



NO 94-126

TRAIN F29

COLLISION WITH HI-RAIL VEHICLE

POUKAWA, HAWKES BAY

12 DECEMBER 1994

ABSTRACT

At about 1615 hours on 12 December 1994, Train F29, a Napier to Wellington express freight, collided with a Hi-Rail vehicle travelling in the opposite direction on the line. Nobody was injured, although the Hi-Rail vehicle was severely damaged. Causal factors involved fitness for duty and failure to clarify the Ganger's location requirements geographically. It was recommended that the Train Control Officer's requirement to establish the position of the required access to the track be extended to those requiring the access.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

RAIL INCIDENT REPORT NO 94-126

Train Type and Number: Express Freight, F29

Locomotive: DX 5016

Date and Time: 12 December 1994, 1615 hours

Location: Palmerston North - Gisborne Line,
139.5 km, near Poukawa

Type of Occurrence: Collision with Hi-Rail vehicle

Persons on Board: Train: 1
HRV: 2

Injuries: Nil

Nature of Damage: Train: Nil
HRV: Substantial

Information Sources: Transport Accident Investigation Commission
field investigation

Investigator in Charge: Mr A J Buckingham

1. NARRATIVE

- 1.1 On 12 December 1994, the Train Control Officer (TCO) on the Wellington “provincial” panel received a radio call from a Ganger on the Palmerston North - Gisborne line, requesting access to the track. The following exchange took place:

203814¹: (Base call)

TCO: Eight one four, Control, over

203814: Control, we’d like to go on track at the one fifteen point six² to the one five eight .. till 1630 please - 601’s just gone by

TCO: Time is now 1533 - I’ve got F29 express freight just going past McDonald’s in Napier - he’ll be going to Waipuk³ to cross 654, over

203814: How long can we have then, Control?

TCO: I’ll fill you out to 1625 clear, over

203814: OK then, 1625 clear, over

TCO: That’s correct, over

203814: Thanks ...

- 1.2 The Ganger’s requirement was to patrol the line from the 115.6 km point (at Waipawa) to the 158 km peg, near Hastings, checking principally for heat buckles. The Hi-Rail vehicle to be used for the patrol was a standard Isuzu twin-cab utility vehicle modified by the addition of steel flanged wheels, permitting either road or rail running. When this type of vehicle is to be used for rail operation, the steel wheels are lowered after the vehicle has been suitably positioned on the railway line.
- 1.3 The vehicle was manoeuvred onto the railway line, and the Ganger, accompanied by a fellow track maintainer, set off on the patrol. At the 138 km peg, to the north of Opapa, they felt a “kick” in the line, and stopped to check the rail temperature. Continuing north towards Poukawa, they saw the southbound freight train approaching, in the vicinity of the 140 km peg. At about the same time, the Locomotive Engineer saw a vehicle with its headlights on, thought initially that it was on the adjacent highway, but then realised it was the Hi-Rail vehicle on the line.
- 1.4 The Locomotive Engineer applied emergency braking, the Ganger stopped the HRV and reversed away from the train, but realising that a collision was imminent despite the train’s braking, instructed his colleague to jump clear, while doing so himself. Both escaped without injury. The train collided with the HRV, which, although sustaining substantial damage, remained on the line. The locomotive was undamaged and the Locomotive Engineer shaken but not injured.
- 1.5 On investigation of the occurrence, it was found that much of the radio conversation in which access to the line had been requested had been at cross purposes. The TCO had evidently interpreted the Ganger’s request as applying to the 115.6 to the 115.8 km, i.e. a 200-metre stretch of line as opposed to the almost 43 kilometres required by the Ganger. Accordingly, he marked the

¹ The radio callsign of the Ganger’s vehicle

² Denotes kilometrage from the line’s origin, in this case Palmerston North

³ Waipukurau

track as being occupied at the 115.6 mark on his train control diagram⁴, with 1625 hours as the “track clear” time. (See Figure 1). In this location, this would have given an ample time margin before the passage of train F29. Retrospective plotting of the HRV’s travel, beginning at 115.6 km about 1535 hours and terminating at the 158 km point (on the southern outskirts of Hastings) at 1625 hours, showed the HRV progress line crossing that of train F29 almost exactly at the point where the collision occurred.

- 1.6 On the other hand, the information given the Ganger by the TCO did not appear to have been fully understood. The key words were “express freight”, “Napier”, and “Waipuk”. Express freights run at a maximum authorised speed of 80 km/h, and generally stop only to “cross” other traffic. On the train control diagram, F29 would have been about halfway between Opapa and Otane at the Ganger’s “track clear” time of 1625 hours. The Ganger was aware of the normal speed of express freights, but had also anticipated that F29 would spend some time shunting at Hastings. Past experience indicated that this could occupy as much as two hours.
- 1.7 Also, the line between Hastings and Woodville is track warrant territory, and it would be normal to overhear Train Control passing the train’s track warrant by radio, prior to its departure from Hastings. However, on this occasion, the train did not stop at Hastings for a significant length of time, and the Locomotive Engineer obtained his track warrant at Hastings by telephone. Thus the “backup” information anticipated by the Ganger did not materialise.
- 1.8 The NZRL Rail Operating Code, Section 6, Operating Instructions for Train Control, requires TCOs, in responding to enquiries from maintenance workers, Hi-Rail vehicles and trolley users, to establish the identity and location of the caller beyond any possible doubt. There is also a requirement for the TCO to insist on callers advising “stations, sidings or intermediate boards between” in addition to metrage when calling from track locations; the same requirement applies when a movement of either a Hi-Rail vehicle or a trolley is going to terminate at a track metrage. The TCO did not do this, introducing ambiguity into the Ganger’s stated location.
- 1.9 Had the Ganger supplemented his track metrage entry and exit points with the geographic locations (Waipawa and Hastings respectively), whether in response to a request from the TCO or of his own volition, the potential conflict would have been apparent at the outset. Even indicating that the required work was a patrol would have averted any misunderstanding. Thus, the clearance for the HRV to travel on the line would have included an earlier “track clear” time or (more

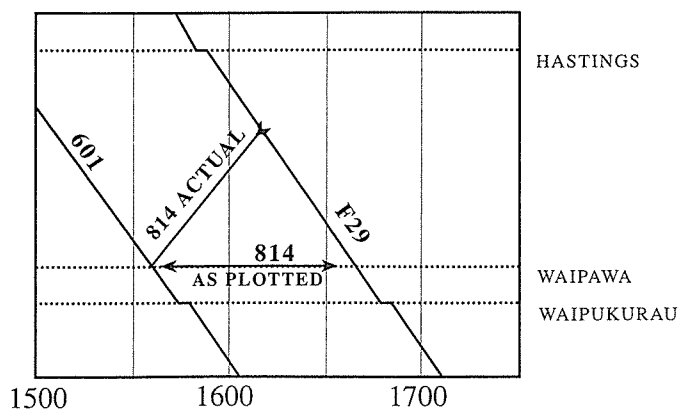


FIGURE 1: SIMULATION OF TRAIN CONTROL DIAGRAM

(Note: some items omitted for clarity)

⁴ The time versus distance graph on which train movements and other track occupancies are plotted

probably) location, to allow the train through. However, under the current rules, the Ganger himself was not obliged to identify his location by other than metrage, unless asked by the TCO.

- 1.10 The Locomotive Engineer of F29 held a valid track warrant as far as Waipukurau, where he was to cross 654. He could reasonably expect, by virtue of holding that warrant, to have sole occupancy of that section of line. However, it is normal practice to permit access to the line by track maintenance staff, based on known train movements, and allowing a suitable safety margin before the estimated arrival time of the train. It is also normal to permit movements of trolleys and Hi-Rail vehicles between trains, usually with the requirement for the operator to report to Train Control at a specific time or location, again with a suitable safety margin built in.
- 1.11 The TCO stated that he had been feeling unwell that morning, and contemplated reporting sick. However, he believed that a relief TCO might be difficult to arrange at short notice, and reported for work as rostered. Additionally, he stated that he was under some work-related stress, as well as being preoccupied with some personal matters. He was at this stage in his last days of employment with NZRL, after he was moving into a private business venture. He felt that these factors had adversely affected his operating performance.
- 1.12 The crucial issue in this occurrence was the lack of confirmation of the required entry and exit points by cross-referring the track metrage to geographical location. The TCO was required to do so as procedure, but there was no requirement for the Ganger to do the same. The latter had, however, given a clue to his location at the time of making the call, in his comment “601’s just gone by”. The ambiguity arose in the expressing of the exit point, which was critical. The TCO had a one-dimensional perception (i.e. time only) of the Ganger’s requirement, which was two-dimensional (time and distance). Additionally, the Ganger accepted the “track clear” time without fully considering the implications of the traffic information passed by the TCO.

2. FINDINGS

- 2.1 The train was being operated normally prior to the collision.
- 2.2 The TCO did not verify the Ganger’s location requirements geographically, as he was required to do.
- 2.3 The TCO felt unwell before his shift, but reported for duty in the belief that a replacement would be difficult to find.
- 2.4 The TCO may not have been medically fit for Train Control duties.
- 2.5 The Ganger did not verify his location geographically, and under the current rules, was not required to.
- 2.6 Had either party requested or offered more information, as appropriate, the impending conflict between the train and the Hi-Rail vehicle would have been immediately apparent.
- 2.7 The Ganger did not appear to have understood the train movement information, which indicated that an express freight was approaching from the other direction at such a speed that a conflict was inevitable.

3. SAFETY RECOMMENDATION

3.1 As a result of the investigation of this incident, it was recommended to NZRL that:

the requirement for TCOs to confirm track locations geographically be widened to include track maintenance staff and others requiring track access (003/95).

3.2 New Zealand Rail Ltd responded as follows:

“003/95 - The recommendation is accepted. The current operating rule will be expanded to reflect and clarify the safety recommendation.

Please note, part of the recommendation is already covered in the Rail Operating Code (refer Section 6, clause 11.1.2 issue 19th September 1994).”

21 June 1995

J Fish
Acting Chief Commissioner