



Australian Government

Australian Transport Safety Bureau

Level crossing collision between freight train 8426N and road-train truck

Cobb Highway, Ivanhoe, New South Wales, 11 July 2017

ATSB Transport Safety Report

Rail Occurrence Investigation

RO-2017-005

Final – 19 March 2018

Released in accordance with section 25 of the *Transport Safety Investigation Act 2003*

Publishing information

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Addendum

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Level crossing collision between freight train 8426N and road-train truck

What happened

At about 1035 on 11 July 2017, a Pacific National freight train (8426N) departed Broken Hill, New South Wales (NSW) toward Condobolin (NSW). Train 8426N consisted of two locomotives (8184, 8249) and 27 wagons loaded with lead and zinc. The train was 437 m in length with a trailing mass of 1,998 t.

At about 1540 Eastern Standard Time,¹ train 8426N was entering the Ivanhoe crossing loop and approaching the Cobb Highway level crossing, located about 2.1 km south-east of the Ivanhoe township. The Cobb Highway level crossing was equipped with flashing lights, an audible warning device (bell) as well as passive warning signs posted on the road approaching the crossing.

The Cobb Highway level crossing flashing lights activated at 15:43:16 with the approach of train 8426N. The train was travelling at 69 km/h and was about 300 m from the crossing when the train driver sighted the warning lights ahead were operating. The driver also saw a truck hauling two trailers (road-train) approaching the crossing from the south. The road-train was a Mack Superliner loaded with 43.7 t of road-base material.

The road-train driver was negotiating a sweeping right-hand bend before the road alignment straightened toward the crossing (Figure 1). The road-train driver reported travelling at about 70 km/h approaching the crossing (the posted speed limit was 80 km/h).

Figure 1: Aerial view of Cobb Highway level crossing and road approaches



Source: Google Earth, annotated by ATSB

¹ Eastern Standard Time (EST): Universal Coordinated Time (UTC) + 10 hours.

According to the road-train driver, he saw the flashing lights when the road-train was within 180 m of the crossing. He started to brake but assessed that the road-train might not stop in time, so accelerated to cross ahead of the train.

The train driver saw the road-train decelerate and then increase speed. The driver reported that he sounded the locomotive’s horn when it was about 190 m from the crossing. Shortly after, he saw the road-train enter the level crossing. Data from the train’s event recorder showed that about 100 m from the crossing, the train driver made an emergency brake application and activated the ‘emergency in progress’ alarm on the train radio. The train crew then relocated to the floor of the locomotive cab in preparation for a collision.

Train 8426N subsequently collided with the near side rear corner of the last trailer of the road-train (Figure 2), travelling a further 319 m before stopping. Shortly after, the train driver reported the collision to the Australian Rail Track Corporation Junee Network Control Centre. The train crew and the driver of the road-train were shaken but otherwise unhurt.

Figure 2: Collision damage to the locomotive and the last trailer of the road-train



Source: NSW Police, annotated by ATSB

Australian Standards

Australian Standard AS 1742.7:2016 *Manual of uniform traffic control devices – Railway crossings* prescribes the requirements for road markings, roadside signs and configuration of active traffic controls at railway crossings throughout Australia.

The traffic controls installed at the Cobb Highway railway crossing comprised flashing lights, an audible warning device (bell) as well as road surface markings and passive warning signs on the road approaches to the crossing. The active traffic controls at the Cobb Highway railway crossing were consistent with the requirements of AS 1742.7.

Australian Standard AS 1742.7:2016 required that flashing signals commence activation a minimum of 20 seconds prior to the arrival of a train. Australian Standard AS 7658:2012 *Railway Infrastructure - Railway Level Crossings* stipulated that flashing light warning signals commence activation a minimum of 25 seconds prior to the arrival of a train.

The intent of the two standards (when lights commence flashing) is to allow road vehicles:

- to stop before entering the crossing,
- if unable to stop, to traverse and clear the crossing, before a train arrives.

AS 7658:2012 – item ‘4. Track & Civil’, section 4.1 clause 2(a) and 2(b) refers to the Austroads guidelines and at clause 3(a) sight distances, obstructions, and clause 3(b) time for road vehicles

to traverse and clear the railway crossing. However, there are no specific guidelines for assessing sighting distance requirements for locations with active/flashing light control, or for locations where the requirement to negotiate curved approaches creates potential for compromised driver perception.

The flashing lights at the Cobb Highway level crossing were operating for 39 s before the arrival of train 8426N at the crossing. NSW *Road Rules 2014, Part 10, Section 123* stipulates that a road user must not enter a railway crossing if the warning lights (or bell) are operating.

Road-train driver

The driver of the road-train reported being very familiar with the crossing, having used it on many occasions over the previous month, including multiple times on the day of the occurrence. During this time, the driver recalled only two instances of encountering a train.

On the day of the occurrence, the driver had completed a number of trips across the Cobb Highway level crossing. He noted that when travelling in a westerly direction later in the afternoon, a combination of sun glare and dust on the prime mover's windscreen can reduce visibility ahead.

The driver stated that the alignment of the sweeping 'S' bend road approach and roadside vegetation meant that sighting of the flashing lights was also restricted until the vehicle had travelled through the bend and was within 180 m from the crossing. On sighting the level crossing operating, the driver assessed that there was now insufficient distance to stop the road-train prior to it entering the crossing.

Previous occurrences

The ATSB has investigated 28 accidents at level crossings since 2002, many involving heavy road vehicles. On 23 September 2015, a collision occurred between a road-train and grain train at a protected level crossing near Narromine, NSW. The road approach to the level crossing contained a sweeping right-hand curve. The road-train driver sustained fatal injuries in the collision. The ATSB report, [RO-2015-016 Collision involving road-train truck and train 8834N](#) is available from the ATSB website.

The ATSB found that although the truck driver was probably travelling too fast for the prevailing conditions, the driver's attention was probably focused on negotiating a sweeping right-hand curve that preceded the crossing, at a critical time when he needed to check for the activation of the crossing. The ATSB concluded that it was likely that when the driver perceived that the flashing lights were operating, he was too close to the crossing to stop, and collided with the train.

The ATSB identified a number of areas of potential improvement related to road design signage and standards associated with railway crossing traffic control, especially with respect to curved approaches before railway crossings. In response to the ATSB findings, Standards Australia commenced a review of AS 1742.7:2016, with respect to railway crossing approaches, in particular curved approaches, and the location signage.

Standards Australia received the project proposal for a Revised Text Amendment (RTA) to AS 1742.7:2006 in early 2017. The committee met on 9 August 2017 to initiate the project and established a working group to commence drafting the RTA. It is anticipated the standard will be published in the last quarter of 2018 subject to Standards Australia standards development process. The committee reviewed a draft of the ATSB investigation report for the 11 July 2017 occurrence and concluded there was no need to carry out any further amendment for update to AS 1742.7 beyond the scope of the current revision.

Safety analysis

The active level crossing warning equipment was consistent with the requirements of both AS 1742.7:2007 and AS 7658:2012. The driver of the road-train was traversing a sweeping bend on the approach to the Cobb Highway level crossing when he noticed the flashing lights were operating during his approach. The driver believed there was now insufficient time to stop the

vehicle before entering the level crossing. He accelerated in an attempt to clear the level crossing ahead of the approaching train 8426N and avoid the potential for a collision between the prime mover or trailers and the train. However, the train collided with the rear trailer of the road-train. It is likely that one or more of the following factors affected the truck driver's timely recognition of the flashing lights:

- focus on negotiating the curved approach to the crossing
- roadside vegetation
- frequent use of the level crossing combined with infrequent train presence.

Findings

These findings should not be read as apportioning blame or liability to any particular organisation or individual.

- It is likely that the truck driver did not look for, or sight, the activated flashing lights until relatively close to the crossing. This was probably due to one or more of: focus on negotiating the curved approach to the crossing, roadside vegetation and/or not expecting a train to be present.
- On sighting the level crossing lights and approaching train, the truck driver assessed there was insufficient available distance to stop the heavily laden road-train truck before the level crossing. Consequently, the truck driver accelerated and entered the crossing while the flashing lights were operating, contrary to the New South Wales road rules.

Safety message

It is imperative that road vehicle drivers always approach railway crossings with extreme care. The level of care and attention required increases as road vehicle gross mass increases.

Although motorists are primarily responsible for avoiding a collision with a train at railway crossings, prudent road design and/or advance warning of a train's presence at railway crossings should be considered as a strategy to lower the risk of road and rail vehicle collisions.

Road and rail authorities should consider measures to enhance the awareness of motorists approaching railway crossings, especially at locations with restricted sighting due to curved approach roads.

For more information about [level crossing safety](#), visit the ATSB website.

General details

Occurrence details

Date and time:	11 July 2017 – 1544 EST	
Occurrence category:	Incident	
Primary occurrence type:	Level crossing collision	
Location:	Cobb Highway, Ivanhoe, NSW	
	Latitude: 32° 54.876' S	Longitude: 144° 18.912' E

Train details

Train operator:	Pacific National	
Registration:	8426N	
Type of operation:	Freight	
Persons on board:	Crew – 2	Passengers – 0
Injuries:	Crew – nil	Passengers – nil
Damage:	Minor damage to the front of locomotive 8249	

Road vehicle details

Registration:	Private
Vehicle details:	Mack Superliner road-train
Persons on board:	1
Injuries:	nil
Damage:	Minor damage near side rear corner of the last trailer

About the ATSB

The 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; and 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 operations involving the travelling public.

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.

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

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.