

SLOT DISCHARGE HYDRO GENERATOR WITH VERY HIGH PD FAILED IN-SERVICE

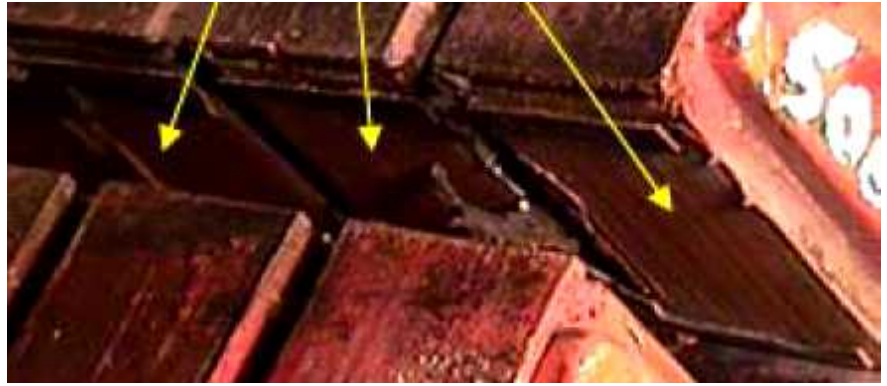


Figure 1. Evidence of Slot PD Activity



Figure 2. Damage in Bar due to Slot PD Activity

Company: Western Canadian Utility
Ratings: 184 MVA, 13.8 kV, Air Cooled Hydro Generator
Manufacturer: Confidential
Related Info: 25 years old
PD Sensors: Four PDA Couplers per phase

Qm Trend @ Full Load Hot

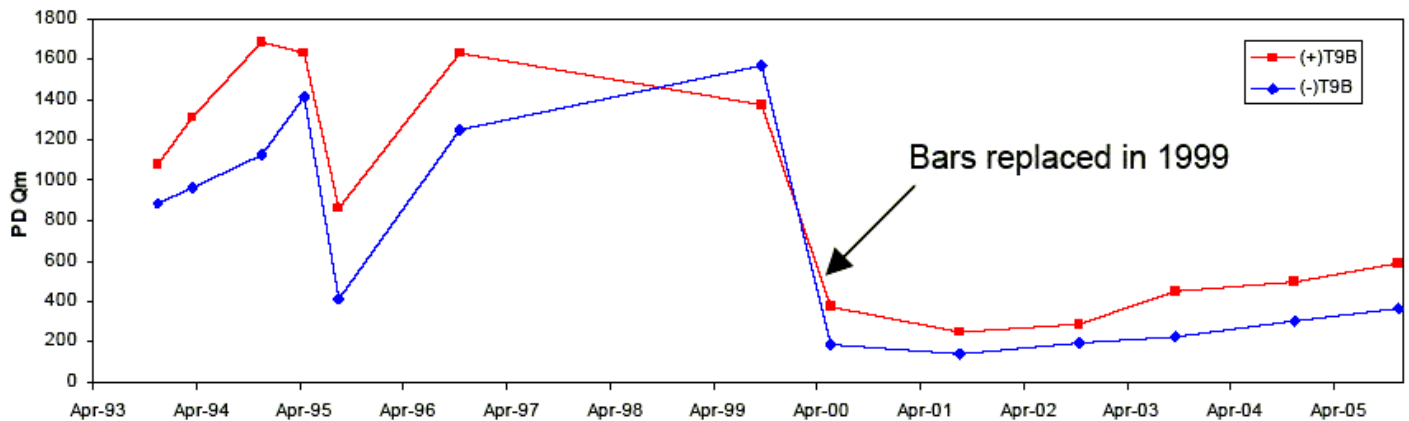


Figure 3. Trend of PD activity over 10 years (Qm Phase C)

Details:

The PD data for this unit has been trended for over ten years. In 1995, semi-conducting paint and CRTV were injected into selected bars that were in high potential locations resulting in the reduction of PD levels; but after two years, the PD levels had increased back to approximately the same levels as before. In comparison with other generators in the same company, this winding had very high PD. Due to operational reasons the maintenance could not be performed and the generator failed in service in 1999. The Figure 3 shows the decrease in PD activity after the bars were replaced in 1999.



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