



Safety Advice 03-2003 (NZ)

SWITCH BOARD EXPLOSION INVESTIGATION

BACKGROUND

Staff were in the process of replacing LV cables from the roadway to LV fuse terminals of the LV switchboard.

When cutting LV cable from bottom left fuse box, circuit 4 with a Saber type of saw, an explosion occurred and a worker was burnt on his left arm and left side of his body. This fault caused an 11kv fuse to blow in RMS 216 causing the RMS to trip and clear the fault.

On investigation of the de-energised LV board, it was found that at the left hand end of the bus bars, there had been a flashover phase to phase and phase to earth. The fire ball from this had caused another flashover in the top left fuse box on the bus side of the fuses and solder had melted out of a solder lug feeding the cable to the local service board causing this cable to fall out of the lug and splattering solder through the bus chamber.

Closer examination of the left end of the bus showed that there were packers missing between the bus end supports and the bus bar. The packers were made from metal and Bakelite.

CONCLUSION

It appears that the packers had fallen out due to the vibration of the Saber Saw cutting the cable, resulting in the metal packers shorting the bus bar to earth and phase to phase, causing the explosion.

ACTIONS TAKEN

The top and bottom distribution fuses were replaced, the bus chamber cleaned up and bus bars coated with an insulating paint, the bus bar end cover was replaced, the end bus bar support was removed as it was deemed to have enough support and was badly damaged, all three (3) 11 kV RMS fuses were replaced. The switchboard was returned to service.

RECOMMENDATIONS

That staff be instructed in the correct use of power tools specifically Sabre saws and the affects that vibrations can have on the equipment that the tools are being used on.

That an inspection of all Reyrolle 400 volt enclosed distribution boards be under taken to ascertain the condition of the bus bar supports and the associated packers and keepers.