# FALL ACCIDENT

**Accident Summary**

In May 2001, a transmission line maintenance team of four employees was undertaking the task of installing barbed wire anti-climbing guards on a transmission tower. The employees, positioned on four corners of the tower at the height of the anti-climb framework, were pulling barbed wire around the tower for connection into the anti-climb steelwork.

All four team members were using personal fall arrest equipment (safety belt and pole straps) during the task.

In the course of re-positioning after untangling wire that had become snared, one of the employees re-attached his pole strap onto a short piece of anti-climb mounting steel fixed to the tower leg instead of around the tower leg itself. After further movement by the employee, his pole strap slightly slackened and, unnoticed by the employee, slid off the end of the short piece of steel. When the employee attempted to lean back on his pole strap he had lost restraint and fell. The fall distance was 11 metres to the ground and in pendulum motion because the wire hanging around the structure became caught around the employee's leg.

The employee suffered extensive bruising, a broken right collar bone, two broken and / or cracked ribs, and a suspected punctured lung.

**Investigation**

The findings of the investigation were as follows:

**(a) Causes**

The investigation established that the prime reason for the fall was the line mechanic's decision to hook his pole strap over an anti-climb bracket rather than around the tower leg. When an attempt was made to untangle barbed wire, the combined effect of the change in pole strap angle, the shaking action to free barbed wire, and the reduced load on the strap caused it to slide off the inadequate attachment point in use at the time.

A contributory cause was the complexity of the task, which made firm attachment to the tower more difficult than usual.

**(b) Safety Procedures**

The contractor had a work procedure for installing anticlimbs. A copy was not on site, even though it was referenced in the daily sheet completed by the team. The team felt the procedure as written was not particularly helpful. Nevertheless they were all familiar with the task having carried it out many times. There was no instruction dealing with the correct and appropriate use of fall arrest equipment for the particular task.

**(c) Safety Equipment**

At the time of the accident the employee was wearing standard personal safety equipment (i.e. safety helmet, overalls, safety boots and lineman's safety belt). He was also wearing two pairs of leather gloves, to protect his hands from the barbed wire.

An inspection of the safety belt register revealed that the Line Mechanics belt was inspected 10 weeks prior to the accident and no defects were noted.

**(d) Training and Experience**

The employee, a line mechanic, had been assessed for competence, including limited line work categories i.e. Tower Painting – including bolt torqueing and replacement, and removing and fitting of anticlimb guards. He had 6 years of transmission line work experience, and was considered to be moderately experienced. He had no previous work accidents and was considered to be safety conscious by his colleagues.

The bulk of the line mechanic's work experience in the three years prior to the accident was undertaking tower painting work, including the removal and re-fitting of anitclimb guards.

**Recommendations**

It was recommended that the contractor provide more detailed work instructions covering use of fall arrest equipment.

The Contractor's work procedure for installing anti-climbs should be revised to include specific instruction on safe attachment methods for the various stages of that work.

The instructions should comply with imminent EEA guidelines on the use of fall arrest systems

**Notes**

(a) The issue in this accident was not the selection of the Personal Fall Arrest Systems (in this case the PFAS was appropriate according to current standards), rather it was selection of an inadequate anchorage point i.e. one which allowed the pole strap to slip off.

(b) When using a safety belt and pole strap tension must be kept on the pole strap at all times other than when re-positioning.

(c) The use of safety belts with pole straps as stand-alone PFAS will progressively need to be phased out. Industry procedures will require, after a transition period, attachment at all times on towers other than for ascent/descent. This will necessitate use of full or sit harnesses as appropriate with lanyard and/or pole strap arrangements suitable to achieve fall arrest for moving about. Since the need for restraint at the work position will remain of course, PFAS may be configured with the belt incorporated into the harness to enable the use of a pole strap at the work position.