



Australian Government  
Australian Transport Safety Bureau

# Passenger train collision with maintenance equipment

Montgomery, near Sale, Victoria | 16 February 2015



Investigation

**ATSB Transport Safety Report**  
Rail Occurrence Investigation  
RO-2015-003  
Final – 9 December 2015

**Cover photo source:** V/Line Pty Ltd

This investigation was conducted under the Transport Safety Investigation Act 2003 by the Chief Investigator, Transport Safety (Victoria) on behalf of the Australian Transport Safety Bureau in accordance with the Collaboration Agreement entered into on 18 January 2013.

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#### **Addendum**

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# Safety summary

## What happened

On 16 February 2015, track maintenance was being conducted at Montgomery between Sale and Bairnsdale. To allow a passenger train to pass through the section, the maintenance gang cleared the track and track protection was lifted. However, when the gang vacated the line, an item of equipment was left on the track.

As the V/Line passenger train approached the work site, the driver saw the obstruction. In response, the driver made an emergency brake application but was unable to bring the train to a stand before it collided with the equipment. The train remained on the track and there were no injuries to passengers or rail personnel.

## What the ATSB found

The ATSB found that an item of maintenance equipment had been moved along the track away from the immediate area of works. Subsequently, this equipment was overlooked when the track was cleared of workers and other tools.

The task of ensuring that the line was clear had cascaded to a third party within the maintenance gang. There was no formal system in place to manage this process of informal delegation.

## What's been done as a result

As a result of this and other related Safeworking incidents V/Line has advised that a Safety Review of infrastructure rules, procedures and training has been implemented.

## Safety message

Track maintenance personnel should be particularly vigilant to ensure that no obstruction remains on the line when authorising the passage of a train through a work site.

Network managers should ensure that systems and processes minimise the potential for maintenance equipment to be left on track.

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## The occurrence

On 16 February 2015, track works were planned for Montgomery, about 7 km from Sale. The works involved sleeper renewal and excavation works at a level crossing. To facilitate the site excavation works, a Hi-Rail excavator was required, and this was to travel on-track from Sale.

To protect the movement of this Hi-Rail excavator from Sale to the work site, and the on-track activities of the maintenance gang, the Signaller at Sale issued a Track Warrant at 0705. The Track Warrant meant that trains were prevented from entering this section of track.

Those involved in the works included:

- the Protection Officer, a contractor responsible for safe working and the holder of the Track Warrant
- a Ganger-In-Charge, a V/Line employee responsible for the site works
- a V/Line Ganger performing the role of a Leading Hand
- eight additional maintenance workers, mostly contracted staff.

As part of the maintenance works, hand and light mechanical tools were being used. One of the tools was a dog spike puller (Figure 1). At some point, when it was not being used, the dog spike puller was moved along the track, about 20 m away from the work area, and left unattended.

**Figure 1: A dog spike puller similar to that used at Montgomery**



Source: Melville Equipment Corp

The Melbourne to Bairnsdale passenger service 8403 was scheduled to depart Sale at 1020. To allow this train through the work site, the Track Warrant would need to be returned at least 20 minutes prior to its departure. To facilitate the return of the Warrant, the Protection Officer drove the 15 minutes back to the signal office at Sale Railway Station to arrive before 1000.

At the worksite, the gang stopped work at about 0955 and off-tracked in preparation for the returning of the Warrant and the passage of the train. In clearing the track, the gang overlooked the dog spike puller.

When the gang had off-tracked, the ‘Leading Hand’ of the gang gave the Ganger-In-Charge an ‘okay’ hand signal. This signal indicated that he believed the track was clear and that the Protection Officer could return the Track Warrant to the Signaller at Sale.

Using his mobile phone, the Ganger-in-Charge communicated the clear track to the Protection Officer, who was with the Signaller in Sale. As a result, the Track Warrant was returned at 1000. This released the section for train operations.

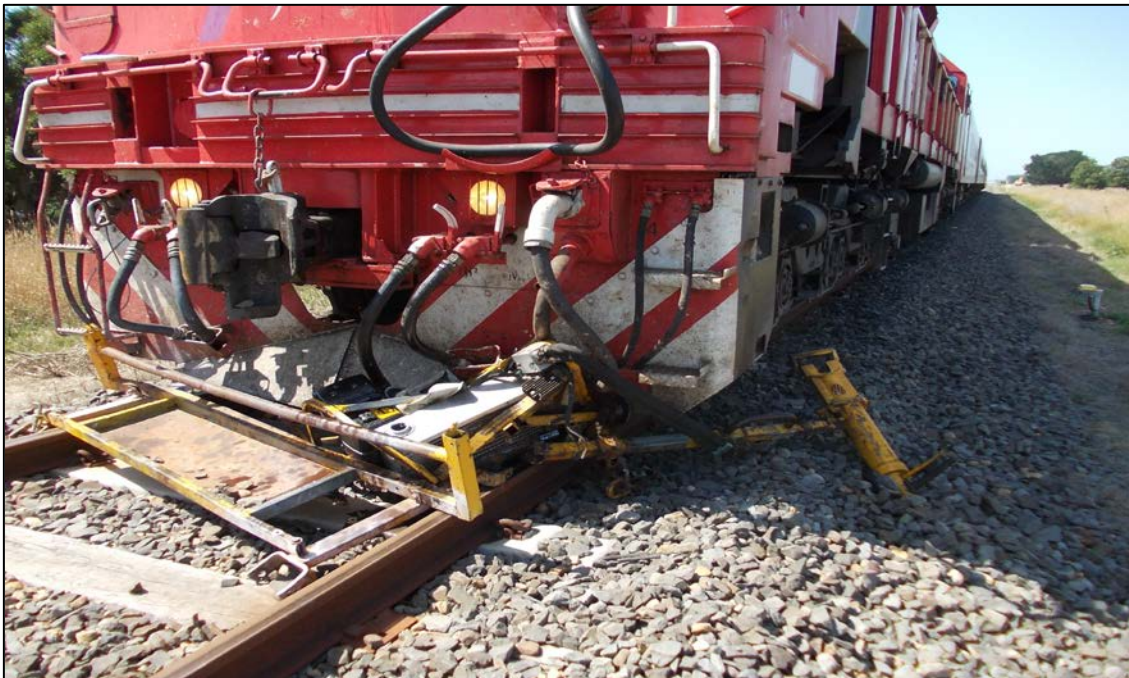
At the work site, the gang had commenced morning break and remained off track.

Train 8403 departed Sale at 1027. It consisted of an N class locomotive and five cars, with 120 passengers on board.

The train was approaching the work site at about 98 km/h. The locomotive driver noticed an obstruction on the line and in response made a full service brake application, followed shortly after by an Emergency application. He also sounded the air horn to attract the attention of the gang, although they thought it was sounded as a greeting.

The train could not stop in time to prevent the collision with the dog spike puller that had been left on the track. The equipment was pushed along the track by the locomotive and train 8403 came to a stop at 1033, about 380 m past the crossing.

**Figure 2: Destroyed dog spike puller under the cow catcher of locomotive N452**



Source: V/Line Pty Ltd

The rail service was terminated and passengers completed their journeys by bus replacement.



# Context

## Safeworking system

The line between Sale and Bairnsdale was a single line. It was one of a small number of lines in Victoria that still operated under the Train Staff and Ticket Safeworking system. This system uses a Staff as the authority for trains to travel or occupy the line between two locations. There is only one Staff for each section and it is physically transferred to the crew of the train that is authorised to use the section. The purpose of this Safeworking system is to prevent more than one train occupying a single line section between locations at any one time.

## Track Force Protection

### **Requirements**

Protection for workers must be provided before work can be carried out on a rail line. This protection can take several forms dependent on the activity. Protection can range from local hand signalling protection to manage through traffic, to a Track Warrant where trains are excluded from the section.

In this instance, a Track Warrant was the form of protection used. This protection covered both the movement of the Hi-Rail excavator from Sale and the maintenance activities of the gang at the work site.

A Track Warrant is the authority for infrastructure work activities. It can be issued by either a Train Controller or a Signaller to the Supervisor or Person in Charge of the work site as authority to foul the line. Track Warrants may be issued for infrastructure maintenance activities where one or more track vehicles or track machines are to be used.

On the Train Staff and Ticket Safeworking system, whenever a Track Warrant is issued for track force protection, the Staff for the section must also be handed to the holder of the Track Warrant. In this instance, the Protection Officer for the maintenance works held the Staff while the Warrant was in place.

Before returning a Track Warrant, the rules required the person holding the Track Warrant to ensure that the line was clear. Another requirement was that a Track Warrant was to be returned at least 20 minutes prior to the scheduled arrival time of a train that was to enter the affected section of line.

### **Personnel qualifications**

The Protection Officer, Ganger-In-Charge and the Ganger acting as 'Leading Hand' all held Train Track Co-ordinator Level 3 competencies. These qualifications allowed them to institute and manage Track Force Protection arrangements and they were all aware of the requirement to ensure the track was clear before returning a Track Warrant.

## Local contracting arrangements

Contractors are often used to perform the Safeworking role of providing track force protection. This was the situation in this instance, with the Protection Officer a contractor. This freed up the V/Line Ganger-In-Charge to supervise work site activities.

# Safety analysis

## Clearing track of equipment

It was known by all key parties that the track was to be cleared prior to the return of the Track Warrant at 1000 for the passage of a train. However, when clearing the site in preparation for the return of the Warrant, the dog spike puller was overlooked.

The dog spike puller had been moved away from the direct area of works and left unattended. It is probable that this led to the lead Ganger overlooking that it was still on the track.

The Ganger-In-Charge was occupied with other tasks and his view of the track was restricted by trucks parked near the track. He accepted the 'okay' signal from the Ganger acting as 'Leading Hand' that the track was clear. This confirmation of a clear track was then relayed by mobile phone to the Protection Officer who was offsite.

## Safeworking systems and processes

### ***Use of Track Warrant protection***

The decision to protect both the Hi-Rail on-track movement to the worksite and the gang's worksite activities with a Track Warrant was consistent with the provisions of the *Book of Rules and Operating Procedures 1994*. However, because of the Train Staff and Ticket Safeworking system on this line, use of a Track Warrant introduced the requirement for the Protection Officer to travel to Sale.

### ***Return of Track Warrant and Staff***

The requirements of the Train Staff and Ticket Safeworking system meant that the Protection Officer needed to return the Warrant and Staff to Sale before 1000 to allow the passage of the next train. To meet his obligations to ensure the line was clear, the Protection Officer adopted an informal process to inform himself of the condition of the line prior to returning the Track Warrant and Staff.

This practice of Protection Officers leaving a worksite on the Train Staff and Ticket system, prior to the line being clear, was an accepted practice. This practice allowed works to continue while the Protection Officer was in transit to the Signaller, and so enhanced productivity.

### ***Informal delegation of task of ensuring track was clear***

The Protection Officer was now relying on receiving a message that the line was clear from the Ganger-In-Charge. Instead of ascertaining the condition of the line themselves, the Protection Officer had informally delegated this task.

At the worksite, there was a further cascading of this task. To focus on other duties, the Ganger-In-Charge had passed immediate work-site supervision to another employee, the Ganger acting as 'Leading Hand'. This included the responsibility of overseeing the off-tracking of the gang and their equipment prior to the passage of train 8403.

The cascading of this task was informal and there was no defined delegation of roles. All those involved were capable of undertaking the task. However, the task focus may have been diminished through the delegation. In any case, the cascading of this role probably heightened the potential for individual error.



# Findings

From the evidence available, the following findings are made with respect to the collision between Passenger train 8403 and maintenance equipment at Montgomery, Victoria on 16 February 2015. These findings should not be read as apportioning blame or liability to any particular organisation or individual.

**Safety issues, or system problems, are highlighted in bold to emphasise their importance.**

A safety issue is an event or condition that increases safety risk and (a) can reasonably be regarded as having the potential to adversely affect the safety of future operations, and (b) is a characteristic of an organisation or a system, rather than a characteristic of a specific individual, or characteristic of an operating environment at a specific point in time.

## Contributing factor

- The dog spike puller was overlooked when the maintenance gang cleared the track to permit the passage of train 8403. As a result, the line was obstructed and the dog spike puller was impacted by the train.

## Other factor that increased risk

- **There were no formal systems in place to manage the accepted practice of Protection Officers leaving a work site to return a Track Warrant and Train Staff, prior to ceasing works, off-tracking and ensuring the line was clear. This practice led to the informal delegation of responsibility for ensuring the track was clear to others at the work site.**  
[Safety issue]

# Safety issues and actions

The safety issues identified during this investigation are listed in the Findings and Safety issues and actions sections of this report. The Australian Transport Safety Bureau (ATSB) expects that all safety issues identified by the investigation should be addressed by the relevant organisation(s). In addressing those issues, the ATSB prefers to encourage relevant organisation(s) to proactively initiate safety action, rather than to issue formal safety recommendations or safety advisory notices.

Depending on the level of risk of the safety issue, the extent of corrective action taken by the relevant organisation, or the desirability of directing a broad safety message to the rail industry, the ATSB may issue safety recommendations or safety advisory notices as part of the final report.

## Safeworking systems and processes

Number:	RO-2015-003-SI-01
Issue owner:	V/Line Pty Ltd
Operation affected:	Rail – Operations and Infrastructure
Who it affects:	V/Line Pty Ltd

### **Safety issue description:**

There were no formal systems in place to manage the accepted practice of Protection Officers leaving a work site to return a Track Warrant and Train Staff, prior to ceasing works, off-tracking and ensuring the line was clear. This practice led to the informal delegation of responsibility for ensuring the track was clear to others at the work site.

### **Proactive safety action taken by V/Line**

Action number: RO-2015-003-NSA-003

As a result of this incident and other related Safeworking incidents, V/Line has completed a 'Take 5' (stand down day) where work was halted to review and discuss the following topics with major works and maintenance personnel workers.

- The definition and responsibilities between Safeworking duties and Ganger duties
- Recent incidents
- Removal of materials from track including handover
- Track Warrants
- Working Limits/Linear worksites
- Plant and equipment.

As part of its 'Destination Zero Strategy' (refer Additional Safety actions) and particularly pertinent to this incident, a Track Worker Safety Review has been commenced. This involves a review of tasks, rules, procedures, and training for works. It includes a review of the levels for Safeworking and rules for infrastructure works.

### **Current status of the safety issue**

Issue status: Adequately addressed.

Justification: ATSB is satisfied that the safety actions taken by V/Line following this incident combined with other actions under way (refer Additional safety actions) will reduce the risk of track maintenance equipment remaining on track when Track Force personnel are clearing a line for the passage of rail traffic.

## Additional safety actions

V/Line is undertaking additional actions that pertain to the safety of track maintenance activities:

- The 'Destination Zero' Strategy for Health Safety and Environment (HSE). Destination Zero is targeting programs to achieve zero incidents
- The roll out of the 'Life Saver Principles' project under the Destination Zero program. This project is about informing staff of V/Line requirements when accessing the rail corridor
- Changes to the procedures and documentation for pre-job start briefings.

V/Line has completed a 'Take 5' and 'Destination Zero' Day with the V/Line Major Works department.

# General details

## Occurrence details

Date and time:	16 February 2015 – 1032 EST	
Occurrence category:	Incident	
Primary occurrence type:	Collision	
Location:	Montgomery, about 7 km from Sale, Victoria	
	Latitude: 38° 02' 28.6" S	Longitude: 147° 03' 40.6" E

## Train details

Train operator:	V/Line Pty Ltd	
Registration:	8403	
Type of operation:	Passenger	
Persons on board:	Crew – 1	Passengers – 120
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Minor to train, maintenance equipment destroyed	



# Sources and submissions

## Sources of information

The sources of information during the investigation included:

- The Protection Officer
- The Ganger-In-Charge
- The Ganger (Leading Hand)
- V/Line Pty Ltd
- Skilled Rail Services.

## Reference

- Book of Rules and Operating Procedures 1994.

## Submissions

Under Part 4, Division 2 (Investigation Reports), Section 26 of the *Transport Safety Investigation Act 2003* (the Act), the Australian Transport Safety Bureau (ATSB) may provide a draft report, on a confidential basis, to any person whom the ATSB considers appropriate. Section 26 (1) (a) of the Act allows a person receiving a draft report to make submissions to the ATSB about the draft report.

A draft of this report was provided to the Protection Officer, Ganger-In-Charge, Ganger, V/Line Pty Ltd, and Skilled Rail Services. Submissions were reviewed and where considered appropriate, the text of the draft report was amended accordingly.

# Australian Transport Safety Bureau

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to fare-paying passenger operations.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

## Purpose of safety investigations

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

## Developing safety action

Central to the ATSB's investigation of transport safety matters is the early identification of safety issues in the transport environment. The ATSB prefers to encourage the relevant organisation(s) to initiate proactive safety action that addresses safety issues. Nevertheless, the ATSB may use its power to make a formal safety recommendation either during or at the end of an investigation, depending on the level of risk associated with a safety issue and the extent of corrective action undertaken by the relevant organisation.

When safety recommendations are issued, they focus on clearly describing the safety issue of concern, rather than providing instructions or opinions on a preferred method of corrective action. As with equivalent overseas organisations, the ATSB has no power to enforce the implementation of its recommendations. It is a matter for the body to which an ATSB recommendation is directed to assess the costs and benefits of any particular means of addressing a safety issue.

When the ATSB issues a safety recommendation to a person, organisation or agency, they must provide a written response within 90 days. That response must indicate whether they accept the recommendation, any reasons for not accepting part or all of the recommendation, and details of any proposed safety action to give effect to the recommendation.

The ATSB can also issue safety advisory notices suggesting that an organisation or an industry sector consider a safety issue and take action where it believes it appropriate. There is no requirement for a formal response to an advisory notice, although the ATSB will publish any response it receives.



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### Investigation

#### **ATSB Transport Safety Report** Rail Occurrence Investigation

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Montgomery, near Sale, Victoria on 16 February 2015

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