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Target Audience:
 Heads of Operations
 Regional Directors
 HM Inspectors of Health and Safety
 RSG Specialist Inspectors

CLIMBING AND WORKING ON LATTICE TOWERS IN THE ELECTRICITY SUPPLY INDUSTRY

This SIM confirms the current situation regarding climbing on lattice towers used for electricity distribution and provides guidance for inspectors.

INTRODUCTION

1 In the past it has been normal industry practise to climb electricity towers without being attached to any form of safety device.

2 HSE has taken the view that this was in breach of regulation 6 of the Construction (Health Safety & Welfare) Regulations 1996 (CHSW) which lays down a hierarchy of measures to prevent persons falling from heights over 2 metres. Such a specific requirement overrides the conclusion of the risk assessment. The use of fall arrest systems is a minimum requirement and is not qualified by reasonably practicable.

3 Electricity towers have usually been climbed using step bolts which are long bolts attached to one or more of the towers legs and protrude sufficiently to provide a foot /hand hold. They are not to be regarded as a ladder under CHSW reg. 6(5) as they do not have a stile on either side.

4 The industry was made aware that HSE considers free ascent/descent likely to be in breach of the Regulations. They have therefore taken the lead in resolving this problem. A variety of systems have been tested for their suitability with the results distributed throughout the industry. This included the five systems described below. Demonstrations were provided for the RECs and relevant contractors.

METHODS OF ATTACHMENT

5 This is not an exhaustive list but represents acceptable types of systems inspectors are likely to find in use.

1. Lock type systems - consisting of a single rail forming a channel into which a slider is placed. This is connected by a lanyard to the front D ring of the

harness. In the event of a fall the slider locks in place. Favoured by users as it allows immediate access by several climbers. Not all the available systems are easy to disconnect from at the top of the tower. It requires regular inspection and is more likely to be appropriate for frequently climbed towers.

2. Cable/slider type - consisting of a pretensioned stainless cable connected to the tower with a sliding device connected to the climber. The same comments apply to its installation and use.
3. Pig tail system - step bolts are replaced with bolts having a pig tail end providing a belay point. The first climber slips a rope into each pig tail whilst climbing past. A second person on the ground feeds rope through a grip fall arrester attached to the leg of the tower. If the climber falls the arrester is pulled out of their hand and locks. This leaves the climber held at the pig tail below the point of fall. Once the rope is secured at the top of the tower the second climber ascends and frees it from the pig tails. The rope is then used for attachment by subsequent climbers using a fall arrester. The installation of the rope takes only a few minutes. This system is favoured by the industry. New towers are likely to have pig tails fitted as standard with existing towers fitted progressively as part of general maintenance.

The maximum fall distance should be less than 2 metres therefore the pig tails should be less than 1 metre apart. In practise this will mean replacing every other step bolt providing a continuous series of pig tails on one side of the leg.

The pig tail will become part of the tower and therefore not subject to annual inspection. However an inspection scheme will still have to be established based on a sample of towers exposed to various local environmental conditions. Pig tails must be designed to withstand the loading applied in the event of a fall. A modified step bolt may not be adequate. Pig tails should provide the same level of protection as detailed in BS EN 795: 1997 Protection against falls from a height - Anchor devices - Requirements and testing.

4. Snap hooks - a pair of sprung loaded hooks each connected to its own lanyard. One hook is positioned over a step bolt whilst the climber steps up, the second hook is fastened to a higher bolt and then the lower hook released. The procedure is repeated up the tower. The diameter at the end of the step bolt is wider. Therefore the inner diameter of the snap hook must not exceed the diameter of the end of the step bolt otherwise it could slide off. With practise it is possible to make a quick climb but a separate set of longer lanyards is needed for working on the tower. This system may be acceptable to riggers putting up a rope but not for general access such as by painters.
5. Strops - the first climber up carries a series of strops which are positioned at regular intervals. A rope connected to the climber is then fed through the D ring on each strop. A second person on the ground feeds spare rope through a grip fall arrester which is anchored to the tower. The distance between strops varies depending where cross bracing connects to the tower leg. The next climber frees the rope from the D rings whilst climbing relying on a fall arrester for safety. The whole process is reversed for the removal of the rope. A simple low cost system. However the first climber up does have to carry a large number of strops over one shoulder. Takes longer to install the rope than when using pig tails. Also the first climber cannot carry any other equipment. Acceptable to riggers but not ideal for other general users.

6 Further work is to be done with tower manufacturers to ensure that appropriate safe means of climbing are part of all new towers. As yet no details are available.

7 Further guidance is in preparation for telecoms lattice towers and the climbing of wood poles.

ACTION BY INSPECTORS

8 There is no justification for working unattached on a tower and inspectors should continue with the current practice of prohibiting such activities.

9 It has been agreed with the electricity supply industry that from 1 January 1999 all free ascent/descent should be prohibited.

10 Engineering/Utilities Sector Nottingham Office should be contacted if there are any further difficulties.

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