



Office of Transport Safety Investigations



FACTUAL FINDINGS

**FIRE INVOLVING GRASSHOPPER TOURS BUS TV 6139
NIMBIN, NSW**

13 JANUARY 2012

BUS INCIDENT FACTUAL FINDINGS

FIRE INVOLVING GRASSHOPPER TOURS BUS TV 6139
NIMBIN, NSW

13 JANUARY 2012

Released under the provisions of
Section 45C (2) of the *Transport Administration Act 1988*

File Reference: 04535

Published by: The Office of Transport Safety Investigations
Postal address: PO Box A2616, Sydney South, NSW 1235
Office location: Level 17, 201 Elizabeth Street, Sydney NSW 2000
Telephone: 02 9322 9200
Accident and incident notification: 1800 677 766
Facsimile: 02 9322 9299
E-mail: info@otsi.nsw.gov.au
Internet: www.otsi.nsw.gov.au

This document is Copyright. In the interests of enhancing the value of the information contained in this document, its contents may be copied, downloaded, displayed, printed, reproduced and distributed, but only in unaltered form (and retaining this notice). However, copyright in material contained in this document which has been obtained by the Office of Transport Safety Investigations from other agencies, private individuals or organisations, belongs to those agencies, individuals or organisations. Where use of their material is sought, a direct approach will need to be made to the owning agencies, individuals or organisations.

Subject to the provisions of the *Copyright Act 1968*, no other use may be made of the material in this document unless permission of the Office of Transport Safety Investigations has been obtained.

THE OFFICE OF TRANSPORT SAFETY INVESTIGATIONS

The Office of Transport Safety Investigations (OTSI) is an independent NSW agency whose purpose is to improve transport safety through the investigation of accidents and incidents in the rail, bus and ferry industries. OTSI investigations are independent of regulatory, operator or other external entities.

Established on 1 January 2004 by the Transport Administration Act 1988, and confirmed by amending legislation as an independent statutory office on 1 July 2005, OTSI is responsible for determining the causes and contributing factors of accidents and to make recommendations for the implementation of remedial safety action to prevent recurrence. Importantly, however, OTSI does not confine itself to the consideration of just those matters that caused or contributed to a particular accident; it also seeks to identify any transport safety matters which, if left unaddressed, might contribute to other accidents.

OTSI's investigations are conducted under powers conferred by the Rail Safety Act 2008 and the Passenger Transport Act 1990. OTSI investigators normally seek to obtain information cooperatively when conducting an accident investigation. However, where it is necessary to do so, OTSI investigators may exercise statutory powers to interview persons, enter premises and examine and retain physical and documentary evidence.

It is not within OTSI's jurisdiction, nor an object of its investigations, to apportion blame or determine liability. At all times, OTSI's investigation reports strive to reflect a "Just Culture" approach to the investigative process by balancing the presentation of potentially judgemental material in a manner that properly explains what happened, and why, in a fair and unbiased manner.

The Incident

At 5:00pm on Friday 13 January 2012,¹ a Grasshopper Tours bus with thirty seven passengers onboard caught fire after the Driver had pulled over to the side of Koonorignan Road, Nimbin. The bus was totally destroyed in the fire but no injuries were sustained by any parties involved.

The bus had departed Byron Bay at 10:00am on a sightseeing tour through to Nimbin, stopping on the way for lunch. The bus departed Nimbin at approximately 4:40pm for the return trip to Byron Bay. On departing, the Driver pulled over to give a talk to his passengers on the history of the immediate location.

The Driver switched off the ignition and commenced turning around to face the passengers when he noticed smoke coming from an inspection port for the radiator on the engine cover. He raised the cover and, on seeing dark smoke, immediately closed the port and evacuated the passengers from the bus through the single front entry/exit door. After the passengers finished disembarking he re-entered the bus to make certain all passengers were accounted for. At this time he observed flames had consumed the fibreglass engine cover and the interior of the bus was commencing to burn. The Driver estimated that only two and a half minutes elapsed between when he first noticed the smoke and the interior catching alight.

After confirming all passengers were accounted for and were a safe distance from the bus, the Driver phoned the emergency number '000' at 5:00pm to alert the Police and Fire Brigade. Police and Rural Fire Service units arrived on scene at 5:22pm by which time the bus was totally destroyed with everything other than the metal frame, side panels, seat frames and roof being consumed in the blaze (see *Photograph 1*).

Passengers were conveyed back to Byron Bay by another bus operated by the tour company.

The Driver

The Driver had 36 years of driving experience including 14 years driving buses. He held the appropriate NSW Driving License issued by the Roads and Traffic Authority (RTA) and Driver Accreditation issued by NSW Transport and Infrastructure.²

¹ All times referred to in this report are in Australian Eastern Daylight Time (UTC+11 hours).

² With effect 1 November 2011, the RTA, NSW Maritime and the elements of NSW Transport and Infrastructure responsible for the issue of bus operator accreditations and driver authorities were amalgamated to form the Roads and Maritime Services NSW.



Photograph 1: Surviving bus metal components

The Bus

The bus was a 1984 ISUZU 38 model SBR422, chassis number CJ873089, owned and operated by Grasshopper Tours of Byron Bay. The Operator held current NSW accreditation (No. 36632) to operate long distance, tourist and charter (LDTC) services. The bus had a front mounted engine next to the driver's position. It was fitted with bench type seats, and had a centre aisle and a single front nearside entry/exit door with an emergency rear window exit (see *Photographs 2 and 3*).

As a LDTC vehicle, TV 6139 was subject to the requirements of the NSW RTA Heavy Vehicle Inspection Scheme (HVIS). The bus had undergone a HVIS inspection for re-registration at Tweed Heads South only four days before the fire and the inspection report showed there were no defects identified. The report indicated the odometer reading was 576899³ at the time of inspection.

³ The bus was purchased second hand and unregistered by the current operator in December 2009 and no previous history was available.



Photograph 2: Location of single entry/exit door

Examination of the Bus

The bus was inspected by an OTSI investigator on 17 January 2012 in company with the Accredited Operator at a holding yard in West Lismore to which it had been recovered after the fire. The examination of the bus was hampered by the condition of the wreckage. It had suffered the consequences of exposure to the environmental conditions, which included significantly wet weather, over the four days that had elapsed since the fire. Rust was well established (see *Photograph 3*). An effort to locate an undamaged bus of the same vintage and model for reference purposes was not successful.

The turbocharger was examined but the damage did not reveal any evidence of the turbocharger being in the vicinity of the seat of the fire. The fan was undamaged although frozen due to exposure to the elements rather than due directly to fire.



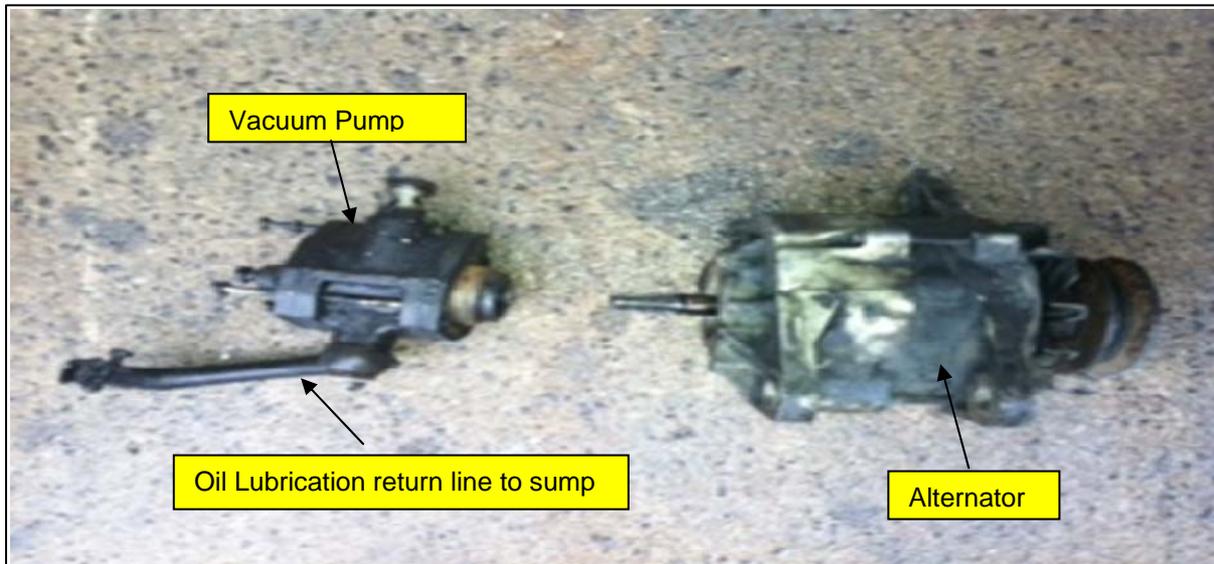
Photograph 3: Indicative of the condition at time of examination

Sources of possible ignition were examined. All fuel lines between the diesel tank and the engine had been destroyed as well as most of the electrical wiring. Diesel fuel lines to the injectors were found to be intact and there was no evidence suggesting the cause of the fire could be attributed to a problem in this area.

Examination of the alternator where an oil lubricated vacuum pump was attached revealed major damage. (*Photograph 4* depicts separated undamaged replacement components.) The purpose of the vacuum pump was to assist braking, with its lubrication coming from the engine with a return line direct into the engine sump. The residue and burn pattern on this side of the engine were consistent with an oil fuelled fire, indicating the likelihood that the seat of the fire was in the immediate vicinity.

Based on the examination, it was concluded that the fire was most probably caused by either an electrical short in the alternator or the seal on the shaft from the alternator to the vacuum pump leaking oil. The heat from an electrical short at the alternator could have affected the membrane seal around the shaft from the alternator to the vacuum pump, allowing oil to leak from the pump and ignite. Alternatively, the seal on the shaft could have leaked, allowing oil from the pump to

enter into the alternator or sufficiently close to ignite the oil. Both situations provide an ignition source and fuel for a fire. After the fire had commenced, additional fuel from the oil lines to the vacuum pump would promote the fire, allowing it to spread to the fibreglass engine cover and then to the interior furnishings of the bus.



Photograph 4: Spare undamaged vacuum pump and alternator

The Driver's initial observation of the location of the source of smoke through the inspection flap, and the existence of dark smoke that is typically associated with an oil fire, supports the conclusion that the fire originated in the vicinity of the alternator and vacuum pump.

Bus Servicing and Maintenance

The Operator provided all available servicing and maintenance records for examination. The records showed that the bus had undergone the following HVIS inspections:

- 3 February 2010 at Lismore (Report No. AZ0890706) - no defects;
- 31 May 2011 at Tweed Heads South (Report No. AZ1202623) - no defects; and
- 9 January 2012 at Tweed Heads South (Report No. AZ1347541) - no defects.

The following regular servicing and maintenance was conducted by a licensed mechanic in 2011:

- 4 January 2011 when a "B" service (20,000km) was completed including the replacement of the exhaust pipe;

- 1 March 2011 when an “A” service (10,000km) was completed and windscreen wipers were replaced;
- 3 May 2011 - another “B” service along with repairs to the driver’s seat; and
- 20 December 2011 - full “A” service prior to HVIS inspection with additional work carried out on the front and rear shock absorbers, left hand turn indicator, rear clearance light, fitting two new front tyres and brake adjustment.

Examination of the servicing and maintenance records revealed no indication of any problem or anomaly which may have contributed to the fire. The documents were in good order and all work was being conducted on a regular basis consistent with the use of the bus.

Action taken by the Bus Operator

Immediately after the fire the Operator conducted a debriefing with the Driver and the Operations Manager. The Operator subsequently convened a further meeting with the Operations Manager and all their drivers to reinforce the company’s Safety Management System requirements relating to the handling and reporting of significant incidents. The requirement for immediate evacuation of passengers to safety in the event of a fire was reinforced at this meeting.

Conclusions

Although the cause of the fire could not be determined conclusively, evidence indicated that the seat of the fire was in or around the alternator and vacuum pump and was initially fuelled by oil most likely from the oil lines to the vacuum pump.

The bus was being maintained in a serviceable condition. It had been presented for HVIS inspection as required and at which no defects had been identified.

The bus Driver’s actions in ensuring the safety and well-being of his passengers were commendable.

Acknowledgement

OTSI acknowledges the cooperation and assistance of the Operator in facilitating interviews and the timely provision of documentation for examination.