

INCIDENT TYPE:

DAMAGE TO EARTHENWARE JOINT  
ON HIGH VOLTAGE CABLE



**What happened**

A National Grid team damaged the earthenware casing of a high voltage (HV) electric cable during emergency work on a fractured main. Central Networks staff who attended site in response to supply losses in the area advised that an action of this nature would normally have resulted in a serious explosion.

**What actions should be taken**

The National Grid team had attended a PRE and excavated to expose a fractured cast iron main. They also exposed what they believed to be a duct running alongside the main with a clearance of less than 25mm between the two services. At this point the team leader took the decision to break into the earthenware to allow sufficient working space for a split collar to be fitted onto the fractured main.

The removal of the earthenware casing exposed the bitumen compound inside the joint and could have caused sufficient vibration to give rise to a serious explosion.

National Grid procedure T/PR/SW/1 – Excavation Manual contains this information, which must be followed:

*“Cable joints may be enclosed in earthenware pipes and filled with a sealing compound, or within cast iron/plastic epoxy-filled casings. These must not be left unsupported or roughly treated and they must not be moved without consultation with the owner.”*

High voltage cables at 11kv usually supply around 2000 customers. Joints are weak points on the system and are very brittle. Any movement of the joint can create an arc inside the bitumen coating which if released will create an explosion of a temperature in the region of 2500°C.

**To quantify this temperature, consider that the melting point of steel is approx. 1300°C and a temperature of around 3000°C is enough to burn the human body to ash.**

The correct procedure in this instance should have been for a temporary repair to have been made on the main without damaging the adjacent service until guidance was sought from the owner of the adjacent utility.

Supervisors and operatives must be instructed that no underground apparatus is to be moved, disturbed or intentionally damaged without prior consultation with the utility owner.