Health & Safety

Toolbox Talk

SCOTTISH WOODLANDS

LV flashover – lopping head damages insulation

What happened

A two-person electrical utility arb team were preparing to remove some Category A Spruce branches from the vicinity zone of a low voltage overhead power line, using a pull cord operated lopping head fitted on a set of insulated rods.

The low voltage line was an inter-wrapped bundle of an insulated live line, an insulated neutral line and a bare earth line.

The operator had fitted the lopping head to the top rod and had fitted 5 intermediate rods, he was resting the insulated rod set against the low voltage overhead line bundle. As he lifted up the 5-rod set to fit an additional rod with one hand, the pull rope hanging free down the side of the set, snagged, either at the pull rope insulator insert on a Spruce branch, or on the ground.

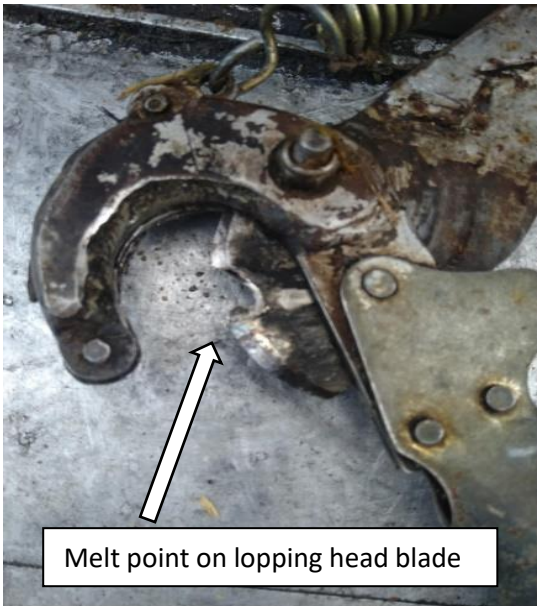
Reconstruction photo (using a section of blue rope) showing rods being assembled leaning against the overhead power line.

The snag caused the operator to lose control of the rod set which slid down the LV bundle it was resting on, the open hook of the lopping head latched over the line bundle and the cutting blade of the lopping head damaged the insulation of the live line. The metal lopping head formed a circuit between the now exposed live line and the bare earth causing a flash over. A loud bang was heard, and the lopping head blade suffered melt damage.

The operative working adjacent to the insulated rod operator was a trainee, with only the basic WI-PS authorisation level. As such the required levels of personal supervision were not as the SPEN authorisation skills matrix.

Reconstruction photo showing possible snagging of pull rope insert insulator, among overhead branches.

Damage point on live line insulation



Melt point on lopping head blade

What can we learn?

All works must be undertaken in reference to **PowerSystems. Working on trees adjacent to live overhead lines. OPSAF-12-018 Issue No 4.**

No lopping head or saw and insulated rod set should be allowed to enter the live zone of any voltage, including insulated lines.
Insulated rods must never be allowed to rest on any overhead powerline, of any voltage, in any circumstance.

The Electrical Networks Association Engineering Recommendation G55 Issue 4, makes the following statements

Lightly insulated covered conductors will provide some protection in the event of accidental contact with other plant but are not deemed to be safe to touch, and so are to be treated in the same way as bare wire conductors for the purposes of determining safe work practices.

It must be borne in mind

- **"where trees are present and have been touching conductors then there will be a strong possibility that abrasion has caused damage to the insulation"**
- **"Older insulation may be subject to degradation and may not offer full insulation".**

In relation to Category A tree work, the Company's procedure states

Where the safe system of work identifies the need for a dedicated lookout to monitor and control operations, a groundsman capable of stopping work (with a whistle) will be appointed to ensure that the required control measures are being adhered to. This requirement will be recorded on the site-specific RAMS.

Such a provision would help to prevent any breach of the live zone with insulated rod sets, and similar potential insulator snagging issues and associated loss of control of the rod set, when working among heavily branched trees.

A correctly authorised person working with the operator, would have recognised, and challenged the unsafe practice, and would have had the knowledge both to recognised that the rope was snagging and the potential consequences of this. And in addition, would have been able to provide the required level of personal supervision for the trainee.

Managers and Team Leaders, in allocating work to works teams, and all SPEN Authorised personnel who are undertaking work, all hold a level of responsibility to ensure they are aware of what Authorisations they and the members of their work party hold, and any limitations on the respective levels of supervision required and what types of work they are allowed to undertake.

Positives

No one was hurt.
The insulated rods and the insulated inserts in the pull rope were maintained in good condition and within their annual test certificate.
The work team immediately set up an exclusion zone to make the area safe and reported the incident to the Network Operator and Management Staff.

I acknowledge I have been briefed on, and understand the content of this toolbox talk and I will ensure I will work to these outlined standards		
Name	**Signature**	**Date**