



**Australian Government**

**Australian Transport Safety Bureau**

# Track obstruction due to loss of freight from train 7WB3 and subsequent impact of passenger train NT32 with track obstruction

near Telegraph Point, New South Wales, on 17 June 2018

**ATSB Transport Safety Report**

Rail Occurrence Investigation

RO-2018-010

Final – 31 March 2020

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

#### Publishing information

**Published by:** Australian Transport Safety Bureau  
**Postal address:** PO Box 967, Civic Square ACT 2608  
**Office:** 62 Northbourne Avenue Canberra, Australian Capital Territory 2601  
**Telephone:** 1800 020 616, from overseas +61 2 6257 2463 (24 hours)  
Accident and incident notification: 1800 011 034 (24 hours)  
**Email:** [atsbinfo@atsb.gov.au](mailto:atsbinfo@atsb.gov.au)  
**Internet:** [www.atsb.gov.au](http://www.atsb.gov.au)

© Commonwealth of Australia 2020



#### Ownership of intellectual property rights in this publication

Unless otherwise noted, copyright (and any other intellectual property rights, if any) in this publication is owned by the Commonwealth of Australia.

#### Creative Commons licence

With the exception of the Coat of Arms, ATSB logo, and photos and graphics in which a third party holds copyright, this publication is licensed under a Creative Commons Attribution 3.0 Australia licence.

Creative Commons Attribution 3.0 Australia Licence is a standard form license agreement that allows you to copy, distribute, transmit and adapt this publication provided that you attribute the work.

The ATSB's preference is that you attribute this publication (and any material sourced from it) using the following wording: *Source:* Australian Transport Safety Bureau

Copyright in material obtained from other agencies, private individuals or organisations, belongs to those agencies, individuals or organisations. Where you want to use their material you will need to contact them directly.

#### Addendum

Page	Change	Date

# Safety summary

## What happened

On 17 June 2018, at about 1309, passenger train NT32 collided with a track obstruction as it crossed the Wilson River Bridge, near Telegraph Point, New South Wales and sustained minor damage. The track obstruction was identified as an awning from a container being carried by freight train 7WB3, operated by Pacific National (PN), which had separated when it came open and struck the bridge structure as the train passed over.

## What the ATSB found

The ATSB found that the container involved had been modified to include a large side opening awning. The awning was only held closed by spring-loaded bolts accessed from the inside of the container. This was not compliant with PN's Freight Loading Manual (FLM), which required a system that could be locked and was externally visible to assure that openings remained secure and enable examination by inspection staff.

Inspections conducted by PN terminal operators at the departure location did not identify the modified container or the absence of locks. The customer did not notify PN that the container was modified as they were not aware of a requirement to do so. Consequently, PN were unaware of the need to assess the modifications against the FLM requirements.

While PN made the FLM available to customers, they did not actively advise them when they had a responsibility identified by the manual and did not have a process for ensuring customers complied with the manual's requirements.

Additionally, the training and checking processes for terminal operators who carried out inspections did not include the FLM requirements for modified containers. This removed an opportunity for the requirements to be reinforced and practiced during training and regular checking of inspection staff.

## What's been done as a result

PN have advised that they have implemented a range of processes to ensure customers are aware of, and are compliant with their FLM requirements. These have included the development of an online course for the FLM, and an auditing program to monitor FLM compliance and performance. PN has further introduced a number of measures relating to the training and checking of inspection staff. These include trialling a change to their transport management system, which triggers mandatory checks by PN inspectors at any terminal where a non-standard or modified container enters, and updating training and checking packages to include the FLM requirements.

## Safety message

Any item on a container that can open into the rail corridor represents a potential risk as, should they come open, they may strike infrastructure, opposing trains or bystanders. This highlights the significance of ensuring that such items are adequately secured prior to transit.

Further, this occurrence emphasised the importance of training and checking to reinforce operational procedures, in this case, for identifying and securing openings on modified containers. It also identified the need to have processes in place to advise customers of the requirements for the safe transport of modified containers and to ensure compliance.

# Contents

<b>The occurrence.....</b>	<b>2</b>
Loading of container wagons	2
Train 7WB3 journey to Taree	3
Occurrence	5
Post-occurrence	6
<b>Context.....</b>	<b>8</b>
Container information	8
Pacific National Freight Loading Manual	9
Loading and carriage of non-standard or modified containers	10
Container door security	10
Freight loading manual availability and familiarisation	11
Inspections at Morandoo	12
FX inspection	12
Roll-by inspection	13
Train crew actions in response to prior openings	13
Crossing between trains NT32 and 7WB3	13
Similar occurrences	14
<b>Safety analysis.....</b>	<b>15</b>
Introduction	15
Awning locking system	15
Detection of modified container	15
Notification of modified container	16
Inform external parties of FLM requirements	16
Internal training	16
<b>Findings.....</b>	<b>17</b>
Contributing factors	17
Other factors that increased risk	17
<b>Safety issues and actions.....</b>	<b>18</b>
Advise relevant external parties of container loading requirements and check for compliance	18
Education on loading and inspection of modified containers	19
<b>General details.....</b>	<b>21</b>
Occurrence details	21
Train 1 details	21
Train 2 details	21
<b>Sources and submissions.....</b>	<b>22</b>
Sources of information	22
References	22
Submissions	22
<b>Australian Transport Safety Bureau.....</b>	<b>23</b>
Purpose of safety investigations	23
Developing safety action	23
Terminology used in this report	24

# The occurrence

## Loading of container wagons

On 15 June 2018, a container (number 2200655) was delivered to the loading facility at Carrington, New South Wales (NSW), for loading onto a rail wagon. The container was loaded onto wagon RQSY 34371M, one of nine wagons loaded with container freight bound for Brisbane, Queensland (Qld). The container was a 20 ft (6 m) shipping container that had been modified for use as a canteen. The modifications included the addition of an awning on one side of the container, pictured below (Figure 1).

**Figure 1: View of the container showing the awning on one side**



Source: Pacific National

At about 1900 Eastern Standard Time,<sup>1</sup> the nine loaded wagons were moved from the loading facility to Morandoo Yard where they were to be attached to the incoming service 7WB3 the next day.

On 16 June, at about 0840, a Pacific National (PN) terminal operator completed an inspection of the nine wagons, referred to by PN as an FX inspection (refer to section titled *FX inspection*). Upon completing that inspection, he issued a train inspection certificate for the nine wagons, indicating that no issues were identified.

Train 7WB3 was a service carrying mostly steel products, originating from Port Kembla, NSW, with a final destination of Brisbane, Qld. The train arrived at Morandoo early the next morning on 17 June. The nine wagons were attached to the rear of train 7WB3 by PN terminal operating staff and a brake pipe continuity test was performed.

<sup>1</sup> Eastern Standard Time (EST): Coordinated Universal Time (UTC) + 10 hours.

## Train 7WB3 journey to Taree

A train crew from Taree, consisting of two drivers, arrived at Morandoo at about 0500. The crew were to drive train 7WB3 from Morandoo to Taree, NSW. Train 7WB3 subsequently departed Morandoo yard at about 0510. On departure, the train consisted of 3 locomotives and 55 wagons with a mass of 4,090 t and length of 1,036 m. Two terminal staff performed roll-by inspections (refer to section titled *Roll-by inspection*), one from each side of the train as it departed and did not report any issues.

Train 7WB3 proceeded north and was confirmed to have arrived at Stroud Road (the location of a passing loop) and crossed<sup>2</sup> a southbound train, 7BM4. The crew of 7BM4 performed a roll-by inspection of 7WB3 and did not report any issues. Train 7WB3 departed Stroud Road at about 0731.

At about 0754, the Australian Rail Track Corporation (ARTC) network control officer (NCO) controlling the NSW north coast train control section 'Coast A' received a telephone call from a member of public who reported an open wagon 'door' toward the rear of train 7WB3. The NCO advised the crew of the reported open 'door' and the crew of 7WB3 subsequently requested to stop their train at Craven North Loop to inspect. When the train came to a stand at Craven North at about 0756, one of the crew alighted and proceeded to inspect the train.

Upon returning to the lead locomotive, the crew contacted the NCO at about 0824 and reported finding and resecuring an 'open window' on an 'office container' on wagon RQSY 34371M. The NCO subsequently cleared 7WB3 to proceed. Photographs taken of the container by the crew member before and after resecuring show that the 'door' and 'window' referred to above were the awning on the side of the container (Figure 1 and Figure 2). The container number, 2200655, was visible in Figure 2.

---

<sup>2</sup> Cross: The passing of two trains travelling in opposite directions, often conducted at a crossing loop when on a single track line.

**Figure 2: View of the container with the open ‘door’ and ‘window’ (awning)**



*The image shows the awning open when inspected at Craven North. The container number 2200655 is also visible on the end door  
Source: Pacific National*

7WB3 continued its journey and at about 1049, crossed train 6422 near Taree. The crew of train 6422 advised that they had seen a ‘door’ open on a container on 7WB3.

At about 1050, train 7WB3 arrived at Taree, which was a crew change location. The departing Taree crew informed the arriving Brisbane crew that a ‘door’ on a container at the rear of the train had been opening. They also informed the ARTC NCO that the ‘window’ had opened again. The Taree crew then proceeded to the back of the train to resecure the awning. They reported that, after they resecured the awning they tried to force it open again by pulling on it and were not able to do so. They informed the Brisbane crew that it was resecured, who relayed the message to the ARTC NCO at about 1105.

## Occurrence

Train 7WB3 subsequently departed Taree at about 1107 and continued its journey north. At about 1257, it crossed the southbound passenger service NT32 at Telegraph Point. PN advised that 7WB3 was stationary in the passing loop for the cross, with NT32 proceeding past it on the main line. Although one of the drivers of train 7WB3 recalled hearing a ‘crackle’ on the radio after train NT32 had passed, the drivers did not receive a roll-by inspection report from NT32, nor any other message.

After crossing 7WB3 at Telegraph Point, train NT32 proceeded south and struck an object on the track while crossing the Wilson River Bridge, a steel through-truss bridge (Figure 3).

**Figure 3: View of the Wilson River Bridge**



*The southern access to the Wilson River Bridge, facing north. This view shows the steel through truss structure that the awning struck.*  
Source: Pacific National

At about 1309, after bringing his train to a stop, the driver of NT32 reported this to the ARTC NCO. The driver described the object that had been struck as a metal object, ‘something about the size of a car bonnet’ and ‘looked like it might have come off a freighter’. The driver also reported that he would inspect his train and look for the metal object on the bridge.



Based on the description of the track obstruction, the ARTC NCO contacted the crew of 7WB3 at about 1319 and requested that they pull up to inspect their train. Ten minutes later the train pulled up at Kundabung, NSW, and one of the crew members alighted. The other crew member drove the train forward slowly so that the person on the ground could inspect the train as it passed.

Meanwhile, the driver of NT32 had advised the NCO that he had completed the inspection of his train and had cut out the number 1 brake cylinder on the leading locomotive due to damage from hitting the track obstruction, and that NT32 was able to depart. The driver did not report seeing any issues on 7WB3, but indicated that one of the passenger service staff on NT32 reported hearing something hit the side of the train as they crossed by 7WB3. He further stated that he had not been able to inspect the bridge, as there was no safe access on foot. Train NT32 continued its journey without further incident.

At about 1332, the crew of 7WB3 reported to the NCO that a ‘window’ was missing from a container. They further advised that they had removed any loose items from the container, that nothing remained out of gauge,<sup>3</sup> and that they were ready to depart. The NCO subsequently allowed 7WB3 to depart and the crew moved the train off from Kundabung at about 1347.

### Post-occurrence

At about 1352, the NCO radioed the crew of 7WB3 and requested that they inspect the other side of the train at Kempsey. The NCO indicated that this request was in response to the report from NT32 of hearing something hit as they crossed 7WB3. The crew subsequently pulled up, inspected both sides of the train and reported that no further issues were found. Train 7WB3 departed Kempsey at about 1442 and completed its journey to Brisbane without further incident.

The damaged container was photographed by PN upon arrival at the Brisbane Freight Terminal (Figure 4). The damaged awning was subsequently recovered from the Wilson River (Figure 5).

**Figure 4: View of the container showing the damage from the missing awning**



Source: Pacific National

<sup>3</sup> Out of gauge: when referring to items loaded on rollingstock - a vehicle load that does not conform to the relevant loading outline. Guidance on loading outlines can be found in Section 4 of the Rail Industry Safety and Standards Board Code of Practice – Loading of Rail Freight and Australian Standard AS7507.

**Figure 5: The damaged awning when recovered from the Wilson River**



Source: Pacific National

# Context

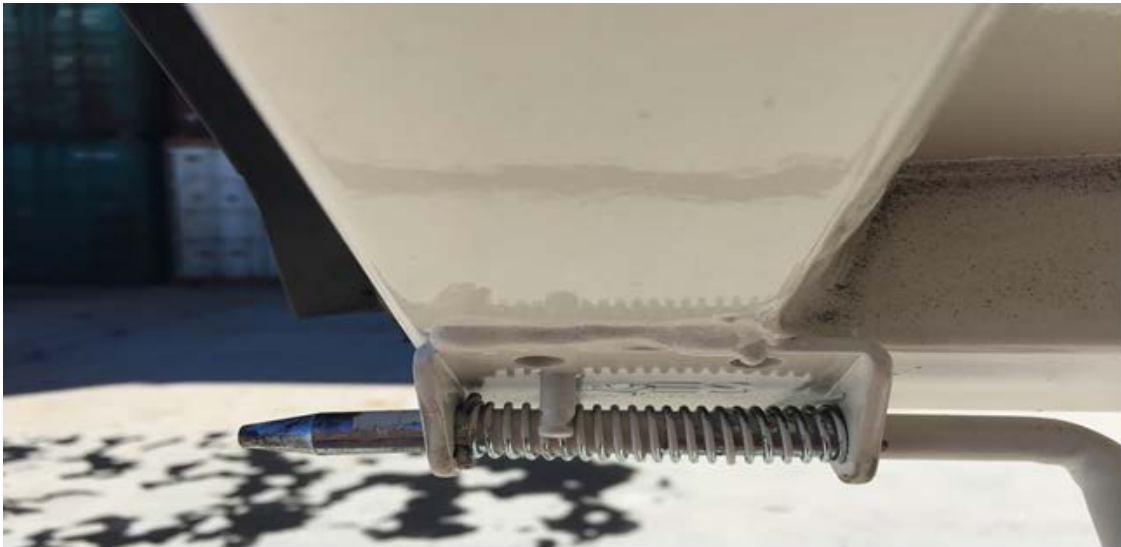
## Container information

Container number 2200655 had been modified by Port Shipping Containers to include a large side opening that was about 1.2 m high by 3 m long, approximately one-quarter of one sidewall of the container (Figure 1). This opening was intended for use as an awning. During the sequence of events, notifications by the train crews and the Australian Rail Track Corporation (ARTC) network control officer (NCO) referred to the awning as a ‘door’ and ‘window’. It was understood that all such references were to the awning and not the container end doors.

The awning was constructed from a rectangular hollow section steel frame with the section of steel sheet that had been removed from the container side welded back into the frame. Another rectangular hollow section steel frame was welded to the opening in the container. The awning was attached to the container with three outward opening hinges along the top edge. A gas strut was mounted on each side to assist with opening and to support the weight of the awning when open.

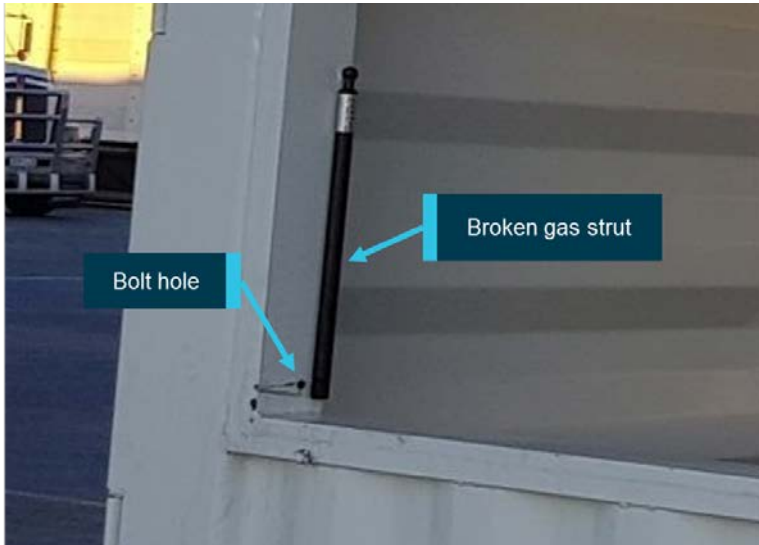
The awning was held closed with two spring-loaded bolts accessed from the inside of the container (Figure 7). There was no locking mechanism provided that was accessible from the outside of the container. The bolts latched into holes in the outside frame, one of which is visible in Figure 8.

**Figure 6: A view of one of the spring-loaded bolts used to hold the awning closed**



Source: Pacific National

**Figure 7: Detail view of one of the holes used for latching the spring-loaded bolts**



Source: Pacific National

A Convention for Safe Containers (CSC) compliance plate<sup>4</sup> was affixed to the container. However, the manufacturer's number on the compliance plate, QXIC 3255502, did not match the number applied to the container end door, 2200655 (which was visible in Figure 2 above). The section of the compliance plate identifying the owner of the container was blank. The plate does not appear to have been amended, or compliance re-checked after the modifications were made. In addition, the container number, 2200655, did not comply with the applicable Australian Standard for container numbering (AS3711.9), as it did not include owner code or category identification letters and was not displayed on the side of the container. While the reason for these discrepancies were unknown, they did not contribute to the occurrence.

### Pacific National Freight Loading Manual

Pacific National (PN) maintained a document suite called the Freight Loading Manual (FLM), which provided instructions on the loading and carriage of rail freight on their rolling stock. PN stated that the FLM:

Has been produced to provide guidance in the basic safety principles which must be followed and in particular the precautions which must be taken to ensure the safe carriage of customers loading.

Sections of the FLM related to the carriage and security of containers, including modified containers, including:

- FLM 01-12\_04 *Provisional load process*
- FLM 03-06\_11 *Container door security*
- FLM 03-14\_07 *Non-standard and modified containers.*

Each section of the FLM listed above contained information and instruction relevant to the loading of the occurrence container. They included, on the first page of each section, identification of the parties that had a responsibility for that section. All the sections above listed, among others, either 'terminal staff', 'terminal operators' or 'PN employees' as responsible parties. Sections 03-06\_11 and 03-14\_07 also identify customers as responsible parties.

<sup>4</sup> Convention for Safe Containers (CSC) is an International Maritime Organization convention that provides uniform international safety regulations for the design of containers that are equally applicable to all modes of surface transport. The convention includes regulations for testing, inspection, approval and maintenance of containers. Approval is evidenced by the application of a safety approval plate containing the relevant technical data. The approval plate is commonly referred to as a CSC plate.

### ***Loading and carriage of non-standard or modified containers***

The FLM provided instruction on the loading and carriage of standard, non-standard or modified containers, which were defined in the FLM as:

Standard container:

In the context of this procedure the term standard containers refers to all solid containers fitted with end or side doors, locking rods and catches that are compliant to ISO [International Organization for Standardization] and AS/NZ [Australian/New Zealand] Standards.

Non-standard or modified container:

...any container that was either not manufactured to ISO/AS Standards or has been altered since manufacture.

The FLM further stated that 'specific approval must be obtained from PN for the consignment of all non-standard or modified containers'. Without this approval, the load was not allowed to be transported. PN advised that this approval was to be obtained through the 'provisional load process'.

PN reported that non-standard or modified containers made up a relatively small portion of the container traffic moved by rail. To quantify the relative rarity, PN indicated that the provisional load process had been used only three times to transfer modified containers in the 12 month period prior to the occurrence.

#### ***Provisional load process***

The FLM contained a section specific to the provisional load process (01-12\_04) which stated that the purpose of the process was:

...to ensure any freight that is transported which does not conform to a specific freight loading procedure can travel under a provisional approval on a Pacific National service.

The FLM stated that the customer was required to notify PN of the need for a provisional load approval. Further, it detailed the information that must be supplied by a customer when this approval was required, and that 5 working days was needed for PN to assess and process this request to grant approval. Where a provisional load approval had been granted, the process also required the load to be inspected for movement and restraint integrity at all terminals en route and during roll-by inspections.

However, in the case of this container, a provisional load process was not conducted as PN were not aware that the container was modified.

#### ***Information from customer***

Port Shipping Containers reported that they did not consider the modifications they made to the container to be major or requiring re-certification. Further, prior to the occurrence, they did not know of a requirement to notify PN that the container had been modified prior to transport.

They estimated that the company was transporting approximately 50 modified containers per year by rail, although not all would have included side-opening awnings. They also indicated that an externally visible lock could be, and had been in the past, applied to awnings, but that this had only been done when requested by their end customer.

#### ***Container door security***

Container security is a broad topic that includes theft prevention, load restraint and prevention of damage. In the context of this occurrence, container security was primarily of concern in terms of ensuring that container doors and other openings were prevented from opening during transit.

### ***Securing doors on standard containers***

The FLM contained a section specific to the requirements for securing standard container doors, which identified that:

Container doors when opened may swing out of gauge on a travelling wagon and strike track infrastructure including signals and bridges. They can also pose a serious and unacceptable risk to persons, by striking opposing trains, track workers or members of the public.

The FLM required that ‘all standard container doors travelling on Pacific National Intermodal services must be in good condition, be properly secured, and locked with an approved device/seal’. The FLM provided requirements and examples of how and where to apply approved devices (padlocks) and seals.

PN provided a photograph, taken when the container involved in the occurrence was later inspected at Brisbane Freight Terminal, showing an approved type of seal applied to the latch of the end door of the container (Figure 9).

**Figure 8: Security seal on the end door of the container**



Source: Pacific National

### ***Applicability to non-standard or modified containers***

The FLM section covering container door security identified that all non-standard or modified containers required specific approval (through the provisional load process) as they may ‘incorporate locking mechanisms other than those on standard containers’. The FLM further stated that ‘any item or structure that can protrude from the container and become out of gauge, regardless of placement on a wagon, must be adequately secured with a separate locking system’. It was also a requirement that the locking system be in operable condition, locked with a padlock or seal, and clearly visible to enable examination by PN train examiners.

### ***Freight loading manual availability and familiarisation***

PN indicated that the FLM was not a publically available document. Access to up-to-date versions of the FLM sections was provided to PN staff through their intranet, and to external parties, including customers, through an online portal.

PN indicated that staff received familiarisation with the FLM through their normal on-boarding processes and where appropriate, specific training activities. When a FLM part was updated or revised, change management procedures were in place to communicate the update to PN staff via a 'safety advice' notice.

At the time of the occurrence, PN did not have any processes in place to familiarise or notify customers or other external parties of the requirements of, and updates to the FLM.

## Inspections at Morandoo

Two separate inspections were conducted prior to departure of train 7WB3 from Morandoo, NSW. These were an FX inspection of the nine loaded wagons, conducted prior to their attachment to the train, and a roll-by inspection of the complete train as it departed.

### ***FX inspection***

An FX inspection is a broad examination of many safety related items performed by a competent person. Of relevance to this occurrence was that it included a check of the security of all loads and equipment on the train. The inspection also included many other tasks such as checking the mechanical condition of all vehicles in a train, confirming the correct operation of the braking system, identifying any vehicles on the train with non-functioning brakes, and checking the make-up of the train confirming that it was consistent with safe and efficient operations of the train.

### ***Training***

PN required FX inspections be conducted by terminal operators who had undertaken training in the loading and securing of freight. PN advised the ATSB that the terminal operator who undertook the inspection on the day had completed:

- The nationally accredited unit of competency TLIA1001A - *Secure Cargo* in August 2014
- Verification for competence for full train inspection (VOCFX) in January 2018

PN also provided course material for their training package *PNE0001 Basic Freight – Load and secure freight* that was specific to PN's rail freight operations. However, PN did not indicate whether the terminal operator had completed this training.

The training course material did not cover the requirements for modified containers or refer specifically to the relevant FLM sections. While it did identify that checking locking devices and wagon doors was a requirement, it did not elaborate that these requirements extended to 'any item or structure that can protrude from the container and become out of gauge' as defined in the FLM for non-standard and modified containers.

### ***Assessment checklist***

PN inspectors were assessed on their ability to conduct the FX inspection through periodic verification of competency or VOCFX checks. The assessment checklist for the VOCFX, among other tasks, required inspectors be evaluated on inspecting loads, checking container locking devices, the security of wagon doors, and accessing the FLM through the intranet. However, there was no requirement for inspectors to be checked in identifying non-standard or modified containers and the follow-up actions required.

FX inspections also involved numerous other tasks such as checking of brake system condition and a mechanical check of rollingstock. While these items were not relevant to the occurrence, they did constitute a significant portion of the FX inspection and were required to be conducted on all rollingstock types regardless of what load was being carried. As such, they would be more routine FX inspection tasks than the inspection of locking devices on non-standard or modified containers, which were carried infrequently.

### Roll-by inspection

A roll-by inspection is a visual inspection of moving rail traffic to identify equipment, loading security or other defects or failures. Roll-by inspections were routinely performed by terminal staff at departure terminals, disembarking crew at crew changes, and the crew of other trains when they passed each other on track.

Due to the nature of roll-by inspections, being a visual inspection of many moving wagons from a distance, they were generally considered to only be effective as a gross error check. Given that the awning was not open at the time of the departure roll-by inspection at Morandoo, there was no gross error present. Therefore, it was reasonable that no issue with the container was detected during this inspection.

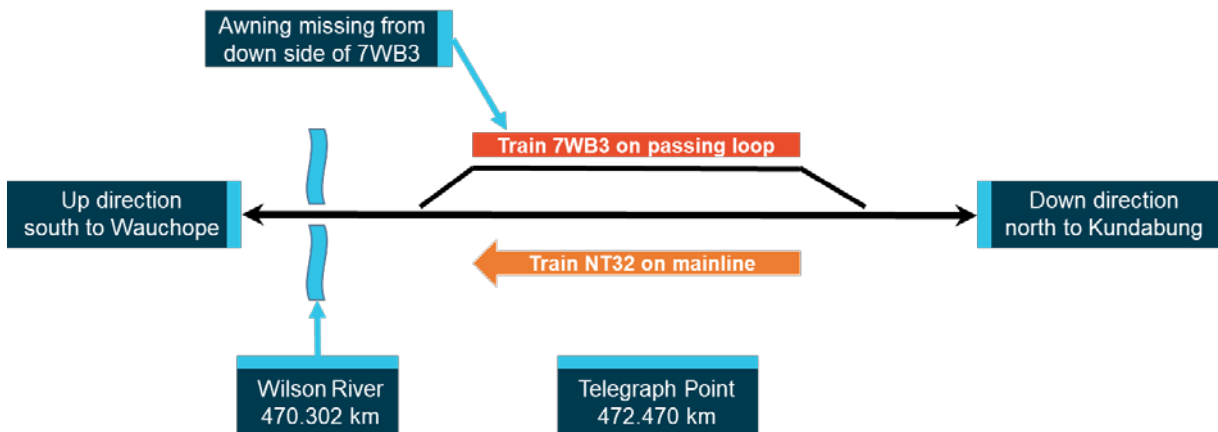
### Train crew actions in response to prior openings

It was reported that train crews could sometimes use wire as a temporary solution to resecure open locks and doors en route. However, this was not an option in the case of the awning as there were no suitable locations provided to apply wire onto. Therefore, short of removing the wagon with the effected container from the train, the crew had no options available to them with which to further secure the awning. While it was not known whether removal from the train was considered, given that they had been able to re-close the awning, it appears reasonable that the crew did not remove the wagon from the train before continuing.

### Crossing between trains NT32 and 7WB3

PN reported that train 7WB3 stopped in the passing loop at Telegraph Point to allow NT32 to pass on the mainline. PN also indicated that the container was loaded on the train with the awning on the down<sup>5</sup> side of the train. As Figure 10 shows, this meant that the driver of train NT32 did not have visibility of the damaged side of the container as his train was passing on the up side of 7WB3.

Figure 9: Train NT32 passing Train 7WB3 at Telegraph Point



Note: Distance references were from the Australian Rail Track Corporation Network information Book Coast A.  
Source: ATSB

<sup>5</sup> Up and down (within NSW): When referring to direction of travel, 'up' refers to the direction heading toward Sydney and 'down' away from Sydney. When used in reference to sides, the up and down sides are the left side in the corresponding direction of travel. For example, the down side is to the left when facing in the down direction.



## Similar occurrences

The ATSB has conducted several investigations where the load was partially or completely unrestrained and subsequently moved during transit. None of these involved non-standard or modified containers. Relevant findings are documented below:

- [RO-2018-003](#) Maitland, NSW, 16 January 2018: It was likely that the container was not effectively secured to the twist locks<sup>6</sup> at one end, which was almost certainly not detected during the train examination. The affected container subsequently shifted out of gauge and collided with the Maitland Railway Station verandah.
- [RO-2015-013](#) near Bowser, Victoria, 24 July 2015: The twist locks designed to secure two containers to a wagon were in an unserviceable condition, which was not identified during pre-loading inspections. Subsequently, the two containers were not adequately restrained and fell from the moving train in strong winds.
- [RO-2014-022](#) Great Western, Victoria, 9 December 2014: The load restraint and securement method used, in conjunction with a likely wagon hunting condition, allowed part of the load (a skeletal road trailer) to shift laterally and strike a bridge as the train passed.
- [2005/006](#) Eden Hills, South Australia, 30 September 2005: Inadequate load securement permitted movement of metal plates loaded on a container. Inspections by both the freight forwarder and the rollingstock operator did not detect the inadequate load securement. The metal plates subsequently moved out of gauge and struck a passenger train on an adjacent track.

In addition, the NSW Office of Transport Safety Investigation conducted an investigation into a 2010 incident ([Investigation 04480](#)). The findings included that the side gates of a container had come open during transport and swung out of gauge because their locking pins had dislodged from their retaining lugs. Inspections by several road and rail operators did not identify the inadequate restraint. Subsequently, one of the gates struck two platforms at Woy Woy Station, NSW, causing it to become dislodged from the train and strike a glass windbreak on the platform.

---

<sup>6</sup> Twist lock: a device used to restrain freight containers to a rail wagon. Twist locks are designed to couple with the standard corner castings found on most containers. They may manually or automatically engage and release from the corner castings depending on type.

# Safety analysis

## Introduction

While on the journey from Morandoo (Newcastle), New South Wales (NSW) to Brisbane, Queensland, the awning of a modified container being carried by train 7WB3 had come open on two occasions, but was subsequently closed by the crew. When the awning again opened, it struck the steel structure of the Wilson River Bridge, near Telegraph Point, NSW, and separated from the container. Train 7WB3 continued north and passed the south-bound passenger service NT32. Shortly after, NT32 struck the awning, sustaining minor damage.

When train 7WB3 passed, the driver of NT32 had the opportunity to perform a roll-by inspection. By that time, the awning had become separated. However, as the awning opening and damage to the container was on the other side of the train (down side), it would not have been visible to the driver.

While a staff member on NT32 heard something hitting the side of the train when passing 7WB3, the subsequent inspection of both sides of 7WB3 by the crew did not find any evidence to indicate that there was train-to-train contact.

There was no evidence to suggest that the handling of either train, the condition of the rollingstock or track geometry contributed to the occurrence.

This analysis will examine the locking system on the container and why the absence of an externally visible lock was not detected during the pre-departure train inspection. Further, it will discuss Pacific National's (PN) requirements regarding non-standard/modified containers, how this information was communicated to customers and the training and assessment for loading and security of freight.

## Awning locking system

PN's loading requirements, as documented in the Freight Loading Manual (FLM), required that any side opening be secured with a locking system incorporating a padlock or other approved seal. This requirement existed regardless of whether the container was a standard or modified container. The FLM further stipulated that, for an addition that could protrude outside the normal gauge of a modified container such as an awning, the locking system was required to be externally visible. These requirements served the dual purpose of providing assurance that the openings remained securely closed and to enable examination by staff.

The side-opening awning on the modified container was held closed by spring-loaded bolts positioned on the inside of the awning. There was no mechanism provided for applying a lock directly to the bolts or separately to the inside or outside of the awning. As such, the container did not comply with PN's requirements for an externally visible locking system. It also meant that there was no option available for the train crew to externally secure the awning during the journey.

## Detection of modified container

The modified container was loaded onto one of nine wagons that were to be attached to train 7WB3 at Morandoo, NSW. An FX inspection was undertaken on the wagons by a qualified inspector and was to include checking container locking devices and ensuring that wagon doors were secured. Likewise, the FLM also required the locking system used on all external openings to be examined. As such, the inspector was required to check for a locking system on the container end doors (which were appropriately sealed) and the side-opening awning (which had no locking mechanism present).

However, a train inspection certificate was issued for the nine wagons despite the awning not having the required externally visible locks. Therefore, it was likely that the inspector did not identify that the container was modified and the awning was not secure when he conducted his inspection.

It is likely the chance of identifying the container was modified was influenced by the numerous other more routine FX inspection tasks required, such as checking of brake system condition and a mechanical check of rollingstock. In addition, there was no expectation of a modified container due to the lack of notification from the customer. It is also possible that a lack of internal training on the requirements of checking modified containers had the potential to influence the chance of detecting such containers.

### **Notification of modified container**

The FLM defined non-standard or modified containers as ones that were not manufactured to the required standards or had been altered since manufacture. The presence of the Convention for Safe Containers (CSC) plate on the container indicated that it was initially manufactured as a 20 ft container in accordance with the standards. It was subsequently modified, including the addition of a side-opening awning, and therefore met PN's definition of a modified container.

While the organisation (customer) who modified the container did not consider the awning to be a substantial modification, they were not aware of the requirement to notify PN of this addition. As a result, the provisional load process was not undertaken by PN, which removed an opportunity for them to assess the modification and ensure that it was adequately secured prior to transport.

### **Inform external parties of FLM requirements**

The FLM detailed the requirements for the preparation and loading freight for transport, which was available to customers through an online portal. However, PN did not have any process in place to inform customers when they had a responsibility under the FLM or to ensure that they complied with the appropriate requirements. Consequently, in this case, the customer was not aware of the need to advise PN that the container had been modified. Further, as the FLM was applicable to all freight travelling on PN trains, the absence of a process potentially had broader implications.

### **Internal training**

The FLM indicated that terminal operators, including inspection staff, were responsible for checking the security of locking systems on non-standard or modified containers. However, the operator's training course for the loading and security of freight did not reinforce the FLM requirements as it did not include any reference to this obligation.

In addition, when inspection staff were being checked on their ability to conduct the FX inspection (verification of competency), there was no requirement to assess if the inspector was able to identify a non-standard or modified container and what follow-on actions were required.

The terminal operator had access to the requirements through the FLM and it was unknown if he had participated in the training course. Therefore, it could not be determined if the lack of reference to these types of containers in the training and during the periodic assessment contributed to the operator not identifying the modified container during the FX inspection in this instance.

Despite this, the FX inspections form the last line of defence to prevent unsafe non-standard or modified containers from being allowed onto the network where they may result in significant risk to other trains, infrastructure and passenger services. Consequently, this removed an opportunity for the requirements to be reinforced and practiced during training and regular checking of inspection staff. The opportunity for practice was of particular importance given that these containers were relatively uncommon and therefore, the required process was not applied on a regular basis.

## Findings

From the evidence available, the following findings are made with respect to the track obstruction due to the loss of freight involving train 7WB3 and subsequent impact of passenger service NT32 with a track obstruction on the Wilson River Bridge, south of Telegraph Point, New South Wales, on 17 June 2018. 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 factors

- The awning on a modified container that was being carried on a freight train separated after opening in transit and striking a bridge, obstructing the track on the bridge. A passenger train struck it, damaging brake equipment on the leading bogie.
- The awning on the modified container was only held closed by spring-loaded bolts accessed from the inside without a mechanism for applying a lock. This was not compliant with the Pacific National Freight Loading Manual, which required a locking system that was externally visible to assure openings remained secure and enable examination by inspection staff.
- Terminal staff did not identify that the awning on the container did not have externally visible locks during inspections prior to departure from the yard. This was likely due to them not identifying that the container was modified.
- The container was modified to include a large side opening awning on one side. The organisation requiring transport of the container were not aware of the requirement to notify Pacific National that it was modified. Consequently, this removed an opportunity for Pacific National to be aware of the need to assess the modifications against the Freight Loading Manual requirements.
- **While the Freight Loading Manual was available to customers, Pacific National did not actively advise them when they had a responsibility identified by the manual. Further, they did not have a process for ensuring that customers complied with the manual's requirements.** [Safety issue]

### Other factors that increased risk

- **Pacific National's training course for the loading and securing of freight, and their verification of competency checks for inspection staff, did not include the Freight Loading Manual requirements for non-standard and modified containers.** [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.

### Advise relevant external parties of container loading requirements and check for compliance

<b>Safety issue number:</b>	RO-2018-010-SI-01
<b>Safety issue owner:</b>	Pacific National Pty Ltd
<b>Operation affected:</b>	Passenger and freight train operations
<b>Who it affects:</b>	Pacific National and relevant external parties (customers)

#### **Safety issue description**

While the Freight Loading Manual was available to customers, Pacific National did not actively advise them when they had a responsibility identified by the manual. Further, they did not have a process for ensuring that customers complied with the manual's requirements.

#### **Proactive safety action**

<b>Action taken by:</b>	Pacific National Pty Ltd.
<b>Action number:</b>	RO-2018-010-NSA-022
<b>Action type:</b>	Proactive safety action
<b>Action status:</b>	Closed

**Safety action taken:** Pacific National have indicated that they have undertaken the following safety actions relating to this issue:

- Established the Freight Load Irregularity Prevention Network Group with representation from all freight business units. The group has a defined charter to reduce the number of load irregularity events for all freight product types including those involving non-standard or modified containers.
- Customer service personnel have reconfirmed with customers and loading contractors of containerised freight the requirements of the relevant Freight Loading Manual (FLM) parts. This specifically included the provisional load process (FLM 01-12), non-standard and modified containers (FLM 03-14), and associated container door security requirements.
- Developed a third party freight loading assurance auditing program for customer sites to monitor FLM compliance and performance.
- Developed and implemented an online course for the FLM as part of the awareness of the freight loading manual module. The course is available to customers and third party loading operators.

#### **Status of the safety issue**

<b>Issue status:</b>	Adequately addressed
----------------------	----------------------

**Justification:** The ATSB is satisfied that Pacific National has developed and implemented processes, which increase customer awareness of, and compliance with their Freight Loading Manual requirements.

## Education on loading and inspection of modified containers

**Safety issue number:** RO-2018-010-SI-02  
**Safety issue owner:** Pacific National Pty Ltd  
**Operation affected:** Freight terminal operations  
**Who it affects:** Pacific National inspection staff

### ***Safety issue description***

Pacific National's training course for the loading and securing of freight, and their verification of competency checks for inspection staff, did not include the Freight Loading Manual requirements for non-standard and modified containers.

### ***Proactive safety action***

**Action taken by:** Pacific National Pty Ltd.  
**Action number:** RO-2018-NSA-023  
**Action type:** Proactive safety action  
**Action status:** Closed

**Safety action taken:** Pacific National have indicated that they have undertaken the following safety actions relating to this issue:

- Trialling a change to their transport management system, which triggers mandatory checks by Pacific National inspectors at any terminal where a non-standard or modified container enters.
- Updated training and checking packages CC395 (formerly PNE0001) 'Basic Freight – Load and secure freight', and verification of competence for train inspection (VOCFX), to include detail in relation to the Freight Loading Manual (FLM) requirements for non-standard or modified containers and container door security.
- Developed and implemented an online course for the FLM as part of the awareness of the freight loading manual module. The course is required for employees identified with load securing responsibility and available to all relevant employees, customers and third party loading operators.

### ***Status of the safety issue***

**Issue status:** Adequately addressed  
**Justification:** The ATSB is satisfied that Pacific National has developed and implemented processes to ensure that terminal operators are trained in, and practice their Freight Loading Manual requirements.

## Additional safety actions

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence

### ***Pacific National***

#### ***Transportation of containers***

As a result of this incident, Pacific National have made changes to how non-standard and modified containers are transported. Only their major freight terminals that are staffed by Pacific National employees will be accepting these containers for transport.

***Load incident management procedure***

Pacific National have reviewed and updated their load incident management procedure to ensure all load irregularity events are accurately identified, captured and investigated to ensure learnings are shared. Awareness packages have also been delivered to all Pacific National stakeholders as part of the change management program with the implementation of the revised procedure.

# General details

## Occurrence details

Date and time:	17 June 2018 – 1309 EST	
Occurrence category:	Incident	
Primary occurrence type:	Collision with obstruction - Railway-related object	
Location:	Wilson River Bridge 470.5 km, Telegraph Point, New South Wales	
	Latitude: 31° 19.747' S	Longitude: 152° 46.953' E

## Train 1 details

Train operator:	Pacific National	
Registration:	7WB3	
Type of operation:	Freight	
Departure:	Wollongong, New South Wales	
Destination:	Brisbane, Queensland	
Persons on board:	Crew – 2	Passengers – N/A
Injuries:	Crew – 0	Passengers – 0
Damage:	Nil	

## Train 2 details

Train operator:	NSW Trains	
Registration:	NT32	
Type of operation:	Passenger	
Departure:	Brisbane, Queensland	
Destination:	Sydney, New South Wales	
Persons on board:	Crew – Unknown	Passengers – Unknown
Injuries:	Crew – 0	Passengers – 0
Damage:	Minor	



# Sources and submissions

## Sources of information

The sources of information during the investigation included the:

- Australian Rail Track Corporation
- Pacific National
- New South Wales Trains
- Port Shipping Containers.

## References

Standards Australia. (2000). *AS 3711.9-2000 Freight containers – Part 9: Coding, identification and marking*. Standards Australia International Ltd: Strathfield, New South Wales.

International Maritime Organisation. (1972). *International convention for safe containers (CSC)*. Retrieved from [www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-Safe-Containers-\(CSC\).aspx](http://www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-Safe-Containers-(CSC).aspx)

## 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 Pacific National, Port Shipping Containers, New South Wales TrainLink, Australian Rail Track Corporation and the Office of the National Rail Safety Regulator.

A submission was received from Pacific National. The submission was reviewed and, where considered appropriate, the text of the report was amended accordingly.

# Australian Transport Safety Bureau

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; 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 ATSB's 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.

## 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.

## Terminology used in this report

**Occurrence:** accident or incident.

**Safety factor:** an event or condition that increases safety risk. In other words, it is something that, if it occurred in the future, would increase the likelihood of an occurrence, and/or the severity of the adverse consequences associated with an occurrence. Safety factors include the occurrence events (e.g. engine failure, signal passed at danger, grounding), individual actions (e.g. errors and violations), local conditions, current risk controls and organisational influences.

**Contributing factor:** a factor that, had it not occurred or existed at the time of an occurrence, then either:

- (a) the occurrence would probably not have occurred; or
- (b) the adverse consequences associated with the occurrence would probably not have occurred or have been as serious, or
- (c) another contributing factor would probably not have occurred or existed.

**Other factors that increased risk:** a safety factor identified during an occurrence investigation, which did not meet the definition of contributing factor but was still considered to be important to communicate in an investigation report in the interest of improved transport safety.

**Other findings:** any finding, other than that associated with safety factors, considered important to include in an investigation report. Such findings may resolve ambiguity or controversy, describe possible scenarios or safety factors when firm safety factor findings were not able to be made, or note events or conditions which ‘saved the day’ or played an important role in reducing the risk associated with an occurrence.