Safety Advice 05-2006 (NZ)

June 2006 – Worker Receives Electrical Induction Shock

Two linemen engaged in changing conductor attachment arrangements on an out-of-service circuit on a double circuit tower received an electrical induction shock towards the closing stages of the work procedure. The other circuit was in service at the time.

Both linemen were working from a cage suspended from a crane. Temporary earthing arrangements were in place, which included the bonding of the three phase conductors to the tower, and the bonding of the crane chassis to the tower base. However the temporary earthing arrangement did not include bonding the suspended cage to the phase being worked on.

Towards the completion stages of the work procedure, having removed the cold end of the rigging that had secured the lowest of the three conductors, the linemen were about to remove the rigging hot end when they noticed a tangle in the temporary earth leads attached to the lowest and highest of the three conductors. While one lineman was holding the rigging strop attached to the conductor, the other lineman advised that he would temporarily detach the earth from the same conductor, untangle and reattach it. As he did so the lineman holding the rigging received an electric shock, as did the other lineman when he also contacted the same conductor.

This incident highlighted failure to bond the cage to the temporary earth arrangements and also failure to maintain the temporary earthing arrangements required for the conduct of the entire work procedure. The electric shock to the two linemen was caused by induction from the adjacent in-service circuit.

Readers are advised to check procedures and practices to ensure application of adequate equi-potential bonding arrangements, to ensure that the integrity of temporary earthing arrangements remain undisturbed while work procedures are being carried out, and to ensure that employees adequately understand induction hazards, including how these arise and the hazard controls.