

SAFETY! ALERT!

12th March 2018
Audit Ref No. 9188



Induced voltages on de-energised cables

WHAT HAPPENED?

When undertaking work on a **de-energised power cable** which runs in parallel with an **adjacent energised power cable** circuit, there is a risk of **electric shock** due to voltages induced from the energised power cable circuit. Isolated and earthed cables can also transfer **fault current** and **earth potential rise (EPR)** between earth grids.

A recent Transpower quality assurance **field audit** has raised questions about the **temporary earthing** or **equipotential bonding** arrangements in place during cable maintenance and installation work.

Further **investigation** identified that Transpower documentation is **unclear** on the **minimum requirements** of earthing and equipotential bonding when undertaking work on cables. In addition, it refers to international standards which refer to specific personnel qualifications which are different to Transpower standard competencies.

Transpower is now working to define the **requirements** and update applicable **service specifications** with the aim to ensure the **procedures** are clear and when coupled with appropriate **tooling** the risk of electric shock from **induced voltages** when working on de-energised cables is **mitigated** to an acceptable level.



IMMEDIATE ACTION TAKEN

Pending publication of the updated Service Specification all work on cable circuits which are installed outside the station earth grid, must undertake a risk assessment to determine the earthing and equipotential bonding requirements. The risk assessment and earthing plan must be submitted and approved by a Transpower subject matter expert prior to seeking outage(s):

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ROOT CAUSE

- **TP.SS 07.24: Work site temporary earthing and bonding in HV switchyards** references UK BP/SE/NSI 5 – National Safety Instruction – Cable Systems, and ESAA Work on cables under induced voltages, however is not clear on temporary earthing and equipotential bonding requirements, it states portable earthing is required to be fitted on both ends of cables where practicable, but leaves to interpretation.

LEARNINGS :

- Cables are hazardous like aerial conductors, which would instinctively be earthed before handling
- Cable runs greater than 100 metres have the possibility of high currents due to induction or earth fault returns
- A portable earth mat may be required at the work zone