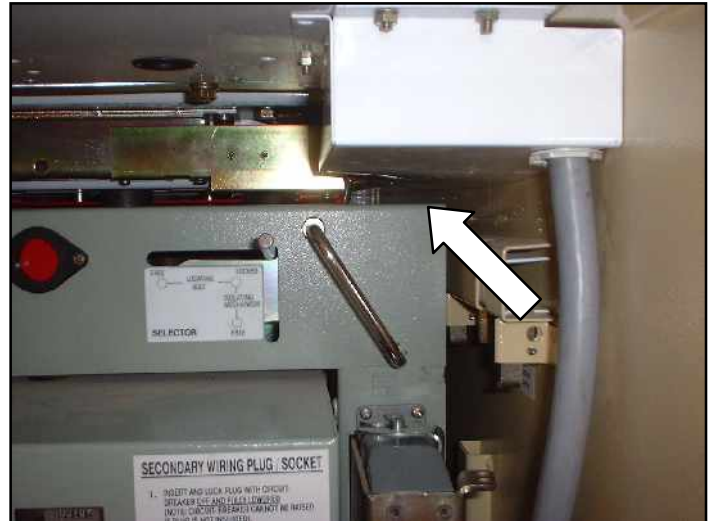


Case Study 4

Ultrasonic discharge from Resin top of Switch Tank

The annual Partial Discharge survey of a switchboard in 2003 revealed Ultrasonic activity from above the Switch tank on a year 2000 vacuum circuit breaker. A reading of 50% at gain 11 was recorded which was strongest from the top right hand corner indicating the location of whatever was at fault.



Following the survey an investigation was carried out. With the tank racked down the problem was clearly evident at the base of the right hand side cable bushing. The whole area was surrounded by white powder which is a usual by-product of discharge activity.



Closer inspection revealed some foreign debris on the surface of the resin next to the base of the bushing. It also seemed likely that there had been more than this one piece.



This debris was later identified as a flake of paint from the inside of the spout orifice plate, perhaps knocked free by either the shutter action or during incorrect orientation prior to racking up.



Prior to cleaning it can be seen how the discharge activity is predominantly along each edge of the paint flake. This highlights the need for resin to be kept clean and what an uneven electrical stress across it can cause.



Preliminary cleaning shows how the surface has actually been etched into by the discharge action. The area was 'cut' with a fine abrasive and then polished to a high gloss finish. The two subsequent annual surveys have remained clear, proving the maintenance has been effective and a potential problem neutralised.

