

Network Switching Principles

Toolbox Talk

Introduction:

VESI members have identified basic principle breaches occurring in both High Voltage (HV) and Low Voltage (LV) switching activities on Distribution Networks. These breaches whilst not directly resulting in any near misses or incidents to either the Operator or the Work Party undermine established safety rules designed to protect all parties accessing the Network safely.

The associated rules for safe access to electrical apparatus can be found in:

- [The Green Book](#) - Electrical Safety Rules for the VESI Distribution Networks
- [Victorian Electricity Supply Industry](#) website
- Distribution Network owner manuals and procedures
- [The Blue Book](#) - Code of Practice on electrical safety for work on or near high voltage electrical apparatus

The following requirements shall be discussed with all personnel authorised or permitted to perform HV or LV switching activities within the VESI.

Switching Authorities

Switching and associated duties on HV electrical apparatus should be performed by Authorised Electrical Operators whose training, duties and instructions cover the particular electrical apparatus. The authority to perform LV switching activities can differ between Distribution Network owners and as such shall be confirmed prior to commencing and switching activity.

However, any person may perform operations in the following circumstances:

- When specifically instructed by, or authorised by, the appropriate Operating Authority.
- When specifically instructed by an Authorised Operator or Network Controller as part of training.
- In an emergency involving serious risk to persons or property.

Minimum PPE whilst switching

Persons performing work on, near or in the vicinity of electrical apparatus shall utilise the following approved PPE:

- Safety headwear
- Safety footwear
- Ankle to wrist natural fibre or arc flash protective clothing
- Insulated gloves for live work
- Non Synthetic material, hardworking gloves to protect from arc flash when using insulating sticks
- Face/eye protection for live work

When HV electrical apparatus is operated, the person undertaking the task shall be protected from electric shock, flash and other hazards using approved methods; refer The Green Book Clause 1.1.10.2 and Table 6.

All Safety glasses shall comply with relevant Australian Standards. Shaded/tinted is preferred, but protection with clear lenses or shield is appropriate for use in poor light situations.

Equipment

All sticks, gloves, sleeves, mats, protective barriers or covers, earthing trucks, portable earthing devices, insulating platforms, insulated elevating work platforms (EWP) or other equipment used for operating electrical apparatus or performing live work shall meet a defined specification or be specifically approved for the particular application. Visual inspection shall be made for physical damage or contamination immediately prior to use.

All equipment, including protective equipment which requires regular testing to prove the effectiveness of its insulation shall be tested. Where an item has been identified out of test it shall be tagged out of service.

Prior to any switching ensure that all required equipment used for switching and testing is in test and serviceable condition.

Equipment Identification & Status

When switching electrical apparatus the following shall apply before operating the equipment:

- Check to ensure the correct location and apparatus to be operated

- Confirm where practical that a clear ingress & egress access can be maintained
- Check the status and condition of the apparatus
- Self-assess your familiarity with the apparatus/equipment to be operated - Have you operated it before? Do you have a Switch Manual you can refer to? If in doubt, **Do Not Operate the Equipment..**

Operation

Prior to a switching operation, the available information regarding circuit conditions shall be taken into account and no electrical apparatus shall be operated if it is inappropriate for the duty to be performed.

All communications relating to the operation of, or access to, electrical apparatus shall be clear and definite.

Verbal switching instructions including changes to operating instructions shall be written down and confirmed by repeating back to avoid misunderstanding.

After switching the correct operation of the electrical apparatus should be confirmed whenever possible e.g. semaphore position.

Tagging & Signage

Appropriate tags shall be attached to all switches and/or control circuits operated to de-energise equipment or line sections on which an Access Authority is required. Wherever practicable, isolation points shall be tagged.

Appropriate signs shall be used where practical to identify apparatus covered by an Access Authority and to identify adjacent live apparatus and related hazards.

Testing

Prior to earthing or bonding, the apparatus shall be tested with an approved tester or equipment indicators.

Tester/s shall be proved for operation/indication before and after use where practicable.

Earthing & Bonding

All operational earths / bonders attached to conductors shall be recorded on the Access Authority prior to issue.

All work party applied earths / bonders should be recorded once applied and noted once removed.

All bonding and/or earthing should be close as practicable to the worksite and Earthing applied to HV apparatus should comply to the "priority earthing" principle where practical.

Access Authorities

HV access authorities shall be issued and cancelled only by an Authorised Electrical Operator or a person specifically instructed by an Authorised Electrical Operator, as part of training.

At the time of issue of any Access Authority the person issuing the authority shall describe and, where practicable, show the electrical apparatus covered by the Access Authority and the precautions taken, to the Recipient in Charge (RIC) and all the initial Recipients.

The person issuing the access authority shall also describe or point out the nearest points of supply and adjacent live electrical apparatus. The issuer and Authorised Recipients all have a responsibility to ensure that the isolations and earthing documented in the Access Authority are such that access to the relevant apparatus shall remain safe for the proposed work to be undertaken.

Any person involved in the issue or receipt of an Access Authority who is not satisfied with the conditions, may apply to have additional precautions taken, either before the Authority is issued or during the currency of the work.

All Recipients of an Access Authority are required to sign off before the Authority is relinquished.

Restoring or Placing Electrical Apparatus into Service

Before making any electrical apparatus live it is a requirement that:

- In the case of new and previously out of commission apparatus, all the necessary Personnel Safety and Service Clearance forms are completed and in the possession of the Operating Authority.
- Any Access Authorities, or other documents, which have restricted the electrical apparatus to a de-energised state, have been cancelled.
- Any pre-activation tests on the electrical apparatus have been completed satisfactorily.
- All earths and/or bonders are removed.
- A visual inspection shows that to all appearance the electrical apparatus is fit for service.