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Work on overhead BT lines in the vicinity of power

Precautions against electrical accidents

About this document ...

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Content approval

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Issue 7	11-Dec-2008	Chief Engineer AEI Technical Documentation team	Change of author & approver
Issue 6	3-Jan-2008	Keri Thomas	Additional data included in Paras 3.3 and 3.4 plus reference to use of Rods Telescopic with LV power and labels on JU poles
Issue 5	20-Feb-2006	Keri Thomas	Updated reference material included, changes to drawing layouts and minor changes to text for clarity
Issue 4	6-Apr-2004	Keri Thomas	Change of owner & approver
Issue 3	19-Oct-2001	Bob Ruddock	Updated
Issue 2	3-Mar-97	Bob Ruddock	Requirement for insulators in aerial cable added
Issue 1	20-Feb-97	Bob Ruddock	Requirement for insulation in aerial cable added

Table of Content

1 *Introduction*

Following a detailed review, it has been determined that this document can be withdrawn after a 4 month period, as the content is already shown elsewhere, and often in a more accessible format. The main reference document is SFY/HSH/D043.

The sections shown below are retained during this period, and will then be incorporated elsewhere.

Electrical guarding in the vicinity of railways which use a high voltage overhead contact wire is described in EPT/PPS/B023. Precautions required when working on poles which carry power conductors, i.e. joint use poles, are described in EPT/PPS/B038.

1.1 Special precautions for BT construction staff

The vertical and horizontal separations between BT lines and power lines, the forms of guarding, the positions of attachments to poles and the general working procedures described in the above documents have all been established in consultation with the Energy Network Association (ENA), the safety of personnel and plant being the overriding consideration. It is essential that the safety requirements of these documents are correctly interpreted and closely followed by BT staff.

Planners **must** ensure that construction staff is made aware of any particular separating distances or special construction methods required before starting work in the vicinity of power lines.

1.2 Danger Notices on poles carrying power lines

New Regulations contained in the Electricity Safety, Quality and Continuity Regulations 2002, identify that DNOs need to warn the public of the hazard of ALL overhead power lines, to include LV and HV. To complete this task they are undertaking a programme to have labels attached to **all** poles carrying overhead power. This includes **ALL Joint User Poles** irrespective if owned by the DNO or BT.

1.3 Crossing and proximities of BT lines and HV power lines

Warning: Never erect BT wires or cables above overhead HV conductors.

For separating distances and general protective requirements see EPT/PPS/B026.

1.4 Joint use with HV power lines

Precautions for BT personnel working on joint use poles are set out in EPT/PPS/B038 and the H&S Handbook Section 5 SFY/HSH/D043.

No new applications for joint use and to fix BT attachments to HV poles should be made.

It is accepted that existing attachments on HV poles may be found. If it is necessary to work on these poles then the procedures detailed in the Health & Safety Handbook detailed above MUST be followed. This will include planning to remove such attachments.

All of the procedures for contacting the DNOs and working in conjunction with them MUST be followed.

On all poles carrying BT and power cables, a 'DANGER' notice will be fixed by the electricity company at a point between the BT conductors and the power conductors.

1.5 Identification of the phase and neutral conductors

The normal method of providing the final drop to an electricity consumer fed overhead is to use a concentric neutral cable, which has the phase conductor enclosed in the neutral conductor.

An earlier method used separate phase and neutral conductors. The neutral conductor of a main is the conductor to which all the neutrals of the service drops are connected. The phase conductors of the various service drops are connected to different phase conductors of the main to equalise the loads.

2 *Use of rubber gloves*

Wherever there is a risk, however slight, of accidental contact between BT plant and power conductors, gloves IR **must** be worn. They **must** also be worn whenever ropes or sash lines which may come into contact with power lines and handled. This is essential because a rope or sash line may become wet with rain and so lose its insulating properties.

Gloves IR are available in small, medium and large sizes.

Warning: Gloves IR in good condition provide good protection against contact with LV conductors but are not designed to protect against contact with HV conductors.

Gloves IR should always be worn when working in the vicinity of either LV or HV conductors. In the case of HV, the gloves will provide some protection if a conductor is touched which is at a reduced, but still hazardous, voltage due to

current leaking from a HV conductor. The main precautions to be taken regarding HV conductors are set out in Section 9.

3 *Use of ladders or mechanical aids near to power lines*

The Energy Networks Association (ENA) has issued revised clearances for working near Overhead Power Lines. As previously, the minimum clearances are related to the Overhead Line voltage, however both the voltage bandings, **AND** clearances have changed.

The new minimum clearances that must be adhered to at all times are as shown in Table 1:

Voltage	Classification	MINIMUM clearance Distance
Low Voltage (230/400V)	LV	1 metre
11kV & 33kV	HV	3 metres
132kV	HV	6 metres
275kV & 400kV	HV	7 metres

Table 1

To avoid danger, keep ladders, crane jibs and booms, pole erection units, elevating platforms, etc, well clear of electrical equipment and, in particular, avoid any possibility of their contact with overhead power wires. When working near HV power lines, as far as possible, keep all personnel, tools and appliances away from any HV power conductor by a distance at least equal to the clearance shown.

The distance quoted in Table 7 is the absolute minimum clearance between either a MEWP bucket or any part of a PEU jib and an Overhead Power Line. The clearance distances do not apply when working on JU poles which are accessed by ladder.

3.1 Cable maintenance at underground crossings and proximities with HV power lines

If a fault occurs in the underground section of an overhead route at a crossing or in close proximity to a HV power line, service should be restored wherever possible by using spare pairs in the underground cable.

If the power line is of 33kV or lower voltage, service may be restored temporarily using Wire, CC, HV, laid on the ground. Alternatively Cable, Polyethylene or Cable Drop wiring may be used either laid in a ditch or trench, or so protected by a wall or hedge that a fallen power conductor could not touch it.

Restoring the service using overhead wires or aerial cable must not be attempted unless a competent engineer, who is familiar with the necessary clearances and construction practices to be employed, has confirmed that clearances will be adequate. Where a temporary overground replacement is not practicable for example at a road crossing where clearances are inadequate for overhead construction, a temporary or permanent replacement cable laid underground is the only permissible method of restoring service.

Warning: If the power line voltage is greater than 33kV and spare pairs are not available, restore the service using a replacing cable laid underground. NEVER ERECT TEMPORARY OVERHEAD WIRES OR AERIAL CABLE and do not lay overground any type of wire or cable at a crossing with or in close proximity to a 66kV or higher voltage line.

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