



## Operational Restriction OR49 Update (Oil Sludging)

### (SOP 183) OPSAF-14-049 issue 11 (Applicable to SPD only)

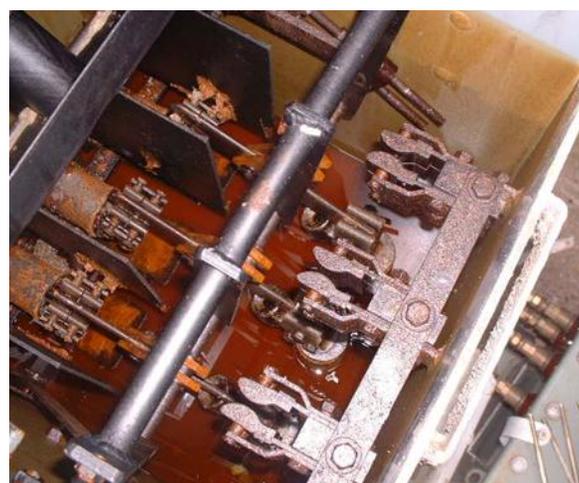
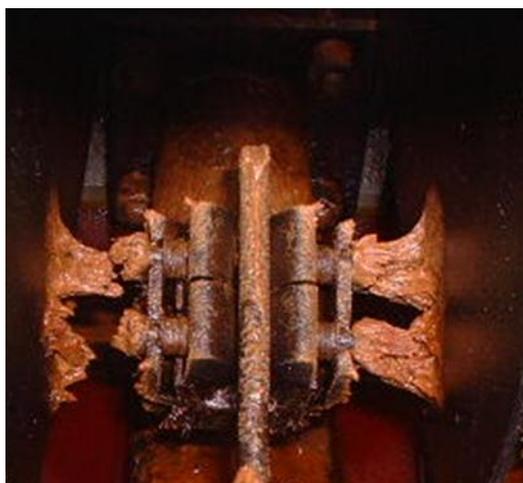
In May 1998 disruptive failures of four Long & Crawford Type T3GF3/T4GF3 Ring Main Units occurred at Upper Manse Brae Substation, Rhu; Carden Castings substation, Cardenden; West Regent Street 2 substation in Glasgow and Lonsdale substation in Giffnock. Subsequent investigations into all of these failures attributed the root cause to be severe degradation of the insulating oil. Sludging of insulating oil is caused by oxidation, which results in high acidity and in some cases polymerisation. The high acidity can cause severe corrosion of components within the switchgear and in extreme circumstances mal-operation of the switchgear operating mechanisms.

It was established that oil supplied in the period between 1<sup>st</sup> January 1989 and 31<sup>st</sup> December 1992 is at risk of degradation within its normal expected lifetime. It has also been proven that where **clean** (unused or reclaimed) oil is used to replace severely degraded oil in units affected by oil sludging, the **clean** oil may also suffer from an increased rate of degradation after a relatively short service life. In extreme cases the clean oil may also suffer from the effects of sludging.

OR49 restriction was applied to around 7000 units in SPD which had significant impact on system and resources. With two Drager head space gas tests annually on each unit, accelerated maintenance, additional LTOS, SAP and PowerOn configuration, EA Technology specialist oil analysis and Zone support we have successfully reduced the number of restrictions outstanding to 80 units. The 80 final units will be fully maintained or removed from service during the early part of the ED1.

### Main Changes in issue 11 of OR49

- Process map detailing steps for lifting restriction or switchgear replacement.
- Removal of Drager testing.
- No requirement for on-site labelling.



## Recommendations and action points

- Operational staff should familiarise themselves with the updated requirements of [OPSAF-14-049](#)