



UBB On-Load Tap Changer (OLTC)

The Wimpeys Pant Quarry 7.5/10MVA transformer failed in service on the 28th April 2016 at 17:41. Just a few hours earlier; at around 13:17, it had been returned to service following maintenance of the on-load tap changer (OLTC).

The transformer had been purchased from ABB in 2014. Maintenance was progressed 2016 to align the maintenance of the other plant and equipment in the substation, resulting in the maintenance being carried out a number of years earlier than the manufacturers recommendation.

The OLTC in the ABB transformer that failed at Wimpeys Pant Quarry was of UBB type, which is an oil-type on-load tap changer.

The bottom plate of the OLTC in the UBB type is extracted from the main body to facilitate the maintenance.

The extraction of the bottom plate was explained during the manufacturer maintenance training, but is not described in its maintenance manual. The bottom plate has no marks indicating the correct direction of installation.

The conclusion of the failure investigation is that the bottom plate had been assembled in the reverse direction after maintenance. This resulted in mismatching contacts causing a short circuit and failure of the transformer beyond economic repair.

Investigation and recommendations report is available in the document library: [TRAN-05-036](#)



Bottom plate in correct direction



Bottom plate in incorrect direction

Recommendations and action points

- Maintenance plans for UBB tap changers should be built from the commissioning date, and not automatically aligned with the wider maintenance activities.
- The bottom plate of the UBB type OLTC must be marked during its disassembly to ensure it is reassembled correctly following the maintenance.
- The failed transformer will be utilised for training purposes by ABB, who will also attend site during the maintenance of the next UBB tap-changer, to provide support.
- Discrepancy between training and maintenance manual to be raised with ABB as well as potential design improvements.
- Staff are reminded that if they are in any doubt on any aspect of maintenance of equipment, assistance should be sought either from an internal expert or from the manufacturer.