

HV Oil-Filled Switchgear Test Probes

Two engineers were killed and a third person seriously injured as a result of a violent explosion and subsequent fire that occurred a number of years ago (15 April 1997) in a distribution substation in Scotland.

The incident happened when a steel guide pin became detached from its mounting whilst the engineers were engaged in testing procedures which entailed access to an 11kV ring main unit. The guide rod fell onto live busbars within the ring main unit causing a short circuit resulting in the explosion.

A Board of Inquiry was immediately established and wide-ranging recommendations were made after a very thorough investigation. Issues such as training, modification of equipment, inspection and control of ancillary equipment were all considered. Changes to the construction and design of equipment were also considered.

A Sherriff's Court Fatal Accident Inquiry held in February 1998 noted that the subsequent action taken by the company would minimise the likelihood of a recurrence.

- Two engineers killed as a result of an explosion in an oil-filled RMU.
- Metal locating pin fell into oil tank due to loose nut.
- 180 MVA fault level
- Test probes now modified
- Safe storage of probes implemented



Learning points:

- All test prods must be subject to a robust system of inspection, identification, and labelling.
- They must be kept in clean dry, secure storage. There should be a procedure for cleanliness that will minimise the possible transfer of contamination into the switchgear



- They must be protected from damage when transported, ideally in a box.
- Test prods must have no removable parts.
- Staff must have training in the use and care of test prods, including awareness of the hazards involved.
- Test prods must be clearly identified and marked with the type of switchgear on which they are to be used, if there is any doubt, do not use them.
- Never attempt to modify or dismantle test prods during use.
- Consider testing from a location that does not involve test prods.
- Inspect test plugs every time before use, never use test plugs that are in a poor condition or with any parts that are loose.