Safety Advice 09-2012 (Jan)(NZ)

11kV SWER Line Incident – Hazardous Electrical Condition

The following Bulletin is provided as EEA Safety Advice 09-2012 by MainPower New Zealand Limited, based on their incident investigation of an 11kV SWER line hazardous electrical condition, that resulted in a fatality and burns to farm occupiers.

The EEA recommends that asset owners note the findings from this report and the implications for public safety management.

Any further information will be advised by the EEA as this becomes available.

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SAFETY BULLETIN

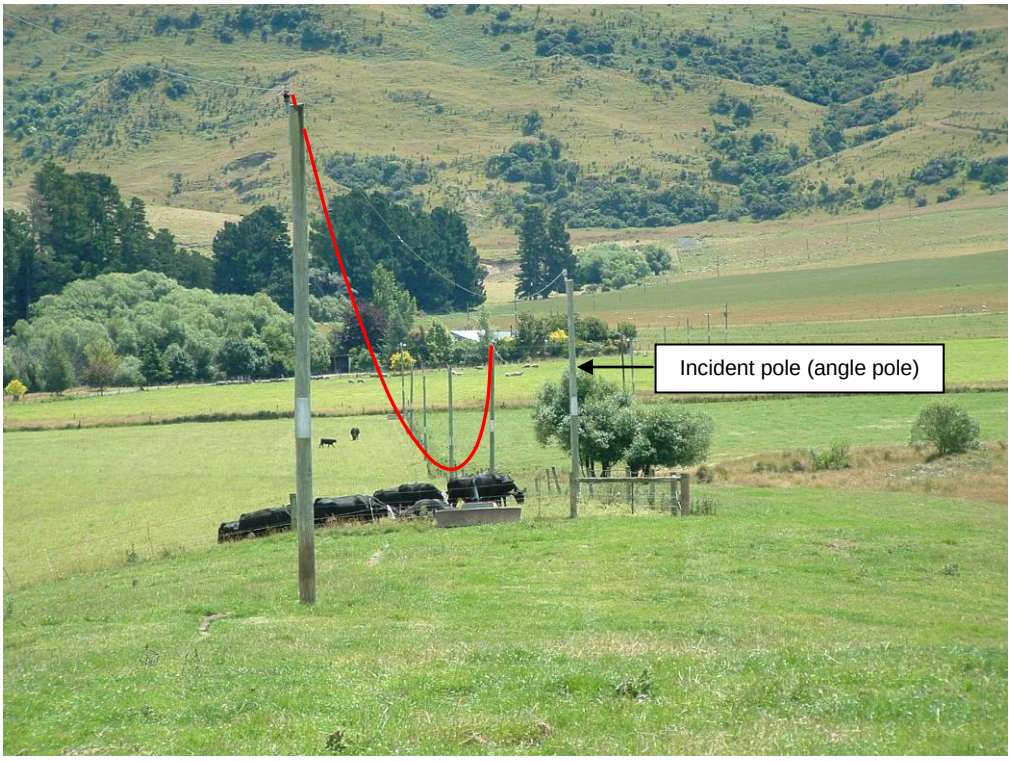
INCIDENT – HAZARDOUS ELECTRICAL CONDITION AT QUAIL DOWNS FARM

3429 INLAND KAIKOURA ROAD, STAG AND SPEY, NORTH CANTERBURY

1. Detail incident

On Saturday 28 January 2012, a fault on the MainPower 11 kV single wire earth-return (SWER) line running through Quail Downs farm, caused a pole top fire and resulted in the SWER conductor detaching from an angle pole, spanning two adjacent poles, and suspended at 1.2 – 1.5 metres above ground level at its lowest point. The SWER conductor remained live at a potential difference of 11 kV to earth presenting a hazardous electrical condition to people and livestock.

Tragically, Brendon Walker (Quail Downs farm manager) was fatally injured, and his wife, Sarah Walker, who went to his aid, was hospitalised with electrical burns. Their seven year old son, Ethan, raised the alarm. Three cattle beasts were electrocuted.



2. Detail outcome of incident

This incident is being investigated by the Department of Labour.

An internal MainPower incident investigation has been completed and a copy of the incident investigation report and this safety bulletin has been provided to the Department of Labour, Energy Safety and the Electricity Engineers' Association.

The following information is drawn from MainPower's internal investigation report:

(a) MainPower believes that the cause of the fault that resulted in the SWER conductor falling from the angle pole was a bird contact between the live 11 kV SWER conductor and the CCA treated softwood pole, causing arcing which ignited the pole. The pole top burnt away to the extent that the two pole top insulator brackets, together with mounting bolts, insulators and SWER conductor, separated from the pole top.

(b) The causal factors of the hazardous electrical condition were the combination of the following:

  (i) clearance between the 11 kV SWER conductor and the nearest uninsulated part of the pole or attachment, was able to be bridged by a bird, and

  (ii) pole was relatively flammable, and

  (iii) pole arrangement (angle pole), and

  (iv) undulating hill incline terrain.

(c) The incidence of pole fires on the 11 kV SWER line systems is high when compared to the number of pole fires on 11 kV and 22 kV lines, relative to the respective total installed line lengths. MainPower believes SWER line pole fires appear to have all occurred on CCA treated pine poles with single or double pole top insulator brackets.

(d) The pole top insulator bracket has been redesigned with increased clearances from live parts to the nearest uninsulated part of the pole or attachment, to minimise the risk of a wildlife induced pole fire. The clearance distance has been increased from approximately 250 mm in the previous design, to 505 mm in the redesign.

(e) The Inland Kaikoura Road SWER line has been surveyed, maintenance plans produced, and construction work commenced on installation of the redesigned pole top insulator bracket.

(f) The remaining Kaikoura and the Mt Grey SWER lines will be surveyed and similarly upgraded by December 2012.

(g) The more remote Lake Taylor SWER line system will be surveyed and similarly upgraded in 2013.

(h) The conclusions and recommendations of the incident investigation report will be tabled at the next employee health and safety committee meeting and health and safety executive committee meeting.