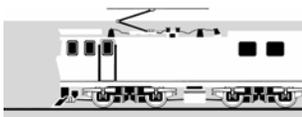
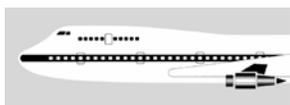


RAILWAY OCCURRENCE REPORT

05-127

Report 05-127, mainline shunting service Train M52, track occupation irregularity, Te Rapa, 27 October 2005

27 October 2005



**TRANSPORT ACCIDENT INVESTIGATION COMMISSION
NEW ZEALAND**

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Report 05-127

mainline shunting service Train M52

track occupation irregularity

Te Rapa

27 October 2005

Abstract

On Thursday 27 October 2005 at about 1410, mainline shunting service Train M52 passed through a protected worksite between Te Rapa and Horotiu on the Up Main line of the North Island Main Trunk without authority from the protector of the worksite.

The site protector was alerted to the imminent arrival of the train and cleared the track before the train arrived.

There were no injuries or equipment damage.

Safety issues included:

- the Conditional Stop Protection rules
- the identification of the correct stopping position when a train approaches a switchlocked controlled set of points.

Two safety recommendations were made to the Chief Executive of ONTRACK to address these issues.

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Abbreviations

CSP	Conditional Stop Protection
DLAS	Double Line Automatic Signalling
km	kilometre(s)
m	metre(s)
NIMT	North Island Main Trunk
SBC	signalbox controller
UTC	coordinated universal time

Data Summary

Train type and number:	mainline shunting service Train M52
Date and time:	27 October 2005, at about 1410 ¹
Location:	Te Rapa
Persons on board:	crew: 3
Injuries:	nil
Damage:	nil
Operator:	Toll NZ Consolidated Limited (Toll Rail)
Investigator-in-charge:	P G Miskell

¹ Times in this report are New Zealand Daylight Times (UTC + 13) and are expressed in the 24-hour mode.

1 Factual Information

1.1 Narrative

- 1.1.1 On Thursday 27 October 2005, Train M52² was a mainline shunting service required to lift a rake of wagons from Te Rapa Public Siding and return to Te Rapa freight yard. In order to carry out the shunt Train M52 had to enter a track maintenance work area, protected by Conditional Stop Protection (CSP), without encroaching on the actual worksite. Train M52 consisted of light locomotive DC4409 crewed by a locomotive engineer, a second person who also held locomotive engineer certification and a rail operator.
- 1.1.2 At about 1400, Train M52 stopped short of the STOP board erected at 547.5 kilometres (km) on the Up Main line of the North Island Main Trunk (NIMT). The locomotive engineer radioed the protector of the track maintenance worksite (site protector) who authorised him to pass the STOP board but proceed no further north than the Apple and Pear Board Siding at 548.18 km (see Figure 1) before crossing to the Down Main line via the switchlocked crossover. The authority was acknowledged and repeated by the locomotive engineer to the site protector.

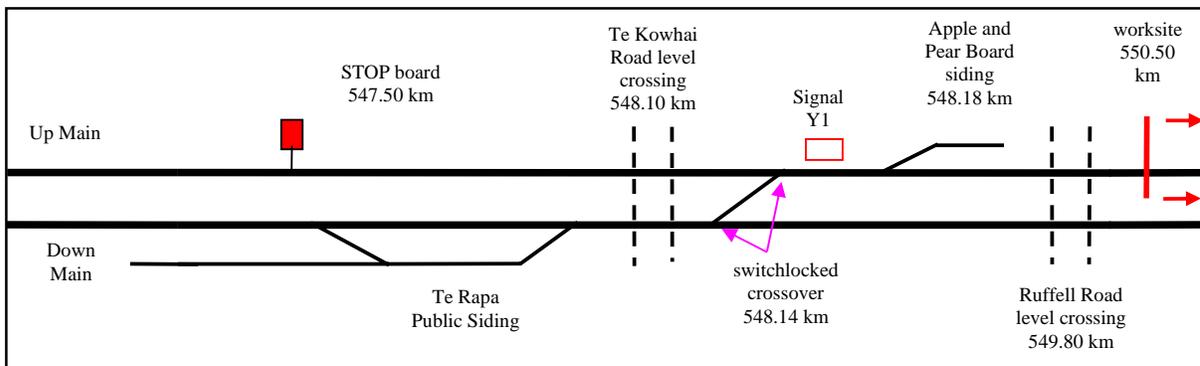


Figure 1
Locality plan (not to scale)

- 1.1.3 After giving conditional authority for Train M52 to pass the STOP board, the site protector contacted train control to ascertain details of the next train movement to approach the board. The train controller told him that express freight train MP26 would be the next train, but instructed him to call back at 1500 so that he could be given the updated arrival time. The site protector then instructed his staff to resume work on the track.
- 1.1.4 At about 1405 the locomotive engineer of Train M52 stopped his train short of the Apple and Pear Board siding but had overrun the track circuitry which prevented the activation of the switchlocked crossover. The locomotive engineer radioed the train controller to inform him of his predicament.
- 1.1.5 At about 1408 the locomotive engineer called the Te Rapa signalbox controller (SBC) to inform him of the situation and the SBC instructed the shunt crew to stay where they were while arrangements were made for a signal maintainer to hand wind the points.
- 1.1.6 The locomotive engineer said that a few minutes later, the SBC confirmed that he had spoken to the train controller, that the train controller had been in contact with the site protector and that it was okay for the shunt to continue on the Up Main to Horotiu and return on the Down Main, then enter Te Rapa Public Siding.

² Train M52 lifted and/or placed wagons as required within a circuit that included Te Rapa Public Siding and Te Awamutu on the NIMT and Hautapu on the Cambridge Industrial line.

1.1.7 The SBC then telephoned the site protector to enquire whether he had authorised Train M52 to pass through the worksite at 550.50 km on the Up Main line and continue to Horotiu. The site protector then looked south and saw a locomotive about 600 metres (m) away and approaching.

1.1.8 The site protector warned his gang of the approaching train, and they removed all equipment from the track before the train passed. There were no injuries or equipment damage.

1.2 Site information

1.2.1 The track between Te Rapa and Horotiu on the NIMT consisted of an Up Main line and a Down Main line. Trains travelled on the left-hand side in direction of travel.

1.2.2 A switchlock-controlled crossover at 548.14 km on the Up Main line allowed Up trains to reverse onto the Down Main line from which they could then access Te Rapa Public Siding (see Figure 2).

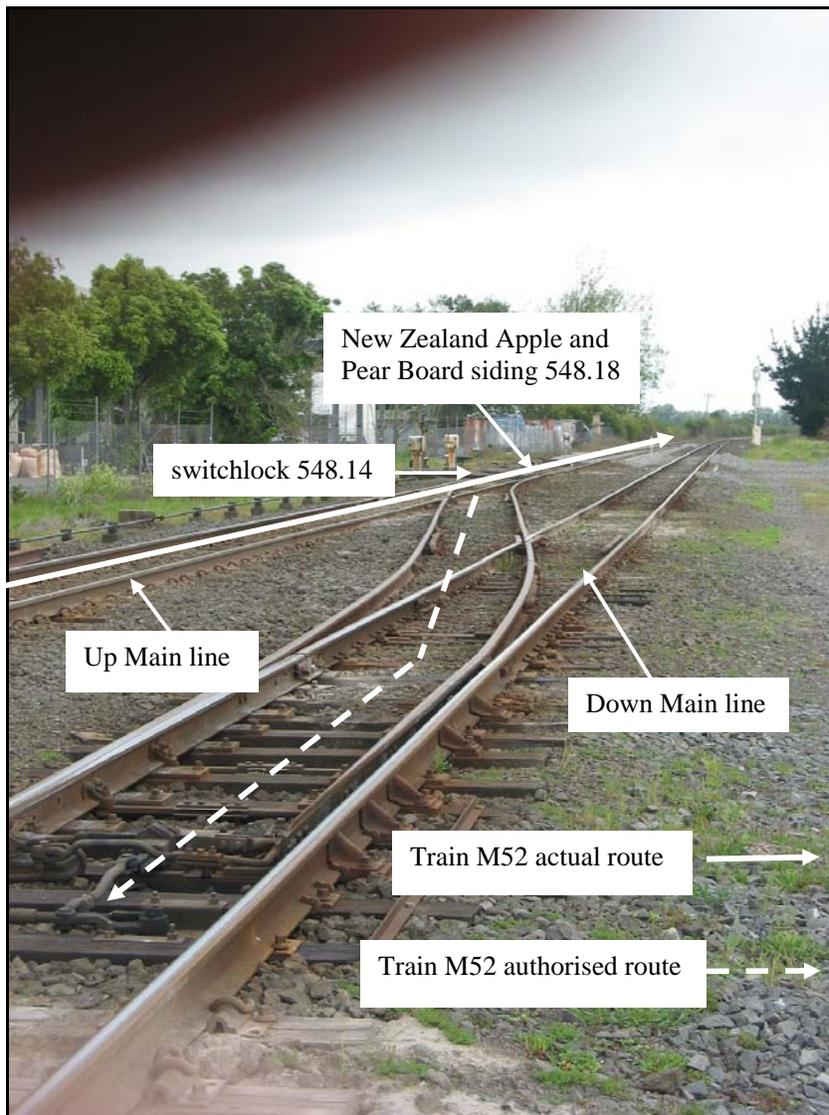


Figure 2
Switchlock-controlled crossover

1.3 Operating information

- 1.3.1 DC class locomotives running on the Up Main line between Te Rapa and Horotiu were restricted to a maximum operating speed of 100 km per hour.
- 1.3.2 Train movements on the NIMT were controlled from the national control centre in Wellington. Double line automatic signalling (DLAS) operated between Hamilton and Te Kauwhata.
- 1.3.3 Toll Rail had no site-specific operating procedures for shunting Te Rapa Public Siding.
- 1.3.4 The Te Rapa SBC operated the interlocking between Hamilton and Horotiu. Horotiu was an interlocked station with a “switch out” signalbox, normally switched “out” so controlled from the national train control centre in Wellington. When switched “in” it was remotely controlled by the Te Rapa SBC.
- 1.3.5 Switchlocks controlled the main line points at both Te Rapa Public Siding and New Zealand Apple and Pear Board Siding. The operation of switchlocked sidings in DLAS territory was governed by ONTRACK’s³ Rule 5, which stated in part:

Switch-locked Sidings

Switch-locked sidings points outside station limits are provided with a single-line switch-lock which is so arranged that the points can be reversed for the siding only after the electric lock has been released.

When it is necessary for a train to work a switch-locked siding **it must be brought to a stand before reaching the points.**

When the intended movement entails the crossing of the opposite main line, before opening the switch-lock door a member of the train crew must observe (as far as practicable) that a train is not approaching the siding or the signal on the opposite line which protects the crossover road.

After obtaining permission from Train Control, the member must go to the switch-lock and open the door which is locked with an AS padlock. After the time release has run down, the indicator will show that the lock is free and he must then turn lever “B” [see Figure 3]. This will allow him to reverse the points by means of the points lever.

The opening of the switch-lock door holds at “Stop” all signals protecting the lines affected and extinguishes the “A” light on such signals, converting them from Stop and Proceed to Stop and Stay signals.

When the turnout does not cross the opposing main line the operation of the switch-lock does not affect the signals on that line.

When it is necessary to lift or put off wagons and the train is not to completely enter the siding, the lock must be left free until shunting is completed and the locomotive has returned to the main line. A member of the crew must then set the points in the normal position for the main line, replace lever “B” and close and padlock the door of the switch-lock.

When a train has to completely enter the siding, to shunt or permit a following train to pass, the member of the train crew must restore the switch-lock and points to normal and satisfy himself that all is clear and safe for the following trains to pass.

³ ONTRACK was responsible for maintaining the operating rules and procedures applicable to all rail personnel operating service vehicles and carrying out maintenance activities on the controlled network.



Figure 3
Switchlock control mechanism at 548.14 km NIMT

When the train is ready to proceed to the main line the procedures set out in clauses (c) and (d) will apply. After the train is on the main line, the member of the crew must set the points in their normal position for the main line and close and padlock the door of the switch-lock. The Locomotive Engineer must not proceed until he has received an assurance that this has been done.

When a switch-lock is unable to release and is required to be used, Train Control will verbally authorise Signals Staff to open the switch-lock once the train has stopped at the points. Once the movement has returned to the main line, Train Control must obtain a confirmation that the points and switch-lock equipment are locked for main line running. This information must be recorded on the Train Control diagram.

- 1.3.6 When shunting Te Rapa Public Siding, it was normal practice for the shunt crew to consist of 3 persons: a locomotive engineer and 2 others on the ground. This arrangement ensured that the switchlock mechanisms controlling movement from the Up Main line to the Down Main line, and from the Down Main line into Te Rapa Public Siding, could be operated simultaneously, resulting in minimal delay to road traffic using the Te Kowhai Road level crossing.

1.4 Information bulletins

- 1.4.1 Information bulletins were dated, unnumbered documents, prepared by ONTRACK's Network Authorities specialists and issued the day before the bulletins were due to come into effect. Each bulletin applied to a specified section of track for one day of operation only, and included details of planned track work to be carried out under Rule 905, Conditional Stop Protection.
- 1.4.2 Information bulletins formed part of the documentation held by the locomotive engineer on every train passing through an affected section of track. Copies of the bulletins were also made available to track staff working in that section of track.

- 1.4.3 The information bulletin issued on 26 October 2005 described track work protection arrangements for work to be carried out the next day on all lines north and east of Te Rapa and included:

Protected Work Area		Rule	Work Details
547.50 km Te Rapa Up line	552.20 km Horotiu Up line	905 Conditional Stop Protection	Welding 0730-1630 021 0644 741 Call sign: Foxtrot Bravo

1.5 Conditional Stop Protection

- 1.5.1 ONTRACK's Bulletin No. 687, effective from Monday 3 October 2005 at 1200, included changes to the Track Occupancy Protection Rule 905 and stated in part:

Conditional Stop Protection

Following recent incidents involving Conditional Stop Protection it will now be necessary for Locomotive Engineers to **STOP** trains at Conditional Stop Boards and then observe the following procedure:-

- Once the train is stopped the Locomotive Engineer will initiate contact with the Site Protector using the radio call sign allocated for the work on the Information bulletin.
- The Locomotive Engineer will obtain from the Site Protector:-
 - authority to pass the Conditional Stop Board
 - any associated instructions regarding speed through the work site.

This procedure aligns with that used for authorising passing of Signals at "Stop" where the train must be stopped at the signal concerned.

905. Conditional Stop Protection

Note: The advance warning and conditional stop boards described in this rule are not to be used. New boards as described herein must be used

(b) When to use Conditional Stop Protection (replaces existing instruction).

Conditional Stop Protection must be used whenever planned work involves breaking the track, or will interfere with the safe operation of trains, e.g.

- welding
- rerailing (including short closer rails)
- maintenance with heavy tools and/or equipment

Planned work (which includes other work of more than 90 minutes duration) which is planned at least one day in advance must be advised to the Authorities office the day before so that the appropriate bulletin can be arranged. Emergency situations and work of an urgent nature that is arranged on the day will be added to the appropriate bulletin by Train Control and Locomotive Engineers advised accordingly.

c) Positioning of Stop Signals and Boards (replaces existing instruction)

Advance Warning Boards, Inner Warning Boards and Conditional Stop Boards must be placed on **each** side of the line opposite each other. The minimum side clearance is to be 2.15 m from the centre line of track.

In double-line sections smaller boards may be used on the right hand side midway between the lines. They should not project more than 850 mm above rail level.

The metrages shown on bulletins indicate where the Conditional Stop Boards will be located.

In Double Line Automatic Signalling areas where the Conditional Stop Board is erected on one line only, a metrage indicating the termination of the work site will be shown on the bulletin.

Note: Some of the lines leading to the work area may include an exit from a yard or siding where it may not be possible to erect Inner Warning Boards or Advanced Warning Boards. These circumstances must be notified on the bulletin.

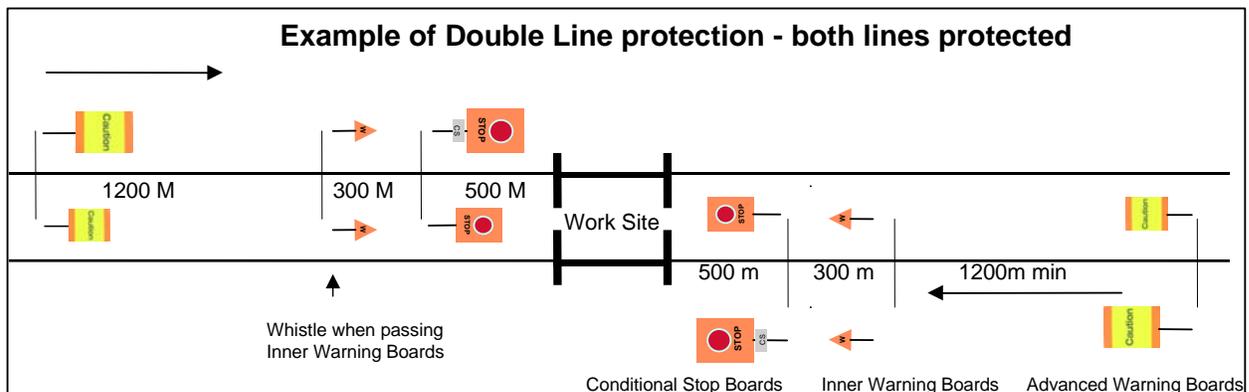
(d) Establishing Protection (replaces existing instruction)

Before work starts:-

- Establish no trains are closely approaching.
- Erect Advance Warning Boards 2000 metres in advance of the outer limits of the work area.
- Erect Inner Warning Boards 800 metres in advance of the outer limits of the work area.
- Erect Conditional Stop Boards 500 metres in advance of the outer limits of the work area.
- The metrages where the Conditional Stop Boards are erected will be shown on the bulletin.

NOTE: In Single line the right hand Conditional Stop Board will display the letters denoting the allocated call sign below the board.
In Double line the left hand Conditional Stop Board will display the letters denoting the allocated call sign below the board.

Locomotive Engineers must sound the locomotive whistle when approaching the Inner Warning Board.



- Boards to be erected between main lines to be placed centrally and must not project more than 850 mm above rail level.

- Protection to be provided in normal direction of travel approaching the work area.
- If both lines affected, protection to be provided on both lines.
- If wrong line running or a setting back movement is required on the obstructed line protection must be provided on both sides of the work area.

(g) Conditional Stop Board not to be passed unless authorised (replaces existing instruction)

- Trains **must stop** at Conditional Stop Boards.
- Once stopped, the Locomotive Engineer must then contact the Person in Charge (Site Protector) for authorisation to pass the Conditional Stop Board.

1.5.2 Because the worksite was confined to the Up Main line, boards were erected for Up trains only, at the following locations:

- 546.00 km Caution boards on all 5 roads at the exit from the north end of Te Rapa Yard
- 547.20 km Whistle boards on each side of the line
- 547.50 km STOP boards on each side of the line.

1.6 Personnel

The locomotive engineer

- 1.6.1 The locomotive engineer had been driving trains for about 30 years, mostly in the Wellington area. In 2002 he transferred to Te Rapa and, on 17 June of that year, completed his site induction/familiarisation for all stations and sidings between Ohakune and Papakura on the NIMT, Te Rapa and Mount Maunganui on the East Coast Main Trunk and all industrial sidings serviced from Te Rapa.
- 1.6.2 His most recent Level A safety observation had been conducted on 12 January 2005. During the safety observation, his train was required to enter a worksite protected by CSP. No compliance concerns were identified during the safety observation.
- 1.6.3 The locomotive engineer had recently returned to work from an extended absence due to ill-health. A condition of his return to locomotive engineer duties was that he was to be accompanied by a qualified locomotive engineer for a minimum period of 3 months followed by a further review.
- 1.6.4 The locomotive crew shared the responsibility for the operation of the train. However, the person driving at the time was responsible for the safe operation of the train.
- 1.6.5 On the day of the incident, he started work at 1045 and was rostered on Train M52 until 2145. He signed for and read the information bulletin that identified welding activity being carried out, under Rule 905, CSP, between Te Rapa and Horotiu on the Up Main line of the NIMT.
- 1.6.6 After receiving authority from the site protector to pass the STOP board and proceed no further than the Apple and Pear Board siding at 548.20 km, the locomotive engineer stopped his train south of the Te Kowhai Road level crossing, so that the second person could alight and operate the switchlock points from the Down Main line to Te Rapa Public Siding.

- 1.6.7 Train M52 then crossed the Te Kowhai Road level crossing, at walking pace, and continued on the Up Main line past Signal Y1 before being stopped. At about 1406, train control was advised that Train M52 had stopped beyond the switchlock track circuit and that it was not possible to get a release. The locomotive engineer suggested, and the train controller agreed, that Train M52 continue on to Horotiu, and return on the Down Main line to Te Rapa Public Siding.
- 1.6.8 The locomotive engineer called the SBC to advise that he had permission from the train controller to proceed to the loop at Horotiu, run around and return to Te Rapa Public Siding on the Down Main line. Train M52 then proceeded to Horotiu at normal speed.
- 1.6.9 Soon after Train M52 crossed the Ruffell Road level crossing, at 549.80 km, the locomotive engineer saw the track gang working foul of the track about 600 m ahead. He reduced speed immediately and when he saw the track gang was clear of the track continued on to Horotiu, without contacting the site protector. Train M52 arrived at Horotiu at about 1410 and departed shortly after, returning on the Down Main line.
- 1.6.10 The locomotive engineer said later that he had shunted Te Rapa Public Siding about 7 or 8 times. On all previous occasions he had been the second person and operated the switchlock mechanism on the Down Main line to Te Rapa Public Siding. This was the first occasion that he had been the locomotive engineer in charge.

Crewing on the day

- 1.6.11 A second locomotive engineer made up the normal complement of 3 required to shunt Te Rapa Public Siding. Additionally, the accompanying locomotive engineer was able to support the locomotive engineer should he become unwell.

The site protector

- 1.6.12 The site protector was an appointed ganger who was responsible for the safety and work performance of a welding gang. He had 7 years' experience in the rail industry and was qualified to carry out planned work under Rule 905, CSP.
- 1.6.13 On the morning of the incident, he picked up a copy of the information bulletin for each of the 3 hi-rail vehicles assigned to his work group. The bulletin authorised him to carry out welding activities on the Up Main line between Te Rapa and Horotiu, under Rule 905, CSP.
- 1.6.14 Before starting work within the protected area from 547.50 km to 552.20 km, he contacted train control and was given permission to erect the required boards and start work.
- 1.6.15 Between train movements, the gang was working cutting out previously identified rail defects and welding in short closer rails between 550.50 km and 551.00 km.
- 1.6.16 At about 1335 the site protector received a cellphone call from the SBC advising that Train M52 would depart from Te Rapa Yard and proceed to the switchlocks at 548.10 km on the Up Main line and cross over to the Down Main line so it could lift wagons from Te Rapa Public Siding.
- 1.6.17 The site protector reminded the SBC that Train M52 must stop at the STOP board, erected at 547.50 km, and the locomotive engineer must call on the channel 1 radio to request authority to pass the board.
- 1.6.18 At about 1355, he gave the locomotive engineer permission to pass the STOP board but to proceed no further than the Apple and Pear Board Siding at 548.18 km from where he could cross over to the Down Main line before entering Te Rapa Public Siding. He then switched his truck radio to channel 4 to make the agreed 1400 base call to train control, and enquire about the anticipated arrival time of the next train on the Up Main line.

- 1.6.19 At about 1408, the train controller advised the site protector that express freight Train MP26 would be the next train scheduled to approach the STOP boards. At that time, the train was at Apata and the site protector was asked to call back at 1500 to get an update on its progress.
- 1.6.20 The site protector left the truck and instructed his gang to resume work knowing that there was at least a 50 minute work window available before the next train arrived. While some of the gang were finishing grinding a weld and others were loading welding equipment onto a truck parked trackside and tidying the worksite, he received a cell phone call from the SBC enquiring whether he had authorised Train M52 to proceed to Horotiu. He replied in the negative, then looked south and saw a locomotive about 600 m away approaching at what appeared to be normal speed, so he told his gang to clear the track.
- 1.6.21 After Train M52 had passed through the worksite, the site protector contacted train control and asked who had authorised Train M52 to come through his worksite. He was informed by the train controller that authority to pass the STOP board could only be given when the worksite was clear and safe for trains. The site protector confirmed that that was the case when he authorised Train M52 to pass the STOP board and proceed no further than 548.18 km. He said that he had instructed the gang to resume work on track because the train wasn't passing through the worksite and there was a 50 minute work window available before the anticipated arrival of the next train at the STOP board. After some discussion, the train controller agreed to log the incident as an operating irregularity.

The signalbox controller

- 1.6.22 The SBC had nearly 30 years' experience operating the signalbox at Te Rapa. On the day of the incident, he was rostered on duty from 0800 to 1600. He read the daily information bulletin at the start of his shift and was aware of the welding activity programmed on the Up Main line between Te Rapa and Horotiu.
- 1.6.23 At about 1330, the SBC received a call from the locomotive engineer of Train M52 saying that they were travelling up the north end No. 1 departure road and wanted to lift wagons from Te Rapa Public Siding. After contacting the train controller, the SBC gave a proceed indication on the Up starter signal.
- 1.6.24 He then telephoned the site protector who said that he would let Train M52 pass the STOP board and travel as far as the switchlock so that the train could cross over to the Down Main line.
- 1.6.25 At about 1408, the locomotive engineer called the SBC from the crossover on the Up Main line and told him that he could not get a release on the switchlock and that he had permission from the train controller to continue on to Horotiu so that he could run around and return on the Down Main line to enter Te Rapa Public Siding.
- 1.6.26 The SBC contacted the train controller and received confirmation of the intended movement and was told that the site protector was happy with the movement. He then telephoned the site protector, who expressed some concern that Train M52 would pass through his worksite without his authority.

The train controller

- 1.6.27 The train controller had attained certification on the Auckland desk on 18 February 2005. He also held certification to operate both the East Coast Main Trunk and Taumarunui train control desks. His most recent desk audit had been conducted on 20 May 2005 with all tasks observed meeting requirements. A tape audit had been carried out on 27 September 2005 and there were no areas of concern identified.
- 1.6.28 On the day of the incident, he was rostered on duty from 0650 to 1500. He had worked the same shift the previous 3 days after returning from 2 weeks' leave.

- 1.6.29 At about 1406, the train controller received a telephone call from the second person on Train M52 advising that he was unable to get a release on 54814 Up Main line switchlock and was then asked for permission to proceed to Horotiu. He authorised the movement and subsequently advised the SBC.
- 1.6.30 At about 1408, the train controller received a radio call from the site protector enquiring about the expected arrival time of the next service to approach the STOP board. The train controller advised that Train MP26 was the next service due at the worksite at about 1500. It was agreed that the site protector would call back at that time.
- 1.6.31 The train controller said later that he was under the impression that the train crew had talked to the site protector about proceeding to Horotiu, because he had conversed with the train crew only a couple of minutes before the enquiry from the site protector.
- 1.6.32 After Train M52 had passed through the worksite, the train controller received a radio call from the site protector stating that Train M52 had been authorised to pass the STOP board but come no further than 548.2 km. The site protector stated that he had not given Train M52 authority to proceed to Horotiu.

1.7 A previous track occupation irregularity involving CSP

Occurrence report 03-113, diesel multiple unit Train 3366, passed Conditional Stop Board without authority, Glen Innes, 30 October 2003

- 1.7.1 On Thursday 30 October 2003, Train 3366, a Tranz Metro⁴ Papakura to Britomart diesel multiple unit passenger train, passed a Conditional Stop Board, between Tamaki and Glen Innes, without authority. The safety issues included:
- the quality of the Channel 1 radio reception near Tamaki
 - the radio procedures for communication between locomotive engineers and the site protector
 - the presentation of the Conditional Stop Boards
 - the frequency of other similar incidents being reported.
- 1.7.2 Following the incident, where the locomotive engineer claimed he had been and the site protector denied he had been given authority to pass the Conditional Stop Board, a joint working party was established to review the CSP method. Among the changes to Rule 905, CSP, which became effective from 19 April 2004, was that it became compulsory for locomotive engineers to stop their trains at STOP Boards before initiating radio contact with the site protectors. The procedure was aligned with that used for trains passing signals at STOP, where the train must stop at the signal concerned.

2 Analysis

- 2.1 CSP was the appropriate method with which to protect the track maintenance work on the day of the incident. The daily bulletin had correctly identified the limits of the work area and the contact details for the site protector. All relevant parties had received the bulletin and there were no misunderstandings on its content.
- 2.2 The Advanced Warning Boards, Inner Warning Boards and Conditional Stop Boards were sited in accordance with Rule 905. Although the planned rail replacement work was to occur between 550.50 km and 551.00 km on the Up Main line, the limits of the work area were identified on the information bulletin as between 547.50 km and 552.20 km.

⁴ Tranz Metro was the group within Tranz Rail with responsibility for the operation of suburban rail services in Auckland.

- 2.3 The STOP boards had been placed 3 km in advance of the actual worksite, which was 2.5 km further out than the 500 m minimum distance required by Rule 905. The site protector would have extended the limits of the protected work area back to 547.50 km to include the 2 protected level crossings. Had the STOP boards been erected at 550.00 km, to comply with the minimum Code requirement, and it became necessary to hold a train at the STOP board until the track was safe, it would have blocked the level crossing, activated the crossing alarms and delayed motorists unnecessarily.
- 2.4 The site protector was responsible for authorising the movement of rail vehicles past the STOP boards and within the work area. In most situations on the rail network, the track was bi-directional, and it was normal for rail vehicles to be authorised to enter the work area, travel through the worksite then pass the STOP board at the other end of the work area. However, on this occasion the protected work area was restricted to the Up Main line in a double track area and the site protector had authorised Train M52 to pass the STOP board, travel about 600 m towards the worksite then cross over to the Down Main line and exit the work area without passing through the actual worksite.
- 2.5 Although the worksite was clear at the time the site protector authorised Train M52 to enter the work area from the south end, his decision to instruct his gang to resume work on the track was reasonable, based on his understanding that Train M52 would come no closer than 2 km from the actual worksite and that Train MP26, the next train to approach the Conditional Stop Board, was still at least 50 minutes away.
- 2.6 Rule 905 did not specifically prohibit a site protector from authorising a rail vehicle movement past the STOP board to a predetermined point short of the actual worksite. On this occasion the site protector probably thought that it was a “win-win” situation for both parties, where Train M52 could complete its task and return to Te Rapa, while at the same time the track maintenance work could resume and be completed before the arrival of the next train. A safety recommendation has been made to the Chief Executive of ONTRACK to address this issue.
- 2.7 Because there were no site-specific instructions for operating Te Rapa Public Siding, the locomotive engineer was reliant on his experience and local knowledge to carry out the shunt movement. Although he had nearly 30 years’ driving experience, he had not previously been the person in charge when lifting wagons from, or placing wagons on, the siding. However, he had previous experience shunting switchlock-controlled sidings in DLAS territory as a Wellington-based locomotive engineer. Had there been a limit marker post that clearly identified the location where the locomotive must be stopped before the switchlock control mechanism could be unlocked, the incident probably would not have happened. A safety recommendation has been made to the Chief Executive of ONTRACK to address this issue.
- 2.8 The locomotive engineer of Train M52 had correctly sought authority from the site protector to pass the STOP board in accordance with Rule 905. However, that authority had been given to a specific location only. Once the train had overrun the switchlock circuitry there were 3 options available to the locomotive engineer. The train could have set back after the train controller had issued the required misc. 60 authority; the train could have remained where it had stopped and the SBC called out signals staff to release the electrical lock of the switchlock mechanism; or, the most expedient option, the train could have continued on the Up Main line to Horotiu and returned on the Down Main line. Once the locomotive engineer had decided to continue to Horotiu, he should have contacted the site protector to ascertain that the worksite was clear before contacting the train controller. That he did not do so was a significant contributing factor to this incident.
- 2.9 The second person in the shunt crew was a qualified locomotive engineer. Having returned to the locomotive cab and heard the radio communication between the locomotive engineer and the train controller, and the locomotive engineer and the SBC, he should have checked with the locomotive engineer that the site protector had authorised Train M52’s movement from 548.18 km through the worksite.

- 2.10 The site protector, the SBC, the locomotive engineer and the train controller all had shared responsibility for the safe movement of Train M52 from Te Rapa Yard to the Public Siding and return. However, once the train was authorised by the site protector to pass the STOP board, the management of rail vehicle movements within the limits of the protected work area became the responsibility of the site protector.
- 2.11 When the train controller was contacted by the locomotive engineer of Train M52 advising of the changed circumstances, he should have challenged the locomotive engineer, as part of the cross-check procedure, to ensure that the site protector had given authority for Train M52 to pass through the worksite. That he did not do so was a contributing factor to this incident.
- 2.12 Had the SBC not alerted the site protector to the situation before the arrival of Train M52, injuries to the track gang or equipment damage could have resulted. Given the nature of the work being carried out, the track could have been broken, which would have put the train and its crew at risk. Had Rule 905 been properly followed, this incident would not have occurred.

3 Findings

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

- 3.1 The operating irregularity incident occurred because the locomotive engineer of Train M52 proceeded through the worksite without authority from the site protector.
- 3.2 CSP was appropriate for the track work being undertaken.
- 3.3 The Conditional Stop Boards and the Warning Boards were erected in accordance with documented procedures.
- 3.4 Rule 905, Conditional Stop Protection did not specifically make provision for the site protector to authorise a rail vehicle to pass the STOP board and travel to an agreed location short of the worksite. However, neither did the Rule exclude that possibility.
- 3.5 The site protector gave the locomotive engineer conditional authority to pass the STOP board but to continue no further than the siding at 548.18 km. By repeating the limits of the authority, the locomotive engineer confirmed his understanding of those limits.
- 3.6 Once inside the protected area, the management of Train M52's movements was the sole responsibility of the site protector.
- 3.7 The locomotive engineer's limited knowledge of the layout and limited experience with the operation of Te Rapa Public Siding, when combined with the absence of a limit marker post, contributed to his overrunning of the switchlock circuited area.
- 3.8 Had the locomotive engineer contacted the site protector to request permission to continue through the worksite, the incident would not have occurred.
- 3.9 Had the accompanying locomotive engineer asked the locomotive engineer whether he had been given authority by the site protector to pass the Apple and Pear Board Siding and continue on the Up Main line to Horotiu, the incident would not have occurred.
- 3.10 Had the train controller known that the locomotive engineer had not received authority from the site protector to pass through the worksite, the train controller would not have given authority for Train M52 to proceed to Horotiu.
- 3.11 Had the SBC not alerted the site protector to the approach of Train M52, the track would have been obstructed when the train entered the worksite.
- 3.12 The actions of the SBC and the site protector did not contribute to the incident.

4 Safety Recommendations

Safety recommendations are listed in order of development and not in order of priority.

4.1 On 5 April 2007 the Commission recommended to the Chief Executive of ONTRACK that he:

site a limit marker post or take other such measures to ensure the locomotive engineer of a train shunting Te Rapa Public Siding from the Up Main line of the North Island Main Trunk line stops his train at a specified location that permits the switchlock control mechanism at 548.14 km to be unlocked. (010/07)

amend Rule 905, Compulsory Stop Protection, to allow the site protector to give authority to the driver of a rail vehicle to pass the compulsory STOP board and proceed to a location short of the worksite. Where circumstances change, the site protector must be contacted to authorise all subsequent rail vehicle movements within the work area. (011/07)

Approved on 15 February 2007 for publication

Hon W P Jeffries
Chief Commissioner



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