Engineering Procedure
Electrical Distribution Unit

PR D 78109

Pole Top Rescue Kits

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Procedure

Transport Sydney Trains

NSW GOVERNMENT

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Version	Date	Author/ Prin. Eng.	Summary of change
1.0	16 May 2016	Chris Leung	First issue as a Sydney Trains document, rebranded from previous RailCorp SMS-06-EN-0558 V1.2
1.1	19 February 2019	Nick Loveday	Updated PR D 78109 "Approved by" to Associate Director Electrical Distribution Unit

Summary of changes from previous version

Summary of change	**Section**

Table of Contents

1. Purpose and scope

To describe the procedures required for the use, inspection and care of Pole Top Rescue Kits.

2. Work requiring a pole top rescue kit

When persons are working aloft it is essential that a rescue plan and resources are available. Pole top rescue kits are required to rescue workers who are trapped aloft on a pole or structure. A person who is uninjured but unable to descend or a person who is injured and unable to help themselves, shall be rescued. In both cases, a worker competent in using the rescue kit and working at heights shall be available to perform the rescue.

If the worker will be required to work on or pass between live low voltage conductors a Pole Top Rescue Kit shall be prepared ready for immediate use.

Whenever a worker will be working aloft on or near live low voltage conductors, a pole top rescue kit and person trained in its use shall be available on site and the kit laid out in an appropriate manner

Whenever a worker will be working aloft on a pole or structure, a pole top rescue kit and person trained in its use shall be on site. It is sufficient that a Pole Top Rescue Kit is available within sight and easy reach from the pole or structure. The kit may be on a vehicle provided the kit is positioned for fast retrieval in the event of an incident.

Warning
If the proposed work requires the worker to work on or pass through exposed live low voltage conductors that are more than four (4) poles steps above the top of a portable ladder, such work shall NOT be conducted.

For such proposed work to be completed, the work shall be completed:

- *from an Elevated Work Platform (EWP), or*
- *from a 'longer' ladder that when placed against the pole has the top of the ladder within four (4) poles steps of the proposed work.*

Refer to Clause 6.4 of PR D 78403 Work on Live Low Voltage for safety requirements before passing through exposed live LV electrical conductors.

3. Hazards

The hazards associated with a Pole Top Rescue are as follows:

- The rescuer may come in contact with the hazard which caused injury to the victim. In particular the victim may still be caught up in live electrical conductors.
- Loose material, tools or equipment associated with the work that the victim was carrying out.
- Live electrical equipment on the pole or structure.
- Projections, ropes, cables and the like that might snag or entangle the rescuer during the rescue effort.
- The rescuer and/or the victim falls, due to equipment failure or incorrect operation.

4. Responsibility

On a site where an electrical hazard may require a worker to be rescued from a pole top, the Line Manager is responsible for ensuring that:

1) A rescue plan is in place and personnel are fully trained to implement the plan, and
2) A pole top rescue kit is available and laid out ready for use when required, and
3) A trained rescuer is in attendance with the rescue kit and is in harness at all times the worker is aloft, and
4) The rescuer has the relevant competencies and has re-qualified within the past 12 months, and if working near electrical hazards, the rescuer is also be competent in resuscitation techniques, and
5) Proper communications between the ground and worker working aloft are established and maintained throughout any working aloft operations, and
6) Depending on the location and type of work, any necessary additional equipment is provided, e.g. Attached Climbing Systems components.

5. Pole top rescue kit components

The requirements for Pole Top Rescue Kits are set out in the RailCorp specification EP 15 00 00 04 SP Pole Top Rescue Kits. The Pole Top Rescue Kit consists of the following components:

- Orange weather resistant kit bag
- List of kit components
- Resuscitation chart for electrical shock victims
- Yellow rescue rope with a large gate alloy hook attached
- Rope grab device with an orange webbing link and snap hook
- Pair of electrical insulation gloves stored in a canvas bag.
- Pair of protective gloves for the insulation gloves stored in suitable bag, such as canvas bag
- Pair of protective gloves stored in suitable bag, such as canvas bag
- Sharp knife in a suitable sheath with an elastic spiral lanyard attached to the knife and sheath
- Orange line worker pole strap with integral webbing loop for attachment of the hook of the yellow rescue rope

The contents of the Pole Top Rescue Kit shall not be used for any purpose other than rescue.

6. Communications

Communication from the top of the pole relies on a person on the ground, who shall have an unobstructed view and be within earshot of the person working aloft.

If working remote or out of earshot of other work groups a reliable means of communication shall be available at the base of the pole.

7. Pre-work inspection of pole top rescue kit

Each time work involves working aloft on a pole or structure a pre work inspection of the rescue kit shall be carried out in accordance with Section 13 Table 2.

Warning
If defective components are identified, work shall not commence until the defective components are replaced.

8. Accompanying Person

When working on or passing through live low voltage conductors, an Accompanying Person shall be wearing a safety harness at all times when a worker is aloft.

Figure 1 – Accompany Person at the Base of Pole

When work is being performed aloft, an Accompanying Person at the base of the pole shall have a safety harness readily available for use at all times when a worker is aloft.

The Accompanying Person shall be competent:

- in the particular task being undertaken, and
- to implement control measures in an emergency, and
- able to use communication equipment in case of an emergency, and
- located on the ground in the vicinity of the worker aloft, with an unobstructed view and be within earshot, in order to be able to provide assistance in a timely manner

In addition, when a worker is required to work near exposed high voltage equipment or live low voltage aerial lines, the Accompanying Person shall be competent to release a worker from live electrical equipment.

9. Pole top rescue kit pre-work set up

The pre-work set up for pole top rescue depends on the work to be undertaken as follows:

- When working on or passing through live low voltage conductors, a Pole Top Rescue Kit shall be available and opened, inspected and ready for use at the base of the pole or structure.

Figure 2 – Pole Top Rescue Kit at Bottom of Pole

- When the work does not require a worker to climb through or pass live low voltage conductors, a Pole Top Rescue Kit shall be available within sight and easy reach from the pole or structure. The kit may be on a vehicle provided the kit is positioned for fast retrieval in the event of an incident.

9.1. When a worker is working on or passing through live low voltage equipment

1) Check that communication equipment is functioning correctly from the worksite, and
2) Place the communication equipment in a secure location in easy reach of the Accompanying Person.

   Place the rescue kit in a convenient position adjacent to the pole or structure and inspect the kit components as described in Section 7 and prepare the kit as follows:

   a) Arrange the knife sheath on the webbing outrigger of the orange line worker pole strap for right hand or left hand to suit the Accompanying Person, and

b) Attach the large alloy hook with the rescue rope attached to the webbing loop on the orange line worker pole strap to suit the Accompanying Person, and

c) Position the orange line worker pole strap assembly on the top of the kit bag in a position where the outrigger snap hook can readily be picked up and attached to the side D ring of the safety harness, and

d) Place the rope grab device with the orange webbing link in a convenient dry clean position, and

e) Remove the electrical insulation gloves and the protective gloves storage bags from the back pocket of the rescue kit bag, and

f) Place the electrical insulation gloves on each hand and fit the protective gloves over the electrical insulation gloves, and

g) Remove the electrical insulation gloves with the protective gloves from each hand and place gloves on the top of the kit bag and pole strap.

9.2. When working aloft with no live low voltage equipment

1) Check that communication equipment is functioning correctly from the worksite.
2) Place the communication equipment in a secure location in easy reach of the Accompanying Person.
3) The rescue kit shall be in a readily accessible position or on a vehicle in a readily accessible position near the worksite. In this instance, the Pole Rescue Kit Pre-work Set Up mentioned in Section 9.1 may be omitted.

10. Live low voltage rescue procedure

The following procedure shall be followed by a worker to perform a rescue following an incident involving live low voltage equipment.

1) The Accompanying Person shall retrieve the communication equipment and contact the Electrical Operating Centre (EOC) on 1800 060 015 or (02) 9379 4911 or internal no. 94911 and advise of the emergency and request assistance.

   Upon EOC answering the phone you should:

   a) First say “Emergency, Emergency, Emergency”.

      Then state:

   b) Identification and location,

   c) The nature of the emergency, and

   d) The type of assistance required.

      If other persons are nearby they shall communicate and request assistance while the rescue is initiated

2) Proceed to the Pole Top Rescue Kit and pick up the orange line worker’s pole strap and attach the pole strap to the side D ring on the safety harness
3) Put on both of the electrical insulation gloves and the protective gloves

Warning
Stop, look and think.
How did the casualty get injured?
How can I approach safely?

Figure 3 – Accompanying Person Observing with Pole Top Rescue Kit Ready for Use

4) Ascend the ladder and on reaching the pole ascend the pole using an approved attached climbing method.

Figure 4 – Accompanying Person Ascending Pole for Rescue

5) Climb to a position just below the casualty.
6) Check for electrical hazards.
7) Place the orange pole strap around the pole and connect the free end to the safety harness D ring.
8) If necessary and safe to do so, position yourself clear of the drop area of the casualty and free the casualty from the live low voltage equipment.
9) Check that the casualty's airway is clear and that the casualty is breathing. If the casualty is not breathing give the casualty five quick breathes.
10) Unhook the large alloy hook of the yellow rescue rope from the pole strap retaining loop on the pole strap outrigger.
11) Place the large alloy hook and rescue rope over the crossarm approximately 0.5 metre out from the pole, then one full turn around the tail of the safety rope.

Warning
This will require you to climb past the casualty.
Check first for hazards.

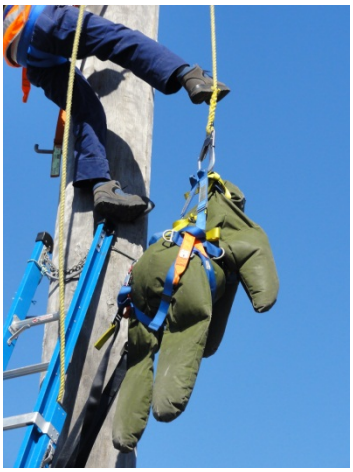
12) If there is no crossarm immediately above the casualty, the yellow rescue rope can be placed over a pole step, around the pole, over a second pole step on the opposite side of the pole and the tail of the safety rope looped over the first pole step. Refer to Figures 5 and 6 below.

Figure 5 – Rescue rope over cross arm with tail one turn around fall of rope

Figure 6 – Rescue rope over pole step, around pole with the tail looped over first pole step

13) Attach the large alloy hook to a suitable rescue point on the casualty's safety harness. The front rescue points are preferred as the casualty will lie back and their airway will open. If these can not be reached use any other available attachment points or harness webbing.
14) Remove as much slack as possible from the rescue rope.
15) Remove the knife from the sheath and take a firm grip on the tail of the yellow rescue rope. Be prepared for a sudden load on the tail of the rescue rope when the casualty is cut away from the pole.

16) Cut through the casualty's pole strap and/or the webbing link on the casualty's rope grab device to detach the casualty from the pole or structure.
17) Place your foot against the yellow rescue rope and push it away from the pole or structure. This will help to prevent the casualty from striking pole steps or other objects attached to the pole while being lowered to the ground.



18) Carefully lower the casualty to the ground.
19) Descend the pole.
20) Persons trained in first aid should follow first aid steps DRSABCD (Danger, Response, Send for help, Airway, Breathing, CPR and Defibrillation). Others should follow the instructions given by the ambulance call line operator.

    Consideration may also need to be given to significant trauma such as cervical spine injury.

    Treat burns.

    a) The injured person(s) shall be transported to the nearest hospital.
    b) The injured person(s) is not to be left alone or allowed to drive to the hospital as heart problems can occur up to several hours following an electric shock.
    c) In the first preference, the injured person(s) shall be transported by ambulance.
    d) Should ambulance transport not be possible a Team Leader, next senior work party member, or Line Manager shall arrange:
        i) for alternative transport e.g. taxi or vehicle & driver, and

ii) to have another person, where possible a qualified first aider and preferably one knowing the details of the incident, to:

- accompany the injured person(s) in the alternative transport to the nearest hospital, and
- wait until all tests are completed.

21) Complete subsequent steps regarding:
   a) Initial treatment,
   b) After assessment,
   c) Continuing treatment,
   d) Incident reporting, and
   e) Statutory notification

as detailed in D2013/80869 Electric Shock Protocol.

11. Incapacitated person rescue procedure

The following procedure shall be followed to perform a rescue of a person who has become incapacitated while working aloft:

1) Follow step (a) of Section 10 on Live Low Voltage Rescue Procedure
2) Retrieve the Pole Top Rescue Kit and place it near the pole. If other persons are nearby have them bring the rescue kit to the pole.
3) The Accompanying Person shall put on their safety harness.
4) Retrieve the orange line worker pole strap from the rescue kit.
5) Attach the large alloy hook with the yellow rescue rope attached to the webbing loop on the outrigger of the orange line worker pole strap.
6) Ensure the knife sheath with the knife is attached to the outrigger of the orange line worker pole strap.
7) Attach the orange line worker rescue pole strap to the safety harness side D ring.

Warning
Stop, look and think.
How did the casualty get injured?
How can I approach safely?

8) Ascend the ladder and on reaching the pole ascend the pole using an approved attached climbing method.
9) Climb to a position level with the casualty.
10) Place the orange line worker pole strap around the pole and connect the free end to the safety harness D ring.
11) Follow steps (i) to (v) of Section 10 on Live Low Voltage Rescue Procedure.

12. Storage of equipment

Pole Top Rescue Kits shall be kept in a suitable labelled position on each vehicle that carries them to facilitate quick deployment if required.

13. Inspection of equipment – general

13.1. Records

Managers and Supervisors identified as being responsible for the inspection and testing of equipment for access and safety at heights shall maintain record systems for all items covered by this document for which they are responsible. These records shall be kept until the item is permanently removed from service.

These systems shall record:

- Item and number
- Date of Routine Check/Test/Inspection (other than user inspections)

13.2. Inspection schedule

The scheduled inspections and tests shall be undertaken irrespective of any other inspection or test carried out on the equipment as described in Section 13.4.

The recommended program for inspection and/or testing of safety critical equipment is:

Table 1 – Inspection/test program

Test	***Month***
Six monthly	January and July

If it is necessary to adopt a different program for inspection of equipment for access and safety at heights in a particular location, it is recommended that a consistent schedule be adopted for all safety equipment at that location.

If the responsibility for an item of equipment is changed, care shall be taken to ensure that the intervals between periodic inspections for that item do not exceed those set out in this document.

13.3. Segregation of defective Items

If in the course of inspections an item is found to be defective, it shall immediately be removed from service. The person removing the item from service shall affix a “DANGER – DO NOT USE” tag to the item. The tag shall describe the defect of concern.

The Supervisor shall then decide if the item is to be repaired or destroyed.

Warning
The DANGER - DO NOT USE tag shall not be removed until one or other of these actions has been completed.

13.4. Inspection of pole top rescue kits

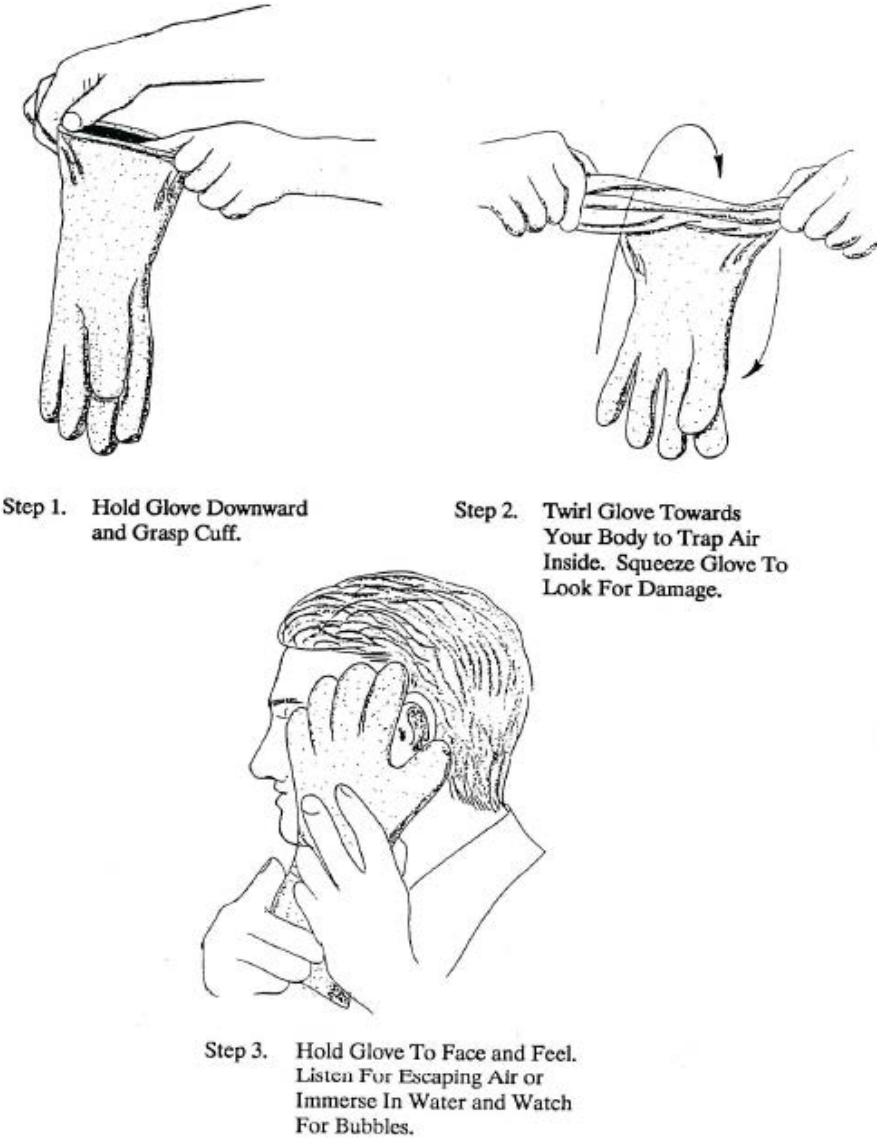
13.4.1. Pre-work Inspection of Pole Top Rescue Kit

Table 2 – Pre-work Inspection of Pole Top Rescue Kit

Component	***Inspection***
Orange weather resistant kit bag	Check the bag for rips and holes and contamination by oil or chemicals. Clean if necessary.
List of kit components	Remove the kit component list from behind the resuscitation chart and check that each item on the list is in the kit. Replace the list.
Resuscitation chart for electrical shock victim	Check the chart is in the clear pocket and clearly legible.
Yellow rescue rope C/W large gate alloy hook	If there is evidence that the kit bag has been contaminated or damaged inspect the rope for defects. Inspect the gate of the large alloy hook for free movement
Rope grab device assembly	Inspect the rope grab device mechanism for correct operation. Inspect the orange webbing link for signs of fraying or other defects. Inspect the snap hook and double acting latch for correct operation or defects.
Pair of electrical insulation gloves	Remove the electrical insulation gloves from the storage bag and **Perform Inspection and Air Leak Test** at Section 13.4.2
Pair of protective gloves	Remove the protective gloves from the storage bag and inspect for: Any damage or cuts that may expose the of electrical insulation gloves to damage. Metal slithers that may penetrate the electrical insulation gloves. Contamination by acids, alkalis, grease, oil, creosote, petrol or turpentine. Any contaminated protective gloves shall be immediately removed from the kit and replaced.
Knife with sheath and spiral lanyard	Ensure the knife is sharp and firmly attached to the sheath by the spiral lanyard.
Orange line worker pole strap	Inspect webbing for signs of degradation. Inspect snap hooks for damage and correct operation of double acting latches or defects. Inspect webbing loop for attachment of large alloy hook on the webbing outrigger for cuts or fraying. Check that knife sheath is firmly attached to webbing outrigger.

13.4.2. Inspect and air leak test gloves by:

1) Visually inspect for any damage, discolouration or perishing or contamination by acids, alkalis, grease, oil, creosote, petrol or turpentine.
2) Carry out air leak test as explained and shown in the diagram below:



Step 1. Hold Glove Downward and Grasp Cuff.

Step 2. Twirl Glove Towards Your Body to Trap Air Inside. Squeeze Glove To Look For Damage.

Step 3. Hold Glove To Face and Feel. Listen For Escaping Air or Immerse In Water and Watch For Bubbles.

Any gloves found to be defective or contaminated shall immediately be removed from the kit and replaced.

13.4.3. Six-monthly inspection

Inspect in accordance with Table 2.

In addition, the full length of the yellow rescue rope shall be taken out of the bag and inspected for degradation. Refer to D2013/80859 Physical Restraint Systems (Inspection and Maintenance) for guidance.

The mobility of any moving parts shall be tested and correct operation confirmed. The gloves shall be strength tested by:

1) Firmly grasping the cuff and fingers and stretching the gloves as much as possible.
2) Then stretching each finger and thumb as much as possible.

The gloves shall be air leak tested in accordance with paragraph 13.4.2.

The results of the inspection shall be recorded.

13.4.4. After use inspection

A complete inspection and if necessary, test of any components used in an actual rescue shall be conducted on completion of a rescue. Any component that appears to be stretched, strained or damaged shall be replaced.

Inspect the Pole Top Rescue Kit in accordance with Table 2.

Rescue ropes that have been used shall be discarded and replaced. This does not apply to a rope designated for use in simulated or practice rescues. Such a rope shall be clearly marked “For Training Purposes only”.

14. References

ENA Doc 024-2009	National guideline for management of tools and equipment used in the electricity supply industry
EP 15 00 00 04 SP	Pole Top Rescue Kits
ISSC 14 – October 2010	Guide to electrical workers' safety equipment
PR D 78403	Work on Live Low Voltage
D2013/80869	Electric Shock Protocol
SMS-06-OP-3036	Manage Risks with Working at Heights
D2013/80859	Physical Restraint Systems (Inspection and Maintenance)