



Office of Transport Safety Investigations

TECHNICAL INSPECTION FINDINGS

HUNTER VALLEY BUS 4358MO FIRE

WANGI WANGI 19 MAY 2014



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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.

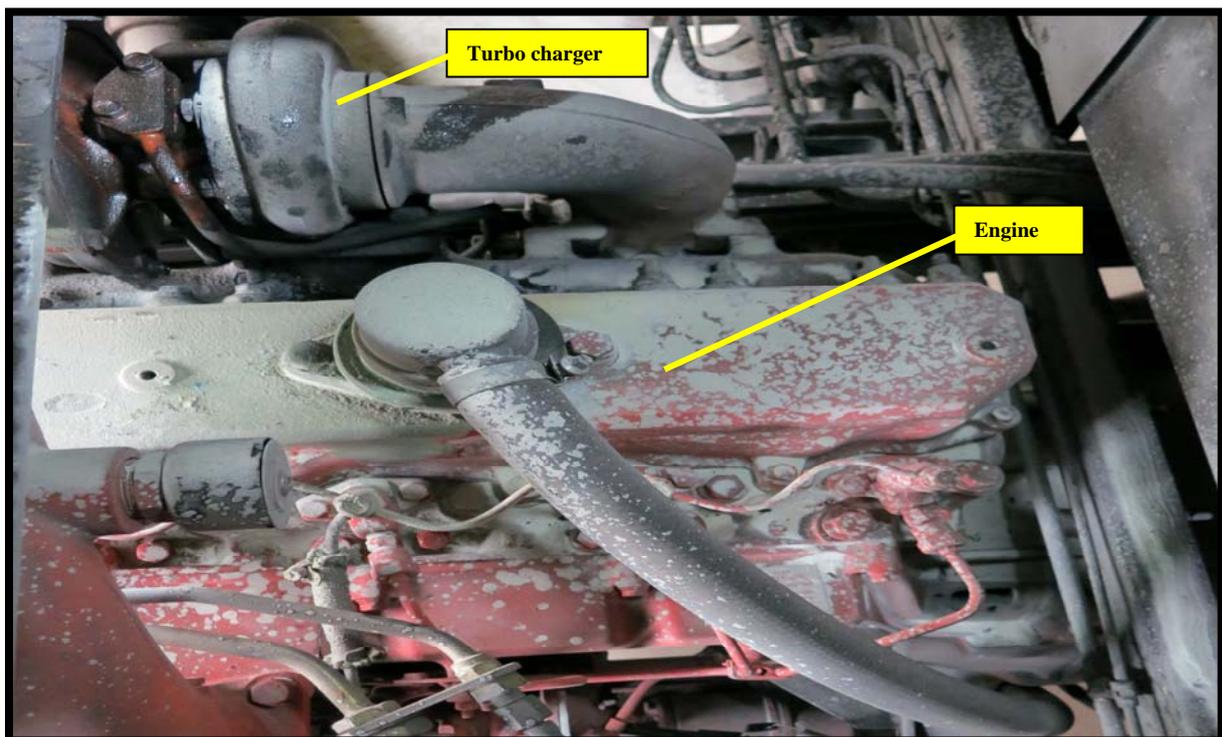
OTSI's investigations are conducted under powers conferred by the Rail Safety Act 2008 and the Passenger Transport Act 1990. OTSI investigators normally seek to obtain information cooperatively when conducting an accident investigation. However, where it is necessary to do so, OTSI investigators may 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 7:59am on 19 May 2014, Hunter Valley Bus, registered number 4358MO, was on Beach Road, Wangi Wangi, when a fire started in the rear mounted engine bay. At the time of the incident there were twelve primary school children onboard.

The driver was alerted to the fire by the driver of a following bus who observed flames and smoke emanating from the rear of bus. The driver immediately stopped the bus, shut off the engine and the electrical system, evacuated the twelve school children and discharged a portable fire extinguisher (dry powder) to extinguish the fire. The driver's prompt action prevented his passengers from being injured and prevented damage to the engine and ancillary items. (See photo 1)



Photograph 1 Engine and turbo charger

The Driver

The driver had over twenty years experience driving buses, the past six years with Hunter Valley Buses. He was accredited with Transport for NSW, No AKO470, and held a current heavy vehicle drivers license.

The driver commenced his shift from Morisset Depot at 6:50am and picked up the first of his school children passengers at 7:07am on the way to the scheduled school service route. The bus travelled along Dobell Drive, Wangi Wangi and had just turned into Beach Road when the driver of a following bus observed flames and smoke emanating from the engine bay and called out to the driver. The driver stopped and immediately directed the twelve school children passengers to evacuate the bus to a safe place while switching off the ignition and battery master switch. He then took a portable dry powder fire extinguisher from the driver's console in the bus, ran to the rear and observed flames coming from the rear hatch through the ventilation grill. He partially discharged the extinguisher into the grill, then opened the rear engine hatch cover where he observed flames on top of the engine block near the turbo charger. He discharged the remaining powder from the extinguisher on to the area, extinguishing the fire.

The driver followed procedures outlined in the Hunter Valley Buses Safety Management System, promptly evacuating the school children to a safe place, shutting down the engine and electrical system and then discharging the onboard extinguisher. The prompt action by the driver prevented his passengers from being injured and prevented the fire from escalating and causing extensive damage to the bus.

The Bus

The bus was a 1993 Hino RG197 model diesel turbo-charged bus, Registered No. 4358MO, which was first in service in January 1993. The bus was one of seven in service with Hunter Valley Buses, four of which were attached to the Morisset Depot.

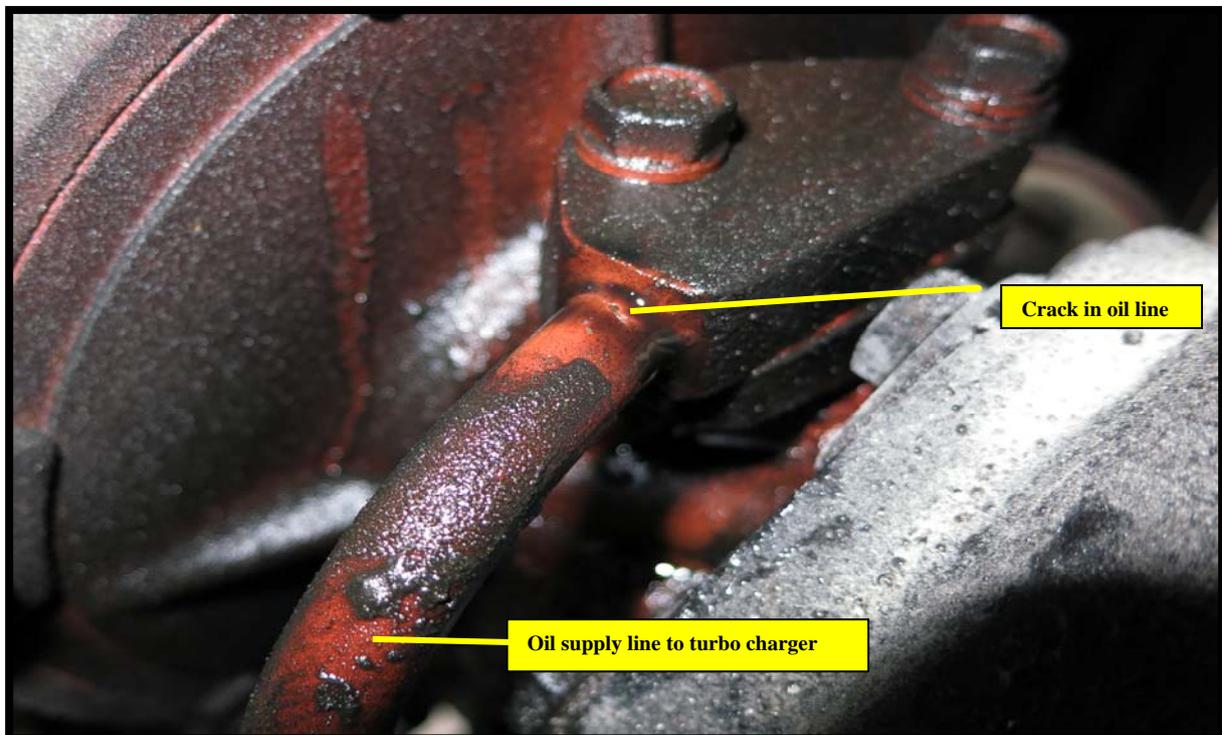
At the time of the incident, the odometer reading on the bus was 720443km, although this is not reflective of the total distance the bus would have travelled during its service over a period of 21 years. The bus was fitted with a single entry/exit door on the near side, and there is provision for two window emergency exits. The RMS current registration shows usage as BUS/TOURIST VEHICLE FOR HIRE dated 19 May 2014. The registration is due to expire on 10 October 2014. There were no fire alarm sensors or fire suppression system fitted to the bus.

The original 6486cc capacity engine on the bus (engine number HO6CTE1988) was replaced with an engine (number HO6CT19630) from a deregistered bus, number 4360, on 24 April 2014.

Examination

OTSI Investigators inspected the bus at the Hunter Valley Bus workshop at Thornton Depot on 20 May 2014. The bus had been quarantined by OTSI immediately after the fire was reported and was towed to Thornton for examination before repairs were made.

The inspection showed a fire pattern around the top of the engine block and turbo charger mounted on the left hand side of the block. There was no wiring or other damage caused by the fire. There was evidence of an oil spill in the fire-affected area and further inspection showed the oil lubricating line to the turbo charger had cracked where it went into the housing. With the engine running, the lubricating oil sprayed onto the hot engine block and exhaust manifold. (See *photo 2*).



Photograph 2 Turbo oil leak

Bus Servicing and Maintenance

The Servicing and Maintenance records for the bus for the previous year were examined. The records showed that the engine of Bus 4358MO was replaced with an engine from bus 4360 from the St Mary's Depot. The corresponding job sheet, JB-150385, indicated that the work to install the replacement engine and accessories was completed at the Morisset Depot and that the work and testing was completed on 24 April 2014.

At the time of the engine replacement, the odometer showed 718155km, indicating the bus had travelled only 2228km before the fire occurred.

The records for bus 4360, from which the replacement engine was taken, showed the bus was sent to Dural Depot for refurbishment on 15 November 2012 where a decision was made to withdraw the bus from service due to excessive rust in the chassis. On 19 February 2013, the bus was towed to St Mary's holding facility to be used for spare parts. The registration of Bus 4360 was cancelled with RMS on 20 February 2013.

Conclusions

The investigation determined that the fire was caused by a fracture in the lubricating oil supply line to the turbo charger mounted on the top of the engine block. Under pressure, the oil had sprayed onto the top of the engine block and exhaust manifold with the oil igniting when it came into contact with the hot surfaces.

Since there is no record of other problems associated with the seven buses in the Hunter Valley fleet, it is possible that the fracture in the lubricating oil supply line may have occurred during transportation of the engine from St Mary's or been inadvertently damaged during installation in bus 4358MO.

The immediate prompt action taken by the driver in shutting down the engine and electrical system and deploying the dry powder fire extinguisher to the fire prevented any major damage from occurring.

Remedial Action Taken

Hunter Valley Buses immediately conducted inspections on the remaining six Hino buses of their fleet at their three depots.

Acknowledgement

OTSI acknowledges the cooperation and assistance of Hunter Valley Buses in facilitating the examination of the bus and the timely provision of documentation for the technical inspection.