



# *Safety Advice 01-2003 (NZ)*

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## **TOWER PAINTING PREPARATION ACCIDENT**

### **BACKGROUND**

This is advice of an electrical accident that may be relevant to other electricity supply industry business units. The accident involved flashover and loss of supply when water-blasting equipment fell onto an in-service 110kV conductor, in the course of tower painting preparation.

### **INITIAL ACCIDENT DESCRIPTION**

A tower-painting preparation crew of two (water blaster and safety observer) were in the process of water blasting the centre cross-arm of a twin circuit transmission line, both circuits of which were under reclose block. The closest point of the middle cross-arm upper cord to the top phase jumper was approximately one metre. There is an approximate 30-degree conductor direction change on this particular tower, which was a strain tower bearing a terminal span into the adjacent sub station. The safety observer was carrying out his task from within the tower body, head at the height of the middle cross-arm base.

The blasting crew were not trained or certificated to perform tower preparation and painting within MAD. The physical clearances available on the cross-arm precluded the work being completed without intruding into MAD: this was not identified at the tailgate session.

Although the blaster was effectively working within MAD, no earthing lead was fitted to the lance.

In the course of blasting the middle cross-arm, the blaster laid his blasting lance down on the horizontal 'X' bracing forming the bottom of the arm, to change position. The lance, in motion from water pulsation, having available hose slack and no other form of restraint, fell to the middle phase jumper 800mm below the middle cross-arm. The resultant flashover split the lance away from the hose, allowing water to pour down onto the conductor below. Protection operation on both circuits on the tower caused loss of supply to the sub station.

The ground crew shut down the water pump. The tower crew descended the tower unharmed, and did not report the accident until confronted by their management, who had previously advised the system operator that circuit shutdown was not associated with work activity at the site.

### **INITIAL LOSS DESCRIPTION**

- Loss of supply.
- Blasting equipment damage.

## **APPARENT CAUSES**

1. Failure to control blasting equipment given the circumstances and arrangements.
2. Failure to plan and execute work and equipment requirements for tower preparation work within MAD. This includes hazard identification for the particular work circumstances, hose management so as to control the limits of lance movement in relation to MAD, and lance earthing given that work was done within MAD.

## **RECOMMENDATIONS**

1. Clarification and reinforcement of contractor understanding of the use and purpose of reclose blocks.
2. Lances to be tethered particularly where they may not be hand-held during position changes and where they may fall into circuits.
3. Reinforce requirements for immediate reporting to the asset owner in event of accident or human element incident.
4. Contractors to improve and reinforce training and employee understanding of MAD/LLMAD work requirements.