

# Runaway and near miss at Dereham station, Mid-Norfolk Railway, 10 December 2020

## Important safety messages

This accident demonstrates the importance of:

- railway undertakings ensuring that when they contract out work:
  - any information and supervision needed to plan and safely carry out the work is made available
  - the specific risks arising are identified, and adequate mitigation measures put in place
- road haulage contractors, and others undertaking safety critical work on or near railway infrastructure, stopping work when the method statement does not cover the required tasks.

## Summary of the accident

Around 15:52 hrs, a runaway rail vehicle narrowly avoided striking pedestrians and road traffic on Norwich Road level crossing at Dereham station. The vehicle was the intermediate vehicle of a three-car Pacer diesel multiple unit that was being delivered to the station by road haulage. It ran away while a winch was being used to roll it off an inclined trailer onto a siding that led to the gated level crossing. The level crossing was open to road users at the time. No arrangements were in place to prevent the runaway vehicle reaching the level crossing.

The Pacer vehicle arrived at Dereham resting on rails fitted to the road trailer. The road haulage unit driver (the driver) and the driver of the accompanying escort van worked together while unloading. The driver operated the winch using a remote control, while at the same time observing the Pacer vehicle. He had attached the winch rope to the vehicle using a length of chain. After the winch had taken the initial load, the escort van driver released other chains that were securing the vehicle to the road trailer. The driver allowed the vehicle to gradually roll off the inclined trailer. Around 70 seconds later, the driver heard the attachment chain drop and the vehicle ran away towards the level crossing. It was unbraked and there was no means of stopping it.

The vehicle ran uncontrolled for over 30 seconds, passing a stop board, running the wrong way through, and damaging, trailing points (which possibly slowed it down) and onto the running line where it collided with the level crossing gates. It came to a stop blocking the road. No-one was injured. However, CCTV shows one pedestrian crossing in front of the vehicle eight seconds before it arrived at the level crossing. Altogether, around 250 pedestrians and cyclists and 150 cars, vans and buses had used the level crossing during the time that the vehicle was being unloaded.



Dereham station showing where the vehicle was being unloaded, the siding, Norwich Road level crossing and the road haulage unit (inset photograph courtesy of Mid-Norfolk Railway)



CCTV images of the vehicle runaway (photographs courtesy of Mid-Norfolk Railway)

## Cause of the accident

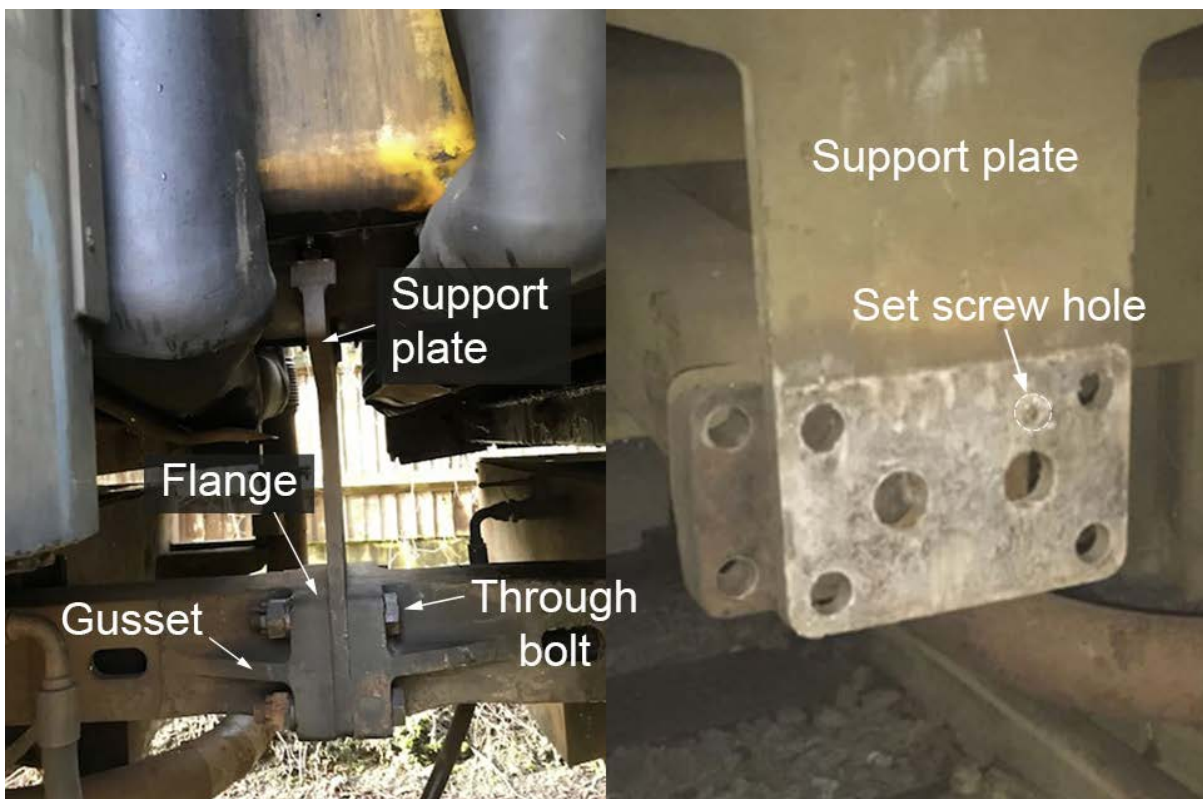
The accident occurred because the winch rope was connected to the Pacer vehicle by a chain in a manner that did not provide a secure means of attachment and, as a result, became free. There were no suitable arrangements for mitigating the consequence of this hazard.

Unloading at Dereham was part of work to transfer a three-car Pacer unit from a depot in Worksop to the Mid-Norfolk Railway Preservation Trust (Mid-Norfolk Railway). On 13 November 2020, Mid-Norfolk Railway contracted the work to a specialist road haulier, SA Smith. It explained that this was one of a number of contractors it had used before for this type of work.

The driver met the road haulage unit during its journey and took it over after another driver had loaded the Pacer vehicle at Worksop and driven part way to Dereham. CCTV shows the haulage unit and the escort van arriving at the station yard at 14:42 hrs. Railway staff had left the gate open in anticipation of their arrival and so as not to cause undue road congestion. After positioning the road trailer over the siding, the two drivers prepared to unload it. Mid-Norfolk Railway's general manager saw that they had arrived and briefly spoke to them during a break in a meeting.

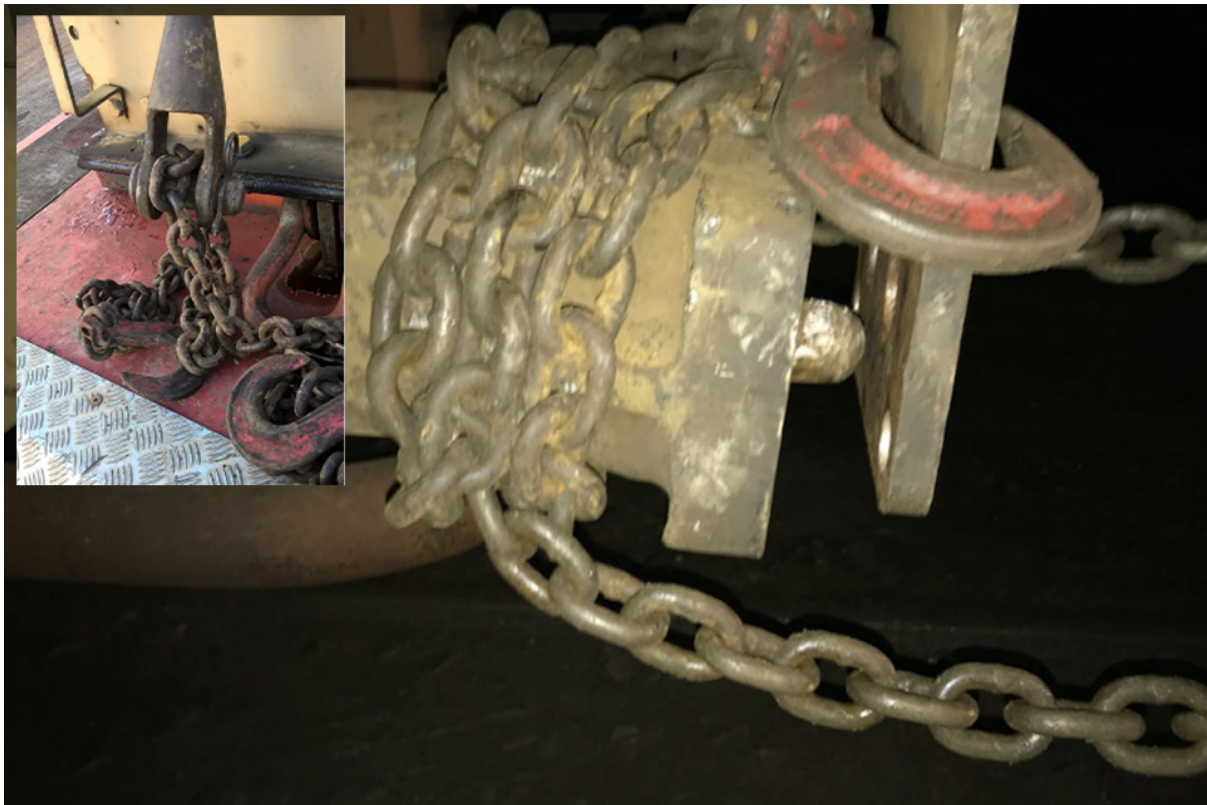
The drivers closely followed the documented method statement that SA Smith had prepared for unloading rail vehicles. However, the method statement only referred to attaching the winch rope to a rail vehicle draw hook. The intermediate Pacer vehicle had no draw hook and, unlike the two driving vehicles, it had no automatic coupler either (a protrusion which may have provided an equivalent point of attachment). The method statement did not explain the actions to be taken when there was no draw hook, and there was no evidence that the driver sought any additional information from anyone at Mid-Norfolk Railway when he realised this. Aware that rail vehicle bodywork can often be corroded and unsound, he considered that the best alternative was the semi-permanent drawbar at the vehicle end closest to the winch.

Semi-permanent drawbars on Pacer units comprise a square hollow bar with a thick rectangular flange at the outer end, which is strengthened by a pair of tapered gussets. When coupled, the flanges on the adjacent drawbars are clamped together with four through bolts, one at each corner. Sandwiched between the two flanges is a single vertical plate that supports the gangway above (support plate). The support plate is fixed to one of the flanges by a set screw, enabling it to continue to support the gangway when the drawbars are separated. When the vehicle was unloaded, the support plate remained fixed to the drawbar that was closest to the winch. The driver decided to wrap the ends of the chain around the drawbar immediately behind the flange. The chain had a hook at each end. He attached these to the support plate. This provided a loop in the chain to which he connected the open termination on the winch rope.



**Semi-permanent drawbars on a coupled Pacer unit. The image on the right shows the support plate and location of the set screw hole - taken after the plate had separated from the drawbar flange (photographs courtesy Mid-Norfolk Railway)**

The exact way in which the chain and winch rope became detached is uncertain. However, the wrapped chain probably slipped on the drawbar and the two gussets guided it over the flange. With the winch load now acting on the support plate, the single set screw failed, allowing the support plate to separate from the flange and the chain to fall.



**Re-creation showing the chain wrapped around the drawbar (photograph courtesy Mid-Norfolk Railway). Inset shows the open termination on the winch rope (photograph courtesy SA Smith)**

The driver was not aware what method of attachment had been used during loading at Worksop. He claimed no expertise in this or any other type of railway rolling stock. He explained that he had used a similar method of attachment before, but in hindsight thought that this may have been when the large through bolts had been fitted to the flange and support plate. Mid-Norfolk Railway clarified that it would not have provided SA Smith with any information or guidance on how to connect a winch rope or chain to the Pacer vehicle, for either loading or unloading, and RAIB found no evidence that the haulier had requested any. The railway explained it considered the haulier to be expert in moving rail vehicles by road, having the necessary competence to be left to carry out the work without supervision or detailed instruction, following its own processes and custom and practice. As such, no-one with rolling stock or other railway expertise was appointed by the railway to supervise or assist when the vehicle was being unloaded. Mid-Norfolk Railway has stated that had it been aware of any associated hazards it would have cancelled or postponed the delivery, or informed the drivers when they arrived on site.

Mid-Norfolk Railway's safety management system (SMS) manual describes the use of operating procedures and work instructions for controlling key activities. However, the railway had no documents covering delivery and unloading of vehicles onto its infrastructure by a third party. The railway explained that the siding in Dereham station yard had been used as a place for unloading vehicles for over 20 years without incident. However, it had defined no rules, guidance, supervision requirements or safety precautions relating to this use.

The SMS manual also covers risk management responsibilities. The railway provided a risk assessment entitled 'loading & unloading vehicles', but this did not identify specific hazards that were associated with the accident: uncontrolled vehicle movement, level crossing incursion, etc. The railway explained that the assessment was only for work carried out by its own staff using plant and equipment that it owned (a telehandler and a forklift truck). It was not intended to apply to the delivery of rail vehicles (or goods) requiring the use of specialist equipment owned and operated by others.

SA Smith had prepared a related risk assessment that included consideration of the risks due to vehicle 'loading or unloading activity'. However, this also did not identify the hazards that were specific to the accident.

Health & Safety Executive guidance for managing health and safety explains that, while contractors have their own legal duties, anyone engaging a contractor has a health and safety responsibility for both the contractor themselves and anyone affected by the work the contractor does. This includes making sure everyone is provided with relevant information, understands their part in identifying and managing the specific risks from the planned work and that the associated control measures are agreed prior to the work starting.

As a result of its own investigation of the accident, Mid-Norfolk Railway has stated that it has suspended vehicle loading and unloading operations on the siding and proposes trackwork alterations that will remove direct access to the running line.