



# Signal Passed at Danger - Gloucester, NSW

11 March 2008

The Australian Transport Safety Bureau (ATSB) is an operationally independent multi-modal Bureau within the Australian Government Department of Infrastructure, Transport, Regional Development and Local Government.

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.

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

ATSB investigations are independent of regulatory, operator or other external bodies. It is not the object of an investigation to determine blame or liability.

© Commonwealth of Australia 2008

This work is copyright. In the interests of enhancing the value of the information contained in this publication you may copy, download, display, print, reproduce and distribute this material in unaltered form (retaining this notice). However, copyright in the material obtained from non-Commonwealth 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.

Subject to the provisions of the *Copyright Act 1968*, you must not make any other use of the material in this publication unless you have the permission of the Australian Transport Safety Bureau.

Please direct requests for further information or authorisation to:

Commonwealth Administration, Attorney-General's Robert Garran National BARTON	Copyright Law Branch Department Offices Circuit 2600
--	---

[www.ag.gov.au/cca](http://www.ag.gov.au/cca)

Australian Transport Safety Bureau  
PO Box 967, Civic Square ACT 2608  
Australia  
1800 621 372  
[www.atsb.gov.au](http://www.atsb.gov.au)

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

## Abstract

At 0750 on 11 March 2008 a northbound freight train, numbered 2WB3, passed the outer home signal at red without authority at Gloucester, NSW. Gloucester is located about 140 km north of Broadmeadow (suburb of Newcastle) on the main Sydney to Brisbane rail line. There were no injuries or damage as a result of this incident.

## FACTUAL INFORMATION

### Train 2WB3

Train 2WB3 was owned and operated by Pacific National Pty Ltd (PN) and was conveying steel products from Morandoo (Newcastle) to Acacia Ridge (Brisbane). The train had originated at Whyalla, SA, several days earlier and had attached and detached wagons at several locations on the way. At each of these locations (including Morandoo) the train was inspected by a train examiner who then issued a Train Inspection Certificate before departure. This certified that the mechanical condition of the train, including the operation of the brakes, was to specification.

On departure from Morandoo train 2WB3 consisted of three NR class locomotives hauling 68 wagons for a gross weight of 5119 tonnes<sup>1</sup> and a length of 1265 m. The maximum permissible speed of the train was 80 km/h.

### Traincrew 2WB3

The crew of train 2WB3 consisted of two drivers, both of whom had extensive experience in train operations. One driver was qualified in the Morandoo to Taree route; the other driver was in the process of learning this route.

The driver at the controls of train 2WB3 at the time of the SPAD<sup>2</sup> had about 28 years experience in freight train driving. He was the driver who was being taught the route. However, he had been previously qualified over this corridor and had driven trains between Morandoo and Taree from the early 1970s until the early 1990s. Between this time and when he returned to the Newcastle area in May 2004, longer and heavier trains had been introduced between Sydney and Brisbane<sup>3</sup>. He had worked over this corridor intermittently since May 2004.

The driver providing the tuition had about 11 years experience in freight train driving and had been qualified on the Morandoo to Taree route for about six months before the incident. During this time he estimated that he had averaged four to five trips over the route per month.

A review of both driver's qualifications and medical records established that they met all of the relevant requirements. In terms of previous SPAD incidents, the driver providing the tuition had one SPAD incident at a shunting yard in Sydney about eight years earlier; the other

1 The maximum through load for a freight train hauled by three locomotives between Morandoo and Acacia Ridge is 5400 tonnes.

2 SPAD-Signal Passed at Danger

3 Before the mid 1990s the average train length between Morandoo and Grafton was about 500 metres, the longest about 700 metres.

driver had never been involved in a SPAD incident.

## Management of the rail corridor

The rail corridor between Maitland<sup>4</sup> and the NSW/Queensland Border is managed by the Australian Rail Track Corporation (ARTC) in accordance with the terms of a 60 year lease agreement with the State Rail Authority of NSW (StateRail) and the Rail Infrastructure Corporation (RIC).

Operational management of the rail corridor is undertaken from the ARTC Network Control Centre at Broadmeadow. The ARTC network rules and procedures applicable to the corridor basically mirror those of the RIC in that the rule numbers are retained but the prefix lettering is amended<sup>5</sup>.

The passage of trains through Gloucester is controlled by the network controller stationed at the North Coast 'A' Board<sup>6</sup>.

The network controller at the North Coast 'A' Board at the time of the SPAD had about 22 years experience in rail operations from base 'traffic' grades through to station master. He had been a network controller at the Broadmeadow train control centre for a little over 12 months. A review of his qualifications and medical records established that he met all of the relevant requirements.

## Gloucester

Gloucester is an unattended station that consists of a main line, a crossing loop capable of accommodating a 590 m train, and a 'goods siding'. The passage of trains through Gloucester is controlled on site by 'colour light running signals' that operate in conjunction with the safeworking system known as Rail Vehicle Detection (RVD)<sup>7</sup>. The colour light signalling at

Gloucester consists of distant, outer home, home and starting signals in the Up (southbound) and Down (northbound) directions. The Up and Down outer home signals mark the Gloucester station yard limits.

In addition, location signs are situated about 2.5 km from both outer home signals. These location signs are an adjunct to the colour light running signals and, in RVD territory, are intended to warn traincrew that they are approaching a signalled location.

## The occurrence

Both drivers signed on duty at 0305 on Tuesday 11 March 2008 at Morandoo to work train 2WB3 from Morandoo to Taree and then return to Morandoo by car. Their rostered sign off time was 1400.

At 0400 the train left Morandoo and continued normally until Stroud Road where it was held from 0626 until 0708 while three southbound trains were crossed. During this time the drivers changed over so that the driver who was learning the route would be at the controls for the remainder of the trip to Taree.

At 0643 the network controller on the 2300 to 0700 shift at the North Coast 'A' board issued a Track Occupancy Authority (TOA) to allow a track gang to undertake work between Gloucester and Bulliac station. Bulliac is about 15 km north of Gloucester. A TOA authorises occupation of a section of track within specified limits for an agreed time. One of the tasks that the network controller must undertake before issuing a TOA is to ensure that blocking facilities have been applied in order to prevent the entry of rail traffic into the occupancy limits.

In this instance, the Gloucester Down outer home signal was held at red and blocking facilities applied at the Broadmeadow Train Control Centre in accordance with this requirement.

After the departure of 2WB3 from Stroud Road at 0708 both drivers said that a routine run was experienced over the 37 km to Gloucester, although intermittent patches of fog were encountered at regular intervals. They also said that the train was a 'good runner' and that, on the two occasions that the train air brake had

---

4 Suburb of Newcastle.

5 For example, RIC rule NSG 606 'Responding to signals and signs' is identical to ARTC rule ANSG 606 'Responding to signals and signs'.

6 The North Coast A Board controls the section of track from Telarah to Kempsey; a distance of about 310 km.

7 RVD – consisting of track-circuiting or axle counters.

been used (in lieu of dynamic brake), it had braked well.

As the train approached Gloucester, full power was needed until the train crested a bank that is several kilometres from the station. Power was then shut off at what the drivers described as their normal 'shut off' point for a train of this length and weight. Both drivers said that by this time they were back in a patch of fog and that visibility was reduced to between 100 and 150 m. Dynamic brake was then selected and gradually increased to the maximum amount to hold the train within the permitted speed limit of 70 km/h down the grade into Gloucester.

Both drivers said they then sighted the distant signal (through the fog) when they were about 100 to 150 m away; it was displaying a yellow (restricted) aspect. The driver at the controls said he immediately made a service brake application and retained full dynamic brake. At the same time, the co-driver (tutoring driver) called for him to "get a hold of it". Further brake-pipe reductions were quickly made and full dynamic brake was retained on the three locomotives. However, the speed was not reducing quickly enough so an emergency application of the train brake was made.

Moments after the emergency brake application both drivers saw the outer home signal at red (when about 100 m away) and knew that they were not going to stop in time. The outer home signal was passed at red shortly after.

Once the train had stopped, they were still able to see the back of the outer home signal from the locomotive. They saw that that they were three locomotives and five wagons past the signal; a distance of about 140 m. The time was just after 0750.

Both drivers said that they felt some shock as a result of the incident. After a couple of minutes, the co-driver placed a call to Broadmeadow train control to tell the network controller that they had passed the outer home signal at Gloucester at red. The network controller (who had signed on at 0700) then asked them to confirm what signal indication the outer home signal was displaying when they passed it. The

co-driver repeated that it was at red<sup>8</sup>. The network controller then told them to stand by. Several minutes later he called back with instructions that the train was not to be moved until further notice.

The network controller said that a visual and audible SPAD alarm activated at his work station at about 0750:00. Shortly after this he received a call from a track worker to fulfil the Gloucester to Bulliac TOA. His recollection was that he had completed this task a short time before he was advised of the SPAD by the co-driver of train 2WB3.

When train 2WB3 came to a halt it was blocking the Phillips Street level crossing 68 m to the north of the outer home signal<sup>9</sup>. As such, the train had to be reversed by about 80 m to clear the level crossing. At 0911 a Special Proceed Authority (SPA) was issued by the network controller that authorised train 2WB3 to set back and clear the road. The driver who was under route tuition then walked to the rear of the train to pilot the reverse movement and by 0931, the train was clear of the Phillips Street level crossing.

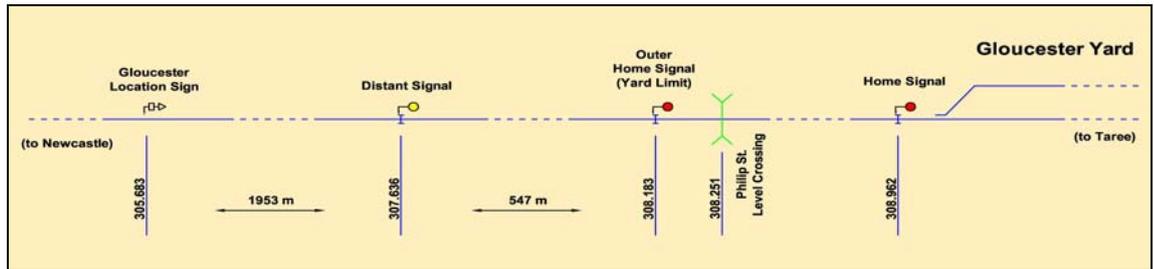
**Figure 1: Outer home signal and Phillips Street level crossing.**



<sup>8</sup> This is a standard practice aimed at ensuring that a 'wrong side failure' has not occurred. In the event of a wrong side failure the signal would incorrectly display a proceed aspect.

<sup>9</sup> Road traffic at the Phillips Street level crossing is passively controlled; the passage of vehicles across the rail line is controlled by 'Stop' signs in conjunction with the relevant road rules.

Figure 2: Site diagram



During the time that train 2WB3 was stationary (one hour and 41 minutes) several motorists walked to the locomotive to ask the drivers when the level crossing would be cleared.

At 0940 both drivers were breath tested for alcohol on site by the police with negative results. At about the same time, the Pacific National Driver Specialist from Taree<sup>10</sup> arrived to drive train 2WB3 to Bulliac. The train left Gloucester at 1002 and arrived at Bulliac at about 1030. Both drivers were then relieved by a 'fresh crew'.

The two drivers then drove a car back to Morandoo where they were tested for the presence of illicit drugs and interviewed by PN management. The results of the drug tests were negative.

The network controller was not tested for the presence of alcohol or drugs, however there was no evidence to suggest that at the time of the incident he was in any way impaired.

The drivers and the network controller said at interview that they felt alert and well in the lead up to the SPAD incident. Their 72 hour history in terms of work/sleep patterns and personal/domestic issues gave no indication of the presence of factors such as fatigue or stress.

## ANALYSIS

The ATSB was advised of the SPAD at Gloucester two days after the incident (on the morning of 13 March 2008). An investigator was subsequently dispatched to Newcastle where interviews were conducted with the train crew, network controller and various management personnel from PN and the ARTC.

Because there was no indication of driver or network controller impairment or degraded train braking performance, the analysis focuses on the actions of the two train drivers and the network controller, the events following the incident and the applicable network rules and procedures.

## Sequence of events analysis

### NR 78 Data Logger examination

In order to determine the events before and after the SPAD, the data obtained from the data logger of the leading locomotive NR 78 was examined. In the context of this examination it is pertinent to note that there is 547 m between the down distant and the down outer home, the approach to both signals is on a 1:80 down hill grade and that signal sighting distance for the down distant signal in clear weather (day or night) has been estimated at between 200 and 250 metres (see figure two).

The examination of this data revealed that:

- At 0749:15, when the leading end of NR 78 was 405 m from the distant signal and 952 m from the outer home signal, the speed was 69 km/h and the locomotive's dynamic brake effort was increasing.
- The first sign of a brake-pipe pressure reduction, indicating an application of the train brakes, was 17 seconds later at 0749:32. At this time NR 78 was 76 m from the distant signal and 623 m from the outer home signal and still travelling at 69 km/h.
- For the next 25 seconds (until 0749:57) dynamic brake was retained and brake-pipe pressure and speed continued to reduce to 386 kPa and 59 km/h respectively.

<sup>10</sup> Essentially the PN Taree driver depot manager.

- Three seconds later, at 0750:00, the brake-pipe pressure fell rapidly to 27 kPa, the dynamic brake effort was zero and the independent (locomotive) brakes were beginning to apply. This indicates that, at or about 0750, an emergency brake application was made<sup>11</sup>. At this time the leading end of NR 78 was 113 m from the outer home signal.
- At 0750:08, NR 78 passed the outer home signal at 45 km/h with the brake-pipe pressure almost at zero and the independent brake fully applied.
- At 0750:31 NR 78 stopped 141 m past the outer home signal.

#### *Drivers' actions*

The data obtained from the data logger of NR 78 corroborated the drivers' account of the incident, particularly in regard to their first sighting of, and immediate reaction to, the distant signal. For example, if a 2.5 second reaction time<sup>12</sup> is added to the time of the first indication of brake-pipe reduction at 0749:32, then the leading end of NR 78 was 124 m from the outer home signal<sup>13</sup> (consistent with the drivers estimation of 100 to 150 m).

The emergency brake application was not recorded until 0750:00 when NR 78 was 113 m from the outer home signal. Although this action was late in the sequence of events, it must be noted that an emergency application of the train brake will not increase the braking effort of the train once an equalised full service brake reduction (about 150 kPa reduction of the brake-pipe) has been attained. Depending on

the size and power configuration<sup>14</sup> of a train, an equalised full service brake-pipe reduction and retention of full locomotive dynamic brake will sometimes produce the quickest rate of deceleration. However, in this instance an equalised full service reduction was not quite achieved prior to the emergency brake application.

Given the distance that train 2WB3 passed the outer home by (141 m), it is debatable whether an emergency brake application at the first sighting of the distant signal would have prevented the SPAD<sup>15</sup>. Likewise, even if the weather had been clear and driver reaction to the caution distant signal indication had been immediate, it is debateable whether the additional 100 to 150 m 'clear weather' sighting distance would have prevented the SPAD.

#### *Network control centre data logs*

The CTC logs, voice logs and alarms (including SPAD alarms) are all synchronised. The CTC log recorded the time of the SPAD at Gloucester as 0750:10. The locomotive event recorder shows train 2WB3 passing the Gloucester outer home signal at 0750:08. This comparison illustrates a close time alignment of the two separate sources of data.

The SPAD alarm is a visual and audible alarm that activates at the relevant network controller's workstation.

---

11 In the emergency position all brake-pipe air is rapidly exhausted to atmosphere, dynamic brake cuts out and the independent brake fully applies.

12 A reaction time of 2.5 seconds is commonly used for purposes such as highway design manuals, level crossing sight distance calculations and so on. A figure of 2.5 seconds is typically applied to ensure that sufficient reaction time is allowed for the majority of persons.

13 Distance travelled in 2.5 seconds at 69 km/h is almost 48 m. (This distance in addition to 76 m equals 124 m.)

---

14 The NR class locomotives have an extended range dynamic brake which means that the braking effort does not reduce markedly until below about 15 km/h.

15 This observation is for comparative purposes only. An emergency brake application should, in normal operations, never have to be the first response to a signal displaying a caution aspect.

**Figure 3: Example of visual SPAD alarm at Broadmeadow Train Control Centre**



It has been confirmed, both at interview with the network controller and by the examination of the CTC logs, that the SPAD alarm operated as intended at 0750:10. At 0750:32 the network controller answered a call from a track worker requesting the fulfilment of the TOA between Gloucester and Bulliac that was granted at 0643. The TOA was fulfilled at 0750:39 (recorded by the network controller as 0750:00) and the transmission between the track worker and the network controller finished at 0751:36. At 0753:13 the network controller answered the call from train 2WB3 and, 11 seconds later at 0753:24, was told by the driver that they had passed the outer home signal at Gloucester at stop. This was 3 minutes and 14 seconds after the SPAD.

#### *Response to SPAD*

The examination of voice and CTC logs has confirmed that the network controller made no attempt to contact train 2WB3 at the sounding of the SPAD alarm. At interview, he said that because train 2WB3 was (only) occupying the track circuit beyond the outer home signal that, in his mind, he 'knew' it was stationary. He also said that if the next track circuit beyond the home signal had showed as occupied that he would have initiated a call to the driver of train

2WB3. In this instance he said he was about to contact the drivers when they called in.

At interview the drivers said they felt some shock immediately after the incident and that, after an initial assessment of the situation, network control was contacted with advice of the SPAD.

#### **Previous SPAD, Gloucester**

On 16 September 2007 train 7MB4 passed the down outer home signal at Gloucester at stop without authority by about 20 m. Train 7MB4 weighed 2463 tonnes and was 1152 m long. The time of the SPAD was 1633 and the weather was clear.

The data logger from the lead locomotive (NR 76) recorded that train 7MB4 was travelling at the permitted speed of 70 km/h under full dynamic brake. About 33 m from the Down distant signal an application of the train brake was made and dynamic brake was retained (the driver of train 2WB3 took similar action when 124 m from the same signal). In this instance though, a service application of the train brake and full dynamic brake were retained in lieu of an emergency application of the train brake.

Even though train 7MB4 was only about half of the weight of train 2WB3, the Down outer home signal was still passed at stop by about 20 m.

The PN investigation into this incident also ruled out driver impairment and train braking performance as contributors to the incident. The investigation also revealed that the network controller failed to contact the train drivers as a first response to the SPAD.

#### **Network rules and procedures**

##### *Signals and signs*

Distant signals are provided to give an advance indication of what the outer home or home signal is displaying. A colour light distant signal can display a green (clear) or yellow (restricted) indication only. A three position home or outer home signal can display a green, yellow or red (stop) indication. If a distant signal is green, the driver knows that the next signal in advance will be showing a proceed aspect. If yellow, the

driver knows that the next signal in advance may be at stop. The distant signal is the only advance indication that the train driver receives of what aspect an outer home or home signal may be displaying.

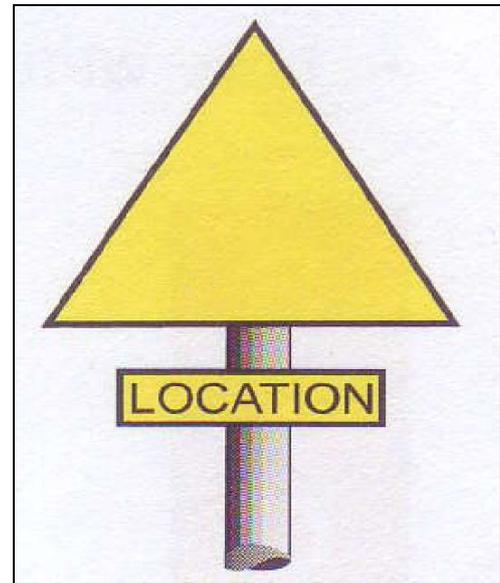
Figure 4: Down distant signal at Gloucester



There are a number of signs/boards that act as an adjunct to colour light signals in RVD territory. In general terms, the signs pertaining to freight trains had their genesis in the introduction of longer and heavier trains in the mid 1990s. They were installed at stations where the braking distance between the distant and home signals at maximum track speed was considered insufficient and a regulated or cautious approach was necessary.

Location signs are currently provided at Gloucester, 2.5 km from the Up and Down outer home signals.

Figure 5: Example of a location sign



Rule ANSG 606 of the ARTC's network rules, *Responding to Signals and Signs*, refers to these signs and reads:

WARNING

Approaching a signalled location.

PROCEED being prepared to respond to the next signal. If the first signal ahead shows CLEAR, normal speed may be continued.

Other than indicating that the train is approaching a signalled location (in RVD territory), the wording of rule ANSG 606 seems unclear. For example, regardless of whether a location board is present or not, trains must always be driven while being prepared to respond to the next signal. The train is then driven according to the indication of that signal. This is a basic safeworking premise.

The rules pertaining to other signs/boards that are relevant to freight trains approaching signalled locations have specific instructions aimed at ensuring a regulated or cautious approach to a signalled location. A past and current example follows.

Superseded Rail Access Corporation (RAC) circular 402 (special) of March 1998 referred to location boards (in lieu of location signs) and, at the last paragraph contained the following instruction:

When a train passes a location board, the driver must continue to control the speed of the train being prepared to stop, if necessary, at the home, outer home or accept home signal.

Although this RAC circular is superseded, it is clear that the driver was specifically instructed to regulate the speed of the train such that a stop could be made at the outer home or home signal if necessary.

Current rule ANSG 604, *Indicators and Signs*, refers to advisory speed signs. The pertinent portion of this rule reads:

Advisory speed signs are provided where there is not enough signal sighting distance to allow trains to stop if required at the second signal ahead...and have yellow text on a blue reflective background for freight trains exceeding 1150 m.

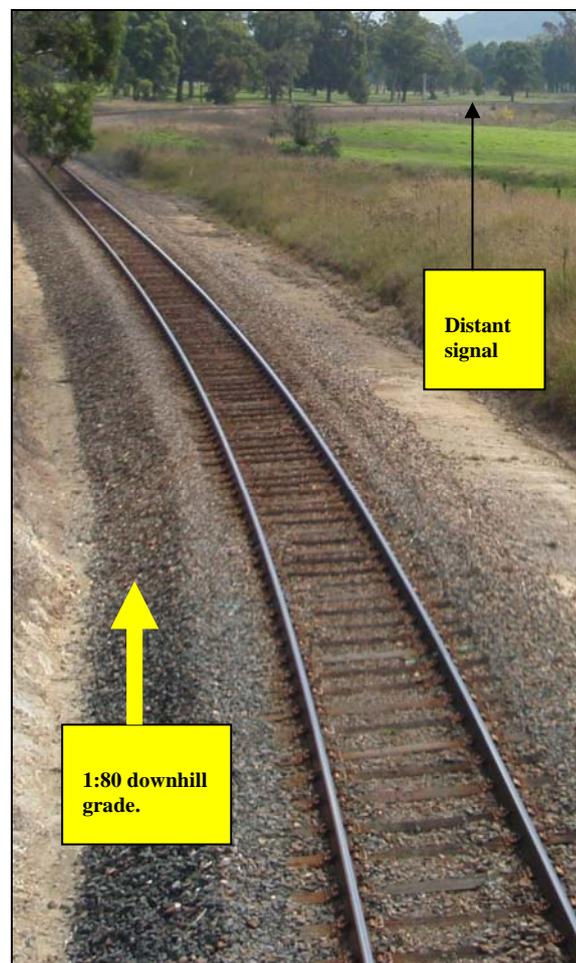
Drivers must reduce train speed so that the train is travelling at the indicated speed before the front of the train reaches the first signal ahead. If the first signal ahead shows FULL CLEAR, normal speed may be resumed.

Again, these instructions are specific in that they set an approach speed of a train that is over 1150 m in length<sup>16</sup>.

Of note is that track and signal diagrams and route standards documentation refer to a 55 km/h advisory speed sign being located 374 m south of the Down distant signal at Gloucester. However, this advisory speed sign was removed some time before the ARTC took over the management of the corridor in September 2004. Evidence from drivers who had worked this corridor since the 1990s confirmed that this advisory speed sign was in place some years ago.

The provision (previously) of an advisory speed sign 374 m from the Down distant signal at Gloucester would imply that the sum of the sighting distance of the Down distant signal and the distance between the distant and outer home signals (200 - 250 m + 547 m) was not considered to be within 'braking distance' for larger freight trains travelling at the permitted track speed of 70 km/h.

Figure 6: Approach to the Down distant signal at Gloucester



Trains are driven up to several kilometres 'in advance' even in conditions of reduced visibility and, as such, safeworking and signalling systems are provided to give advance notification to train drivers. In short, there is no room for 'second guessing' what an authority or signal indication may be without an advance indication of some sort. Therefore, the placement of the distant signal needs to be at the track speed braking distance from the outer home (or home) signal. If this is not so, it is essential that alternate measures are in place to ensure that train speed is such that a routine stop can be made in the distance available.

#### *SPAD management procedures*

The ARTC safety procedure *Signals Passed at Danger and Limit of Authority Over-run Management* issue O.A 05 October 2004 is the safety procedure to be used by the Broadmeadow Network Control Centre in the

<sup>16</sup> It is unknown how the figure of 1150 m was chosen. The braking performance of a train is not influenced by length alone.

event of a SPAD. Section six of this procedure deals with the initial response to a SPAD. The first paragraph of section six reads:

On the report of a SPAD from the train crew or other person, the train controller/network controller and the train crew shall protect against any danger with other services and/or road traffic.

Having established this important element, the procedure then goes on to deal with reporting and managing the incident at the ARTC and train operator level.

However, the procedure does not deal with the actions of a network controller when they become aware that a SPAD has occurred. That is, it does not instruct the network controller to contact the train crew with an emergency message directing them to stop the train. This appears to be inconsistent with the applicable network rule ANSG 612, *Overrun of limit of authority*, the pertinent portion of which reads:

The network controller must:  
stop rail traffic that has overrun its limit of authority and has not stopped and,  
stop and prevent other movements that are at risk...

Rule ANSG 612 also deals with the train driver's response to an overrun. In this regard it reads:

Responding to overrun of limit of authority  
Drivers or track vehicle operators who find they have overrun a limit of authority must immediately:  
stop their trains or track vehicles  
tell the network control officer.

It is critical that rule ANSG 612 is followed. For example, if a driver has missed a signal completely or mis-read a signal then they will be unaware that they have passed it at stop. Therefore, without intervention, the train is likely to continue and the safety of train operations will be compromised. Similarly, a train controller does not always receive notification that an overrun of a safeworking authority has occurred (train order territory, automatic signals etc). Therefore, if the train crew is aware that they have exceeded an authority it is imperative that train control be notified so that other movements that are at risk can be stopped.

#### *Movement of train 2WB3*

Train 2WB3 was stationary across the Phillips Street level crossing for one hour and 41 minutes and blocked the road for this lengthy period of time.

ARTC safety procedure, *Signals Passed at Danger and Limit of Authority Over-run Management*, also reads:

Where it has been established that the SPAD was caused by train crew error the movement shall be given a train authority to move at low speed to a location where other movements may be able to cross or pass. Once the movement has come to a stand at this location it shall not be permitted to proceed until such time as the train crew involved in the accident has been relieved of duty (if applicable).

Pacific National Procedure Industrial Products Division has a generic procedure titled *Management of Employees Following an Incident*.

This procedure is used when a SPAD occurs and mandates a number of actions when it has been confirmed that the incident was or may have been caused by employee error. Issues such as relieving the crew from safeworking and operational duties, alcohol and drug testing are all dealt with. However, this procedure, like the relevant ARTC procedure, does not prohibit the movement of a train from the incident location.

Of note is that after the SPAD involving train 7MB4 on 16 September 2007, the driver was given permission to proceed to Bulliac after only four minutes. The two drivers were then relieved from operational duties at Bulliac.

The ARTC procedure, *Signals Passed at Danger and Limit of Authority Over-run Management*, makes a valid reference to protecting against any danger with other traffic or road traffic. The risk of a motor vehicle colliding with a stationary train that is obstructing a passive level crossing increases with the length of time that the level crossing is obstructed, particularly in times of reduced visibility.

Given the ARTC and Pacific National procedures, there was no reason why train 2WB3 could not have been moved back earlier to clear the Phillips Street level crossing or

alternatively have been driven at low speed to Bulliac crossing loop.

## FINDINGS

### Context

At 0750 on 11 March 2008 a northbound freight train, numbered 2WB3, passed the outer home signal at red (SPAD) without authority at Gloucester, NSW. There were no injuries or damage as a result of this incident.

Based on available evidence, the following findings are made with respect to the SPAD but should not be read as apportioning blame or liability.

### Contributing safety factors

- There was insufficient sighting distance of the Down distant signal and insufficient distance between the Down distant signal and Down outer home signal at Gloucester to allow train 2WB3 to stop at the Down outer home signal from the permitted track speed of 70 km/h. *[Safety issue]*

### Other safety factors

- Communication between network control and the train drivers immediately following the SPAD was not in accordance with network rule ANSG 612.
- ARTC procedures for managing limit of authority over-runs by trains appear to be inconsistent with the applicable network rule as they do not mandate an immediate emergency call from the train control centre to the train crew as the first response. *[Safety Issue]*
- Train 2WB3 was not moved clear of the Phillips Street level crossing in a timely manner after the SPAD in accordance with the relevant procedures.

## SAFETY ACTION

The safety issues identified during this investigation are listed in the Findings and Safety Actions 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.

All of the responsible organisations for the safety issues identified during this investigation were given a draft report and invited to provide submissions. As part of that process, each organisation was asked to communicate what safety actions, if any, they had carried out or were planning to carry out in relation to each safety issue relevant to their organisation.

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.

## Australian Rail Track Corporation

### *Sighting distance*

#### Safety Issue

There was insufficient sighting distance of the Down distant signal and insufficient distance between the Down distant signal and Down outer home signal at Gloucester to allow train 2WB3 to stop at the Down outer home signal from the permitted track speed of 70 km/h.

#### **ATSB safety recommendation RR2008003SR004**

The Australian Transport Safety Bureau recommends that the Australian Railway Track Corporation takes action to address this issue.

### *Emergency call*

#### Safety Issue

ARTC procedures for managing limit of authority over-runs by trains appear to be inconsistent with the applicable network rule as they do not mandate an immediate emergency call from the train control centre to the train crew as the first response.

### **ATSB safety recommendation RR2008003SR005**

The Australian Transport Safety Bureau recommends that the Australian Railway Track Corporation takes action to address this issue.

### **SUBMISSIONS**

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

A draft of this report was provided to:

- Australian Rail Track Corporation
- Pacific National Pty Ltd (Asciano Ltd)
- The drivers of train 2WB3
- The network controller, Broadmeadow Train Control Centre

A submission in response to the draft report was received from the Australian Rail Track Corporation. This submission was reviewed and, where considered appropriate, the text of the report was amended accordingly.