



Safety Advice 06-2002 (NZ)

LINE MECHANIC CUTTING IN-SERVICE UNDERGROUND 11kV CABLE

Introduction

The work task to be completed by the contractor was to cut the 11kV cable feeding the overhead line and through joint the feeder cable to the newly installed underground cable, thereby allowing subsequent livening of the 11kV underground network.

The weather was fine and the cable pit had been exposed for approximately 3 weeks as part of earlier trenching work.

As-Built cable plans were available of services in the area. In fact the system diagram amendment indicated two 11kV cables in the area with routes defined in the As-Built plans for the work area. The contractor was issued a full set of plans including As-Builts at the start of the project.

Work Zone Access

A Release Request was applied for by the contractor to the network for the appropriate circuit to be isolated and earthed. The release called for safety measures, which were expanded by the Controller to include further isolation. The switching was completed the night before to allow the contractor to receive an access permit at the start of the job the next morning.

The Access Permit was issued following confirmation between issuer and recipient of isolation and earth points as well as the safety measures applied.

Upon issue, the Controller asked casually if the Line Mechanic was going to spike the cable, the line mechanic said usually he would, but he was sure he had the correct cable so would proceed without spiking. The line mechanic commenced his cable cut on the cable understood to be covered by the received access permit.

Accident

The Line Mechanic discussed using HV gloves with his colleague and elected to wear an 11kV glove on his left hand to hold a hacksaw and commence cutting the 11kV cable he thought was isolated and earthed under his access permit. He proceeded to cut the 3 core 0.4in² PILSWA cable and made contact between the cable armouring and the blue phase conductor. The resultant flashover resulted in burns to his left hand, forearm and face.

His colleague reacted quickly and removed the line mechanic from the cable pit, sat him in a chair and cooled the burns with water. The work crew nearby called the control room who dispatched an ambulance and the injured line mechanic was taken to hospital.

A doctor diagnosed second-degree burns and the line mechanic was held overnight in hospital for observation. Emergency staff commended the response and immediate care administered to



the burn victim by his work mates who had recently completed safety and first aid refresher training.

Contributing Causes to Accident

An investigation of the accident concluded the following causal effects:

- As-Built plans were used by a trenching contractor, but the excavation had not been checked by the contractor to positively identify the exposed cable.
- Not enough trench had been opened to positively determine the cable route from the cable termination at the adjacent pole (approximately 2m away) to the intended work zone.
- The 11kV cable intended for through jointing was never exposed.
- The cable exposed contained a joint. The As-Built drawings showed a joint on another cable in the general area, but not on the cable intended for through jointed. This anomaly did not trigger further investigation by the contractor.
- The Tailgate report did not consider a cable identification hazard.
- The line mechanic had elected not to use a spiking gun as he was convinced the exposed cable was the cable isolated under the access permit.

Recommendations

It is the recommendations of the investigation:

1. That the contracting company immediately retrain their line mechanics to test and recertify their competency for the identification of power cables as prescribed in the Safety Rules Electricity Industry.
2. Not more than one week following retraining, the contractor submits their revised written work procedure for identifying and working on cables which adopts the procedures of the SR-EI and confirms that spiking of HV cables is a mandatory work procedure.