

1. SCOPE

This Safety Instruction applies the principles established by the ScottishPower Safety Rules (Electrical and Mechanical) and the **Company** Safety Instructions to achieve **Safety from the System** when access equipment, cranes, vehicles and *Long Objects* are being moved or used within substations and **High Voltage (HV)** enclosures containing exposed **Live HV** conductors.

2. ISSUE RECORD

This is a [Reference](#) document. The current version is held on the EN Document Library.

It is your responsibility to ensure you work to the current version.

Issue Date	Issue No.	Author	Amendment Details
October 1998	1		Initial Issue.
September 2015	2	Phil Currie	Title amended to include vehicles. Section 7 Definition of <i>Standby Man</i> and <i>Field Equipment Earth</i> modified. Added definition of <i>Long Object</i> . Section 10 amended to include Scaffolding. Guidance on movement of <i>Long Objects</i> by two people. Section 11 re-worded to avoid overlap with section 10. Section 12 simplified. Section 13.3 reference to lifting plan. Section 13.6 change to where reasonably practicable. Section 13.11 change to bonding at work position.

3. ISSUE AUTHORITY

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4. REVIEW

This is a [Reference](#) document which has a 5 year retention period after which a reminder will be issued to review and extend retention or archive.

5. DISTRIBUTION

This Energy Networks' Safety Instruction is maintained by EN Document Control and is part of the ScottishPower Safety Rules which is published to the SP Energy Networks Internet site.

6. CONTENTS

1. SCOPE.....	1
2. ISSUE RECORD.....	1
3. ISSUE AUTHORITY	1
4. REVIEW	1
5. DISTRIBUTION.....	1
6. CONTENTS	2
7. DEFINITIONS	3
8. PLANT AND APPARATUS IDENTIFICATION	3
9. DANGERS	3
10. MOVEMENT AND USE OF LADDERS, SCAFFOLDING AND OTHER <i>LONG OBJECTS</i>	3
11. ERECTION AND USE OF SCAFFOLDING	4
12. MOVEMENT OF CRANES, VEHICLES AND MOBILE ACCESS EQUIPMENT TO AND FROM THE WORK AREA	4
13. USE OF CRANES, VEHICLES AND MOBILE ACCESS EQUIPMENT WITHIN DEFINED SAFE BOUNDARIES.....	5

7. DEFINITIONS

For the purpose of this document the following definitions apply:

- (i) *Standby Man* – an **Authorised Person** selected by a **Senior Authorised Person** and provided with written instructions to assist in ensuring the safe movement of vehicles or mobile equipment within a defined area of usage. He shall also assist in the observation of safe working practices and compliance with Safety Rules by personnel engaged in work on or adjacent to the **System**.
- (ii) *Field Equipment Earths* – **Approved** connections for bonding items of field or access equipment to earth. The earths shall be distinctly marked to differentiate them from **Drain Earths** and **Portable Primary Earths**. They are not included in an **Earthing Schedule**.
- (iii) *Long Object* – any tool or object which by virtue of movement or improper use may infringe **Safety Distance**.

Terms printed in bold type are as defined in the ScottishPower Safety Rules (Electrical and Mechanical).

8. PLANT AND APPARATUS IDENTIFICATION

Plant and **Apparatus** on which work or testing is to be carried out shall be readily identifiable or have fixed to it a means of identification which will remain effective throughout the course of the work or testing.

9. DANGERS

The main **Dangers** to personnel during the movement and use of vehicles, cranes, access equipment and *Long Objects* in substations containing exposed **Live HV** conductors are electric shock, burns or falling, arising from:

- (i) Infringing **Safety Distance**;
- (ii) Becoming electrically charged due to induced voltages.

10. MOVEMENT AND USE OF LADDERS, SCAFFOLDING AND OTHER LONG OBJECTS

- 10.1 Only **Approved** ladders shall be used which are of no greater length than is required for the work involved.
- 10.2 When not in use all portable ladders and, where practicable, other *Long Objects* within substations shall be securely **Locked** to a suitable anchorage.
- 10.3 Ladders, scaffolding and other *Long Objects* shall not be used without the permission of a **Senior Authorised Person**.
- 10.4 The movement, erection and dismantling of ladders, scaffolding and other *Long Objects* shall be carried out under the **Personal Supervision** of the **Authorised Person** in charge of the work. When moved at ground level, ladders and *Long Objects* shall be carried in the horizontal position and as near to the ground as is practicable. In general it will be necessary for two **Persons** to carry ladders, scaffolding or *Long Objects* in substations.
- 10.5 If ladders, scaffolding or other *Long Objects* have to be moved within a defined safe work area after the initial placement, the movement shall be carried out in accordance with the specific instructions of the **Authorised Person** in charge of the work.

10.6 Before being used, portable ladders provided to give access to fixed ladders which terminate above ground level shall be **Locked** in position by an **Authorised Person** and shall remain **Locked** during the period that the ladders are in use.

11. ERECTION AND USE OF SCAFFOLDING

11.1 The **Senior Authorised Person** issuing the **Safety Document** shall define on site to an **Authorised Person** the route and **Location** of scaffolding to be erected.

11.2 Scaffolding erected adjacent to exposed **Live HV** conductors shall be electrically bonded to earth, using *Field Equipment Earths*, preferably by connection to the substation earthing system, immediately that it is practicable to do so. As erection proceeds, the scaffolding shall be electrically bonded to earth at approximately 5m intervals, vertically and horizontally, or as determined by the **Senior Authorised Person**.

11.3 Separate earthing systems shall not be connected and precautions shall be taken to avoid **Danger** from the reduced separation between earthing systems. It may be necessary to install a non-conductive panel between a temporary earthed scaffold and the permanent substation fence.

12. MOVEMENT OF CRANES, VEHICLES AND MOBILE ACCESS EQUIPMENT TO AND FROM THE WORK AREA

12.1 An **Authorised Person** shall give **Personal Supervision** to the movement on site of any crane, vehicle or mobile access equipment higher than 2.3m above ground level, including any load or fully extended radio or other aerials. The route shall be defined by a **Senior Authorised Person**.

12.2 At no time shall **Safety Distance** be infringed. To avoid **Danger** associated with induced voltages, contact shall not be made by persons on the ground with any crane, vehicle or access equipment when it is moving under or adjacent to **Live HV** conductors within the distances specified in the following table, unless a *Field Equipment Earth* is first applied.

Rated voltage kV	Distance in metres
Up to 33	2.75
66	3
132	3.4
275	4.6
400	5.5

The **Authorised Person** providing **Personal Supervision** shall have means to communicate immediately with the operator so as to avoid **Danger**.

Using the distances quoted in the table above as a minimum, the **Senior Authorised Person** shall specify to the **Authorised Person** providing **Personal Supervision** when the crane, vehicle or mobile access equipment needs to be bonded to earth.

12.3 The **Senior Authorised Person** shall decide if the issue of a **Limited Work Certificate** is required for the movement of cranes, vehicles or mobile access equipment to the work area.

12.4 Cranes, mobile access equipment and other special purpose vehicles shall only be operated by suitably trained personnel who shall be made aware, by the **Senior Authorised Person**, or by his appointed *Standby Man*, of the hazards of working near **Live HV Apparatus**.

- 13. USE OF CRANES, VEHICLES AND MOBILE ACCESS EQUIPMENT WITHIN DEFINED SAFE BOUNDARIES**
- 13.1 Safe boundaries and safe work areas shall be identified and shall be in accordance with PSSI 6, 'Demarcation of Work Areas in Substations'.
- 13.2 Where a **Safety Document** has been issued, and after the application of any necessary **Drain Earths** to the exposed **HV** conductors to be tested or worked on, the equipment may approach within **Safety Distance** of the **Earthed** exposed **HV** conductors at the point of work.
- 13.3 Cranes, mobile access equipment and other special purpose vehicles shall only be operated by suitably trained personnel who shall be made aware, by the **Senior Authorised Person**, of the hazards of working near **Live HV Apparatus**. Where necessary, this shall include a formally produced lifting plan.
- 13.4 Cranes, vehicles and mobile access equipment shall be suitable for the work in hand. The operator shall ensure that effective use is made of any equipment stabilising devices or outriggers.
- 13.5 The **Senior Authorised Person** issuing the **Safety Document** shall, after consultation with a **Selected Person** where necessary, ensure that safe ground bearing pressures will not be exceeded, particularly on duct covers, by wheels or other supports. Where necessary, load spreading devices shall be provided and used.
- 13.6 No part of any equipment shall, where reasonably practicable, encroach over exposed **Live HV** conductors.
- 13.7 As soon as is practicable after reaching the work area, cranes, mobile access equipment and special purpose vehicles shall be electrically bonded to earth using a *Field Equipment Earth*.
- 13.8 The **Senior Authorised Person** shall consider the desirability of providing a *Standby Man* having regard to the work to be done, the **Location** of the work and the equipment being used, in relation to the exposed **Live HV** conductors. Where reasonably practicable, the *Standby Man* shall be provided with means of halting the movement of mobile equipment where necessary to avoid **Danger**.
- 13.9 The **Senior Authorised Person** shall also ensure that the limits of operation are defined and clearly understood by the **Person** in charge of the work and also by any *Standby Man* provided who shall ensure that such limits are observed.
- 13.10 Where the equipment is provided with limit stops and these are to be used to limit the range of operation, the **Senior Authorised Person** shall confirm that they are capable of correct operation and are correctly set. In addition, he shall satisfy himself that the person operating the equipment is conversant with the work in hand and is obtaining correct response from all the equipment's controls. The *Standby Man* shall, when the limit stops are to be used, confirm the correct setting of the stops.
- 13.11 To avoid **Danger** arising from touch potentials at the point of work, both the mobile access equipment and the **HV Apparatus** shall be electrically bonded to the substation earth at the point of work. This may be achieved by connecting both the *Field Equipment Earth* and the **Primary Earth/Drain Earth** to the substation earth as close as is reasonably practicable.