



Report 97-108

Train 320

container struck bridge

Puhinui

12 July 1997

Abstract

On Saturday, 12 July 1997, at about 0322 hours an empty container on Train 320, a Mount Maunganui to Westfield express freight train, struck a footbridge at Puhinui, south of Auckland. The footbridge pier was badly damaged, as was a road overbridge further north, before the container fell from the train, blocking the adjacent down main. There were no injuries.

The cause of the collision was movement of an inadequately restrained container. Safety issues identified were:

- twistlock serviceability,
- compliance with container security requirements,
- compliance monitoring of container security, and
- the suitability of the Mount Maunganui resources and operational practices to deal safely and effectively with the traffic offering.

Transport Accident Investigation Commission

Rail Incident Report 97-108

Train type and number:	Express Freight 320
Date and time:	12 July 1997, 0322 hours
Location:	Puhinui at 659 km North Island Main Trunk
Type of occurrence:	Container struck bridge
Persons on board:	Crew: 1
Injuries:	Nil
Damage:	Major damage to the pier of Bridge 355, a footbridge attached to Bridge 356, and the container
Investigator-in-Charge:	R E Howe

1. Factual Information

1.1 Narrative

- 1.1.1 On Saturday, 12 July 1997, Train 320 was a scheduled Tranz Rail Limited (Tranz Rail) container train running from Mount Maunganui to Westfield. It was crewed by a locomotive engineer (LE).
- 1.1.2 The train consist was two locomotives, DC4070 and DC4006, together with 51 varied container wagons with a total weight of 1198 t and length 845 m.
- 1.1.3 At approximately 0322 hours the train was passing Bridge 355, a footbridge serving Puhinui Station, at 659 km North Island Main Trunk, when an empty container on the train struck and partly demolished the bridge pier on the left side of the up main. Rail bracing on the pier prevented the footbridge span collapsing (see Figure 1).
- 1.1.4 Approximately 113 m north of Bridge 355 was Bridge 356, a concrete road overbridge with a timber footbridge attached on the north side. The container struck the left hand abutment of the overbridge, rose and damaged the underside of the concrete spans, before severely damaging the timber footbridge (see Figure 2).
- 1.1.5 The container fell from the wagon, coming to rest approximately 120 m north of Bridge 356 straddling the adjacent down main and foul of the up main. The container was extensively damaged (see Figure 3).
- 1.1.6 The LE was unaware of the collision and the train continued on its journey to Westfield.
- 1.1.7 The noise of the collision was heard by a nearby resident who went out to investigate. He found the damaged footbridge attached to Bridge 356 and advised the police.
- 1.1.8 At about 0330 hours Wellington Train Control were advised by the police of the collision. Train Control realised that Train 320 was the most likely train involved and contacted the Westfield Operations Controller to check the service, which had arrived at Westfield.
- 1.1.9 The Operations Controller found a container missing on wagon UK15276, the 32nd wagon in the consist. The Operations Controller was then asked to check the two bridges at Puhinui and at approximately 0400 hours advised Wellington Train Control of the damage and that an empty container blocked both mains.
- 1.1.10 The Train Control Officer immediately arranged for all up and down trains to be held and for appropriate staff to be called out.
- 1.1.11 The next train due through the area after the passage of Train 320 was northbound Train 224 at approximately 0500 hours. (Normally this would have been Train 364, timed through Puhinui at approximately 0415 hours, but on this particular night Train 364 was running early and was ahead of Train 320.)
- 1.1.12 The event recorder from locomotive DC4070 was extracted at Westfield on 14 July 1997. Because of the elapse of time only the long log output was available, giving speed at 10 second intervals.



**Bridge 355 (footbridge)
pier following collision**



Figure 1

**Bridge 355 temporarily repaired
(Bridge 356 in the background)**



Figure 2

Damage to footbridge on Bridge 356

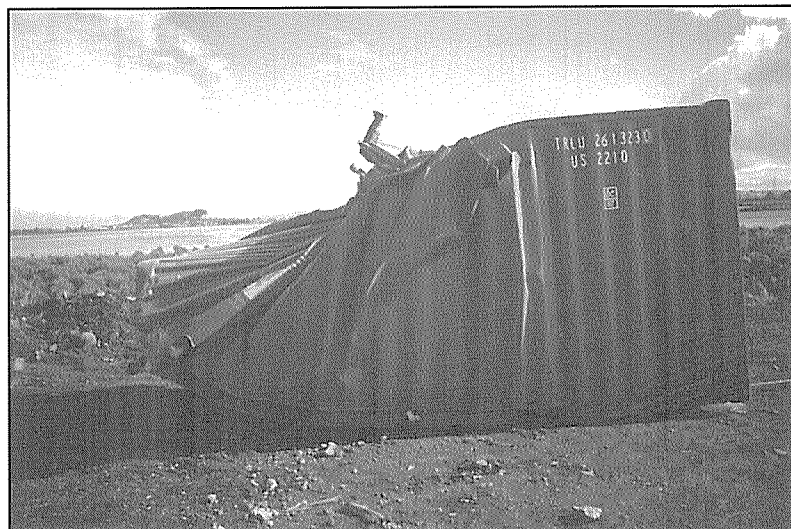


Figure 3

Container damage

1.2 Bridge 355

- 1.2.1 Bridge 355 was a standard timber pier footbridge. The minimum clearance from centre line to the pier on the left hand side of the up main was 2.375 m.
- 1.2.2 The damaged pier comprised two timber columns braced with two crossed rails. Both columns were broken off and one rail brace removed. The remaining rail brace supported the adjacent spans until repairs could be arranged.

1.3 Bridge 356

- 1.3.1 Bridge 356 was a standard single span concrete overbridge. The left abutment was 2.425 m from centre line, with damage marks 2.815 m from centre line and 900 mm above rail level and extending to 3.3 m above rail level.
- 1.3.2 The underside of the concrete beams were 4.46 m to 4.48 m above rail level. The beams had been struck by the container and concrete had broken out to the reinforcing.
- 1.3.3 Immediately north of, and attached to, Bridge 356 was a timber footbridge. The underside of the footbridge was 5 m above rail level. The footbridge had been struck by the container and severely damaged.

1.4 Container details

- 1.4.1 The empty container was a standard TEU (20 foot equivalent unit) container with dimensions 6.42 m long, 2.438 m high and 2.438 m wide. Its height above rail level when on any UK wagon was 3.328 m, and its furthest distance from track centre was 1.219 m.

1.5 Container fastening

- 1.5.1 Containers are fastened to rail wagons by twistlock fastenings. The twistlock is a two-piece protrusion above the wagon floor which, as the name implies, locks onto the container when the top piece is rotated through 90° by twisting a handle on the side of the wagon.
- 1.5.2 Twistlocks are strategically located on wagons to suit combinations of standard container lengths and may be raised above the wagon floor or retracted below it. When either raised or lowered the twistlock is held vertically by a slide which, when in the closed position, is locked with a slide pin to stop it vibrating loose to the open position. The various components in alternative positions are shown in Figures 4, 5 and 6.
- 1.5.3 The twistlock handle rotates to the horizontal when locking or unlocking containers. When the twistlock is in the locked position the handle falls through 90° to vertical and is intended to be held in position.
- 1.5.4 Tranz Rail have two versions of twistlocks currently in service on their container fleet. The standard version was installed on UK15276. In this version locking was achieved by a protrusion at the hinge of the twistlock handle which was intended to fit into a slot cut in the twistlock assembly (see Figure 6). However, once wear occurred in the pin and hole which located the handle, the handle could drop and lose its restraint. This can be seen in the example of a locked twistlock shown in Figure 6.
- 1.5.5 Tranz Rail introduced a redesigned twistlock approximately three years ago to overcome the problem of unrestrained handles vibrating to the unlocked position, with the possibility of twistlocks dropping if an unpinned slide also vibrated out of position.

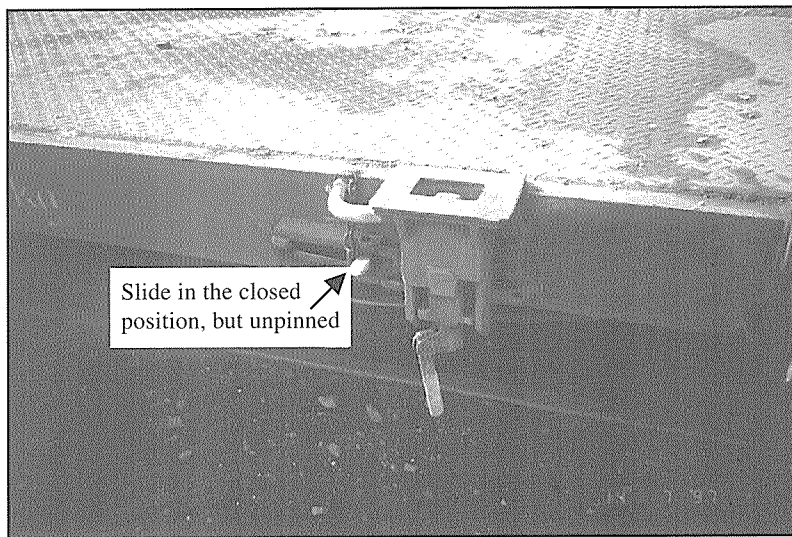


Figure 4

Twistlock in lowered position and slide closed, but not pinned (left rear of the container which fell)

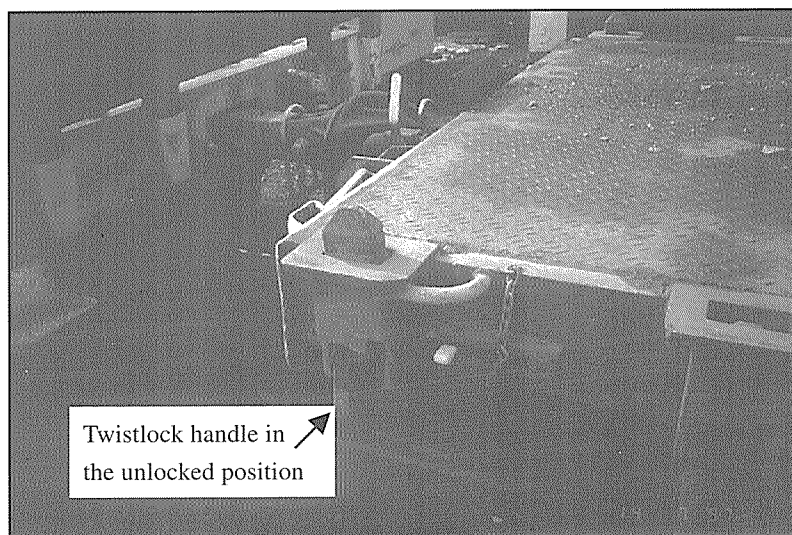


Figure 5

Twistlock raised, not locked, and slide closed but not pinned (left front of the container which fell)

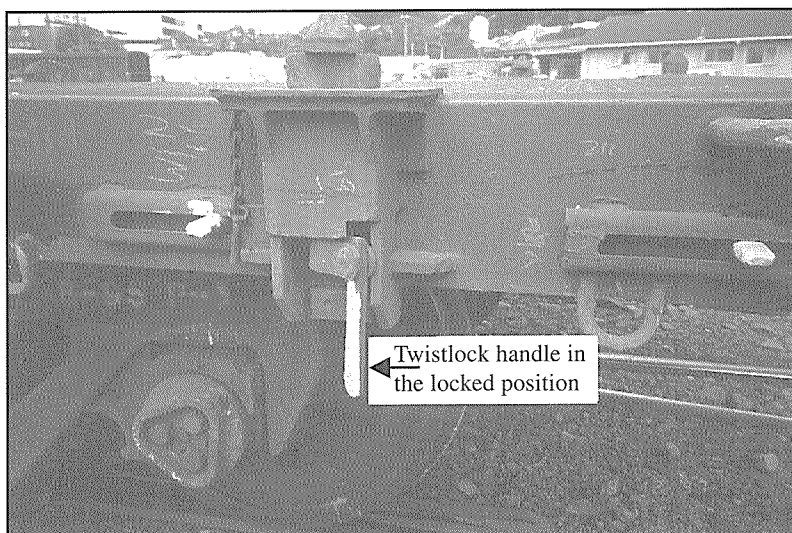


Figure 6

A typical twistlock showing the twistlock raised and in the locked position, slide closed but not pinned

- 1.5.6 The new design has been incorporated on recently built IA and IB wagons and used to replace original twistlocks during wagon overhauls and when replacements are required. Approximately seven percent of the Tranz Rail fleet are now equipped with the redesigned twistlocks.
- 1.5.7 The majority of container loadings on rail wagons involve two TEUs, one at each end of the wagon, as carried on UK15276 on the day. When a wagon which had been previously loaded in this manner was provided for similar loading, staff did not usually have to lift the twistlocks assemblies by hand and hold them in position while engaging the slides in position as these components would generally be in place. In these circumstances containers could be immediately loaded onto raised twistlocks in the unlocked position and the only action necessary following placement of the container was to lift the twistlock handle, twist it to the locked position and then lower the handle. This simple process was usually only disturbed when different combinations of container numbers or lengths had been carried previously.
- 1.5.8 It was not possible to establish the previous loading on UK15276.

1.6 Wagon UK15276

- 1.6.1 Wagon UK15276 was inspected in Westfield Yard on Monday 14 July 1997. Tranz Rail advised that all twistlock components were in the same position as when the wagon arrived on Train 320 on 12 July.
- 1.6.2 The container which fell from the wagon had been the leading container on UK15267. The position of the four twistlocks provided to restrain this container were:

left front (Figure 5)	twistlock raised slide in the closed position pin not inserted handle in the unlocked position
right front	twistlock raised slide in the closed position pin not inserted handle in the unlocked position
left rear (Figure 6)	twistlock lowered slide in the closed position pin not inserted (when the twistlock is lowered the handle can only be in the unlocked position)
right rear	twistlock lowered slide in the open position pin not inserted

All twistlocks were tested and were able to be raised and locked with slides and pins inserted as required. There was no excessive wear in any of the twistlocks considered sufficient to allow the handles to vibrate from the locked to unlocked position in transit if the slide was in position.

- 1.6.3 The twistlocks holding the trailing container on wagon UK15276 were all raised and locked. All slides were in the closed position. Two slide pins had not been inserted and one slide pin was missing.
- 1.6.4 There was no sign of damage or unusual wear on the two raised twistlocks at the leading end.

- 1.6.5 An unused twistlock on the right hand side, approximate 600 mm behind the right rear twistlock, was heavily worn on its leading edge.
- 1.6.6 The floor in the centre of wagon UK15276 had been forced down forming a discernible depression in the wagon profile.
- 1.6.7 The right side of the trailing container on UK15276 was pushed in approximately 150 mm at its centre.

1.7 Other wagons from Train 320

- 1.7.1 Two other wagons from Train 320, UK5144 and UK13641, were still present in Westfield Yard on 14 July 1997. As for UK15276 Tranz Rail advised these were in “as arrived” condition.
- 1.7.2 UK5144 was loaded with two TEUs, one at each end. An inspection of twistlock condition showed:

leading container

right front	twistlock raised and handle in the locked position slide in the open position
right rear	twistlock raised and handle in the locked position slide in the closed position, but not pinned
left front	twistlock lowered
left rear	as for right rear

trailing container

right front	correctly fastened except unpinned
right rear	correctly fastened
left front	correctly fastened except unpinned
left rear	correctly fastened

- 1.7.3 During the Tranz Rail inspection of Train 320 on 12 July, wagon UK13641 had been found to be carrying a container which had shifted. Inspection on 14 July showed the trailing container had shifted 110 mm to the right at the leading end. The two trailing end twistlocks were raised and locked as required, the two leading end twistlocks were in the lowered position. The leading container on this wagon was twisted and only three of the four twistlocks were able to be engaged.

1.8 Tranz Rail requirements

- 1.8.1 Tranz Rail’s Working Timetable, Section G1, clause 9.2, required all containers to have a minimum of three twistlocks per container engaged and locked to secure them safely. This included the need for the side key locking mechanism to be secured in the locked position.

1.8.2 Tranz Rail's Rail Operating Code, Section 5, clause 1.3, required a shunter "... to check that the required number of twistlocks are engaged" when lifting wagons from a private siding.

1.8.3 Tranz Rail's Rail Operating Code, Section 5, clause 16.5 required a check of twistlocks during terminal station train inspections carried out as part of train examiner operations (TXOs) duties.

1.9 Train 320

1.9.1 Train 320 was made up in Mount Maunganui Yard by aggregating wagons from various sidings using the yard shunt.

1.9.2 On 12 July wagon UK15276 was loaded with Sofrana containers which had been loaded by New Zealand Lumber (NZL) at Mount Maunganui and consigned to Container Services Limited at Auckland.

1.9.3 Statements by staff concerned in the loading and make up of Train 320 on the day indicated the wagon had been one of a number loaded at No. 3 Road (also known as Shed 2 Road), one of the NZL loading points at Mount Maunganui.

1.9.4 The wagon had been loaded between 1200 hours and 1500 hours on Friday 11 July. A three person team was involved, two loading with fork-lifts and one fastening twistlocks.

1.9.5 The NZL staff member responsible for tying down on that day stated that the wagons were pre-set for two TEUs although he "... might have had to alter the odd wagon". He stated his job was basically to "... pull the handles" and he did not check slides and pins when wagon twistlocks were set for two TEUs.

1.9.6 The shunter working with the shunt making up Train 320 stated he was conversant with the three out of four requirements for twistlock security and the need for slides to be across and pinned.

1.9.7 The shunter had commenced duty at 1700 hours and at about 1900 hours picked up 15 wagons from No. 3 Road. He stated he rode in on the locomotive with two wagons attached to couple up. As was his usual practice he walked down one side of the rake to ensure it was coupled, checking twistlocks as he went. On the side he walked he found all the twistlocks were raised but four twistlock handles were not in the locked position and he locked them before riding out on the rear of the rake to take the wagons to the yard. He did not recall any slides being open or pins not in place. The remote control operator's recollection was that they had spent some time sorting wagons from No. 1 Road and when he pushed out from No. 1 Road to move and enter No. 3 Road to pick up the 15 wagons the shunter walked across from No. 1 Road to No. 3 Road.

1.9.8 On that night Train 320 was made up on the No. 2 Long Road in Mount Maunganui Yard. The recollections of the shunt crew were that all wagons picked up from No. 3 Road were placed on No. 2 Long Road to become part of Train 320 (Tranz Rail's records for Train 320 did not define the particular wagons making up Train 320 by their specific loading point and NZL did not keep records of the individual wagon numbers placed at any siding).

1.9.9 The final check on Train 320 was made by the acting TXO prior to the departure of the train at approximately 2330 hours. He had commenced work at 1300 hours and was working a "double up" (a 12 hour shift to cover for unavailable rostered staff).

- 1.9.10 The acting TXO stated he carried out his normal checks when inspecting Train 320 that night. This meant he walked down the left hand side of the 51 wagons checking twistlocks as he went. The acting TXO stated he found “. . . about 20 to 25 containers not secured down properly” on the train and that this was “. . . generally that the twistlocks hadn’t been done up, the handle hadn’t been turned on the twistlocks”.
- 1.9.11 He was aware of the three out of four security requirements and used his memory to ensure that this requirement was met. If on checking the first side of a rake he found a twistlock that could not be secured he made a mental note of its position and the container markings associated with it. When completing his check on the other side of the rake he stated he made sure two twistlocks were secure on the other side on these containers. If they were not he stated he climbed over the wagon to ensure that the three out of four requirement was achieved. On the night of 11 July 1997 he stated he had to climb across “. . . three or four times” and in each case was satisfied requirements were met.
- 1.9.12 While walking the right side of Train 320 he stated he found a container with two twistlocks down and unable to be raised due to the position of the container. He called for assistance and another TXO used a fork-lift to reposition the container before applying the twistlocks.

1.10 Mount Maunganui Yard operation

- 1.10.1 On the night of 11 July the Mount Maunganui Yard shunt operation was the same as in past years. It was not operating under Tranz Rail’s normal work order procedures, which provided shunt crews with prior written advice of the wagons to be uplifted from various loading points. Enquires revealed that this was not uncommon at Mount Maunganui and a reflection of the original development of the yard as an “on demand” yard. Tranz Rail’s improved work order procedures had not been introduced into Mount Maunganui Yard at the time of the incident.
- 1.10.2 As the shunt proceeded to the No. 3 Road area the shunt crew were receiving radio instructions from the operations controller as to which wagons to uplift. When they reached the sidings these instructions were altered by the customer. Conditions on that night were described by a member of the shunt crew as “. . . chaos, it was a break down of communications that particular night”.
- 1.10.3 Tranz Rail had recognised the pressure on Mount Maunganui Yard as traffic had increased and had initiated a review of yard operations which was completed shortly before the incident. One of the recommendations arising from this review, and made following the incident, was for an increased staffing level at Mount Maunganui. This has since been accepted and actioned by Tranz Rail. Other actions arising from the review have been:
- a change to customer’s timing to spread workload
 - the proposed increased use of work orders to be introduced into Mount Maunganui in March 1998 in conjunction with Tranz Rail Terminal Plan 2¹ and Customer Service Centre² initiatives.

¹ Terminal Plan 2 involves the extended introduction of a computer driven work order control system (Amicus) for yard operations throughout the Tranz Rail system.

² Customer Service Centres have been set up as “one stop shops” to ensure the necessary customer input to enable Amicus to operate effectively.

1.11 Twistlock condition

- 1.11.1 This incident, and other reported problems, prompted Tranz Rail to carry out a twistlock condition survey during late July 1997.
- 1.11.2 The results of the survey of approximately 1000 wagons showed 21% of wagons had one or more handles that could not be locked.
- 1.11.3 The method of reporting and details supplied varied throughout the country. The most detailed area report covered approximately 200 wagons and showed 50 containers on these wagons had two or more handles which could not be locked.
- 1.11.4 Tranz Rail initiated an immediate upgrading programme to improve twistlock serviceability. This has now been completed and a further survey in October 1997, although not yet fully evaluated, has shown a marked improvement in twistlock serviceability.

1.12 Personnel

- 1.12.1 The shunter had been with Tranz Rail for approximately eight months and held a current operating certificate for shunting duties. His shift had commenced at 1700 hours. He had been on a similar 1700 to 0100 hours shift for the four previous nights, following a rostered day off. He stated he was not on medication, enjoyed good health, and did not feel fatigued on that particular night.
- 1.12.2 The acting TXO was a shunter who had been with Tranz Rail for approximately two years. He had attended a Train Examiner training course in October 1996 and was certified in TXO duties and acted in this capacity when required. His shift had commenced at 1300 hours and was due to finish at 0100 hours as he was working a 12 hour “double up” shift to cover for staff on holiday. He had also worked a 13 hour “double up” shift from 1200 to 0100 hours the previous day following three days on a 1700 to 0100 hours standard shift, preceded by a rostered day off.
- 1.12.3 The acting TXO stated that he had recently attended a sleep deprivation course run by Tranz Rail and that he was aware of measures he could take to avoid attending work in a fatigued condition and had used them to decline a shift for that reason.
- 1.12.4 He stated that on the night in question he was not tired, under no particular personal stress, and “. . . able to do the job that I was undertaken to do in every aspect”.

2. Analysis

- 2.1 The speed of Train 320 as it passed through Puhinui was derived from the long log output as approximately 65 km/h, below the maximum authorised speed of 80 km/h for an express freight train in this area.
- 2.2 The front of the leading container on UK15726 had moved at least 1.2 m to the left before striking Bridge 355. This was only possible if the container was not located on any of the raised twistlocks immediately prior to impact.

- 2.3 Damage to the container and Bridge 356 indicated that after striking and partly demolishing the pier of Bridge 355 the container, still on the wagon, struck the left abutment of Bridge 356. The concrete abutment pushed the container back approximately 900 mm at which stage the rear caught on an unused twistlock and the container was pushed up and collided with the underside of the road over-bridge. When clear of the underside the container struck the adjacent timber footbridge causing severe damage. The impact caused the telescoped container to fall from the right hand side of the wagon, damaging the trailing container as it fell, before coming to rest straddling the adjacent down main and foul of the up main.
- 2.4 Although the twistlock condition survey revealed a high percentage of handles which would not lock, the twistlocks on UK15276 were all functional and in good condition when inspected following the incident.
- 2.5 To be free of any raised twistlocks prior to impact, and taking account of the positions of the twistlocks components on UK*15276 when inspected at Westfield, either:
- a) The container was located on the two raised, but not locked, leading twistlocks at some stage in the journey, moved vertically during transit, and jumped off the twistlocks, with the options that:
- Option 1: The container left Mount Maunganui with the twistlocks in the position and condition found at Westfield, i.e. the two front twistlocks raised, but not locked, and the two rear twistlocks lowered.
- Option 2: The container was held and locked by at least three twistlocks with slides in position but unpinned when it left Mount Maunganui, and that three handles and one slide vibrated and moved to allow three twistlocks to unlock and one to drop.
- Option 3: The container was held by at least three twistlocks securely fastened when it left Mount Maunganui and they were interfered with during the nine minutes stop at Hamilton.
- or
- b) The container was not located on any twistlocks when loaded.
- 2.6 All options under alternative 2.5 a) would have required approximately 100 mm vertical movement of the container during transit. There was no physical sign of such violent movement having taken place on the two raised leading twistlocks. The weight of the container, the quality of the track between Mount Maunganui and Puhinui, the wagon's suspension and damping characteristics, and the lack of any shunting on route means that this is highly unlikely. When looking at the conditions under which this may have occurred Option 2 is not supported by the conditions of the twistlocks. Option 3 is most unlikely considering the time and length of the stop at Hamilton and the spread of non-compliance throughout Train 320 indicated by the wagons available for inspection. In the unlikely event that the container moved off the raised twistlocks Option 1 is considered the only precondition that could have allowed this to happen.
- 2.7 The most likely scenario is that the container was not placed on the twistlocks initially, that its displacement longitudinally on the wagon was not noticed and that the twistlock deficiencies were not picked up during inspection.

- 2.8 The possibility that inspection did not pick up the twistlock deficiencies is supported by the condition of other twistlocks from wagons on the train inspected at Westfield. The three wagons available to inspect (numbers 25, 32 and 33 in the consist) carried six containers and involved 24 potential twistlock fastenings in use. These 24 fastenings can be summarised as follows:
- seven were correct to code
 - eight complied with the code except they were not pinned
 - five were in the lowered position
 - two were raised but not locked or pinned
 - one was raised and locked but the slide was not engaged
 - one was unable to be used due to a twisted container.
- 2.9 No containers complied fully with the “three out of four secure” requirement, with two cases where only two twistlocks were raised.
- 2.10 TEUs can be located on the end position on a wagon or on a second position a short distance back provided for containers with refrigerated units. It would not be unusual for operating staff to see the two end twistlocks raised and not in use alongside a loaded container, as appears to have been the case on the day.
- 2.11 The conclusion that the container left Mount Maunganui not located on the twistlocks means that three levels of control, the loading, the shunting and the train inspection, failed to identify the irregularity. While it is difficult to understand how this could have happened the following factors indicate the potential for such a possibility:
- the loading team member’s emphasis was on the single action of locking
 - the shunter was operating without a plan and trying to respond to changed requirements at short notice
 - the acting TXO was relying on his memory of individual containers on a 51 wagon rake to climb over the train and check the three out of four requirement at night
 - although Tranz Rail stated the procedures taught at train examination courses were to climb over as soon as a twistlock could not be secured it is likely that the high percentage of unserviceable twistlocks revealed by the survey made this an arduous and time consuming process and thus encouraged staff to look for other methods.

3. Findings

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

- 3.1 Train 320 was operated correctly.
- 3.2 It is likely that the leading container on UK15267 was not loaded onto its intended twistlock fastenings at Mount Maunganui.
- 3.3 If not located on the twistlock fastenings the empty container would have moved gradually under the normal train dynamic behaviour until the offset was sufficient to cause the collision with the pier of Bridge 355.

- 3.4 The high level of unserviceable twistlocks was not reflected in “bad ordering” of wagons and throughout Tranz Rail’s system there was an unacceptable level of non-compliance with the requirement for three out of four twistlocks to be secure.
- 3.5 The three wagons from Train 320 available for inspection indicated it was likely that there was a particularly high level of non-compliance with container security requirements on this train.
- 3.6 The non-compliance on wagon UK15276 was not directly related to twistlock serviceability.
- 3.7 Inspection procedures failed to identify the non-compliant fastenings on wagon UK15276.
- 3.8 The procedures used to plan and operate Mount Maunganui Yard, although not directly related to the incident, were not conducive to a controlled inspection and safety regime and may have contributed to the apparent high level of non-compliance on Train 320.

4. Safety Actions

4.1 Mount Maunganui Yard operations

- 4.1.1 The actions already taken by Tranz Rail to increase staff and spread the work load at Mount Maunganui Yard, and the increased use of work orders which will accompany the introduction of Terminal Plan 2, and Customer Service Centre initiatives at Mount Maunganui in March 1998, will create a more controlled work environment. This will encourage adherence to the standards for container security. These standards are considered suitable to ensure container security if complied with.

4.2 Twistlock serviceability

- 4.2.1 The concentrated upgrading of twistlocks following this incident had resulted in a marked improvement in twistlock serviceability. While this lack of serviceability was not directly related to the loss of the container the general poor level of serviceability did not encourage inspection procedures which were likely to identify all improperly restrained containers accurately.

4.3 Training

- 4.3.1 Tranz Rail is running a refresher course for all staff certified in train examination duties. While not directly related to this incident Tranz Rail advised that the opportunity will be taken to reinforce this aspect of train examination in areas dealing with container traffic. The courses commenced in late 1997 and should be completed by the middle of 1998.
- 4.3.2 Changes in Tranz Rail’s training methods since October 1997 have resulted in train examination becoming an essential ingredient of the basic Yard Training Course. The intent of this is to increase the knowledge and involvement of all operating staff in this important aspect without altering the final responsibility for train examination which rests with the TXO.

4.4 Compliance monitoring

- 4.4.1 Under Tranz Rail’s recently revised training and compliance monitoring procedures more emphasis has been placed on compliance monitoring by line management than by dedicated training staff. Tranz Rail advised that line management had been made aware of the lessons arising from this incident and the need to take particular interest in this aspect of TXO compliance monitoring.

- 4.4.2 Tranz Rail's Safety and Quality Office carried out a quality audit system assessment of train inspections in late 1996 which showed significant variance with the loading guidelines for containers. Tranz Rail advised that a further audit will be carried out in early 1998 and will take particular note of the need for improvement in the level of variance found in 1996.

5. Safety Recommendations

- 5.1 In view of the actions taken by Tranz Rail the Commission has made no safety recommendations regarding this incident.

15 April 1998

W P Jeffries
Chief Commissioner

