

## Case Study:

# Contamination

**Areva**, a power generating company in New Zealand, ordered inspection services from:

**Mr. Paul Douglas of Livescan Services Ltd.** in September 2004. Areva complained having outages occurring in early mornings with thick fog & light rain. The fault was on one of Areva's 110kv lines, with EPDM polymer insulators, where previous foot patrols by its maintenance crew showed nothing. The line protection indicated an existing possible insulation fault. Areva decided to have Mr. Douglas inspect the lines with his DayCor camera.

"...I flew the line with the camera and found intense corona on the line at some pole locations and on the particular phase that was indicating the transient fault.

These were replaced with new insulation and corona rings, and the faults stopped. The whole line had varying amounts of corona activity on the insulation. Analysis of the insulation indicated contamination of geothermal origin (geothermal discharges of steam etc... to the atmosphere) and a reduced creepage distance on these items under moist conditions.

Design engineers are now looking for a suitable replacement for the insulation on this line in the designated places. It was decided that I will do a yearly condition inspection on the remaining lines."



Airborne inspection: Strong discharge observed with the DayCor camera.

UV gain is 110 on a scale of 250

**Estimated saving according to Mr Douglas:**

**Lost generation & profits costs from these outages are around NZ\$500,000.**

**The cost for identification & repairs (Corona Camera, Helicopter, Liveline Crew) was NZ\$13000.**

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