



Catastrophic Failure of a 132kV Cable Sealing End

This bulletin is to raise awareness of the inherent risks associated with equipment failures within an operational high voltage substation.

Whilst working at Oldbury substation two Burns & McDonnell staff members witnessed a catastrophic failure of a 132kV cable sealing end. The energy released under the fault conditions was sufficient to cause an explosion, heat from which was described as a fire ball and the top plate of the cable sealing end, the bus bar clamp and bus bar to propel a considerable distance (approximately 20 metres) - as shown in the photographs below.

There was no prior warning of the impending failure (no visual indication, no noise, or smell). The first sign was a loud bang followed by a fire ball and then the clatter of the components as they were scattered around that area of the substation. Fortunately, there were no injuries suffered as a result of this event.

Whilst there is always the risk of catastrophic equipment failures, fortunately these are very rare due to the systems, processes and control measures.

Practical safety measures are to adhere to safety clearance distances, respecting the potential dangers of electrical equipment and limiting exposure of working in the proximity of energised equipment; leaving the area when there is no such requirement. It is also a reminder of the importance of wearing the correct PPE, fully and properly.

Note: had this cable sealing end been manufactured out of porcelain and not composite rubber, the resulting projectiles would have been far more numerous and presented an even greater potential danger.



The photo above shows the location of the of the fault and scattered components. Top right photo the bus bar and top clamp. Middle right photo the gouges in the transformer concrete screed caused by the top plate. Bottom right photo - where the top plate came to a rest.