ASP Safety Alert
Service & Installation Compliance

Alert Number: SA04_20_v3

13 March 2021

Subject: Metal Clad Fuses and Service Enclosures v3

Version 3: This version superseded the previous version issued on 15 May 2020

Key Messages

Ausgrid's Electrical Safety Rules - Appendix A Live LV task list, DOES NOT permit work on Live Metal Clad Fuses and Service Enclosures

Suitable controls are to be implemented for the operation (removal or installation) of the fuse with a metal clad enclosure .

Metal clad fuses and metal clad service enclosures (handbag connections) are present on services throughout the Ausgrid network and generally installed at customer switchboards. There is a risk of an uncontrolled discharge of electricity when working on or operating (removing/installing) the fuse as the equipment is contained within a metal enclosure (pictured below).

To manage the risk, an appropriate risk assessment should be undertaken prior to commencing applicable work, to determine suitable controls to be applied. Suitable controls for work include isolation of supply by a suitably qualified and authorised person, or Ausgrid where isolation is required via the LV distributor fuses, prior to replacing the metal clad fuse with a new service fuse holder as depicted in figure 3 below (this would apply to most 100A installations aged circa 1970's and earlier).

The attached *SafeWork safety alert – Dangers of working on or near energised (live) electrical equipment*, is a reminder to electricians including Accredited Service Providers (ASPs) of the legislative obligations not to work live on customer's electrical equipment (including the service fuse) or installations merely because it is more convenient.

When operating (removing/installing) a metal clad service fuse, other suitable controls may include (subject to completion of a risk assessment for the work):

- Use of Full Personal Protective Equipment (this is a mandatory requirement in certain circumstances per Ausgrid's Electrical Safety Rules section 9.5.3).
- Where the fuse is required to be removed to isolate the supply to the customer, undertaking this work with the use of a suitable fuse pulling tool (images of fuse pulling tools are depicted below to assist with their identification; however, the selection of a suitable fuse pulling tool should be done as part of an appropriate risk assessment and Ausgrid is not recommending or endorsing the use of the specific tools depicted).
- Ensuring that the fuse carrier is adequately secured to the board, prior to operating the fuse; and
- The use of an arc rated face shield.

When Operating, care should be taken to not move the conductor from the metal clad fuse holder entering the handbag connection. Furthermore, as a reminder, electricians including ASPs must ensure compliance with appropriate legislative obligations associated with materials potentially containing asbestos. Please see attached previously issued *Ausgrid safety alert – SA27_15 HRC fuses containing asbestos on Ausgrid's Network* or refer to *Ausgrid Network Standard NS211 – Working with asbestos products* for further information.

This is also a reminder that Ausgrid may, if any ASP is identified as committing a safety breach (including failing to manage risks and apply suitable controls when undertaking work identified in this alert), Ausgrid may take action to address the safety breach, which may include suspension or cancellation of the ASP's authorisation.

Images of equipment

1. Metal Clad Fuses – Example of metal clad fuse installed on customers switchboard

2. Example of fuse pulling device (GRIP CABLE JAW 415V EXTRACTION TONGS)

3. Example of metal clad service enclosures (handbag connections) with modifications completed

Note: Tar compound leaking from within handbag beneath new service fuses.

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Ausgrid

Dangers of working on or near energised (live) electrical equipment safety alert

This safety alert reminds electrical workers of the hazards associated with working on or near energised (live) electrical equipment. These hazards include electric shock, arc flash explosion and fire.

Background

In November 2018, two electrical workers received serious burns from an arc flash explosion that occurred while they were connecting electrical supply wiring to a new electricity meter. The meter was being added to an existing electrical installation within a switch room of a large commercial/residential building. Investigations into the incident are ongoing.

Damage caused by the arc flash explosion.

What is arc flash?

Arc flash is the light and heat produced from an arc fault - created by a short circuit between two conductors; phase to phase or phase to earth. The massive energy released in the fault can rapidly vaporize the metal conductors and tools involved, changing it

from a solid state to a gas vapour (plasma) that expands with explosive force (arc blast). The temperature of the plasma can reach 19,000ºC – hotter than the surface of the sun. Exposure to the noise, concussive forces, blasted molten metal, high-energy radiation and temperatures can be catastrophic.

The radiant energy released by an electric arc is capable of permanently injuring or killing people. Arc flashes may cause severe burns to the skin and flash burns to the face and eyes. Inhaled hot gases and molten particles can cause serious internal burns to the throat and lungs. Injury can also occur through the impact from flying debris and dislodged components, or by the concussive blast.

Actions required

Electricians including Accredited Service Providers (ASPs) must not work live on customer's electrical equipment or installation merely because it is more convenient. Convenience is not an excuse to carry out dangerous work.

The Work Health and Safety Regulations (WHS Regulations) in NSW prohibit work on energised (live) electrical equipment unless one or more of the exceptions under the WHS Regulations applies. Refer to SafeWork NSW Code of Practice: Managing Electrical Risks in the Workplace for more information on the few circumstances under which working live is permitted and how it should be carried out.

Working de-energised eliminates significant electrical risks. The following are the key steps for an effective isolation of electrical supply.

- **Consultation:** consult with the person who manages or controls the workplace or the premises (eg in relation to the timing of the work) and notify any other affected people as appropriate
- **Isolation:**
    - identify the circuit(s) requiring isolation
    - disconnect active conductors from the relevant source(s), noting there may be multiple sources and stand-by systems/generators/photovoltaic systems as well as auxiliary supplies from other boards
    - if a removable or rack out circuit breaker or combined fuse switch is used, it should be racked out or removed then locked open and danger tagged
    - each high-voltage exposed part must be earthed after proven de-energised
- **Securing the isolation:** lock the isolating switch(es) or remove and tie back relevant conductors to protect the people carrying out the electrical work
- **Tagging:** tag the switching points where possible to provide general information to people at the workplace
- **Testing:** test to confirm the relevant circuits have been de-energised along with any other relevant conductors in the work area, and re-test as necessary.

The safe work procedure 'Test for 'dead' before you touch' must be applied at all times.

Important information for meter installers

Installing or replacing an electricity meter requires the proper isolation of the electrical supply at the Service Protection Device (SPD) before proceeding. If the SPD is missing or inoperable, workers must stop work. An isolation on the distribution network must be arranged before proceeding with the meter installation.

Important information for accredited service providers (ASPs)

The provisions of the ASPs accreditation and authorisation applies only to contestable work undertaken in accordance with:

- NSW Department of Planning & Environment – Accreditation of Providers of Contestable Service (Scheme Rules); and
- Accredited Service Providers Authorisation requirements with distribution networks (Ausgrid, Endeavour or Essential Energy) and their relevant Electrical Safety Rules

It is important that ASPs distinguish between the different requirements when carrying out contestable work on the electricity network (as an ASP) and electrical work on a customer installation (as an electrical contractor). Electrical contractors are required to manage the risks associated with electrical work in accordance with Part 4.7 of the Work Health & Safety Regulation 2017.

Further information

- Work Health and Safety Regulations 2017 (Part 4.7)
- SafeWork NSW Code of practice: Managing electrical risks in the workplace
- AS/NZS 4836:2011 Safe working on or near low-voltage electrical installations and equipment
- Service and Installation Rules of New South Wales
- Code for safe installation of direct-connected whole current electricity metering in NSW

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