

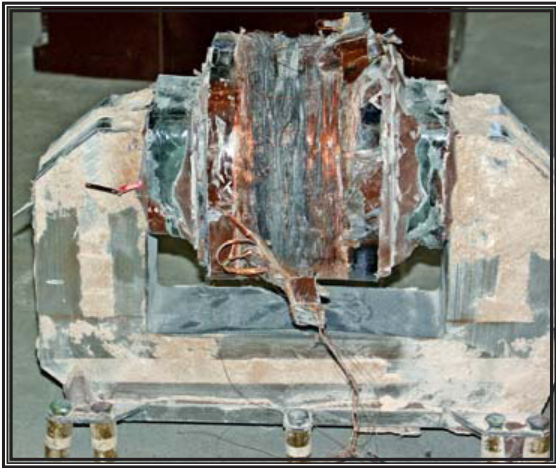


## R&D Fund Project

### Study On 33KV Voltage Transformer Failures

#### Project Overview

TNB Transmission (TNBT) has reported several failures of 33kV ETAH voltage transformers (VT) in the system which have caused TNB power system reliability. These ETAH VT's are also used in several makes of switchgears such as EPE, TOPRANK and TAMCO. As a result, TNBT Engineering has commissioned TNB Research Sdn Bhd to carry out investigations into the failures of these ETAH VT's. This failure investigation work aims at determining the root causes of these failures and identifying the appropriate measures to mitigate these problems. Eight units of failed and damaged ETAH VTs were examined. The VT's were subjected to physical inspections and electrical tests. A list of recommendations was finally submitted to TNBT based on the outcomes of the failure investigation.



Primary winding destroyed by heat



View of damaged VT

#### Deliverables

Failure investigation report detailing out the following :-

- Failure investigation methods and procedures
- Tests set-up, procedures and results
- Test results analysis
- Failure root cause and mechanisms
- Remedial measures

#### Benefits

- Reduced risks of failures of similar VT's in the future
- Increased reliability of power supply
- Increased quality of VT for TNB in the future
- Reduced financial losses as a result of the reduced number of VT failures