NO. 93-118

TRAIN 203

WHANGAMARINO

25 OCTOBER 1993

ABSTRACT

This report relates to a collision between the southbound Auckland-Wellington passenger train No. 203 and the edge of an open door of a container on a northbound freight train, No. B38, which was stationary in a crossing loop at Whangamarino on 25 October 1993. A window in one of the carriages was broken injuring two passengers. The safety issue identified in this report is the minimum spacing between main lines and crossing loops.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

RAIL ACCIDENT REPORT NO. 93-118

Train Type and Number:	Express Passenger, 203; Freight, B38
Date and Time:	25 October 1993, 2156 hours NZDT
Location:	Whangamarino 598.60 km North Island Main Trunk
Type of Occurrence:	Train 203 collided with an open container door on train B38 which was on the adjacent track
Persons on Board:	Crew: 203: 3 B38: 1 Passengers: 203: Approx. 180 B38: Nil
Injuries:	Crews: Nil Passengers: 2 minor Others: Nil
Nature of Damage:	Minor collision damage to carriages on 203; moderate damage to door of a container on B38.
Information Sources:	Transport Accident Investigation Commission field investigation
Investigator in Charge:	Mr WJD Guest

1. NARRATIVE

1.1 New Zealand Rail Limited's train 203 on 25 October 1993 was the overnight Auckland-Wellington express passenger service (the Northerner).

1.2 Shortly before 2200 hours the train was approaching Whangamarino, a crossing loop on the single track between Mercer and Te Kauwhata.

1.3 The Locomotive Engineer observed a yellow over red light indication on the home signal, which was a direction for him to slow and be prepared to stop at the next signal. He was slowing the train when the signal changed to green over red, so he accelerated again to approximately 80 km/h.

1.4 When the train reached Whangamarino, the Locomotive Engineer saw that there was a northbound train stationary in the crossing loop to his left. This was B38, a Wellington-Westfield express freight service.

1.5 As the Northerner rounded a slight left hand curve, the Locomotive Engineer saw that the door of a container on train B38 was opened outwards towards the main line on which the Northerner was travelling.

1.6 The Locomotive Engineer realised that the outer edge of the door might foul the path of his train, and applied the brakes. As the door was only 200 m in front of the Northerner, he was unable to stop the train before reaching it.

1.7 As the locomotive passed the door without colliding with it, the Locomotive Engineer thought that there may have been just sufficient clearance for his train. He advised the Locomotive Engineer of B38 (the freight train) of the open container door by radio, and as he finished the message the emergency brakes were also applied from one of the carriages. The train was brought to a halt.

1.8 The Train Manager then contacted the Locomotive Engineer on a portable radio and advised him that a window had broken in the third carriage of the train and that two passengers had been injured. The Locomotive Engineer sent a radio message to Train Control, and the Controller telephoned for an ambulance.

1.9 The passengers sitting in the seat beside the window who received minor cuts and abrasions from the flying glass were shaken by the incident. After treatment by a local doctor, they rested overnight and continued their journey next day.

1.10 Examination of the train revealed that the container door had scraped the side of a generator van, scratching paintwork and inflicting minor panel damage. No other damage was done to the rest of the train, apart from the broken window in the middle of the following carriage. The edge of the container door and the hinges were damaged.

1.11 The exact movement of the container door was not determined. The door was facing the oncoming Northerner. Its hinge mechanism allowed for a full 270 degree swing, from fully closed to a position against the side of the container. The Locomotive Engineer of the Northerner could see that the door was wide open, but could not observe its exact angle. However, the damage was consistent with the door being thrown clear after the initial scraping contact with the generator van, and then bouncing back to break the window of the next carriage. The initial contact was probably caused by the slipstream of the Northerner swinging the door into the generator van.

1.12 The container was a standard ISO shipping container. It had been packed and sealed by the consignor. The container was closed correctly, the holes on the handles aligned, and the metal seal passed through the holes and clamped. The handles could not be positioned to align the holes unless the doors were properly closed.

1.13 Consignors used a variety of seal types, but the application of them was common to all ISO containers. The container could not be opened unless the seal was broken. New Zealand Rail Limited and most consignors used seals which were impossible to open by hand, and required heavy bolt cutters to remove. A door of a container which had been sealed could not open because the handles could not be moved to release the closing mechanism.

1.14 Train B38 had commenced the journey from Wellington on 23 October, arriving in Taumarunui during 24 October. Because 25 October was Labour Day the train remained in Taumarunui until the afternoon of 25 October to suit crew rostering requirements for the statutory holiday.

1.15 New Zealand Rail Limited's operating manual required that all trains were inspected before leaving the originating terminal. The checks included the integrity of the door seals on any containers.

1.16 A lesser check would be carried out at intermediate stations on the journey if wagons or locomotives were added or changed.

1.17 In this instance a full inspection was carried out at Taumarunui as if the train was originating from there because of the time that the train had been berthed unattended. The Train Examiner noted that all containers were secure.

1.18 During the journey from Taumarunui to Whangamarino, B38 stopped for 55 minutes in Hamilton awaiting the arrival of the Locomotive Engineer who was to complete the journey to Westfield. It would have been possible for a thief or thieves to have boarded the wagon with cutting equipment, cut the seal, and opened the container during this period.

1.19 After B38 completed its journey and the container was delivered, the consignee reported that two parcels were missing, confirming that a theft had occurred.

1.20 The Locomotive Engineer was not required to make regular inspections of the train while in transit. While driving the train he was seated on the right hand side of the locomotive cab. It was not appropriate for him to leave the driving position while the train was moving.

1.21 Had the train passed a staffed station or track maintenance staff, or had it crossed another freight train, the container door may have been noticed earlier. However, most staff were taking the statutory holiday, and there were few people on the railway to raise the alarm. The absence of the usual number of staff in the Hamilton-Te Rapa area may have assisted the thief or thieves also.

1.22 The minimum spacing between main lines and loops for the construction of new tracks or the major renewals of old tracks on New Zealand Rail was set down in a company code of practice. The predecessors of New Zealand Rail Limited, the New Zealand Railways Corporation and the New Zealand Government Railways Department also had standards for track construction defined in codes. The spacing between tracks was revised occasionally to take into account the use of wider wagons and carriages.

1.23 The current code of practice, in keeping with its predecessors, did not require that all track be altered when a change to the standard for construction was made. It would have been impractical and uneconomic to do so.

1.24 The code issued by the New Zealand Government Railways Department in 1964 required a spacing between main lines and loops of 12 ft, measured between track centres. In metric measurement, this is 3.66 m.

1.25 The code issued by the New Zealand Railways Corporation in 1980 required a spacing of 3.80 m.

1.26 In June 1993, New Zealand Rail Limited issued an amendment to its code of practice, requiring a spacing of 4.00 m.

1.27 The distance from the centreline of another ISO container to the extremity of the open door was measured as 2.46 m. The dimensions of the container involved in the accident would have been similar. The carriage in which the window was broken measured 1.35 m from centreline to outer edge. Thus the track centre distance required for clearance was a minimum of 3.81 m.

1.28 Measurements of the track centres taken after the accident at intervals along the Whangamarino crossing loop varied from 3.80 m to 3.54 m. In the vicinity of the collision point the spacing was 3.60 m, which was less than the standard set down in the 1964 code. While there was ample clearance for trains to pass in normal circumstances, the space was insufficient to accommodate the open container door without hitting the passing train.

2. FINDINGS

2.1 The container on train B38 was closed and sealed at the commencement of its journey from Taumarunui on 25 October 1993.

2.2 Between Taumarunui and Whangamarino, probably at Hamilton, the container was unlawfully broken into and the door was left open.

2.3 The container door was not visible to the Locomotive Engineer of B38.

2.4 The Locomotive Engineer on 203, the Northerner, observed the container door and took the appropriate action of braking and notifying the Locomotive Engineer of B38.

2.5 The container door struck the Northerner at least twice, the first time scraping paint and causing minor panel damage to the generator car, and on the second striking the centre of the following carriage and breaking a window.

2.6 The Train Manager took correct action to give assistance to the passengers.

2.7 The distance between the main line and the loop was insufficient for the Northerner to pass the open container door without collision.

2.8 The distance between the main line and the loop was less than the standard of 3.66 m set down in the 1964 code of the former Railways Department, and a more recent standard of 3.80 m set down in the 1980 code of the Railways Corporation.

2.9 Neither the 1964 nor the 1980 minimum track standard would have avoided a collision in the circumstances of this accident.

2.10 The spacing set down by New Zealand Rail Limited in 1993 would have removed the potential for the collision.

2.11 The distance between the tracks was ample for trains to pass safely if they conformed to the standard profile for moving rail service vehicles.

3. SAFETY RECOMMENDATION

3.1 It was recommended to New Zealand Rail Limited that:

3.1.1 They undertake a study of:

(i) The frequency and location of container door opening and other "out of gauge" incidents (022/94);

(ii) The distance between main line and loop tracks at crossing loops (023/94);

to determine the risk of recurrence and accordingly whether a programme should be instituted to increase the distance between the main line and the loops at stations where passenger trains pass freight trains.

New Zealand Rail Limited responded to these recommendations as follows:

3.1.1 (i) This type of occurrence is identified as a loading irregularity and is monitored in New Zealand Rail's safety management system.

All wagon loads that require attention on route are logged on the system and include container doors opening, loads moving in transit, etc.

The loading irregularities are monitored each week and trended every three months to ensure management controls are adequate.

(ii) A review of the distance between main line and loop tracks at crossing loops is currently in hand to determine the number that meet either old code or new code dimensions or are similar to what exists at Whangamarino.

A scoping study will follow to identify and develop the need for an action plan.

23 March 1994

M F Dunphy
Chief Commissioner