



Islington SVC 9 Capacitor Fire – 15 Feb 2016

WHAT HAPPENED?

On the 15th of February 2016 there was a fault and significant fire in the Thyristor Switched Capacitor compound of Transpower's Islington Static VAR Compensator (SVC) 9.



IMMEDIATE ACTION TAKEN

- SVC 9 was isolated and earthed, an Access Permit was issued, and the fire extinguished by the Fire Service.
- The scene was secured, debriefs held, and an Investigation Team and Terms of Reference formed.
- A detailed Safety Assessment was performed and a thorough onsite and offsite investigation has been undertaken.

ROOT CAUSE

Although the direct cause is yet to be established, a number of potential causes and opportunities for improvement have been identified. When reviewing other recent capacitor failures at other sites, one of the modes of failure of capacitors relates to the overheating and failure of an electrical connection at the bushing terminal, leading to melting of bushing solder, release of oil, and potentially fire. A number of other causes are also being considered.

Transpower is currently reviewing applicable SMP's and future capacitor bank designs.



LEARNINGS FOR O&M

- Ensure correct connection hardware is used and is installed in the correct sequence (e.g. Bellevue washer). Use electrical contact grease between conductors, clamps, and terminal bolts;
- Check and ensure that clamps and materials are in good condition (no cracks etc). Check connections are torqued to manufacturer specifications and are not over or under tightened. Ensure the bushing cap does not twist during tightening. Mark the torques when completed;
- When testing capacitors, test equipment may be available that uses a bridge that would avoid the need to disconnect and reconnect individual capacitor terminals e.g. ABB CB-2000, Nokian NCM-20;
- Extra care should be exercised when handling capacitor cans to not damage the bushings or cause oil leaks;
- It is important to routinely carry out thermovision surveys of capacitor terminal electrical connections and especially after return to service following disconnection/reconnection of terminals;
- Immediately report signs of terminal overheating or oil leaks to the TP Service Delivery Manager (SDM);
- Ensure that grout and fireseals are correctly installed. For PVC pipe, grout should penetrate to below the adjacent concrete level to prevent spread of burning oil. Notify TP SDM or PM if not installed correctly;
- Remove flammable birdproofing materials or use alternative non-flammable materials. Flammable materials may add to the development/spread of a capacitor fire. Review use of materials with TP SDM or PM.