Report 08-108, express freight Train 845, track warrant overrun, Reefton–Cronadun, 13 August 2008

The Transport Accident Investigation Commission is an independent Crown entity established to determine the circumstances and causes of accidents and incidents with a view to avoiding similar occurrences in the future. Accordingly it is inappropriate that reports should be used to assign fault or blame or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

The Commission may make recommendations to improve transport safety. The cost of implementing any recommendation must always be balanced against its benefits. Such analysis is a matter for the regulator and the industry.

Report 08-108

express freight Train 845

track warrant overrun

Reefton-Cronadun

13 August 2008

Figure 1
Location of incident

Contents

Figures

Abbreviations

KiwiRail	KiwiRail Limited
km	kilometre(s)
TWACS	track warrant assisted computer system
TWC	track warrant control
UTC	universal co-ordinated time

Data Summary

Train type and number:	express freight Train 845
Date and time:	13 August 2008 at 0941[1]
Location:	Reefton-Cronadun, Stillwater-Ngakawau Line
Persons on board:	locomotive engineer: one cab pass holders: 2
Injuries:	nil
Damage:	nil
Operator:	KiwiRail

[1] Times in this report are New Zealand Standard Times (UTC+12) and are expressed in the 24 hour mode.

Executive summary

On Wednesday, 13 August 2008 at 0941, express freight Train 845, a westbound Lyttelton to Ngakawau empty coal service, overran its track warrant limit at Reefton. The locomotive engineer continued to drive the train for a further 8.75 kilometres before he realised what had happened and stopped the train. There were no conflicting movements or track engineering occupations.

Two employees of the operator had been authorised to ride in the cab and were travelling with the locomotive engineer at the time to familiarise themselves with coal route operations. The investigation has determined that onboard discussion most likely distracted the locomotive engineer, meaning that he forgot the limit of his track warrant as it approached and passed.

While the cab pass holders were properly authorised and the passes carried contained appropriate warnings, the locomotive engineer was the only person available to give the information they needed to fulfil the purpose of their trip, which left him vulnerable to distraction. The operator has revised its procedures following its own investigation into this incident.

The Transport Accident Investigation Commission (the Commission) concluded that in spite of existing defences in the track warrant control system to prevent overruns, the system was still vulnerable to the weakest link, limitations of human performance. Previous safety recommendations the Commission has made about using advances in technology to mitigate the risk of track warrant overruns are equally applicable to this report.

1 Factual Information

1.1 Narrative

1.1.1 On Wednesday 13 August 2008, express freight Train 845 was a Lyttelton to Ngakawau empty coal service consisting of 2 DXC class locomotives operating in multiple hauling 26 empty coal wagons for a gross weight of 458 tonnes and a total train length of 417 metres. The lines on which Train 845 travelled were referred to as the coal route.

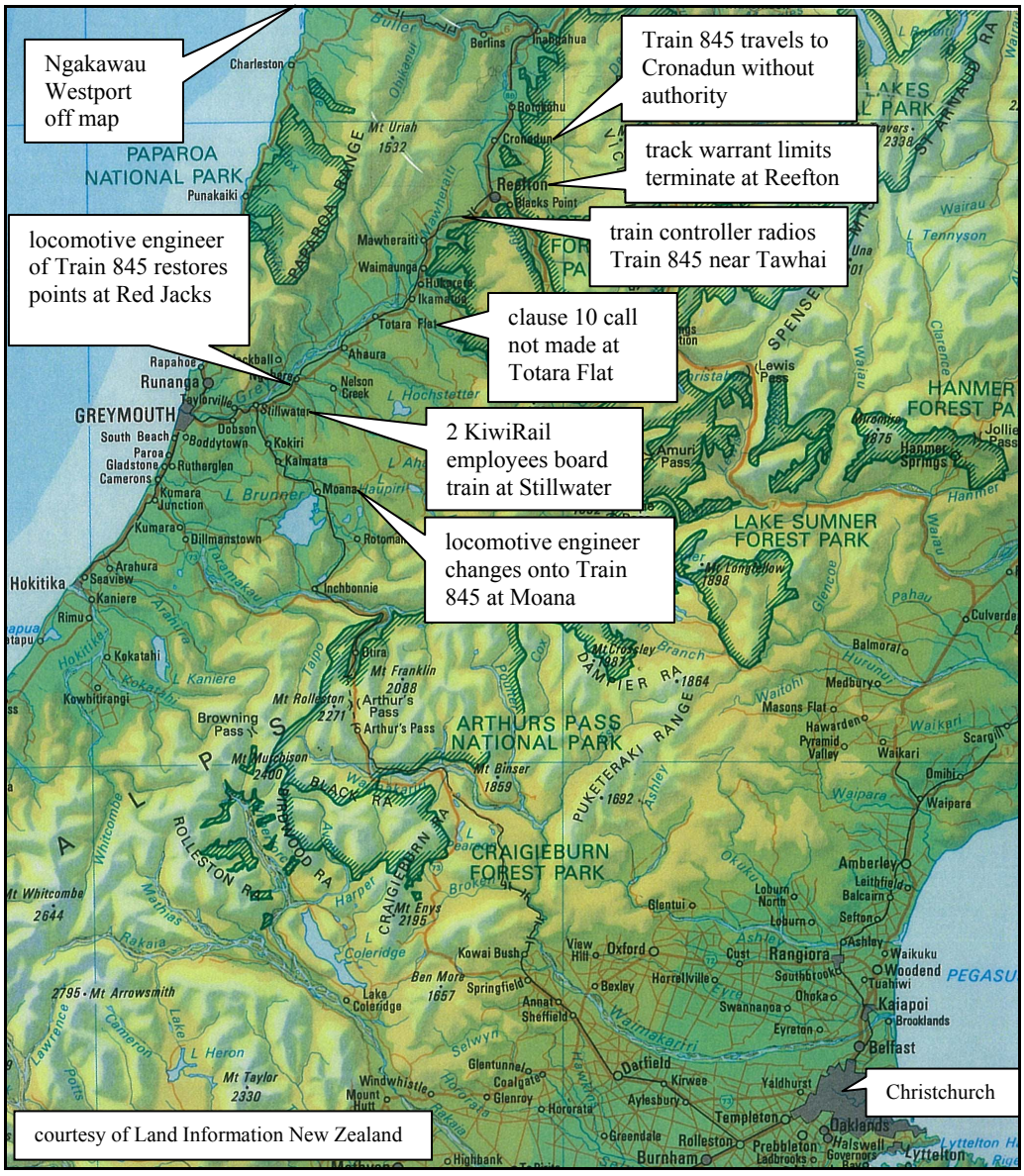

Figure 2
Coal route map showing pertinent locations

1.1.2 The locomotive engineer changed onto Train 845 at Moana, (see Figure 2) and obtained an operating instruction to travel through to Stillwater, about 33 kilometres (km) ahead. While Train 845 was still at Moana the train controller also issued a track warrant for it to proceed from Stillwater to the main line at Reefton only, because another train was running ahead of Train 845 and held authority, at that time, to occupy the section of track beyond Reefton. Instructions, contained in clause 10 of the track warrant, required the locomotive engineer to make radio calls[2] to the train controller, one at Stillwater and the other at Totara Flat.

1.1.3 While at Moana, the train controller instructed the locomotive engineer to also pick up 2 KiwiRail employees[3] at Stillwater. The employees held cab pass authority to travel with him to Westport. The employees will be referred to as cab pass holders through the remainder of this report.

1.1.4 The locomotive engineer stopped the train at Stillwater and the 2 cab pass holders boarded the cab and introduced themselves. The locomotive engineer said that he assumed they had been instructed on how they were to conduct themselves while in the cab. The locomotive engineer made his first clause 10 call to the train controller when he left Stillwater.

1.1.5 Shortly afterwards, the locomotive engineer stopped the train at Red Jacks in accordance with a clause 12 instruction on the track warrant and restored a set of main line points to the normal position to allow his train to travel over them correctly.

1.1.6 The locomotive engineer learned from the cab pass holders that they were on a field education trip and sensed they were seeking information regarding operational features on the line. Consequently the conversation levels increased as points of interest were discussed while the train passed through different locations.

1.1.7 The locomotive engineer forgot to make his second clause 10 call when he passed through Totara Flat. About 30 minutes later, the train controller radioed the locomotive engineer seeking his whereabouts, by which time Train 845 was approaching Tawhai, 24.4 km beyond Totara Flat. During this conversation, the locomotive engineer did not confirm with the train controller the limit of his track warrant as required by track warrant control (TWC) procedures, nor was he challenged by the train controller (see section 1.2).

1.1.8 The locomotive engineer said that he made his mandatory channel one radio call when he sighted the station warning board at Reefton. The mandatory channel-one calls were local calls only and were required to be made at every warrant station in TWC areas irrespective of the clause 10 calls, specified on the track warrant, which were also required to be made.

1.1.9 Shortly afterwards he saw the arrival signal displaying a caution, normal speed aspect that signalled his train to enter the station on the main line. However, during this time, the locomotive engineer and the 2 cab pass holders were discussing operational features at Reefton.

1.1.10 The locomotive engineer next saw the purple aspect on the trailing points indicator, which was a signal that told him the points from the loop were set for the main line, meaning that he was not required to stop and change the points. The locomotive engineer forgot that his track warrant terminated at Reefton and continued towards Cronadun without stopping.

[2] The calls were made on a shore-to-cab system that provided radio coverage over the majority of the controlled network. The system enabled 2-way communication between train controllers and operating staff such as locomotive engineers.
[3] The employees were a resource supervisor and a crew advisor.

1.1.11 The locomotive engineer could not recall whether he made his channel-one call approaching Cronadun but realised that he had overrun his track warrant limits when he referred to his track warrant at that time. The locomotive engineer stopped the train and informed the train controller of what had happened.

1.2 Coal route operation

1.2.1 The coal route runs between coal-mining areas on the West Coast and the Port of Lyttelton (near Christchurch) in the South Island. Lines that originate at Ngakawau and Hokitika form a junction at Stillwater. Train movements on these West Coast lines are controlled by the TWC system. Between Stillwater and Lyttelton, train movements are controlled by various track-circuited automatic signalling systems. Train controllers, located in the national train control centre in Wellington, authorise all movements on the lines.

1.2.2 TWC was introduced to New Zealand Railways in 1988 as an alternative to signalling systems on single-track lines that generally carried little traffic. TWC was designed to achieve the fundamental railway operating principle that only one rail vehicle had authority to occupy a specific section of track at any time.

1.2.3 TWC operates on many lines throughout the country with a combined coverage of 2254.74 km. This coverage is 56% of the national rail system by length. None of the TWC lines is track circuited between stations. This means that, unlike some track-circuited automatic signalling systems, train movements are not displayed on mimic screens in the national train control centre.

1.2.4 Authority to occupy a section of track on a TWC line is achieved with the issue of a track warrant. After a train controller has plotted the planned train journeys on a train control diagram provided at each desk, they pre-prepare the track warrant based on the plotted limits. A computer-based system called the track warrant assisted computer system, commonly referred to as TWACS, is used by train controllers to prepare, issue, update, cancel and store track warrants. TWACS incorporates a defence feature that does not allow a train controller to prepare a track warrant that conflicts with one that has already been prepared and/ or issued.

1.2.5 Following preparation, the train controller issues the track warrant to an addressee[4] who has charge of any rail vehicle, including maintenance vehicles. The addressee is required to understand and comply with the limits together with any number of conditions contained on the track warrant.

1.2.6 The radio calls made to the train controller when the train passes specified wayside locations enables them to monitor the progress of the train and ensure that plotted movements are going as planned. The wayside locations selected by the train controller are included in clause 10 of the track warrant. In addition to updating the position of the train, the information allows the train controller to "free up" a section of track already travelled for other rail vehicle movements.

1.2.7 The procedure for a clause 10 radio call is written into KiwiRail's operating rule 412, calling train control enroute, which states in part that:

> When Clause 10 of a track warrant specifies that a call is to be made at a location, then that call must be made but the train need not stop for an acknowledgement from Train Control.
>
> When Train Control acknowledges, the addressee must advise their location and the terminating limit of the warrant held.

[4] The generic term for an authorised recipient of a track warrant.

1.2.8 Train controllers are required to review outstanding events continually by reference to the train control diagram. When a clause 10 radio call is overdue by more than 15 minutes, the train controller is required to contact the train to identify why the call has not been made. If contact cannot be established, the train controller must initiate emergency procedures to locate the train.

1.2.9 In 2000, TWC rules were amended to require channel-one radio calls as follows:

> **Implement Mandatory Calling of Limits Held**
>
> **Operating in Track Warrant Control Area (Additional new sub-clause)**
>
> As a train approaches a station warning board or intermediate signal, the addressee must call on radio channel 1 advising the train number, location being approached and the terminating limit of the warrant held.

1.2.10 Unless there is another train or rail vehicle at or near the station, the channel one calls are mostly not answered. The primary purpose of a call is to remind a locomotive engineer of the track warrant details of which they are in possession, particularly its limits. A secondary purpose of the call is to initiate communication between 2 opposing trains approaching a station at which a train crossing is scheduled to occur. Channel one is designed for local coverage and is not heard by train controllers and, regardless of any clause 10 requirements and the limit of the track warrant, the calls are required to be made.

Signalling arrangements

1.2.11 The signalling arrangements at warrant stations, such as at Reefton, incorporate a limited signalling and track-circuiting system. The signalling system comprises an arrival signal located at the entrance to the station, with an associated set of motorised points, located inside the arrival signal (see Figure 3 for the signalling arrangements at Reefton).

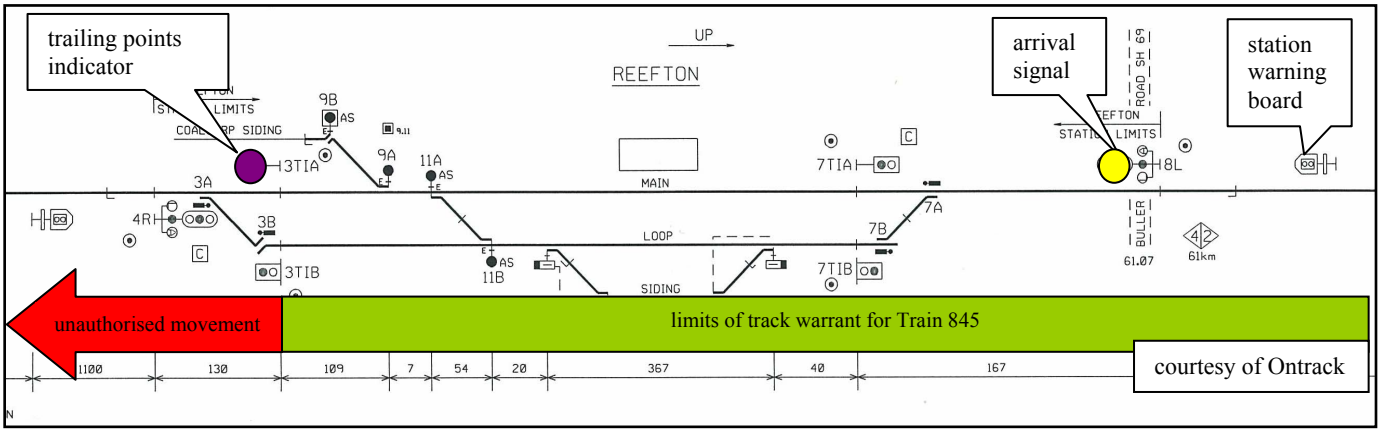

Figure 3
Signalling arrangements at Reefton with Train 845 movement (not to scale)

1.2.12 The limited length of track circuiting generally starts about 800 metres before the arrival signal and extends along the main line (only) to the opposite point at the other end of the station. The 2 arrival signals are interlocked with the track circuits. If the circuiting is unoccupied and both motor points are in the normal position, the arrival signal displays a caution, normal speed aspect on a train's approach. The arrival signal can be passed, without stopping, if the track warrant includes specific instructions to berth on, or travel along, the main line.

1.2.13 Four trailing indicators are installed at the exits from both ends of the loop and main line. Unlike signals, the trailing indicators only confirm to the addressees that the points are correct for the intended movement. In all circumstances, a track warrant has to be obtained before passing any of the indicators.

1.3 Locomotive cab passes

1.3.1 A locomotive cab pass is the authority for a person other than locomotive crew to travel in the cab. The procedures for the issuing of locomotive cab passes were contained in the rail operating code and in KiwiRail's cab pass policy.

1.3.2 The cab pass contained safety information for visitors, particularly those who might be unfamiliar with railway operations. The section headed "Once on Board" stated in part:

- When in the locomotive you must follow all instructions given to you by the Locomotive Engineer. Please remain seated unless the locomotive engineer tells you it is OK to move in the cab.
- Do NOT distract the Locomotive Engineer. The Locomotive Engineer needs to be very observant in watching the track ahead, level crossings and listening for instructions on the radio.

1.3.3 The cab pass included a remarks space for specific instructions. A locomotive cab pass dated some months after the incident, and sighted during this investigation, contained the statement "The visitors need to be briefed" but on the cab passes issued to cab pass holders on Train 845, the remarks space described only their role in the organisation.

1.4 Personnel

1.4.1 The locomotive engineer held a current Grade 1 locomotive engineers' certificate. He had 6 years' experience in locomotive-running duties, all of which had been based in Westport. He had started work on Wednesday 13 August at 0210 at Westport for his rostered shift, which involved driving eastbound express freight Train 842 to meet westbound express freight Train 845. The crew change-over occurred at Moana at about 0730.

1.4.2 The locomotive engineer said that he had not been aware of the operational knowledge or experience of the cab pass holders, and had not discussed "in cab" behaviour with them when they boarded the locomotive at Stillwater. He thought that the subject would have been covered by the person issuing the locomotive cab pass. Also, he was aware that the cab pass contained information on the required "in-cab" behaviour.

1.4.3 The resource supervisor was based in KiwiRail's headquarters in Takapuna, Auckland and he was responsible for national locomotive crew rostering, and for the staff of the crew and locomotive roster centres. He had been in the role for about one year and had been in the rail industry for 3 years. The journey on this day was part of his on-the-job training covering South Island routes and was the first time he had travelled from Stillwater to Westport. He had not appreciated the serious implications of the track warrant overrun until the locomotive engineer stopped the train and explained the overrun situation to him.

1.4.4 The crew advisor was also based in KiwiRail's headquarters in Takapuna, Auckland and was responsible for the rostering of locomotive engineers in the South Island, including the coal route. He had been in the role for 2 years. This was his second trip to the area. He did not receive a briefing from the locomotive engineer regarding the requirements of the locomotive cab pass.

1.4.5 The train controller had been employed in the role for 3 years. On the day of this overrun he had responsibility for train operations west of Arthur's Pass, including the Stillwater-Ngakawau Line.

1.5 Locomotive event recorder data

1.5.1 The data from the event recorder installed on DXC5212, the lead locomotive on Train 845, was downloaded and made available for analysis. The extraction showed the journey of Train 845 from just after it passed Totara Flat until the locomotive engineer stopped the train at Cronadun. The data showed that the speed of Train 845 had been maintained within the maximum allowed and response to the vigilance system by the locomotive engineer had been within acceptable practice.

2 Analysis

2.1 Train 845 overran its track warrant limit by 8.75 km in a 15-minute period with no recognition by the locomotive engineer until the train was approaching Cronadun, at which point he checked the track warrant prior to making his channel-one call. In this case there was no opposing traffic and the previous train had by then terminated in Ngakawau.

2.2 When Train 845 passed through Reefton, the locomotive engineer had been driving for about 7½ hours. Although this time was not excessive, it was nearing the end of his shift, which had started at 0210 that day. The locomotive engineer's level of alertness and fatigue would have depended on a number of factors, including the amount of sleep obtained before starting his shift. The event recorder showed that the locomotive engineer was responding well to the vigilance device, indicating that he was alert. Even if he was tired from his night's work, the conversation he was having with the cab pass holders would seem to have kept his level of alertness up. Fatigue therefore is not considered to have been a factor contributing to this incident. Ironically, those same conversations were the main factor contributing to the locomotive engineer becoming distracted and forgetting to stop his train at Reefton.

2.3 As the journey progressed, the locomotive engineer became increasingly distracted by the conversation he was having with the cab pass holders. He correctly stopped at Red Jacks about 5 minutes after leaving Stillwater to restore a set of main line points, but by the time the train reached Tawhai about 40 minutes later, the driver was distracted enough to have forgotten to make the clause 10 radio call to train control at Totara Flat. All 3 occupants of the cab recalled an increase in conversation approaching Reefton. How many of the channel-one calls were made could not be determined, but the cab pass holders later said that conversation continued other than at times when he was using the radio, so it is likely that the locomotive engineer made some of the channel-one calls.

2.4 During the radio call from train control to Train 845 when the train was approaching Tawhai, which in effect had replaced the Totara Flat clause 10 call, the location of the train was confirmed but the approaching limit of the warrant was not. This was effectively a breakdown in established procedure. Had the locomotive engineer confirmed the limit of his track warrant to the train controller at that time, or had the train controller requested it, the incident might not have happened because the locomotive engineer might have been reminded that his track warrant ended at Reefton, only 9 km ahead.

2.5 The arrival signal at Reefton displayed a proceed aspect for the main line, and the trailing points indicator showed a purple aspect meaning that the points were set for a movement along the main line. This indicator was not authority for the train to proceed, but simply showed that the points were correctly set for the train to continue once proper authority from train control had been received.

2.6 Usually, making the channel-one radio call at a station warning board would remind a locomotive engineer of the limit of his track warrant by virtue of his having to say the name, particularly if the limit station was the one he was entering. It is likely the locomotive engineer was alerted to his overrun when reading his track warrant in preparation for making such a call at Cronadun. Either the locomotive engineer did not make the channel one call at Reefton, or he omitted to state what the limit of his track warrant was, or he was simply so distracted by his conversation with the cab pass holders that it did not register with him that he had reached the limit of his track warrant and should have been stopping his train.

2.7 The cab pass system had the potential to distract a locomotive engineer under normal circumstances. In this case the reason for the cab passes being issued was not consistent with the rules associated with the cab pass. The cab pass holders were there to learn about the route and the operation. The only person who could give that information in this case was the locomotive engineer, so the risk of distraction was always going to be present. Through its own investigation, KiwiRail recognised that the locomotive pass system was not as robust as it should have been and changed it so that in future, employees on familiarisation trips would be escorted by a locomotive operating person familiar with the area. This person would fulfil the role of a "tour guide", allowing the locomotive engineer to concentrate fully on his train-driving tasks. In view of this action, the Commission has not made a safety recommendation to deal with this safety issue.

2.8 Once a track warrant was issued, the system relied mostly on the locomotive engineer, having correctly perceived the requirements of the track warrant, to retain that perception, maintain situational awareness and act in accordance with the track warrant and associated regulations.

2.9 There are a number of defences built into the TWC system to help prevent the system failing. The TWACS system helps prevent a train controller issuing a track warrant that conflicts with another already issued. The read-back system helps to ensure the track warrant has been received and understood correctly. Having an illuminated clipboard with the track warrant in full view of the locomotive engineer, the channel-one radio calls and clause 10 radio calls, and effective crew resource management training all help the locomotive engineer to remain aware of their track warrant limits.

2.10 But, the TWC system was reliant on human interaction. Research shows that humans rarely operate with absolute accuracy. Boredom, distraction, fatigue, illness, anxiety, misunderstanding and sensory problems can degrade performance, but operating inconsistencies can be tolerated if there are adequate defences in place to detect and correct any errors, slips or lapses. A number of tools or defences have been developed to assist the locomotive engineer to remain vigilant, for example alertness and fatigue management programmes, rules around rosters, and vigilance devices in the cab, yet overruns still do occur owing to fatigue, or in this case distraction.

2.11 The risk of collisions due to track warrant overruns in the context of the entire track warrant network is relatively low (refer to the Appendix to this report), although the consequences of a collision can be high as shown in the Commission's report on a head-on collision at Waipahi on 20 October 1999 (report 99-122). In that event one train incorrectly travelled along the main line at Waipahi and collided with another stationary train, resulting in one death, one serious injury and significant damage to both trains. The safety issues included the recognition of track warrant limits. Passenger trains do operate in some track warrant areas. Any track warrant overrun involving a passenger train will represent a significant increase in risk to human life.

2.12 A sample taken over 4 months in the 2008/2009 period showed that on average 300 track warrants were issued each week day, giving an annual total of about 110 000 track warrants. These include track warrants issued for a range of track occupations from 2003 onwards following changes to infrastructure engineering rules. Between 1994 and 2007, the Commission investigated 12 track warrant irregularities, of which 9 involved overruns of track warrant limits. These figures do not take into account incidents that might not have been reported to the Commission, but track warrant overruns are viewed seriously within the industry and are usually reported to the Commission. So while the potential consequences of an overrun are high, the likelihood is low.

2.13 Apart from enhancing the existing defences, the industry will need to explore other technological solutions if the risk is to be further reduced significantly; ones that do not rely totally on the human element. There is technology available that would allow a number of levels of train control, ranging from train controllers simply being able to monitor train positions in track warrant territory as well as on other signalled lines, to full positive train control where a train's progress can be automatically halted before an overrun occurs based on preset parameters. The Commission has commented on this safety issue in previous rail incident report (07-108) and recommended that the New Zealand Transport Agency take action to ensure that any project to enhance train control functionality results in a progressive move to achieving positive train control (safety recommendation 005/09).

2.14 Because the New Zealand Transport Agency reported that it would work closely with the relevant rail industry participants with an aim of implementing and closing those recommendations as soon as practicable, no further safety recommendation has been made.

3 Findings

Findings are listed in order of development and not in order of priority.

3.1 Train 845 exceeded the limits of its track warrant by about 8.75 km in a 15-minute period when the locomotive engineer became distracted while conversing with 2 visitors authorised to be in the cab at the time.

3.2 The practice of issuing cab passes for non-operational staff without supervision creates the potential for locomotive engineers to become distracted, as happened in this case.

3.3 In spite of the defences incorporated into the TWC system, it is still vulnerable to the weakest link, limitations of human performance, and will require the use of advances in technology if the risk of collision due to locomotive engineers overrunning or misinterpreting the limits of their track warrants, is going to be reduced.

4 Safety Action

4.1 On 5 December 2008, KiwiRail advised that one of the outcomes of its internal investigation into this incident was a review of locomotive cab pass procedures. Arising from that review was the development of new, revised procedures that have been drafted for inclusion in the forthcoming reissue of the rail operating code. The revised procedures have been implemented by KiwiRail during January 2009.

4.2 A significant change in the procedures was the introduced requirement for a "safety escort" to be provided when conversation with the locomotive engineer was likely to occur in the vicinity of safety-critical situations, such as when approaching signals, level crossings, worksites and speed restrictions or when listening to or using a radio. The "safety escort's" role was to ensure conversation did not distract the locomotive engineer.

Approved on 19 November 2009 for publication

Hon W P Jeffries
Chief Commissioner

Appendix

Previous track warrant overrun occurrences investigated by the Commission

Between 1994 (when the Commission started to investigate rail occurrences) and 2007, the Commission reported on 12 safe working irregularities in TWC areas. Of those 12 occurrences, there were 9 where trains overran their track warrant limits:

- report 94-109, 30 March 1994. Train 847, a Lyttelton to Westport empty coal service overran Reefton and continued about 23 km without a track warrant. The safety issues included the observance of track warrant limits
- report 96-101, 8 January 1996. Train 701, the "Coastal Pacific" passenger service, overran Waipara and continued about 24 km without a track warrant. The safety issues included the recognition of the track warrant limits
- report 99-102, 9 March 1999. Train 523, a New Plymouth to Palmerston North express freight service, overran Whangaehu and continued about 18 km without a track warrant. The safety issues included the maintenance of concentration levels
- report 99-109, 21 May 1999. Train 902, the "Southerner" passenger service, overran Mosgiel and continued 2 km without a track warrant. The safety issues included possible distraction by events that differed from the normal track warrant issue pattern
- report 99-122, 20 October 1999. Train 938 incorrectly travelled along the main line at Waipahi and collided with stationary Train 919. The safety issues included the recognition of track warrant limits
- report 00-106, 4 May 2000. Shunt Y35 overran Mataura and continued 15 km without a track warrant. The safety issue included the need for formalised crew resource management training
- report 00-111, 14 June 2000. Train 630, a Wellington to Napier express freight service, overran Tapuata and continued about 1100 metres without a track warrant. The safety issues included a lost situational awareness as a result of microsleeps
- report 02-127, 17 November 2002. Train 526, a Palmerston North to New Plymouth express freight service, overran Waitotara and continued about 1.5 km without a track warrant. The safety issues included the maintenance of concentration levels
- report 07-108, 12 May 2007. Train 720, a Christchurch to Picton express freight service, overran Seddon and continued about 28 km without a track warrant. Another train was parked in the loop at Seddon and watched Train 720 go by, knowing that it did not have a track warrant to do so. Fatigue was identified as being the major contributory factor and inadequate crew resource management an underlying safety factor.

Recent railway occurrence reports published by the Transport Accident Investigation Commission (most recent at top of list)

07-103	Report 07-103, passenger express Train 200, collision with stationary passenger express Train 201, National Park, 21 March 2007
07-115	Report 07-115, express freight Train 533, derailment, 103.848 kilometres, near Tokirima, Stratford – Okahukura Line, 7 November 2007
06-106	Report 06-106, express freight Train 826, signalling irregularity, Cora Lynn, 31 July 2006
07-108	express freight Train 720, track warrant overrun at Seddon, Main North Line, 12 May 2007
07-113	express freight Train 239, wagons left in section at 514.9km, between Te Awamutu and Te Kawa, 22 September 2007
07-110	collision, express freight Train MP2 and Work Train 22, Ohinewai, 19 June 2007
06-110	passenger train 4045, uncontrolled movement, between Britomart and Quay Park Junction, 9 October 2006
06-108	EMU Passenger Train 9268, struck slip and derailed, between Wellington and Wadestown, 26 August 2006
07-101	express freight Train 736, derailment, 309.643 km, near Vernon, 5 January 2007
05-123	empty passenger Train 4356, overran conditional stop board without authority following an automatic air brake irregularity, Meadowbank, 6 October 2005
05-116	collapse of Bridge 256 over Nuhaka River, Palmerston North-Gisborne Line, 6 May 2005
05-124	express freight Trains 834 and 841, collision, Cora Lynn, 20 October 2005
06-112	loss of airbrakes and collision, Tram 244, Christchurch, 21 November 2006
06-102	SA/SD passenger Train 4306, braking irregularity, between Westfield and Otahuhu, 31 March 2006
06-101	diesel multiple unit passenger Train 3163, fire in diesel auxiliary engine, Manurewa, 15 March 2006
05-127	Mainline shunting service M52, track occupation irregularity, Te Rapa, 27 October 2005
05-120	Express freight Train 142, runaway wagons, Mercer, 1 September 2005

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