



## Gretna 11 kV Yorkshire Switchgear Fault

On Monday 30<sup>th</sup> July a disruptive failure of a Yorkshire Switchgear (Schneider) YSF6 circuit-breaker occurred at Gretna 11 kV primary substation. The switchgear catastrophically failed after being re-energised following operation of the bus zone protection on the T2 side of the switchboard.

The summary of events leading up to failure are listed below:

1. A 33 kV yellow to blue overhead line fault was cleared successfully by High Set Overcurrent followed by an unsuccessful auto reclose sequence 4 seconds after the initial trip.
2. The T2 bus zone protection tripped all circuit-breakers on the T2 side of 11 kV switchboard. (It is believed that this operation was initiated due to a fault in the T2 circuit-breaker).
3. The team sectioned and re-energised the 33 kV overhead line feeding the T2 transformer at Gretna which indicated the overhead line fault was transient.
4. A visual inspection by field staff confirmed no obvious signs of distress or damage to the 11 kV switchgear. The 33 kV circuit was energised remotely up to the open T2 11 kV circuit-breaker which then failed disruptively.

The initial cause of the 11 kV switchgear failure is under investigation by SPEN and Schneider, but the cause is unknown at this time. Presently it is not thought that the cause was a type issue and consequently there are no proposed changes to operational practices of Yorkshire Switchgear YSF6 switchgear.

## Recommendations and action points

- The switch panels are to be removed from site for detailed examination at manufacturer works.
- Staff are reminded that in the event of any bus zone protection operation that no part of the switchgear shall be re-energised until the switchgear has been examined and tested to ensure that the switchgear is in a healthy condition. This shall include moving portions.
- In the event of operation of bus zone protection the switchgear shall be re-energised from a remote location and moving portions of circuit-breakers shall only be racked in when busbars and circuit are de-energised. The bus section can be racked in if the healthy side is live and the circuit-breaker successfully passes testing.

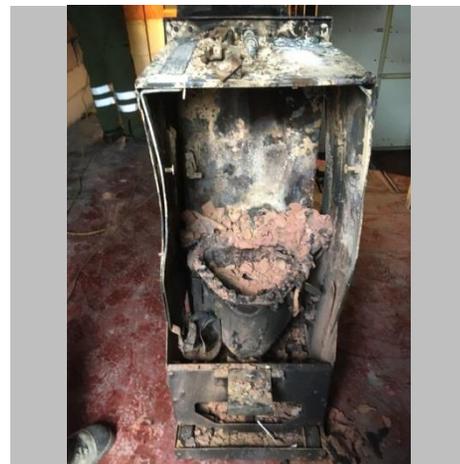


Figure 1 – T2 11 kV moving portion cast resin tank housed SF6 puffer circuit breaker



Figure 2 – T2 side of 11 kV switchboard (T2 panel on Left hand side)