and Apparatus not fully isolated –** (Rule, 8.2.5).

Where **Apparatus** cannot be fully **Isolated** (including every customer cut-out), or the **Apparatus** cannot be **Earthed**, or a **Low Voltage Earth** cannot be connected between the point of work and any connected customer, the following priority of working methods should be adopted;

(a) Live Working

Isolate the cable from all sources of supply from the distribution network. Links, fuses and locking off

keys should be kept in a safe place.
Use **Approved Live** working techniques.

(When the work to be done is not covered by an **Approved Live** technique, **Dead** Working methods **Shall** be adopted as follows).

(b) Dead Working

Isolate the cable as detailed in (a).

Prove the cable **Dead** at or near the point of work where safe access to the **Conductors** is available e.g. cut-outs, link distribution boxes and fuse boards or by opening the cable using **Approved Live** working techniques.

When the cable has been proved **Dead** work may proceed using appropriate **Approved** PPE, on the understanding that the cable might still become energised.

Periodic testing to prove that the cable is still **Dead** should be undertaken throughout the work especially at critical stages such as immediately before handling **Conductors.**

In situations where neither the conditions of paragraph (a) or (b) can be applied, the point of work **Shall** be **Isolated** completely by cutting the cable using **Approved Live** working techniques.

13.7 Faulty / Damaged Cables – (Rule, 8.3.1(c)).

Currently there are no procedures for work at the point of damage or fault. Additional guidance is provided in WPD Engineering Business Directive ST:OS4A.

13.8 Live Working in Multi Service Pillars – (Rule, 8.5.2).

There is no **Approved** procedure for working **Live** in a multi service pillar. Operations within a multi service pillar **Shall** be in accordance with WPD Engineering Business Directive ST:OS2E.

AP 14.0 SPECIAL PROCEDURES

14.1 Where the Distribution Safety Rules Cannot be Applied – (Rules, 1.6, 4.1.1(iii)).

In circumstances where the Distribution Safety Rules cannot or for special reasons should not be applied and it is necessary to carry out work on, or testing of, **Apparatus**, a **Senior Authorised Person Shall** devise a safe method of operation which **Shall** be agreed by the **Distribution Control Engineer**. This method of operation **Shall** be referred to the **Designated Person** or his nominated representative for endorsement before it is proceeded with.

AP 15.0 COMPRESSED AIR, VACUUM OR GAS OPERATED SWITCHGEAR

15.1 Venting to Atmosphere – (Rule, 5.6.1(c)).

When compressed air systems are **Isolated** for work to take place, any captive air must be discharged and the vent(s) must be locked open, by means of a **Safety Lock**, before the work may be released. A **Caution Notice Shall** be attached at the locking point to prevent recharging before it is safe to do so.

15.2 SF6 – (Rule, 5.6 3).

Guidance on recognition and the procedure to be adopted on approaching switchgear containing SF6 is given in WPD Engineering Business Directive ST:SP2LB.

15.3 Unfamiliar Components -

All personnel who have need to approach, or work on, switchgear containing compressed air, vacuum or SF6 **Shall** be aware of the operating characteristics of the switchgear and **Shall** be sufficiently informed as to be able to identify the major component parts and recognise **Danger** signals. Where there is any doubt or incomprehension, advice must be sought before proceeding.

APPENDIX H

INDEX
ENGINEERING BUSINESS DIRECTIVES

Operation & Control Series

Operational Safety Series

No.	Subject
POL:OS1	Operational Safety – Management of Risk
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POL:OS3	Access to Operational Premises
POL:OS4	Location, Identification and Proving Dead of Electrical Apparatus
POL:OS5	Communication of Electrical Safety
POL:OS6	Safety Co-ordination at the Interface between WPD Network and other Third Party's Networks
POL:OS7	Management of Competence of Staff and Contractors
POL:OS8	The Selection, Use, Storage, Transport and Maintenance of Voltage Testing Devices
POL:OS9	Installation and Operation of Mobile Generators and Interrupter Cable
POL:OS10	Testing and Commissioning of High Voltage and Low Voltage Apparatus