

HEALTH AND SAFETY ALERT No. 9



Fatality – 11kV electrocution

Description

At 11:00 am on 2 June 2012, a fatality occurred on the Strategic Tunnel Enhancement Programme (STEP) Contract T-01 when a worker was electrocuted when he attempted to remove a high voltage (11 kV) cable connected to a tunnel boring machine (TBM) switch transformer gantry. The gantry was in the process of being removed and replaced due to a faults on two control transformers. Before removing the gantry the electrical cable connections (415V and 11kV) needed to be disconnected. The supply to the 415V side of the gantry is isolated at the gantry control panel and the 415V outgoing cables were disconnected without incident. However, the 11 kV supply to the switch transformer had not been isolated and this was not communicated to all workers carrying out the task. Whilst the supervisor and other workers were taking a break and waiting for the isolation to be made an assistant mechanic removed the outer steel panel and inner polycarbonate screen using a power screw driver and attempted to remove the live 11 kV cable connection using a spanner. He was fatally injured at the scene after suffering an 11 kV electrical shock.

Health and safety hazard

Work had commenced on a high voltage electrical system without implementing a formal permit to work as described in the contractor's health and safety plan.

Action

- STEP suspended all TBM operations and issued a list of action items to the contractor that had to be fully addressed before work was permitted to recommence, e.g. review and revise the permit to work system
- STEP commissioned an independent electrical engineer experienced in HV and LV installations to review the safety of the site electrical equipment and the electrical equipment on the TBM gantries
- STEP required the responsibility given to a subcontractor for tunnelling operations to be removed and transferred to the main contractor

Learning

- Strictly adhering to formalised permit to work systems to control electrical isolations
- Maintaining effective communication and control between contractor and subcontractor
- Thoroughly planning and assessing non routine tasks



Figure 1. TBM back up gantries connected to step up transformer .



Figure 2. Switch gantry with 11 KV steel panel and polycarbonate screen removed.

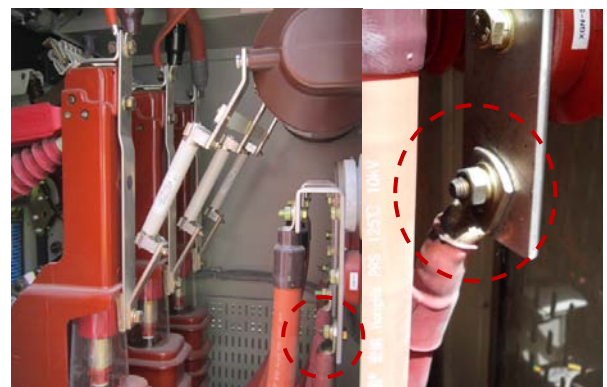


Figure 3. 11 kV supply connection to the switch gantry.

