



Learning Event



WORKING WITH ELECTRICAL EQUIPMENT

HAZARD

Electrical
(Low voltage)

**Contact
With Live
Electricity**

CONSEQUENCES

Actual: No harm to persons

Potential: This could have caused a fatality

WHAT ARE YOU DOING TO PREVENT ARC FLASH WHEN USING LOW VOLTAGE MOBILE ELECTRICAL EQUIPMENT?

What Happened?

A crew was setting up for welding activities. The genset (i.e. portable power supply consisting of an engine and generator) was positioned 8m from a pipeline which was considered a hazardous area zone. The crew visually inspected and passed the generator, heavy duty extension lead and RCD push button test before commencing the task. The in-date and tagged extension lead failed following an arc flash at the socket after being plugged into a lead from the HDPE heating plate. The arc flash continued for approximately 5 seconds until the emergency stop button was activated.

Why did it Happen?

The short occurred at the flex point just outside the cable gland on the socket end of the lead. The overload protection devices installed on the generator are likely to have failed. This allowed a high fault current to pass through the residual Current Device (RCD), causing damage and impeding its correct function.

What did they Learn?

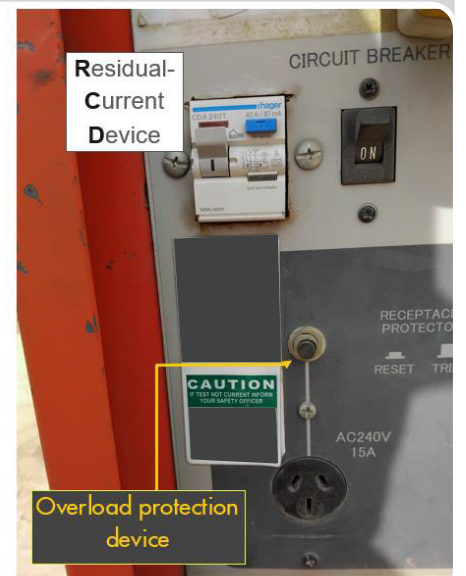
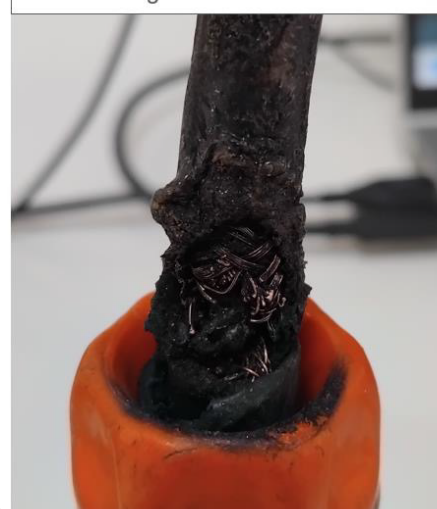
Defect inspections:

- Extension cords in a construction environment can suffer increased physical damage from: exposure to weather; traffic; solar radiation; tools; etc.
- Older style RCD overload protection devices are suspected to be more easily prone to swarf, dust and moisture contamination.
- Gensets (regardless of whether an RCD is fitted) must have weatherproof 15 amp industrial outlets individually protected by a 16 amp residual Circuit Breaker with Overload Protection (RCBO) in accordance with AS/NZS 3010 Electrical Installations - Generating Sets.
- Inspection of extension leads should focus on the plug, socket and adjacent flex points. However, the braided screen and clear plastic insulation may obscure the breakdown of the internal insulation. In a construction environment physical testing by a qualified person should occur at least quarterly or more frequently depending on risk associated with the environment.

Transition to Work (Step 7) tips:

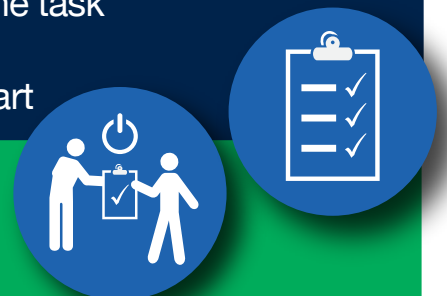
- Plan to test electrical equipment before use in a hazardous area zone.
- Communicate by ensuring the crew understand emergency shutdown protocols for electrical equipment.
- Check before use by confirming in-date tagging of the electrical equipment and safety switch tests.

Damage to the Lead from arcing next to the gland of the Socket



IOGP Life-Saving Rules

- ✓ Understand and use safety critical equipment and procedures which apply to the task
- ✓ Confirm that hazards are controlled and it is safe to start



Ask yourself or your Crew:

- What safety checks do you complete prior to using portable electrical equipment? What would you do if visual checks were impeded?
- What action would you take if an arc flash occurred during a task involving use of electrical equipment? Would you stop the job? Who has the authority to make the decision to proceed?
- When can you use electrical equipment in a hazardous area zone? What isolations are required and do you pre-identify emergency shutdown steps? How is this communicated?

Further information:



SCAN ME

AS/NZS 3010:
Electrical
Installations -
Generating Sets



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Safe Work
Australia -
Electrical Safety
Overview



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Safer Together -
Assist & Assure
(Step7)

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