Fire & Rescue NSW
Safety Bulletin 2012/03
Voltage detector use

Issue

The GLM Mini Rescue is a critical piece of equipment for detecting electrical hazards that can injure or kill firefighters.

To be used safely the operator of the detector must be aware of how the detector works and its limitations.

Background

The Recommended Practice for the GLM Mini Rescue voltage detector has been updated to provide enhanced guidance about the intended use of the detector and safety precautions that must be observed.

This bulletin highlights some of the most critical information that has been incorporated into the new Recommended Practice.

WARNING

Contact with, or close approach to, live wires or electrical equipment could kill or injure you.

If you receive an electric shock, or suspect that you have received one, the Incident Controller must be immediately informed. You must be transported to hospital for assessment and treatment.

When the detector should be used

The GLM Mini Rescue voltage detector should be used whenever a suspected electrical hazard is present.

Some examples of when the GLM Mini Rescue should be used are:

- By firefighters at structure fires, tasked to enter an electrical Exclusion Zone because they need to protect life or prevent dangerous expansion of the incident, to assist with determining the location of electrical hazards.
- To assist with determining, after power has been isolated by the electricity company, that other sources of power, such as illegal electrical connections, are not present.
- By the Safety Officer as part of ongoing checks to confirm the adequacy of an electrical Exclusion Zone.
- To help identify whether a component, such as street fixtures (eg traffic lights), or anything in contact with it, is electrified.

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How it works

Non-contact voltage detectors, such as the GLM Mini Rescue, work by detecting the magnetic field that surrounds an object energised with alternating current (AC) electricity.

The strength of the magnetic field increases as the voltage increases. The magnetic field is strongest next to the electrified object, with the magnetic field reducing its strength as the distance increases.

Limitations

The detector does not detect:

- **Direct current** because a detectable magnetic field is not created by Direct Current (DC) as it is with AC. Examples of where DC is found are:
  - Solar power systems
  - Batteries
  - Electric commuter trains (standard and light rail)
  - Some lift motor rooms.

The detector is not designed to detect:

- **AC wiring that is shielded** in metal conduit (or otherwise surrounded by metal) or by water. The metal or water surrounding the wire impedes the magnetic field reducing the ability of the GLM Mini Rescue to detect the presence of AC electricity

Further safety considerations

- Carefully consider whether the possible benefits of undertaking work where an electrical hazard could exist outweigh the risks.
- Test the detector prior to use and during the incident to confirm the operation of the unit.
- Placing the detector in a pocket, or other holder, significantly reduces its detection capability. If placed in a pocket or holder to free your hands, regularly remove it, hold it at arms length and scan for electrical hazards.
- Take care approaching an electrical source. A *voltage gradient* (a pool of electrical energy in the ground) may be formed around an energised source. No matter what the voltage, if you step in the pool of electricity you will receive an electric shock – you do not have to be actually touching the wire or energised source. Avoid walking in water, wet ground or other highly conducting surfaces as they increase the risk of electric shock.

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- Do not reduce the size of an Exclusion Zone around an electrical hazard based on the readings from this detector. Examples of this are at a *wires down incident* where the detector may show that the wires are not live, but the *reclose function* on the electricity network can operate, re-energising the wires at any time and without any notice.
- Before undertaking any activity that could potentially expose an electrical hazard (eg prior to commencing overhaul, before removing or cutting ceiling or wall coverings) ensure electricity has been isolated by the electricity company and use the GLM Mini Rescue to check for the presence of AC electricity from any secondary supply, illegal wiring or other source.
- Never touch a potentially energised object with the GLM Mini Rescue as you may receive an electric shock.

Further reading

- Electricity SOGs 14.2 – 14.7
- Guideline Support Document for Electricity SOGs 14.2 – 14.7
- Safety Bulletin 2011/04, *Electric shock injuries*

Instruction

Station Commanders are to:

1. Immediately replace all previous copies of the Recommended Practice for the GLM Mini Rescue with Version 2 Recommended Practice for the GLM Mini Rescue found on the Station Portal.
2. Conduct a drill during the next drill period on the GLM Mini Rescue using the Recommended Practice and the relevant sections of the Station Training Program module *Electricity and Incidents involving Electricity* as a reference.

Contact officer: Inspector Andrew Dadley, Acting Equipment Development Officer, 0408 442 898, andrew.dadley@fire.nsw.gov.au .

Noted: Station Commander	**A**	**B**	**C**	**D**	**Other**
Checked: Duty Commander					

Previous Safety Bulletin: Safety Bulletin 2012/02, *Recall of POK 70 mm into two breechings.*

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