



## Bus Safety Investigation Report

### Woodpark

3 March 2004

**Air brake failure on bus resulting in a collision.**



# Road Safety Investigation - Woodpark

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## **Glossary of Abbreviations and Acronyms**

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ADR 35 .....	Australian Design Rule 35 – Commercial Vehicle Brake Systems
ADG Code .....	Australian Dangerous Goods Code
EPA .....	Environmental Protection Agency
ITSRR.....	The Independent Transport Safety and Reliability Regulator
km.....	Kilometre
MoT .....	Ministry of Transport
MOU .....	Memorandum of Understanding
MVRIA .....	Motor Vehicle Repair Industry Authority
MVRIC.....	Motor Vehicle Repair Industry Council
NSW .....	New South Wales
OTSI .....	The Office of Transport Safety Investigation
RTA .....	Roads and Traffic Authority
SMS.....	Safety Management System
TMC.....	Traffic Management Centre

## PART 1 EXECUTIVE SUMMARY

- 1.1 At approximately 12:30hr on 3 March 2004, a 24 year old chartered bus operated by Bustrans Pty Ltd, collided with five cars and a truck at Woodpark, NSW. The bus, registration number MO8053, was returning 64 children and teachers to Fairvale High School after an excursion to the Blacktown Ice Skating Rink.
- 1.2 The accident occurred in the southbound lanes at the intersection of Woodpark Road and the Betts Road section of the Cumberland Highway, Woodpark, NSW. The bus was travelling in the second of three southbound lanes. After cresting a hill approximately 600m before the intersection, the bus driver reported that he applied his brakes twice and on the second application heard a “strange” noise. He again tried to apply the brakes but to no effect, with the brake pedal travelling all the way to the floor.
- 1.3. Confronted with brake failure, the driver decided to attempt to manoeuvre the bus between the stationary vehicles in the two turning lanes to his right (refer to *Figure 1*). In doing so, the bus made contact with the first stationary vehicle at a speed of approximately 70 km/h and subsequently damaged four other vehicles before colliding with the rear of a truck positioned at the front of one of these lanes. Both the bus and truck travelled across Woodpark Road, coming to rest on the island separating the north and southbound lanes of Betts Road. The truck, an Isuzu flatbed registration number TDD240, was transporting 40 drums of acetone at the time of the accident. One of the drums dislodged onto the road and numerous others became embedded in the bus’s frame. Acetone is a highly flammable liquid and it was fortunate that none of the drums ruptured.
- 1.4 Ambulance officers assessed and treated approximately 60 people at the scene for a range of injuries and 32 people were subsequently transported to Westmead, Westmead Children’s, Fairfield and Liverpool Hospitals. Most were treated for minor injuries, but three passengers sustained serious injuries. In total, eight vehicles were damaged, with the bus being rendered inoperable.
- 1.5 The primary cause of the accident was brake failure and this failure was directly attributable to poor maintenance. The following matters were also established as contributing factors:
  - a. Bustrans modus operandi was reflective of a poor safety culture. There were a number of serious deficiencies in the company’s approach to safety: maintenance requirements were not being comprehensively addressed; some maintenance tasks had either not been conducted or had not been documented; the requirement for basic checks before the commencement of daily running had not been established, and the extent of the company’s compliance in respect of one key element of its accreditation was at the ‘margins’. OTSI noted that the driver of MO8053, who had only been with the company for two days at the time of the accident, had not had the benefit of a safety brief before being committed to tasking by the company.
  - b. Operator maintenance was conducted solely by one of the company’s two owner/directors. Checks conducted by the RTA the day after the accident resulted in defect notices being issued against 14 of 16 Bustrans vehicles inspected. The inadequacy of the maintenance program was such that OTSI could only conclude that this owner/director was unable to meet the competing time demands associated with his dual role, or that deliberate

decisions were being made to sacrifice safety in favour of financial imperatives.

- 1.6 OTSI notes that Bustrans ceased to function as a commercial entity on 09 April 2004 and has not sought to re-register under another business name. OTSI also notes that with effect 1 January 2005, operators are required, under a revised accreditation regime, to have a formally established safety management system.
- 1.7 To prevent a recurrence of similar incidents, the following safety recommendations are made in relation to:

#### **Ministry of Transport**

- a. the MoT require operators to demonstrate the application of their Safety Management System as a condition of accreditation;
- b. the MoT require operators to conduct an examination of the RTA-defined safety critical components of braking systems at the start of each day's operations;
- c. the MoT include as a component of its audit inspections, the requirement to check, through the MVRIA, the bonafides and professional good-standing of persons performing maintenance and/or repair work on buses utilised by accredited operators;

#### **Roads and Traffic Authority**

- d. the RTA subject buses that do not conform to ADR 35 to additional scrutiny during inspections;
- e. the RTA define the safety critical components of a compressed air braking system and distribute the information to operators to inform their maintenance programs;
- f. the RTA be empowered to inquire into the bonafides and professional good-standing of persons performing maintenance and/or repair work on buses utilised by accredited operators;

#### **Ministry of Transport and Roads & Traffic Authority**

- g. the MoT and the RTA establish formal arrangements for the exchange of information resulting from compliance and inspection activities;
- h. the MoT engage the Department of Roads for the purpose of having the RTA empowered to inquire into the bonafides of persons performing maintenance and/or repair work on buses utilised by accredited operators, and
- i. the MoT and the RTA establish a procedure to communicate concerns to the MVRIA about the quality of work being performed on buses utilised by an accredited operator.

## PART 2 TERMS OF REFERENCE & METHODOLOGY

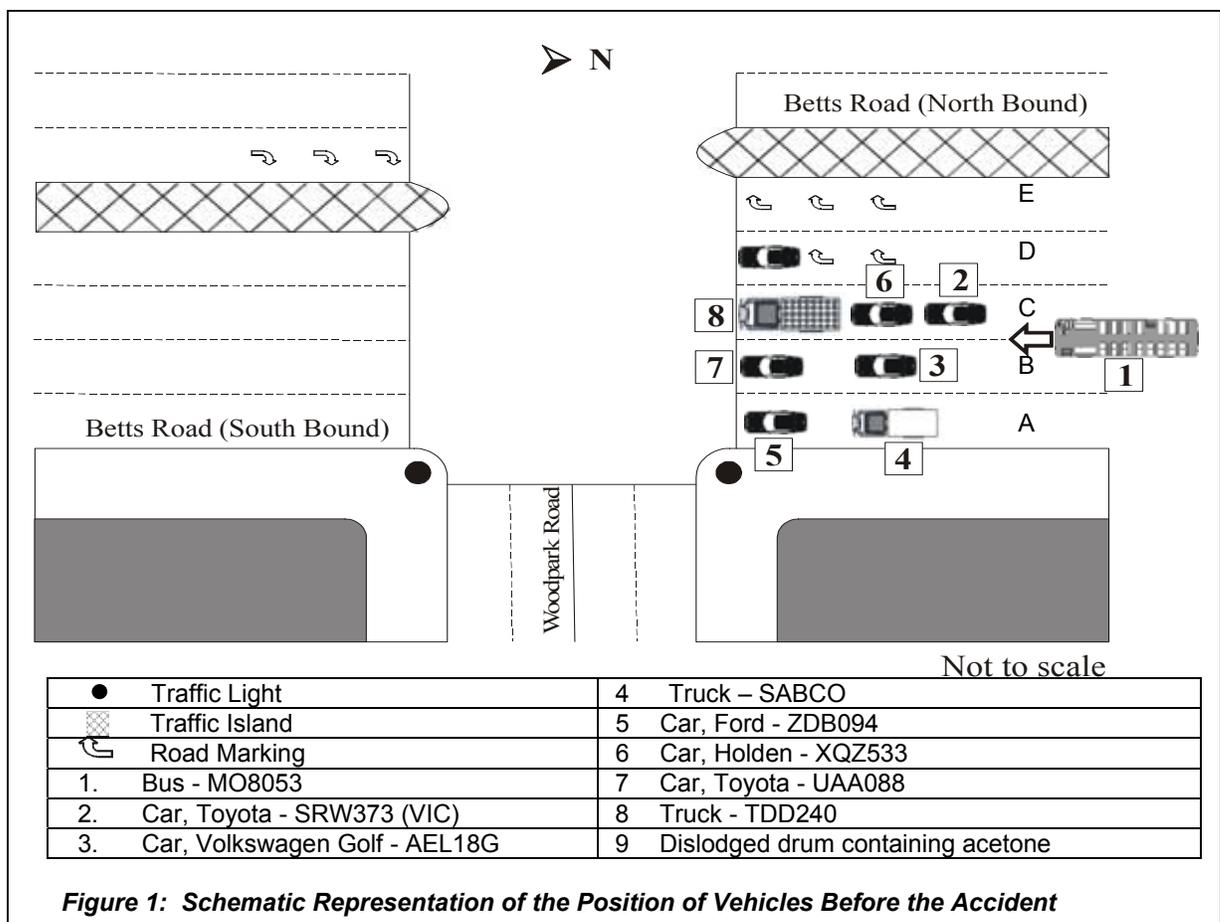
- 2.1 In response to the accident, and pursuant to Section 46B of the Passenger Transport Act 1990, the Chief Investigator, Office of Transport Safety Investigation, directed an investigation to:
  - a. identify and report on both the contributing factors and organisational factors which led to the accident;
  - b. assess the adequacy of the incident response (including emergency response where relevant) as it affected the safety of all persons involved, and
  - c. to identify and report on any safety actions that would assist to mitigate or eliminate the risk of similar events occurring in the future and any other matters arising from the investigation that would enhance road safety operations.
- 2.2 The investigator has sought to establish **what** happened; **why** the accident happened and **how** recurrences of a like nature might be prevented. The investigation therefore provides factual information and an analysis of that information to establish findings and to determine appropriate recommendations.
- 2.3 The investigator has sought to look beyond the immediate cause of the incident and to establish broader or 'systemic' matters that may have previously been 'dormant' but which in isolation, or in concert, contributed to the accident.
- 2.4 The investigator has drawn on information and documentation provided by the driver, the operator, the RTA, the MoT, the NSW Police Accident Investigation Unit and the MVRIA. The investigator wishes to acknowledge the assistance of the above parties.
- 2.5 The investigation does not seek to establish blame or attribute liability; however, some of the information presented may reflect on the performance of individuals and organisations.

## PART 3 FACTUAL INFORMATION

### Overview

- 3.1 At approximately 12:30 hrs on 3 March 2004, a chartered bus operated by Bustrans, registration number MO8053, collided with five cars and a truck at Woodpark in NSW. The bus was returning 64 children and teachers to Fairvale High School following an official excursion. The truck, registration number TDD240, was transporting 40 drums of acetone, a highly flammable liquid. At the time of the incident, the bus was travelling in one of three southbound lanes and was approaching the intersection of Woodpark Road, on the Betts Road section of the Cumberland Highway, where the southbound traffic was stationary at the intersection's stop lights. In addition to the three southbound lanes, there were two dedicated lanes to facilitate traffic turning right/west into Woodpark Road. (Refer to *Figure 1*). The speed limit was, and is, 70km/h.

- 3.2 The bus (1) was travelling in the second of three southbound lanes (indicated as lane B in *Figure 1*). After cresting a hill approximately 600m before the intersection, the bus driver reported that he applied the brakes and that the application was effective. A few seconds later, he again applied the brakes but there was no deceleration. He also reported hearing a “strange” noise. He made a further application of the brakes but there was no brake pressure and the pedal travelled to the floor.
- 3.3 After warning the passengers of the loss of brakes, the driver considered applying the emergency brake but appreciated that he would be unable to both reach the brake handle and concentrate on steering<sup>1</sup>. He therefore elected to steer the bus between stationary vehicles in the lanes indicated as B and C in *Figure 1*. In the process, the bus collided with a vehicle (indicated as 2) at approximately 70 km/h and subsequently with three other vehicles (indicated as 3, 6 and 7) before colliding with the rear of a truck (indicated as 8). The bus and truck came to rest on the island separating north and southbound lanes of Betts Road. (Refer to *Figure 2*).
- 3.4 After the accident, the driver of vehicle 7 repositioned it onto the island behind the truck (8) and bus (1) to minimise the level of obstruction to other vehicles.



<sup>1</sup> This brake was positioned on the floor and to the right and rear of the accelerator. It had a very short handle and the driver would have to have leaned well forward and down to access the handle.



## **Injuries**

- 3.6 Ambulance officers assessed and treated approximately 60 people at the scene for a range of injuries. In total, 32 people were transported to Westmead, Westmead Children's, Fairfield and Liverpool Hospitals. Most were treated for minor injuries, although three people sustained serious injuries.

## **Bus Operator**

- 3.7 Bustrans Pty Ltd had been an accredited operator since 29 August 1997; it had previously functioned as Katen and Heath Pty Ltd, an entity registered in June 1991. Bustrans was reaccredited on 3 February 2004 and was authorised to operate up to 35 vehicles.
- 3.8 Under the condition of its accreditation, Bustrans was authorised to provide both regular passenger services, long-distance and charter services.
- 3.9 Maintenance tasks were completed in-house by one of the company's two owner/directors. This owner/director was a fully qualified and certified motor mechanic and had been so endorsed (by the MVRIA) since 1981.

## **Bus Driver – Qualifications, Experience and Condition**

- 3.10 The bus driver held a valid heavy vehicle licence which allowed him to operate the bus type. At interview, the driver indicated he had been driving heavy vehicles for 20 years and subsequently provided documentation which verified that he had held full-time employment as a bus driver from 24 August 1995 to 19 June 1998 and 08 August 2000 to 01 March 2001.
- 3.11 The driver joined Bustrans on 2 March 2004, i.e., the day before the accident. When questioned, the driver indicated that he not been given any form of safety briefing by Bustrans before commencing his driving duties with the company. He further advised that he was also working for another bus operator and his combined workload was approximately 40 hours per week. However, he had worked for his other employer in the week preceding the accident. These matters were subsequently verified.
- 3.12 In response to questions to establish whether the driver may have been impaired or pre-occupied with other matters, the driver advised:
- a. he had enjoyed good rest over a number of the preceding nights;
  - b. he was not experiencing any domestic stress;
  - c. he had commenced his shift at 10:00 hrs;
  - d. his trips had been well-spaced and that he was on-schedule at the time of the accident;
  - e. he had not consumed alcohol or drugs at any time preceding the accident as this would have been in violation of his personal and spiritual beliefs; non-consumption was subsequently confirmed by toxicology testing, and
  - f. there had been no prior indication of brake failure that morning.

## Environmental Factors

- 3.13 The accident occurred at approximately 12:30 hrs. Visibility was excellent and the driver advised that whilst he was aware of noise emanating from the students, it was not excessive and he was not in any way distracted.
- 3.14 The Cumberland Highway is an arterial road connecting Liverpool to the greater Parramatta area in Sydney's western suburbs. It runs approximately north-south and is divided into sections for identification purposes. The road is sealed, guttered and painted with line markings. All line markings were clear and the road surface was dry. The intersection of Woodpark and Betts Roads is controlled by a set of traffic lights and the speed limit is 70 km/h. The traffic lights controlling the intersection are clearly visible from a distance of 100m and the speed limit is clearly posted 100m before the intersection.

## Equipment, Mechanical and Load Factors

### 3.15 Bus Type



<b>Manufacturer:</b>	Bedford	<b>Tare:</b>	6900 kg
<b>Model:</b>	YLQ	<b>GVM:</b>	10180 kg
<b>Date of manufacture:</b>	January 1980	<b>Type:</b>	Charter
<b>Registration number:</b>	MO8053	<b>Seating capacity:</b>	55
<b>State:</b>	NSW	<b>Passengers:</b>	64

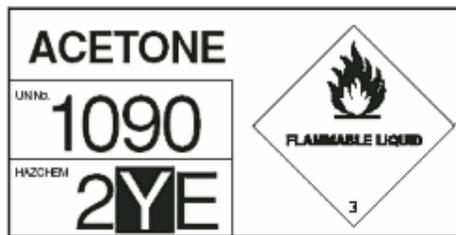
- 3.16 Bus Condition. The RTA inspected MO8053, for the purpose of re-registration, on 19 February 2004 and issued a defect notice (A5500283553) in relation to the following matters:

- inoperative left side parking light;
- insecure seat and seat base, and
- the interior roof light was dull.<sup>2</sup>

<sup>2</sup> The bus was re-inspected by an independent, accredited inspection station on 20 February 2004 and the defects were certified as having been resolved.

## Loads

- 3.17 MO8053 was authorised to carry 55 seated and 14 standing passengers and was therefore operating within limits at the time of the accident.
- 3.18 The truck (vehicle 8) was laden with 40 drums, each containing 167 litres of Acetone. Acetone is extremely toxic and highly flammable and is therefore classified under the Australian Dangerous Goods Code as a Class 3 flammable liquid<sup>3</sup>. Containers of Acetone must be labelled (refer to *Figure 3*) and any load of this type in excess of 1000 litres requires the consignor to display warning signage on the front and rear of the transporting vehicle/s.<sup>4</sup> In this instance, the truck was not displaying the required signage; a matter under the jurisdiction of, and consideration by, the EPA.



**Figure 3: Acetone Warning Sign**

- 3.19 In addition to the one drum that was dislodged, four drums were embedded into the side of the bus. Had any of these drums ruptured, the consequences might have been catastrophic. The RTA's Load Restraint Guide requires individual drums to be secured by lashings<sup>5</sup>. The rope webbing found at the rear of the truck may have allowed for easy access to the drums but it did not meet the RTA requirements designed to ensure that dangerous loads are isolated in the event of rear-end collisions. The restraining arrangements also failed to meet the requirements of the Dangerous Goods Code which requires that such loads be isolated by a secure gate on all sides.<sup>6</sup> Again, these are matters for further consideration by the RTA and EPA.

## Recorded Information

- 3.20 Under arrangements negotiated between the MoT and the bus industry, buses being utilised for regular passenger services are required to be fitted with video cameras in their forward, interior section to provide a capability to monitor events within buses. As part of the negotiation package, bus operators were awarded an increase in the passenger fare rate. The camera fitted to MO8053 was inoperable at the time of the accident.

<sup>3</sup> Australian Dangerous Goods Code, Appendix 2, Section 2A.

<sup>4</sup> Road Transport Reform (Dangerous Goods) Regulations, Division 2, Section 2.13(2c)

<sup>5</sup> RTA Load Restraint Guide, Second Edition, Section E, 3.2, page 126.

<sup>6</sup> Dangerous Goods Code, Regulations Part 9, Sections 931(2) and 931(3).

## Damage

3.21. The level of damage sustained as a result of the accident is indicated *Table 1*.

Vehicle Type	Vehicle Make	Registration No.	Damage	Location
Bus	Bedford	MO8053	Extensive; major impact	Front & both sides
Flatbed truck	Isuzu	TDD240	Minor	Left rear
Car	Volkswagen	AEL18G	Moderate	All sides
Car	Toyota	SRW373 (VIC)	Minor panel	Left side
Car	Holden	XQZ533	Major panel	Left side
Car	Ford	ZDB094	Minor	Rear bumper
Car	Toyota	UAA088	Minor panel	Right side
Truck	Ford Trader	SABCO	Very Minor	Front bumper

**Table 1: Summary of Damage**

## Procedures

3.22 The MoT requires operators to specify their maintenance schedule as part of their application for accreditation. Schedules may be prescribed by set intervals or follow the specific recommendations of a vehicle manufacturer. Bustrans had advised the MoT that it would service its vehicles every 10 000 km or every six months, whichever ever came first. Bustrans' records indicated that servicing was being conducted as scheduled.

## Organisational Matters

3.23 **RTA.** The RTA requires all buses to undergo a mechanical inspection by a licensed RTA inspector no earlier than three months prior to the date its registration falls due. A second inspection is also required six months later. The operator 'books' the inspection date with the RTA. The RTA can also conduct random checks. As a result of this accident, the RTA conducted a special audit of Bustrans' fleet on 05 March 2004. All available vehicles, a total of 16, were examined and only two were found to comply with the standards. The specific defects are identified at *Appendix 1*.

3.24 **Ministry of Transport.** Under current arrangements, once an operator is accredited, the MoT does not require the operator to be re-accredited unless their accreditation has been withdrawn or the nature of services provided under their contract is substantially changed.<sup>7</sup> The most recent audit of Bustrans by MoT was on 03 February 2003.

3.25 MoT audits accredited operators every five years but this is complemented by random spot-checks. Both functions are performed by the MoT Audit and Compliance Unit. To successfully qualify for MoT accreditation, an operator is required to provide evidence of:

- a driver safety monitoring program;
- an information management system;
- a specified area for off-street parking and an under-cover maintenance facility if applicable;

<sup>7</sup> As of 1 Jan 05, operators are accredited for a three year period.  
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- d. a vehicle preventative maintenance program (essentially a check of maintenance records), with vehicle inspections being conducted by the RTA;
- e. a vehicle cleaning program, and
- f. meeting the requirements of all relevant standards and legislation.

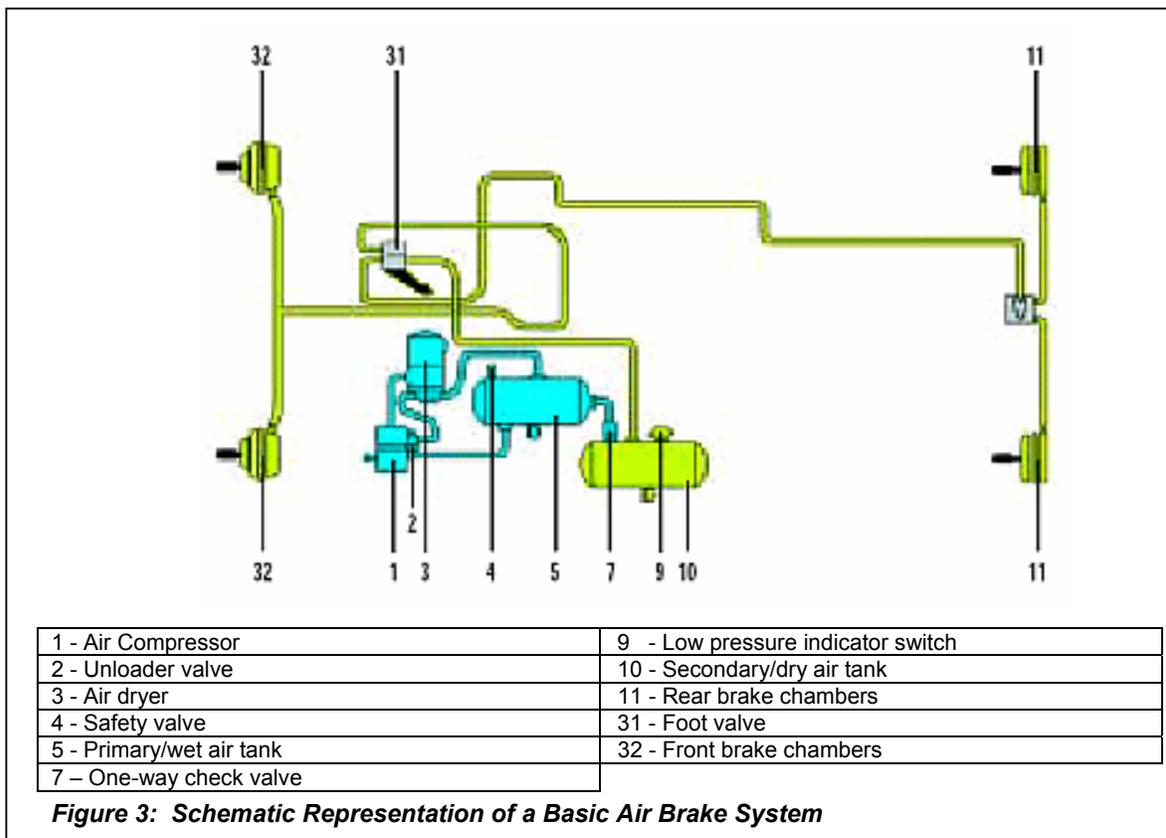
### Emergency Response

3.26 The accident occurred at 12:29 hrs on 03 March 2004 and the NSW Police were on site at approximately 12:40 hrs. In addition, the NSW Ambulance Service, NSW Fire Department, HAZMAT and the RTA all responded in a timely manner.

## PART 4 ANALYSIS

### Absent or Failed Defences

4.1 **Bus Braking System & Function.** *Figure 3* illustrates a braking configuration typical of that fitted to MO8053. It should be noted that such a system, whilst allowed, predates the requirement of Australian Design Rule 35 which requires a level of redundancy with respect to compressed air (braking) systems. The braking system of MO8053 requires a regulated flow of compressed air passing through an air compressor (indicated as 1) to brake chambers (11 & 32) which allow for the activation of brakes when applied. Enroute, air pressure is regulated by an unloader valve (2) and moisture is removed via an air dryer (3) and 'stored' in air tanks (5 & 10). These components make up the critical elements which need to be functioning correctly for proper brake function to occur.



- 4.2 Testing of MO8053's braking system at the RTA Heavy Vehicle Inspection Station immediately following the accident established that the vehicle's secondary air tank (10) and the air compressor (1) failed to supply air, but that the damage was a consequence, rather than the cause, of the accident. When the system was supplied with pressurised air from another vehicle, the air-brake test results were satisfactory. Each wheel brake (11, 32) and the park/emergency brake (a separate system not depicted) functioned satisfactorily when tested on a brake roller.
- 4.3 Examination of the air compressor (1) established that it was pumping a sufficient amount of air through the air line to the unloader valve.
- 4.4 During an inspection of the primary air tank (5), a considerable amount of oil and debris drained from the tank when the drain cock was opened.
- 4.5 Shortly after the accident, testing of the unloader valve (2), which is designed to maintain constant air pressure in the braking system, found that a large amount of oil had dispersed from around the inlet side of the unloader valve and sprayed rearward onto the surrounding chassis rail and body. It was further established that with the engine idling, no air was detected coming out of the valve. The Police subsequently removed the unloader valve and in their report stated that "the entire inlet port was blocked with a build up of carbon and other debris, which had hardened."<sup>8</sup> Further examination found that the inside of the valve assembly was coated with "sludge" and engine oil (refer Figure 4).



**Figure 4: Photograph of Unloader Valve Removed From MO8053 on 17/03/2004**

- 4.6 Inspection of the air line and a one-way check valve (7) connected between the unloader valve (2) and the primary air tank (5) found that the air line and a one-way valve connected between the unloader valve and the primary air tank were also contaminated with engine oil and sludge.<sup>9</sup> This contamination effectively blocked the flow of compressed air, preventing the activation of the brakes.

<sup>8</sup> NSW Police Examination of Bedford Bus MO8053, Job No: 1132026, 06/04/2004, Point 14.

<sup>9</sup> NSW Police Examination of Bedford Bus MO8053, Job No: 1132026, 06/04/2004, Point 14.

- 4.7 The exhaust brake, an engine brake, is designed to slow rather than stop a vehicle. There is no legislative requirement to have an exhaust brake fitted on a passenger bus in NSW, however it is worth noting that in this instance the brake was disconnected. The NSW Police investigating officer is of the view that disconnection was not a consequence of the collision, i.e., disconnection had occurred before the collision.<sup>10</sup>



**Figure 5: Photograph of Disconnected Exhaust Brake from MO8053 on 17/03/2004**

- 4.8 The fact that the air system on this bus predated the requirements of ADR 35 meant that once the single air system failed, there was no secondary system to facilitate braking. Under ADR 35, a secondary braking system would have been available once the primary system failed and the bus driver would have been better positioned to control the vehicle.

### **Individual / Team Actions**

- 4.9 There is no evidence to suggest that the bus driver was other than suitably licensed and experienced. There is also nothing to suggest that the driver was in any way impaired. The driver's decision not to attempt to engage the emergency brake was an appropriate decision as he would have forfeited the limited control he did have had he tried to reach for this brake. In sum, there is nothing to suggest that the bus driver contributed in any way to the occurrence of the accident.
- 4.10 Police testing has established that MO8053's air system, upon which the brake system depended, was contaminated by water, grease and oil. This contamination was a consequence of poor maintenance.
- 4.11 The manner in which the load onboard vehicle 8 (*Figure 1*) was restrained suggests that the consignor of the acetone either did not know, or failed to comply with, the requirements for transporting bulk quantities of the chemical.

<sup>10</sup> NSW Police Examination of Bedford Bus MO8053, Job No: 1132026, 06/04/2004, Point 10.  
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## Task / Environmental Conditions

- 4.12 Since the accident occurred at 30 minutes past noon and the bus was travelling in a southbound direction, the position of the sun was discounted as a contributing factor. Similarly, the condition of the road was discounted because of its clear markings and dry surface.

## Organisational Factors

- 4.13 **Bustrans.** It is significant that on his first day with Bustrans (the day before this accident), the driver was involved in an incident when the vehicle he was driving suffered a transmission failure and had to be recovered. Maintenance within Bustrans was performed by one of the company's two owner/directors and there were a number of indications that maintenance within Bustrans was sub-optimal; record-keeping was poor and the standard of work performed was questionable. OTSI had cause to question whether this reflected the fact that conscious decisions were made to cut corners and/or the director in question was having difficulty in balancing dual roles. The answer, in either case, would suggest that the owner was confronted with competing demands and potentially incompatible goals.
- 4.14 In the course of its investigation, OTSI had cause to question the **safety culture** within Bustrans. Not only was maintenance sub-optimal, so too was the decision to commit a new driver to tasking without the benefit of a safety brief. OTSI also noted that Bustrans had been in breach of requirements under the terms of its Regular Passenger Service Accreditation which stipulated that the average life of its fleet was not to exceed 12 years.<sup>11</sup>
- 4.15 **Regulatory Function.** As its investigation progressed, OTSI identified a number of issues that, whilst not contributing to the accident, might be deemed 'non-contributory' relevant factors. These factors related to some of the processes employed by MoT and RTA in discharging their regulatory functions.
- 4.16 OTSI notes that the MoT's and RTA's visits to operators are conducted independently and appreciates that this is a consequence of differing inspection/audit cycles. OTSI also notes that results of audits and inspections by the MoT and RTA are not routinely exchanged between the two parties. It considers that what is essentially a divided responsibility should be more of a shared responsibility. Judgements about the standard of maintenance documentation should be informed by judgements about the standard of the maintenance, and vice-versa. To do otherwise could result in a less than complete understanding of an operator's approach to maintenance. OTSI has been advised that some inspectors in both organisations seek advice from their counterpart in the MoT or RTA to establish if there are any matters that might inform their audit/inspection, but do so on the basis of their personal initiative. OTSI believes that both organisations should enjoy access to the relevant section of each other's database because this would add depth to the audit and inspection regime.
- 4.17 The RTA is not empowered to check the qualifications and professional goodstanding/bonafides of those performing maintenance or repair tasks on

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<sup>11</sup> The average age of the Bustrans fleet as calculated by the MoT in Feb 03, was 13.76 years  
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vehicles utilised by accredited operators; this responsibility falls to the MVRIA. However, once licensing has occurred, the MVRIA relies largely on public feedback in discharging its quality assurance function. In the context of its audit and compliance checks, MoT advised OTSI that it does check the qualifications of personnel performing maintenance functions, particularly that they hold an MVRIA license. However, they also advised that their compliance officers are not qualified to comment on the quality of work being performed on vehicles that are being utilised by accredited operators. Given that operators may engage new mechanics or redirect their work to different contractors/garages at any time, and the lengthy intervals between MoT's audit and compliance checks, OTSI believes that the RTA should also be empowered to make such inquiries about those performing work on an accredited operator's vehicles. The RTA is, in effect, making a judgement about whether or not work has been done and the quality of such work when it inspects a vehicle. If it has reservations about the quality of work performed it should be empowered to make enquiries about the qualifications and professional good-standing of those who performed the work. More importantly, the RTA should be in a position, indeed obliged, to advise the MVRIA of poor workmanship.

### **Emergency Response**

- 4.18 Whilst the NSW Police, Fire Department, Ambulance Services and RTA were notified and responded in a timely manner, communication between MoT and OTSI was sub-optimal. OTSI became aware of the accident in the course of communication, on an unrelated matter, with the Police at 16:10 hrs. OTSI then contacted the MoT to establish details of the accident and to receive a copy of the operator's incident report. An assurance that a report would be faxed to OTSI was not met until 09 March 2004. It should be noted however, that OTSI only came into being on 1 January 2004 and much of the detail required to exercise what are differing, but complementary, roles, had yet to be resolved. This matter was simplified on 1 July 2004 with bus operators now reporting accidents and incidents directly to OTSI. It is also noted that an MOU between MoT and ITSRR/OTSI, which further clarifies responsibilities and communication requirements, is now in the final stages of completion.

## **PART 5 FINDINGS**

- 5.1 Public transport operations within New South Wales occur within the context of co-regulation. This requires operators to identify risk; operators and the regulators to develop the rules to manage the risk and regulators to monitor compliance thereafter.
- 5.2 The primary cause of this accident was brake failure and this was the consequence of poor operator maintenance. The poor maintenance has its roots in organisational matters within Bustrans and a compliance regime which, although strengthened on 1 January 2005, is less robust than it ought to be.

## **PART 6 SAFETY RECOMMENDATIONS**

- 6.1 To prevent a recurrence of similar incidents, the following safety recommendations are made in relation to:

### **Ministry of Transport**

- a. the MoT require operators to demonstrate the application of their Safety Management System as a condition of accreditation;
- b. the MoT require operators to conduct an examination of the RTA-defined safety critical components of braking systems at the start of each day's operations;
- c. the MoT include as a component of its audit inspections, the requirement to check, through the MVRIA, the bonafides and professional good-standing of persons performing maintenance and/or repair work on buses utilised by accredited operators;

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- d. the RTA subject buses that do not conform to ADR 35 to additional scrutiny during inspections;
- e. the RTA define the safety critical components of a compressed air braking system and distribute the information to operators to inform their maintenance programs;
- f. the RTA be empowered to inquire into the bonafides and professional good-standing of persons performing maintenance and/or repair work on buses utilised by accredited operators;

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- g. the MoT and the RTA establish formal arrangements for the exchange of information resulting from compliance and inspection activities;
- h. the MoT engage the Department of Roads for the purpose of having the RTA empowered to inquire into the bonafides of persons performing maintenance and/or repair work on buses utilised by accredited operators, and
- i. the MoT and the RTA establish a procedure to communicate concerns about the quality of work being performed on buses utilised by an accredited operator to the MVRIA.

## Appendix 1

### Summary of RTA Special Random Inspection on the Operator's Fleet on 05/03/2004

Bus	Defect Notice Issued	Defect Description
MO7695	Major defect notice	<ul style="list-style-type: none"> <li>• Rear shock absorbers missing</li> <li>• Diesel fuel leak at engine area</li> <li>• Oil leak at Gearbox area</li> <li>• Passenger stop buzzer inoperative</li> <li>• Rear step light inoperative</li> <li>• Front step light inoperative</li> <li>• School lights to operate correctly ( All lighting to operate)</li> <li>• Air tanks contaminated unable to check ADR 35</li> <li>• Left and right side inner tyres insufficient tread</li> <li>• Incorrect fire extinguisher fitted</li> </ul>
MO8617	Major defect notice	<ul style="list-style-type: none"> <li>• Left side rear wheel excessive brake drag (over 400kgf)</li> <li>• Air leak at relay valve (front of centre tank area)</li> <li>• Incorrect fire extinguisher fitted</li> <li>• Movement at right side king pin area</li> <li>• 1st axle right side low brake efficiency</li> </ul>
MO5327	Major defect notice	<ul style="list-style-type: none"> <li>• 1st axle low brake efficiency</li> <li>• 2nd axle low brake efficiency</li> <li>• Excessive fumes from exhaust</li> <li>• 2nd axle right side outer tyre insufficient tread depth</li> <li>• Left front park lamp inoperative</li> </ul>
MO7692	Major defect notice	<ul style="list-style-type: none"> <li>• 1st axle low brake efficiency</li> <li>• 2nd axle low brake efficiency</li> <li>• Oil leak steering box area</li> </ul>
MO8411	Major defect notice	<ul style="list-style-type: none"> <li>• ADR 35 inoperative</li> <li>• Oil leak steering box area</li> <li>• 2nd axle left side both tyres insufficient tread depth</li> <li>• 2nd axle right side inner tyre insufficient tread depth</li> </ul>
MO7184	Major defect notice	<ul style="list-style-type: none"> <li>• Emergency brake release inoperative</li> <li>• Incorrect type of fire extinguisher</li> <li>• Interior step light inoperative</li> <li>• Excessive movement at rear of steering draglink</li> <li>• Extensive rust at top of door frame (Sharp edges and loose metal)</li> </ul>
MO8989	Major defect notice	<ul style="list-style-type: none"> <li>• Left side rear outer tyre insufficient tread depth</li> <li>• Air tanks contaminated with oil and water</li> <li>• Incorrect fire extinguisher fitted</li> <li>• Emergency exit window hammers missing</li> <li>• Windscreen washers inoperative</li> </ul>
MO7988	Minor defect	<ul style="list-style-type: none"> <li>• Reverse lights inoperative</li> <li>• Step/interior light inoperative</li> <li>• Left front clearance light inoperative</li> </ul>

MO8456	Minor defect	<ul style="list-style-type: none"> <li>• Left front indicator inoperative</li> <li>• Left side front headlight lens cracked</li> <li>• Air tanks contaminated with oil and water</li> <li>• Brake pedal rubber worn metal exposed</li> <li>• Incorrect fire extinguisher fitted</li> </ul>
MO7185	Minor defect	<ul style="list-style-type: none"> <li>• Incorrect fire extinguisher fitted</li> <li>• Engine oil and diesel fuel leaks</li> </ul>
MO8505	Minor defect	<ul style="list-style-type: none"> <li>• Incorrect type of fire extinguisher fitted</li> </ul>
MO8512	Minor defect	<ul style="list-style-type: none"> <li>• Hi-beam warning light on dash inoperative</li> <li>• Right side front indicator inoperative</li> <li>• Reverse lamp inoperative</li> </ul>

**Nb.** In supporting notes to this report, provided by the RTA, it is indicated that 16 vehicles were inspected and that only two were “found to comply with the standards”. OTSI notes however that this table provides details of only 12 defective vehicles. MO8053 was not amongst the vehicles tested because it was under separate testing by the Police.