

Safety Advisory SA03/23

Securing bus batteries, cabling and protective covers

Safety message

In March 2023, the Office of Transport Safety Investigations (OTSI) deployed to a bus fire at Umina Beach on the NSW Central Coast. Bus fires present a significant risk of serious injury, loss of life and assets. OTSI data from 2013 to 2022 indicates that about 34 per cent of fires are caused by electrical faults.

This incident highlights the importance of risk assessment and having an effective maintenance and inspection process to manage risks to safety. Operators should provide their mechanics with sufficient training and instruction for the inspection of batteries, their mounting brackets, cabling and protective covers.

In a similar bus fire at Homebush in 2017,¹ OTSI recommended that safety inspections should include specific instruction for ensuring the integrity of cabling and protective covers on the terminal posts of batteries in accordance with the National Heavy Vehicle Inspection Manual (NHVIM). This advice continues to apply.

The incident

On 16 March 2023, OTSI deployed to a bus fire at Umina Beach. The bus was stopped at a bus stop on Brisbane Avenue, Umina Beach when a loud bang was heard by the driver and nearby residents. The driver identified smoke coming from under the bus and exited the vehicle. Video evidence indicated there were flames at the front of the bus which quickly spread.

The bus was well alight when Fire and Rescue NSW (FRNSW) attended the scene, along with NSW Police and Ambulance paramedics. The bus was destroyed before firefighters could extinguish the fire. There were no passengers on board and no injuries were reported.

Observations

The OTSI inspection of the bus and review of available video footage showed the fire started in the lower offside corner near the battery compartment. There was significant damage to the bus body. The driver's area was destroyed, along with the front third of the bus, and the rest of the vehicle was heat affected (blackened, melted or charred).

One battery was found to be missing the top cover and the sides were deformed outwards at the top, likely the result of the battery exploding (Figure 1). The battery bridging cable showed marks consistent with arcing on the battery compartment frame. It was unclear if this was the cause or

¹ Bus Safety Investigation - Bus fire - Telfords Charter bus Homebush - 08 February 2017. Available at: <https://www.otsi.nsw.gov.au/documents/bus-safety-investigation-bus-fire-telfords-charter-bus-homebush-08-february-2017>

consequence of battery failure and fire. OTSI inspected two other buses of the same model and found that the configuration of the battery bridging cable increased the risk of the cable rubbing on metal components (Figure 2) which can result in cable abrasion. The loud ‘bang’ that the driver and resident heard was likely the battery exploding.

While the investigation did not determine the exact cause of the fire, based on the evidence available, it was probably due to one or a combination of the following factors which led to flammable gases from the battery igniting:

- battery mounting bracket became loose with the bridging cable abrading and short circuiting to the frame;
- bridging cable installed in a position that could have abraded and short-circuited to the frame; and/or
- internal battery fault.

Key points for operators

Bus and coach operators should identify, and assess battery related risks and controls arising from the placement and management of batteries in accordance with their Safety Management System and:

- Refer to the OEM standards as applicable, ensure mechanics and staff have sufficient guidance and training to correctly position battery cables and mounting brackets.
- Inspect their fleet battery terminals, cables, mounting brackets and packing and secure/replace if loose or incorrectly placed.
- Replace/repair any damaged cables and mounting brackets.

For more information contact: engagement@otsi.nsw.gov.au

Figure 1: Umina Beach bus fire battery compartment



Figure 2: Exemplar bus battery compartment

