RAIB
Rail Accident Investigation Branch

Rail Accident Report

Collision at Pickering station
North Yorkshire Moors Railway
5 May 2007

Department for Transport

Report 29/2007
August 2007

This investigation was carried out in accordance with:

- the Railway Safety Directive 2004/49/EC;
- the Railways and Transport Safety Act 2003; and
- the Railways (Accident Investigation and Reporting) Regulations 2005.

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Investigation into collision at Pickering station North Yorkshire Moors Railway, 5 May 2007

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Introduction

1 The sole purpose of a Rail Accident Investigation Branch (RAIB) investigation is to prevent future accidents and incidents and improve railway safety.

2 The RAIB does not establish blame, liability or carry out prosecutions.

3 Access was freely given by the North Yorkshire Moors Railway (NYMR) to their staff, data and records in connection with the investigation.

4 Technical terms (shown in *italics* the first time they appear in the report) are explained in Appendix A.

5 All times in the report have been verified back to BST.

Summary

6 On 5 May 2007 at approximately 15:24 hrs a former British Railways (BR) steam locomotive, number 62005, in the process of *running round* its train at Pickering station on the North Yorkshire Moors Railway, entered the platform line from which it had come, and collided with the carriages it had left there.

7 The collision was caused by the driver of the locomotive becoming distracted, and not changing the points before giving the fireman permission to drive the locomotive across them.

8 The RAIB has made two recommendations to modify the operation of points at the *headshunt* at Pickering, and one recommendation concerning actions after an accident.

Location

9 The NYMR is an 18 mile long line from Grosmont to Pickering, formerly operated by BR. It has been operated as an independent *heritage railway* since 1973 (Figure 1).

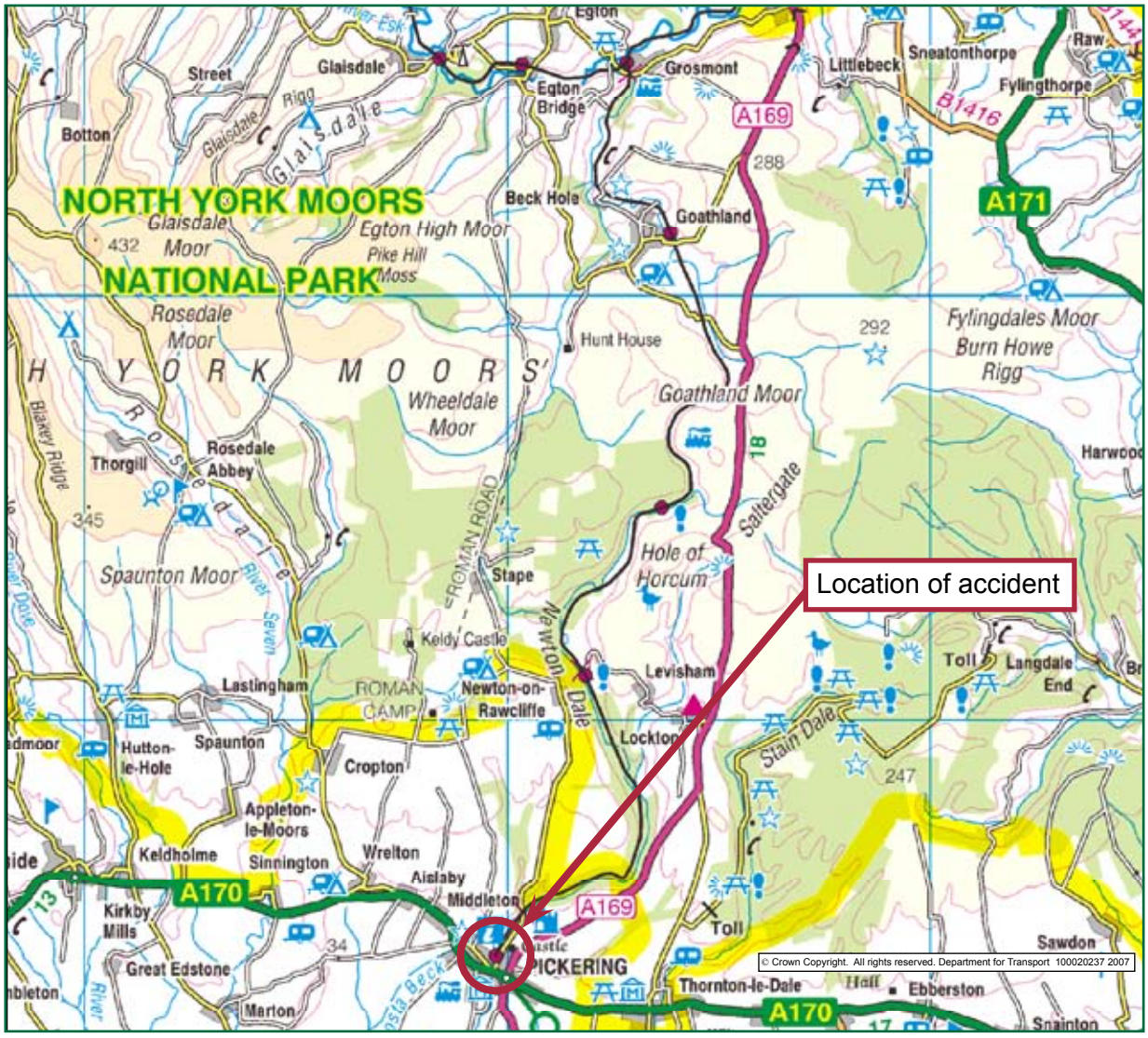

Figure 1: Extract from Ordnance Survey map showing location of accident

10 Pickering station is the southern terminus of the line. There are two running lines passing between the two platforms. At the southern end of the station is a single pair of points, leading from both lines into a headshunt (Figure 2).

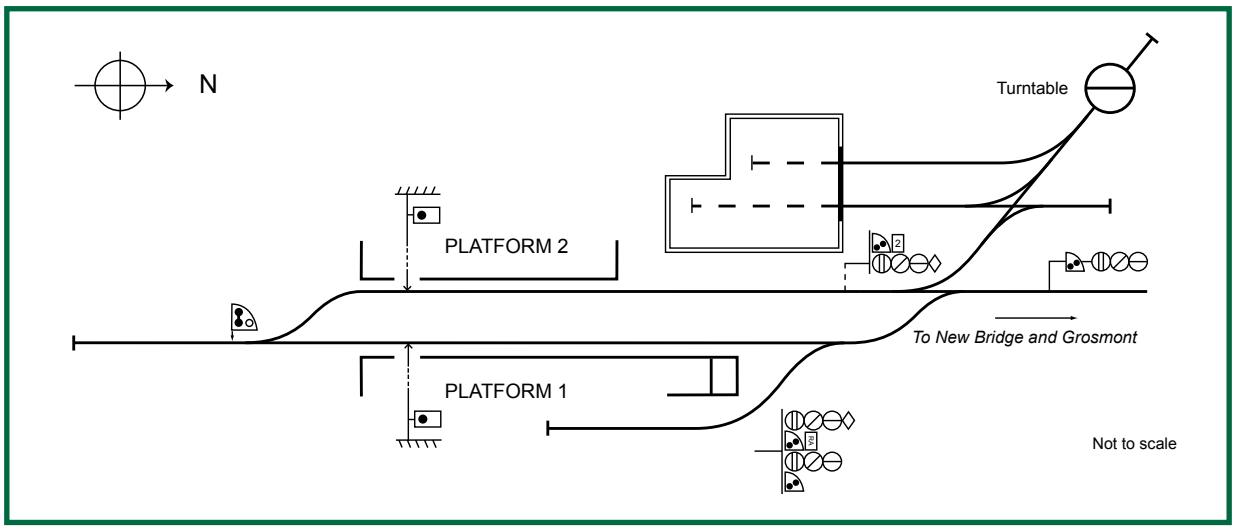

Figure 2: Track layout at Pickering

11 The signalling and points at Pickering are controlled from a signalbox at New Bridge, a mile to the north of the station. The points at the north end of the station that control access to the two running lines and the sidings are operated by electric motors; the controlling signals are all colour light.

12 At the south end of platforms one and two running lines are *stop boards* (Figure 3). A train arriving at Pickering that is short enough to fit in the platform line with its engine has to stop before reaching these boards, which are effectively signals. The locomotive is then uncoupled from the train, and moved into the headshunt, before returning through the other platform to run round. If a train is longer than normal it can be given a written permit by the signaller at New Bridge to pass the stop board, drawing forward to a position where the locomotive can still run round its train, but preventing the risk of the carriages fouling the other line.

Figure 3: Stop board at the south end of Pickering station

Figure 4: Points lever and ground signal at Pickering south

13 The points at the south end of the station are not traversed by any passenger trains, and are operated by a hand lever. A single *ground signal* (Figure 4) is provided, which can be *cleared* by the signaller at New Bridge when there is no train detected by a *track circuit* as standing on the south end points. The ground signal can only be cleared two minutes after the track circuit has itself cleared and is intended to ensure that a locomotive only runs round when the signaller wishes it to. This is to avoid the risk of a collision being caused by a locomotive running round one train at the same time as another train enters the second platform.

14 The ground signal gives no indication as to which direction the points are set in, only permission to enter the platform loop area. Discussion with Network Rail indicates that this arrangement of signals is not used on the national network.

15 The headshunt is separated from the surrounding area by a wooden fence. The public have access to the outside of the fence, on both sides of the railway, and gather in this area to observe locomotives running round from close by (Figure 5).

16 On 5 May 2007 the NYMR was operating a Gala event, with a total of 17 trains scheduled during the day, 14 of which were planned to run to Pickering. The other three trains terminated at Goathland, three miles from Grosmont. The incident involved the 14:00 hrs train from Grosmont, which was scheduled to arrive at Pickering at 15:15 hrs. The train was to be hauled by locomotive 62005, and consisted of 8 carriages. The length of this train meant that the locomotive would be required to pass the stop board at Pickering in order to be able to run round.

The train and its crew

17 Class K1 Locomotive 62005 was built for BR in 1949 to a design of the former London and North Eastern Railway. It was withdrawn from traffic by BR in December 1967, and was purchased for preservation, re-entering service in 1974. Since then it has regularly operated on both the national network and heritage railways. In recent years the locomotive has spent much of its time on the NYMR. The locomotive has been regularly overhauled and maintained, and there is no evidence that its condition contributed to the collision.

18 The locomotive was running *tender* first from Grosmont to Pickering. As there is no turntable at Grosmont all trains on the line run tender first in one or the other direction

19 The locomotive was crewed by a driver, a fireman, and a cleaner.

20 Firemen on the NYMR are qualified to drive under supervision of a qualified driver, and cleaners are similarly qualified to fire under supervision. This is normal practice on steam railways so as to permit staff to gain real life experience before taking on the higher graded role.

21 The driver had worked on steam engines for BR from 1954 to the end of steam in the mid 1960s, and has since worked on several heritage railways, in particular on the NYMR since the early 1980s. He drives regularly, between five and nine days a month, and set up the training scheme for train crew on the NYMR. The driver was passed competent as a NYMR driver in September 1983, and had his most recent competency assessment, which he passed, on 13 March 2007. His most recent medical examination, which he also passed, was on 7 July 2006. He was not required to wear glasses whilst driving.

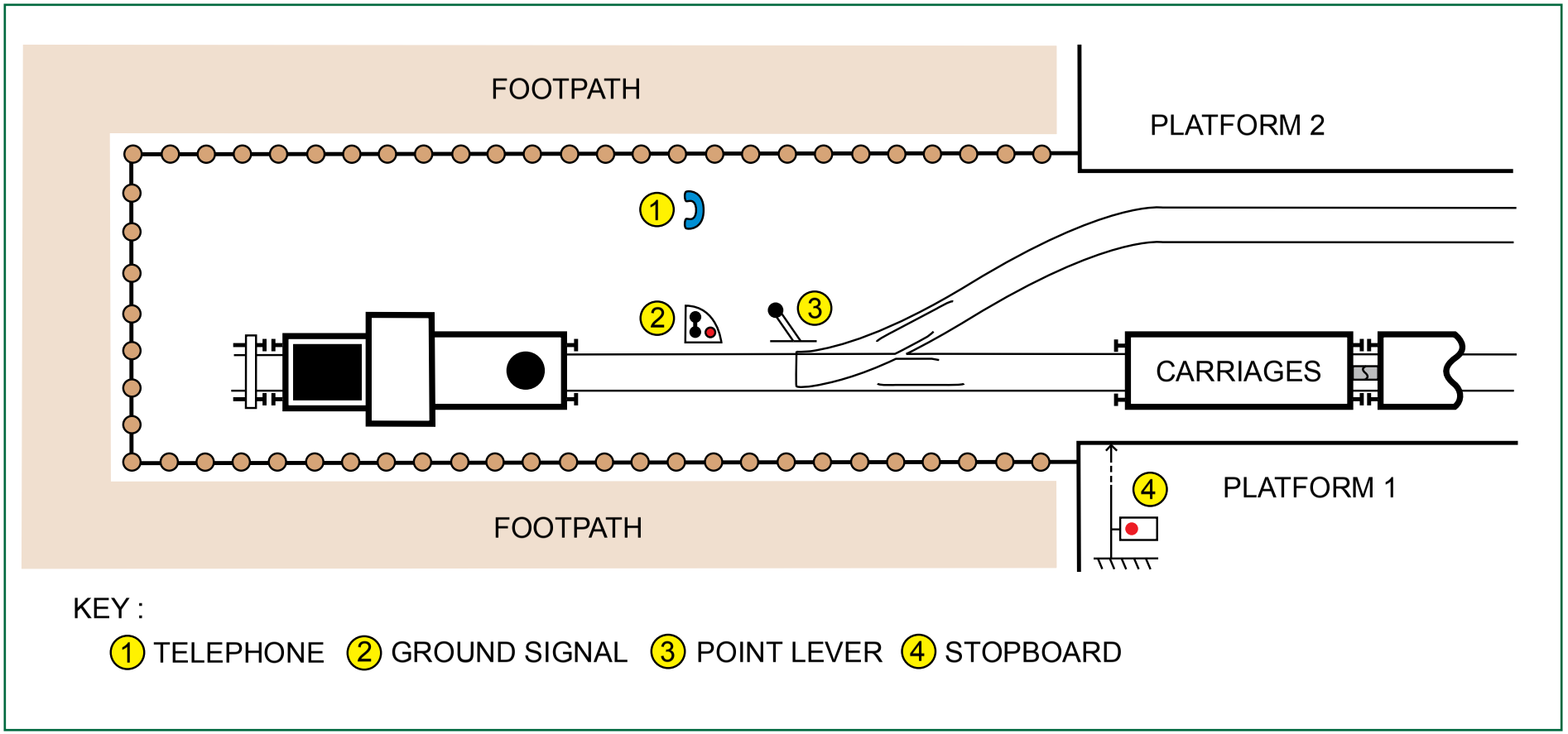

Figure 5: Key features of the headshunt at Pickering south at 15:23 hrs, 5 May 2007

22 The fireman has volunteered on the NYMR for five years, and has been a fireman since being passed competent for the duties on 5 July 2004. He was gaining experience in driving under supervision prior to being examined for the grade of driver. He spends alternate weeks on the railway when it is running, usually firing for three or four days of that week. The fireman was last medically examined on 1 July 2005. He is required to wear glasses whilst driving, and was wearing them at the time of the accident. The NYMR does not have a competence refresher process for firemen.

23 The cleaner has worked on the NYMR for two years. He was taking classes in firing and signalling at the time of the accident, and has done over 40 turns as a cleaner. He was passed as a cleaner on 10 August 2005. As a cleaner, the NYMR does not require him to undertake either competence or medical assessment.

24 The carriages were a mixture of designs. The two most northerly carriages were ex-BR Mark 1 carriages. There were then five carriages from the former London and North Eastern Railway, with a construction date between 1922 and 1948, and at the southern end was the General Manager's saloon from the former Great Northern Railway, built prior to 1922. A number of seats in the General Manager's saloon were not fixed to the carriage, allowing the occupants to move them around to see out the observation window in the end of the saloon.

The incident

25 According to the train register in New Bridge signal box, the 14:00 hrs train from Grosmont arrived at Pickering at 15:15 hrs as scheduled.

26 The train had been driven by the fireman, and fired by the cleaner, both under the supervision of the driver. This is a normal practice, and is how staff gain experience and competence before becoming qualified in a grade.

27 The signaller at New Bridge had correctly issued an order to the train to pass the stop board at Pickering, and the train stopped in platform one in accordance with that order, with the leading carriage clear of the *fouling point*.

28 Upon arrival the crew got down from the locomotive and the cleaner uncoupled it from the train. Photographic evidence shows that there was no-one on the footplate at 15:18 hrs. The crew then rejoined the locomotive, and the fireman drove it into the headshunt.

29 The driver then descended from the locomotive and went to change the points. He spoke to the signaller using the signal post telephone next to the ground signal, but then became engaged in conversation with members of the public outside the boundary fence who were asking about the operation of the railway. The driver was concerned about time pressure before the train's departure (scheduled for 15:40 hrs), and broke off the conversation to return to the cab. In doing so he overlooked that he had not changed the points.

30 When the driver returned to the locomotive cab he told the fireman, who was at the controls, that the ground signal was clear to proceed. The fireman opened the *regulator*, starting the locomotive forward. Because of the boiler of the locomotive restricting vision, none of the crew could see the actual lie of the points.

Figure 6: Train re-entering platform one at Pickering (photograph courtesy of site witness)

31 At 15:24 hrs the locomotive re-entered platform one and the crew realised that they were on the wrong line; the driver immediately applied the brakes (Figure 6). However, it was too late for the locomotive to stop and it collided at slow speed with the carriages it had hauled, moving the train northwards by about 0.5 m.

32 There were four passengers in the observation saloon of the General Manager's saloon at the time of the collision. Some of them saw the locomotive approaching, and realising that a collision was imminent, attempted to leave the carriage. A number of passengers were knocked over by the collision; none were seriously injured, and first aid was provided by NYMR staff. One of these passengers was taken to hospital as a precaution, but was discharged the same evening.

33 The collision had lifted the body of the General Manager's saloon a small amount (probably less than 25 mm) off its south end bogie. The collision also resulted in compression of the buffers between the two vehicles. Shortly after the collision occurred the driver eased off the locomotive steam brake in order to then apply the handbrake. The buffer springs expanded and moved the locomotive back, and the driver let it roll back to a natural stop and re-applied the brakes about a metre away from the carriages. In doing this he considered he was making the train safer. However, as a result the saloon dropped back onto its bogie; the shock and noise of this caused further distress to those passengers who were still inside. Moving the locomotive in this way also disturbed evidence without the agreement of the RAIB, contrary to the Rail Accident (Investigation and Reporting) Regulations, 2005 (Figure 7).

Figure 7: Locomotive and saloon after locomotive had been moved clear

34 There was no damage to the locomotive. There were several items of minor damage to the General Manager's saloon (Appendix B) and minor damage to a coupling on one other carriage.

35 As a result of the collision two trains were cancelled, and two others turned back short of Pickering. Other trains were delayed by up to 65 minutes. Normal service on the NYMR resumed the following morning, 6 May 2007.

Conclusions

36 The immediate cause of the collision was that the driver did not change the points before re-joining the locomotive. He was of the mindset that he had done this, and he had seen that the ground signal was clear. He told the fireman, who was driving, that he could proceed.

37 A possible causal factor is that the driver felt under time pressure to run the loco round and prepare his train for departure.

38 A contributory factor was that none of the crew could see the lie of the points from the footplate due to their proximity to the locomotive and the size of its boiler.

39 A further contributory factor was that the ground signal only indicated that the locomotive could enter the station, but did not indicate the lie of the points.

40 There is no evidence that the condition of the locomotive, the carriages, the track, or the competence of any of the crew members contributed to the collision.

41 Either a person standing by the points, observing their lie, and calling the train forward or a suitably designed hand worked lever mechanically linked to an indicator (Figure 8) would have adequately mitigated the risk identified at Pickering from this incident.

Figure 8: Point lever and indicator combined (photograph courtesy of private collection)

42 Releasing the locomotive brakes to allow it to move away from the train after the collision without ensuring that those involved were aware of the imminent movement caused further distress to the passengers and in addition disturbed evidence of the accident without permission from the RAIB.

Actions reported as taken by the NYMR

43 The NYMR have instructed that any person who operates the hand points at Pickering south must remain at the points after operating them, and only call a locomotive past them when the ground signal clears, after again checking the lie of the points.

Recommendations

44 The following recommendations are made[1]:

1. The NYMR should immediately mandate that the person who operates the hand points at Pickering south should remain at the points after operating them, and should only call a locomotive past them when the ground signal clears, after again checking the lie of the points (paragraphs 41 and 43); or

   The NYMR should install a system at Pickering south that provides an indication to the train crew in the cab as to the lie of the points (paragraph 41).

2. The NYMR should introduce procedures to ensure that after an accident no rolling stock or other evidence is moved without considering the effect on people involved, and only in compliance with the Rail Accident (Investigation and Reporting) Regulations, 2005.

[1] Responsibilities in respect of these recommendations are set out in the Railways (Accident Investigation and Reporting) Regulations 2005 and the accompanying guidance notes, which can be found on RAIB's web site at www.raib.gov.uk

Appendices

Glossary of terms — Appendix A

All definitions marked with an asterisk, thus (*), have been taken from Ellis' British Railway Engineering Encyclopaedia © Iain Ellis. www.iainellis.com.

Clear	To clear a signal is to change its aspect from its most restrictive aspect to a less restrictive aspect.* A clear track circuit is one where no train is present on the track circuit.
Fouling point	The point at which vehicles on converging tracks would be in contact with each other. This is deemed to be the point at which the running edges of the tracks are 6'6" (2 m) apart.*
Ground signal	A signal located at ground level.
Headshunt	A short length of track provided to allow shunting movements to take place in sidings without those movements fouling the running line.*
Heritage railway	A railway equipped and operated in a manner dating from a previous era.*
Regulator	The control handle by which a driver applies or removes power to and from the traction unit.*
Running round	The act of moving a locomotive from one end of a train to the other.*
Stop boards	A lineside sign instructing a driver to stop.*
Tender	A dedicated vehicle attached to a steam locomotive that carries the water and coal.*
Track circuit	An electrical train detection system, based on the principle of proving the absence of a train.*

DAMAGE REPORT ON G N SALOON 3087
18th May 2007

Following lifting the carriage off its bogies and carrying out a thorough examination the following defects have been caused by the collision on Saturday 5th May 2007.

1. The headstock at the south end is bent behind both buffers, the east side being the bent more than the west.
2. The gusset at the back of the east side buffer is also bent.
3. The east side buffer slide casting is cracked in three places.
4. Both centre casting pins are bent.
5. The centre casting on the south end bogie is damaged due to the carriage body lifting up from the bogie.
6. One cast wearing pad is cracked on the bolster on the east side of the north end bogie
7. One window broken on the east side.
8. A water pipe connection damaged to the toilet flush tank.

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