



Report 99-125

Train 200

passed conditional stop board without authority

between Ohau and Levin

24 November 1999

Abstract

At approximately 1010 hours on Wednesday 24 November 1999, the Wellington to Auckland *Overlander* passenger express, Train 200, proceeded past a conditional stop board between Ohau and Levin without authority. Some 5 kilometres later Train 200 unexpectedly met a track maintenance gang, which had just cleared the track to allow the passage of the train. There were no injuries.

The safety issues identified were:

- the incomplete radio procedures for communication between locomotive engineers and track gangs working under conditional stop board protection
- the locomotive engineer passing the conditional stop board without authority
- the availability of an expired information bulletin
- the decision by the ganger in charge of the work to not arrange for fixed signals controlling entry of trains into the work area to be held at Stop
- the need for better understanding by train control officers and track gangers of responsibility for control of track and better communication.

Five safety recommendations were made to the operator.

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List of Abbreviations

CTC	centralised traffic control
km	kilometre(s)
km/h	kilometres per hour
LE	locomotive engineer
m	metre(s)
TCO	train control officer
VDU	visual display unit

Data Summary

Train type and number:	Express passenger Train 200
Date and time:	24 November, at about 1010 hours
Location:	89.5 km between Ohau and Levin, North Island Main Trunk
Type of occurrence:	proceeded past conditional stop board without authority
Persons on board:	crew: 2 passengers: 48
Injuries:	nil
Damage:	nil
Operator:	Tranz Rail Limited (Tranz Rail)
Investigator-in-Charge:	Dennis Bevin

1. Factual Information

1.1 Narrative

Train 200

- 1.1.1 On Wednesday 24 November 1999, Train 200 was the *Overlander* passenger express operating from Wellington to Auckland. The train was crewed by a locomotive engineer (LE) and a train manager and conveyed 48 passengers.
- 1.1.2 The LE of Train 200 had previously commenced duty in Palmerston North at 0340 hours on the day of the incident. He was rostered to take Train 211 express freight service from Palmerston North to Wellington, returning to his home depot at Palmerston North as LE on Train 200.
- 1.1.3 At the start of his shift the LE took copies of the relevant documentation for his train, including what he thought was the current information bulletin. This bulletin, issued daily, notified LEs and operating staff of work sites under conditional stop board¹ protection.
- 1.1.4 Track work was scheduled between Levin and Koputaroa. The bulletin that the LE uplifted did not show this because it was the one issued for the previous day.
- 1.1.5 The early running of Train 211 meant that the LE did not encounter any track work activity or trackside signage on the way from Palmerston North to Wellington.
- 1.1.6 The LE did not refer to the information bulletin before departing Wellington on his return journey.
- 1.1.7 After passing through Ohau station immediately south of Levin, the LE saw an advance warning board, meaning there was a conditional stop board 1500 m ahead. He could not remember seeing anything about conditional stop boards in that area on the information bulletin so decided that the advance warning board must have been left there in error. He did not check his information bulletin. The Rules relating to conditional stop board protection are attached as Appendix 1.
- 1.1.8 As Train 200 approached Levin station, the LE saw a conditional stop board. He concluded from this that work was in progress ahead of him and that the details had been missed off the information bulletin. He slowed his train as he approached the conditional stop board and tried unsuccessfully to establish radio contact on channel 1 with the ganger in charge of the work.
- 1.1.9 The conditional stop board was positioned approximately 20 m south of Tararua Road level crossing and the crossing alarms had been automatically activated by the train as it slowly approached the conditional stop board.
- 1.1.10 About 30 m north of Tararua Road level crossing was a signal controlling the entry of trains into Levin station. This signal displayed a Caution Proceed² indication as it had been cleared earlier by the Train Control Officer (TCO) to enable Train 200 to berth at the platform at Levin station.

¹ Tranz Rail Rule 175(b) (i) required that Advance Warning Boards be erected alongside the line 1500 m in advance and Conditional Stop Boards 200 m in advance of the outer limits of the work area in each direction.

² A Caution Proceed indication on a signal advised the LE that the next signal beyond the one he was approaching may be at Stop.

- 1.1.11 Conditional stop board protection procedures require that where a fixed signal controlling the entry of trains into an obstructed section was located between the signal and the obstruction, the signal must be held at Stop by the signalman (TCO) until the line is clear and safe for traffic to proceed through the work area. The ganger did not ask the TCO to hold the entry signal at Stop and there was no requirement for the TCO to question the ganger regarding the need to fix signals at Stop.
- 1.1.12 The TCO was monitoring the progress of Train 200 as it approached Levin on the centralised traffic control (CTC) visual display unit (VDU) before him. When he saw Train 200 move to the Levin platform he assumed that the LE had received permission from the ganger to pass the conditional stop board. He assumed this was done using the local channel 1 as he had not been contacted by the LE or the ganger on the train control channel 4.
- 1.1.13 The LE of Train 200 was confused by the presence of the conditional stop boards but wanted to keep Train 200 moving to maintain its schedule and reduce the potential delay to road traffic at the level crossing. He could see that there was no track work before the station, so he decided to continue to the platform where he was scheduled to stop for passenger work. The train event recorder showed the train slowing to 10 km/h as it passed the conditional stop board and then increasing speed to 30 km/h before stopping at Levin platform.
- 1.1.14 Rule 175(b) (iv) stated that:
- Conditional stop board not to be passed unless authorised* – Trains must not pass a Conditional Stop Board unless authorised by the employee in charge of the work. This authorisation will normally be given by radio communication.
- 1.1.15 When the passenger work was completed the guard gave the LE “right of way” to depart and the LE radio base-called³ the TCO, requesting a signal to depart Levin. The TCO verbally acknowledged the call and advised the LE that the signal he required was “coming up”. The TCO then entered the relevant command into his computer. This started the level crossing alarms and cleared the signal for Train 200 to depart.
- 1.1.16 The TCO did not contact the ganger in charge, nor was he required to, to ensure that the line was safe and clear for the passage of trains before clearing either of the signals for Train 200 to enter Levin or for it to depart.
- 1.1.17 The LE later stated that after departing the platform his train travelled at a reduced speed and he kept an eye out for any obstructions such as gangers working on track. The locomotive event recorder showed that after departing Levin the train accelerated to approximately 55 km/h, reduced speed to 40 km/h for a speed restriction over a level crossing before it accelerated to approximately 70 km/h.
- 1.1.18 Approximately 4 km north of Levin the train came over a rise and the LE saw the maintenance gang beside the track, about 150 m ahead, and slowed the train. The locomotive event recorder showed that the train had accelerated to 70 km/h before a brake application was made, reducing the speed to 40 km/h by the time the train passed through the work area. The LE later stated that he had been surprised to see the track gang working so far from the conditional stop board.
- 1.1.19 After the incident was reported by the ganger in charge, arrangements were made for the LE to be relieved of duty at Shannon pending an investigation into the incident.

³ “Base-calling” was an informal procedure whereby LEs pressed the transmit button on their cab radio to advise the TCO when they required a signal to depart a station platform. The TCO received the train ID on his radio system VDU and acknowledged the call by advising the LE that the required signal was being activated. This procedure was often used when a road level crossing was positioned near the platform. The signal facing the LE was held at Stop and not cleared until the train was ready to depart, thereby minimising delays to road traffic.

- 1.1.20 During the changeover it was discovered that the relief LE had also picked up the information bulletin for the previous day by mistake. Although the correct information bulletin had been received in Palmerston North, it had not been distributed for collection by LEs.

Track maintenance gang

- 1.1.21 At 0845 hours the ganger in charge requested permission from the TCO to establish conditional stop board protection between the 89.5 km (between Ohau and Levin) and the 95.4 km (between Levin and Koputaroa, including station limits at Levin), a distance of 5.9 km. This was to enable the track gang to carry out maintenance work at various sites within that work area between 0900 hours and 1600 hours.
- 1.1.22 The site at which the track gang was working at the time of the incident was approximately 5.1 km north of where the southern conditional stop board was erected. The conditional stop board marking the work area for southbound trains was a further 800 m north of the worksite (refer Figure 1).
- 1.1.23 After receiving permission, the ganger in charge erected the advance warning boards and conditional stop boards and confirmed this with the TCO. The ganger in charge did not advise the TCO of the exact location of the work within the protected area nor did he arrange for the signal controlling entry to the obstructed section to be held at Stop in accordance with Rule 175(d) (ii), which stated that:
- Obstruction Near Controlled Signal - If controlled signals governing the entry of trains into the obstructed section are located between the obstruction and the point at which protection is to be placed, the employee establishing the protection must also communicate with the Signaller and arrange for the signals to be held at "Stop" to prevent confusion. The Signaller must maintain the signals in that position until advised by the employee in charge that the line is clear and safe for traffic to proceed through the work area.
- 1.1.24 The ganger was aware of this requirement but felt that he had adequately complied with the requirements of conditional stop board protection.
- 1.1.25 At approximately 0930 hours Train 600, the northbound *Bay Express* passenger service, cleared the section and the gang went on track to undertake de-stressing work. This involved breaking the track and restoring it to a safe state in time for the passage of Train 200.
- 1.1.26 The ganger in charge thought he had initiated radio contact with Train 600 on channel 4 via the TCO but could not be sure. He was certain that communication had not been through channel 1.
- 1.1.27 At about the time the ganger in charge expected the LE of Train 200 to call from the conditional stop board, he instructed the track gang to tighten up the rail in readiness for the passage of the train and then have a break while they waited for the train to pass. Rule 175(b) (iii) stated that:
- Line to be cleared before train due* – The line must be cleared at least 5 minutes before a train is expected. Once the line is clear and safe for traffic the employee in charge must advise Train Control accordingly. Advance Warning and Conditional Stop Boards are not to be removed when the track is cleared temporarily for train movements.
- 1.1.28 The ganger did not advise Train Control when the line was safe and clear.
- 1.1.29 The ganger in charge then tried to contact Train 200 through channel 1 and channel 4 to authorise the LE to pass the conditional stop board but did not receive a response. It was while he was doing this that Train 200 appeared over the rise and approached the worksite.

- 1.1.30 The ganger had planned to restrict the speed of the train over the work site to 40 km/h but, because he couldn't make contact with the LE, he was unable to advise him of this requirement.
- 1.1.31 After the train had cleared the worksite, the ganger in charge contacted the TCO to see if he had authorised Train 200 to proceed past the conditional stop board. The TCO advised the ganger that he hadn't. The TCO told the ganger when he saw on the CTC VDU that Train 200 had arrived at the platform in Levin he assumed the ganger had authorised the train to pass the conditional stop board by radio on channel 1. This was in spite of Rule 175(b)(iii), which require that the TCO be advised that the track was safe before the passage of any trains into the work area.

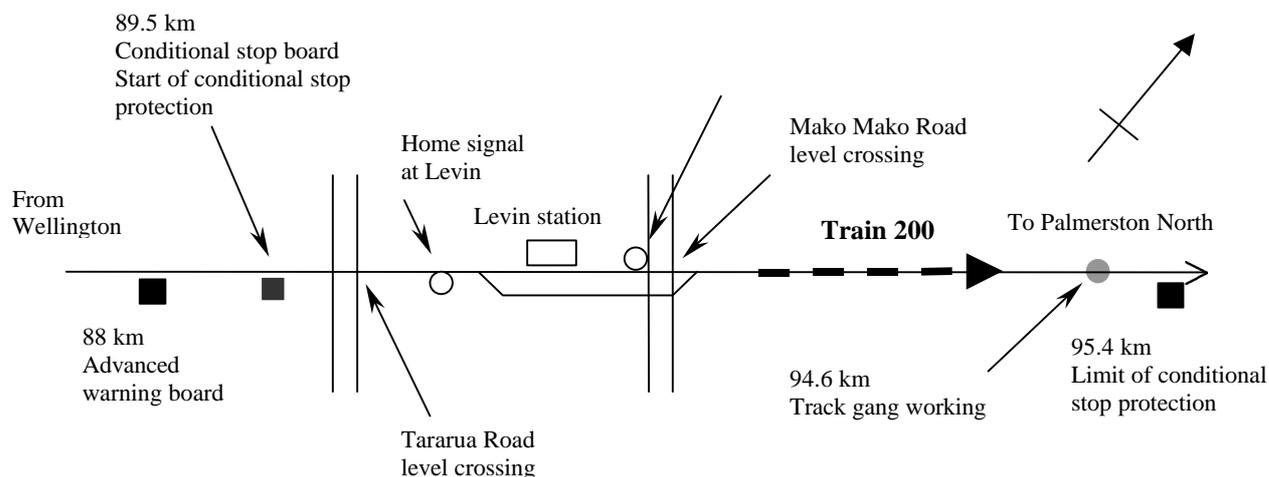


Figure 1
Plan of work area including conditional stop board protection area
 (not to scale)

1.2 Information bulletins

- 1.2.1 Information bulletins were prepared from requests for track work received in the Service Delivery Office in Wellington by 1600 hours the previous day. The information bulletins were prepared and faxed to Palmerston North for distribution to LEs and other track users.
- 1.2.2 The information bulletin remained in effect for 24 hours, a new one being prepared and issued for each day, each coming into effect at 0001 hours.
- 1.2.3 The bulletins defined the work area including metreages and stations between, the name of the person in charge, the type of work being undertaken and the hours of operation. The information bulletin also included a Rule reference relevant to the work; in this case it specified "Work By Rule 175(b), Conditional Stop Protection" (refer Appendix 2).
- 1.2.4 On receipt of the information bulletin at Palmerston North it was copied and distributed for staff to uplift. Those for LEs were placed in the "Book on" room for collection when LEs commenced duty.
- 1.2.5 Minor changes to the information bulletin were made by TCOs and enroute trains were advised verbally, with LEs amending their copies accordingly. If significant changes were required, a new bulletin was issued.

1.3 Radio coverage

- 1.3.1 There were no restrictions on the length of a work area under conditional stop board protection.
- 1.3.2 Channel 1 was a VHF point-to-point radio communication system which did not use repeaters. Coverage for this channel in particular localities was not normally documented by Tranz Rail unless specific site tests had been carried out but, under normal circumstances was expected to be in the order of 5 km, depending on the power output of the radio in use, the terrain and other sources of interference.
- 1.3.3 There were no documented procedures in place for when communication between LEs and track gangs via channel 1 was unsuccessful. It had become common practice for LEs to contact the ganger, and vice versa, via train control using channel 4 when this occurred.

1.4 Personnel

- 1.4.1 The LE was certified for the duties he was undertaking.
- 1.4.2 His work and recreational patterns were normal. His health was good, and he had no requirements for any medication that might have affected his performance.
- 1.4.3 The ganger in charge was certified for the duties he was undertaking.

2. Analysis

2.1 Track maintenance gang

- 2.1.1 The purpose of establishing a protected area of 5.9 km was to enable the gang to work at the 94.5 km (the northern limit) for the first part of the day then move to the 91.0 km (the southern limit) to undertake more work, without having to go through the process of erecting and removing advance warning boards and conditional stop boards when they required to change work sites.
- 2.1.2 Although he was aware that the work area extended beyond the coverage of channel 1, the ganger in charge did not consider the length to be excessive, provided the correct conditional stop board protection procedures were carried out. Train 600 had gone through the work area under control before the arrival of Train 200 although in neither case was the TCO advised that the track was safe and clear for the passage of trains.
- 2.1.3 The ganger in charge was aware of the requirement to arrange for the signals controlling entry to the obstructed section to be held at Stop. By not following documented procedures, the ganger left out an important defence designed to safeguard the track gang from trains occupying the section through LEs becoming confused by 2 signals, one of which was the conditional stop board telling him to Stop while the other was the fixed signal which told him to proceed.
- 2.1.4 The positioning of the conditional stop board close to the level crossing had the potential to cause delays to road traffic.
- 2.1.5 The requirement for the ganger to contact the TCO to advise him that the line was safe and clear for the passage of trains before Train 200 entered the work area was an operational and not a safety requirement, which had no bearing on the incident.

2.2 Train 200

2.2.1 As Train 200 approached the conditional stop board just south of Levin there were 7 factors that probably influenced his decision to proceed past the conditional stop board without authority; one telling him to stop and 6 encouraging him to continue. The one factor telling the LE to stop was his knowledge that to fail to do so would be in violation of the rules that had been learned in his training and reinforced from time to time. The 6 factors that probably influenced his decision to continue were:

- he was not expecting to see the conditional stop board and thought that it may have been left up in error
- the Levin home signal was showing a Caution Proceed indication because the ganger had not arranged for it to be held at Stop
- his train was causing the traffic to build up at the Tararua Street level crossing ahead
- he could not see any track maintenance work in progress between his train and the Levin station ahead
- he could not contact the maintenance gang on channel 1, which again raised doubts as to its existence
- he had passenger work to perform at the station and was conscious of his schedule.

2.2.2 The continuation of Train 200 to the Levin platform was carried out in relative safety. The train travelled at slow speed and the view ahead was clear. To minimise delays to road traffic and remove confusion for the LE the conditional stop board could have been placed close to the departure signal at Levin. This would have meant the LE would not have had the additional pressure of holding road traffic at the level crossing and the conditional stop board would have been immediately in front of a fixed signal showing a Stop indication.

2.2.3 The limitations in the coverage of channel 1 had not been fully accounted for when the procedures for conditional stop board protection for track gangs were developed. Some LEs catered for the shortfall by using the undocumented procedure of contacting the ganger via train control using Channel 4 for times when Channel 1 had not been successful. Had the LE of Train 200 used this procedure, the incident probably would not have happened.

2.2.4 Had the LE checked that he was in possession of the correct bulletin for the day, and if the home signal had been held at Stop as required, and if the procedure for communicating between LE, ganger and train control had been complete, it is unlikely that the LE would have proceeded past the conditional stop board without authority. Recommendations have been made to address these procedural issues.

2.2.5 On arrival at the platform, the LE probably reverted to a “situation normal” mindset as the passenger activities were undertaken and the LE waited for the “right-of-way” message from the guard once they were completed. While waiting at the platform, the LE had ample time to check his information bulletin or to talk to the TCO but did neither. When he received the “right-of-way” call from the guard he continued with the procedure for preparing to leave Levin and base-called the TCO for a signal to depart. The TCO acknowledged the base call with a short verbal confirmation that the signal was “coming up”. The crossing alarm bells started, the signal cleared and the train departed, all of which would have reinforced the mindset of the LE who had, by now, forgotten about the possible presence of a track maintenance gang in the section ahead of him.

- 2.2.6 Train 200 accelerated after leaving the 40 km/h speed restriction over the level crossing and was continuing to increase speed as it approached the worksite. This would indicate that the LE's mind was on getting the train up to its normal operating speed rather than expecting to see a track gang. He had travelled approximately 5 km from the conditional stop board by then and had either forgotten about the possibility of a track gang being present, thought he had already past the worksite without sighting the gang, or concluded that there was no gang working and the conditional stop boards had been left up in error after earlier work.

2.3 Train control

- 2.3.1 The TCO was unaware of the exact location the gang were working at, knowing only that it was within the 5.9 km block for which he had authorised conditional stop board protection. He maintained that he didn't need this information as the metreages defining the work area, together with the on-track and off-track times, were recorded on the train control diagram to remind him of the gang's presence in the work area.
- 2.3.2 Once the TCO had given permission for the advanced warning boards and conditional stop boards to be erected, and had received confirmation that they were in place, he stated he had no further input into the protection of the work site, other than to advise the ganger in charge of expected train movements and times. Had the ganger in charge contacted the TCO and advised him that the line was safe and clear before Train 200 proceeded through the work area, it would have provided an additional defence by generating additional radio communication between him and the TCO regarding Train 200. Although Train 200 already passed the conditional stop board, its progress further into the work area could have been halted.
- 2.3.3 When the TCO became aware of the passage of Train 200 to the platform at Levin he should have questioned the ganger in charge as he had not been advised that the track was safe for the passage of trains before Train 200 had entered the work area.

2.4 Information bulletins

- 2.4.1 Although the information bulletin specified working by Rule 175(b) there were other clauses of Rule 175 which were appropriate to conditional stop protection, specifically clauses (c) and (d), which related to the positioning of Boards and obstructions near controlled signals respectively. Both of these clauses should have been included on the information bulletin to remind staff of the requirements. A recommendation has been made to address this issue.

2.5 Summary

- 2.5.1 The failure of the ganger to arrange securing of the signal controlling entry to the work area at Stop could have been averted by sound crew resource management by the ganger in charge and the TCO. The work and related protection was being undertaken under Rule 175(b), (c) and (d) which was a commonly used procedure. While one person may not have known the whole rule in detail, between the 2 of them there should have had sufficient knowledge of its requirements to protect the maintenance gang.
- 2.5.2 The TCO had absolute authority over the section of track under his control but was able to delegate specific sections of track and safe operating responsibilities to the ganger in charge although he did not delegate "ownership". This ownership remained with the TCO and was reinforced by the requirements under Rule 175(b) which stated that permission must be obtained from TCO each time before the line was obstructed; the TCO must be advised in all cases once the line was clear and safe for traffic, and under Rule 175(d) (ii) which stated that signals controlling the entry of trains into the obstructed section were to be held at Stop. These conditions were meant to ensure that the TCO retained control of the activities going on in his section by active communication with the ganger in charge and through involvement in the protection process.

- 2.5.3 Rule 175(b), (c) and (d) was designed to ensure a team approach between the ganger in charge and the TCO to the protection of work areas and the movement of trains. Each individual had clearly defined responsibilities which, when they came together, should have ensured that maximum safety was achieved for gangers working on track. This was further reinforced by each individual's knowledge of the others responsibilities to foster a "challenge and response" environment as a defence. Had such an environment been present the home signal at Levin should not have been cleared without the agreement of both the ganger in charge and the TCO.
- 2.5.4 Tranz Rail advised that, because of the importance placed in the understanding of the requirements of this rule, it features regularly in the training, recertification and refresher processes for TCOs and gangers.
- 2.5.5 A safety recommendation raised previously by the Commission covered the introduction of crew resource management training and arose from an investigation into the wrong line running of Train 411 at Ngaruawahia on 15 May 1998 (Rail Occurrence Report 98-107). As a result of that investigation it was recommended to the Managing Director of Tranz Rail that he:

Introduce formalised crew resource management training for Train Control Operators, Signalmen and LEs based on the training available in the aviation and marine industries. (001/99)

The Managing Director of Tranz Rail replied:

Service delivery will review the crew resource management training available within New Zealand for the aviation and marine industry to assess its suitability to meet the requirements of our operation. If accepted such training would be linked into our current training requirements for Locomotive Engineers, Signal Box and Train Control staff.

Tranz Rail advised that it had since implemented steps towards the introduction of crew resource management training following aviation industry guidelines.

3. Findings

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

- 3.1 Both the ganger in charge and the LE were appropriately certified for the duties being carried out.
- 3.2 The LE of Train 200 was not expecting to encounter a conditional stop board, because he had uplifted an outdated information bulletin although the correct information bulletin was available.
- 3.3 The conditional stop boards had been placed in accordance with documented procedures but the south board had not been placed in the most appropriate position, which resulted in potential confusion for the LE and unnecessary delays to road traffic
- 3.4 Train 200 passed a conditional stop board and entered the work area without authorisation after the LE was unable to make contact with the ganger in charge using radio Channel 1. The initial movement into the Levin station did not compromise the safety of the track gang who were working some 5 km away.
- 3.5 The documented procedures for communicating between LEs and gangers did not allow for the limitations of the designated channel 1 radio.

- 3.6 The decision of the LE to proceed past the conditional stop board without authority was a violation of procedures as was the failure of the ganger to arrange for the signal controlling entry to the section to be fixed at stop.
- 3.7 A number of factors influenced the LE's decision to enter the work area without authority; they were:
- he was not expecting to see the conditional stop board and thought that it may have been left up in error
 - The Levin home signal was showing a Caution Proceed indication because the ganger had not arranged for it to be held at Stop
 - his train was causing the traffic to build up at the Tararua Street level crossing ahead
 - he could not see any track maintenance work in progress between his train and the Levin station ahead
 - he could not contact the maintenance gang on channel 1 which again raised doubts as to its existence
 - he had passenger work to perform at the station and was conscious of his schedule
- 3.8 The manner in which Train 200 was being driven after departing Levin station indicated that the LE of Train 200 either forgot about the possible presence of a track gang ahead of him or concluded that no track gang existed.
- 3.9 Holding the home or departure signals at Stop was an additional defence designed to protect the track gang but was not actioned.

4. Safety Actions

- 4.1 On 29 May 2000 Tranz Rail advised that:

Service Delivery Manager Palmerston North has reviewed the bulletin administration process and rectified the deficiency that caused out of date information to be displayed for staff. Service Coordinators have been made responsible and accountable for the correct display of bulletin information.

Operations Manager Palmerston North has advised inspection of Locomotive Engineers documents, including bulletin information, is included as part of the Safety Observation assessments conducted.

To provide additional assurance that these actions had occurred. These elements were assessed during an internal audit undertaken on the 1st and 2nd of February 2000, covering both Palmerston North-based Line Managers.

This included:

- a review of the administrative processes used at this site for bulletins,
- physical inspection of bulletins available for staff checking for currency and completeness,
- formal observation of two locomotive engineers completing the book on process,
- random questioning of locomotive engineers and operations staff to test employees knowledge of the process requirements.

No errors or deficiencies relating to currency of bulletin information were found and staff questioned had a good understanding of their responsibilities.

5. Safety Recommendations

5.1 On 7 April 2000 it was recommended to the managing director of Tranz Rail that he:

- 5.1.1 widen the application of procedures currently in place for radio communication between LEs and gangers working with track maintenance machines under conditional stop board protection conditions to include track gangs when working under conditional stop board protection conditions (025/00)
- 5.1.2 ensure persons in charge of obstructed sections are aware of, and comply with, the requirement to use fixed signals where available inside work limits to provide additional protection for staff working under conditional stop board protection conditions (026/00)
- 5.1.3 ensure that the requirements for persons in charge of obstructed sections to not obstruct the line until satisfied that any controlled signals governing the entry of trains into the work area are fixed at stop are complied with (035/00)
- 5.1.4 audit the distribution and supply of information bulletins to ensure only current versions are available to LEs and operating staff. (027/00)

5.2 On 6 July 2000 the managing director of Tranz Rail replied:

- 5.2.1 025/00
We have no changes to the wording or focus of this recommendation.
- 5.2.2 026/00
Action to support the intention of this recommendation has already been implemented. A training session comprising a full day working on “occurrence outcomes and lessons learnt” has been developed. The requirement for Train Controllers to hold signals at stop when they are located between the obstruction and the protection is included in this training.
- 5.2.3 027/00
The bulletin administration process has been reviewed and the deficiency that caused out of date information to be displayed for staff has been rectified. Service Coordinators have been made responsible and accountable for the correct display of bulletin information.

5.3 On 14 September 2000 the managing director of Tranz Rail replied:

5.3.1 035/00

Tranz Rail intends to adopt safety recommendation 035/00 as follows:

This procedure currently exists [and implementation] has been completed.

5.4 On 18 September 2000 it was recommended to the managing director of Tranz Rail that he:

5.4.1 ensure that all relevant Rule clauses and sub-clauses are specified in the “Work By Rule” section of the information bulletin. (067/00)

Approved for publication 27 September 2000

Hon. W P Jeffries
Chief Commissioner

Appendix 1

Extract from Tranz Rail Rules and Regulations Rule 175, paragraphs (b) (c) (d) and (e), which relate to protection under Conditional Stop Board Protection.

- 175 (b) **Protection For Planned Work** – Planned work (authorised by Train Advice) will be protected by Conditional Stop Protection using Conditional Stop Boards and Advance Warning Boards. This method of protection is to be used whenever planned work is going to involve breaking the track or is likely to interfere with the safe operation of trains; e.g. welding, rerailing (including short closer rails) and other such activities. Planned work is that which is known at least one day in advance so that the appropriate train advice can be arranged. Protection MUST be provided before any work is started which may obstruct the line, except
- In a TWC area when a Track Warrant has been issued for the work giving sole occupancy of the section of line involved.
 - At an interlocked station and under the instruction of Officer in Charge.
 - When otherwise authorised by the Officer Controller Train-running.
- i) *Establishing and Removing Protection* – Before work starts Advance Warning Boards must be erected alongside the line 1500 metres in advance and Conditional Stop Boards 200 metres in advance of the outer limits of the work area in each direction.
- They must be removed by the finish time stated in the Train Advice unless the line is still obstructed in which case the employee in charge must advise Train Control.
- ii) *Permission to obstruct line* – Work involving obstruction of the line must only be carried out between the times shown in the train advice and the employee in charge must personally obtain permission from Train Control before the line is obstructed. If the line is to be cleared temporarily for train movements the employee in charge must on each such occasion contact Train Control and obtain permission before the line is again obstructed.
- iii) *Line to be cleared before train due* – The line must be cleared at least 5 minutes before a train is expected. Once the line is clear and safe for traffic the employee in charge must advise Train Control accordingly. Advance Warning and Conditional Stop Boards are not to be removed when the track is cleared temporarily for train movements.
- iv) *Conditional Stop Board not to be passed unless authorised* – Trains must not pass a Conditional Stop Board until authorised by the employee in charge of the work. This authorisation will normally be given by radio communication.
- v) *Conditional Stop Protection not appropriate* – When the employee in charge considers Conditional Stop Protection is not appropriate then protection for Accidental Obstruction is to be used. In this instance the intermediate detonators at 500 and 1000 metres are not required.

- (c) **Positioning of Stop Signals and Boards** – Track Worker’s Stop Signals, Advance Warning Boards and Conditional Stop Boards must be placed on the side of the line which will give Locomotive Engineers the best view of them. In single-line sections, this will normally be on the right hand side facing in the direction of travel. The minimum side clearance is to be 2.15 m from the centre-line of track.

In double-line sections they should generally be placed on the left hand side of the line facing in the normal direction of travel on the line affected. A second Stop Signal or Board should be placed on the right hand side midway between the lines at a level such that it does not project more than 850 mm above rail level.

In multiple track areas or where any confusion may arise as to which line is affected, Stop Signals and Boards should be placed on both sides of the line at a level such that they do not project more than 850 mm above rail level where the distance between adjacent track centres is less than 5 metres.

- (d) **Variations to Location to Stop Signals and Boards** – When special circumstances apply, the distance of 1500 metres from the obstruction or work area for the location of Track Worker’s Stop Signals and Advance Warnings Boards and 200 metres for Conditional Stop Boards must be varied as follows to provide for safe protection of the obstruction.

- i) *Obstruction Near Tunnel* – If placing the protection would cause it to be inside or just beyond a tunnel, the Track Worker’s Stop Signal and detonators, Advance Warning Board or Conditional Stop Board must be placed at a greater distance from the obstruction or work area and whenever possible at least 400 metres beyond the tunnel where the Locomotive Engineer will have a good and distant view of it.
- ii) *Obstruction Near Controlled Signal* – If controlled signals governing the entry of trains into the obstructed section are located between the obstruction and the point at which protection is to be placed, the employee establishing the protection must also communicate with the Signalman and arrange for the signals to be held at “Stop” to prevent confusion. The Signalman must maintain the signals in that position until advised by the employee in charge that the line is clear and safe for traffic to proceed through the work area.
- iii) *Protection placed to Ensure Good and Distant View* – If placing the Track Worker’s Stop Signal and detonators or Advance Warning Board at 1500 metres, or the Conditional Stop Board at 200 metres from the obstruction or work area would cause it to be obscured from the view of the Locomotive Engineer for any reason the protection must be placed at a greater distance from the obstruction or work area where the Locomotive Engineer will have a good and distant view of it.
- iv) *Minimum Distance between Advance Warning Board and Conditional Stop Board* The distance between the boards must not be less than 1300 metres.

- (e) **Attendance at Protection** – Continuous attendance is not required at Track Worker’s Stop Signals, Advance Warning Boards and Conditional Stop Boards, except:

- i) If the employee in charge has reason to believe they are liable to be interfered with.
- ii) If the employee who is to establish Detonator Protection is not in possession of a Track Worker’s Red Disc or Red Flat, then he must remain at the place where the three pairs of detonators are placed on the rails and exhibit a Danger hand signal.
- iii) If Track Worker’s Stop Signals, Advance Warning Boards or Conditional Stop Boards are not clearly visible to Locomotive Engineers owing to fog, falling snow, or other causes, then a Protectionman must be appointed at each such Stop Signal or Board to stop approaching trains or to control their speed according to the nature of the signal or board which is exhibited.

Appendix 2

Service Delivery
WELLINGTON 23 November, 1999

INFORMATION BULLETIN - continued
WEDNESDAY 24 NOVEMBER 1999 - continued
PALMERSTON NORTH, - WELLINGTON, WOODVILLE - WELLINGTON, JOHNSONVILLE LINE:
and BRANCHES

WORK BY "TRACK AND TIME PERMIT" NEW RULE 24, MIS 60

STATIONS /METRAGES /SIGNALS BETWEEN	IN CHARGE	TYPE OF WORK

GENERAL INSTRUCTIONS:

WORK BY TRACK WARRANT REGULATION (2d)

WORK BY RULE 142, TRACK MAINTENANCE MACHINES

WORK BY RULE 175 (b), CONDITIONAL STOP PROTECTION

Ohau - Koputaroa 89.50 - 95.40	H.Sinclair	Welding 0900 - 1600

WORK BY RULE 175 (h), WORK STATION LIMITS

BJ TUFFIN.
NETWORK CONTROLLER