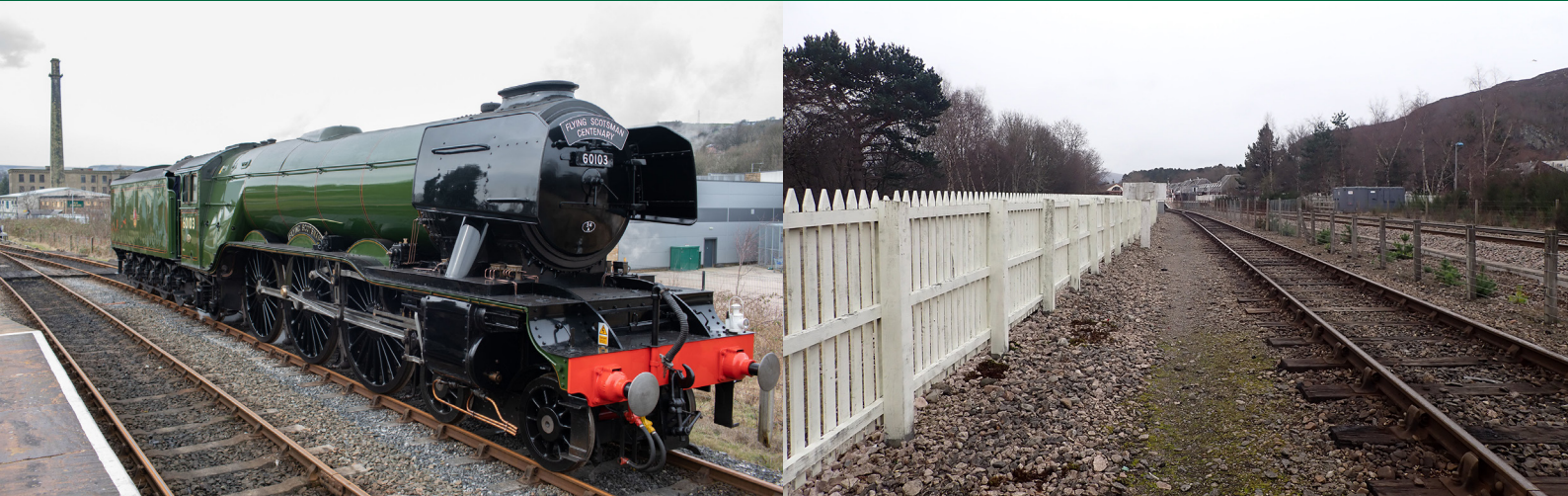




Rail Accident Investigation Branch

# Rail Accident Report



## Collision at Aviemore station on the Strathspey Railway 29 September 2023

Report 09/2024  
September 2024

This investigation was carried out in accordance with:

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

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## Preface

The purpose of a Rail Accident Investigation Branch (RAIB) investigation is to improve railway safety by preventing future railway accidents or by mitigating their consequences. It is not the purpose of such an investigation to establish blame or liability. Accordingly, it is inappropriate that RAIB reports should be used to assign fault or blame, or determine liability, since neither the investigation nor the reporting process has been undertaken for that purpose.

RAIB's findings are based on its own evaluation of the evidence that was available at the time of the investigation and are intended to explain what happened, and why, in a fair and unbiased manner.

Where RAIB has described a factor as being linked to cause and the term is unqualified, this means that RAIB has satisfied itself that the evidence supports both the presence of the factor and its direct relevance to the causation of the accident or incident that is being investigated. However, where RAIB is less confident about the existence of a factor, or its role in the causation of the accident or incident, RAIB will qualify its findings by use of words such as 'probable' or 'possible', as appropriate. Where there is more than one potential explanation RAIB may describe one factor as being 'more' or 'less' likely than the other.

In some cases factors are described as 'underlying'. Such factors are also relevant to the causation of the accident or incident but are associated with the underlying management arrangements or organisational issues (such as working culture). Where necessary, words such as 'probable' or 'possible' can also be used to qualify 'underlying factor'.

Use of the word 'probable' means that, although it is considered highly likely that the factor applied, some small element of uncertainty remains. Use of the word 'possible' means that, although there is some evidence that supports this factor, there remains a more significant degree of uncertainty.

An 'observation' is a safety issue discovered as part of the investigation that is not considered to be causal or underlying to the accident or incident being investigated, but does deserve scrutiny because of a perceived potential for safety learning.

The above terms are intended to assist readers' interpretation of the report, and to provide suitable explanations where uncertainty remains. The report should therefore be interpreted as the view of RAIB, expressed with the sole purpose of improving railway safety.

Any information about casualties is based on figures provided to RAIB from various sources. Considerations of personal privacy may mean that not all of the actual effects of the event are recorded in the report. RAIB recognises that sudden unexpected events can have both short- and long-term consequences for the physical and/or mental health of people who were involved, both directly and indirectly, in what happened.

RAIB's investigation (including its scope, methods, conclusions and recommendations) is independent of any inquest or fatal accident inquiry, and all other investigations, including those carried out by the safety authority, police or railway industry.

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# Collision at Aviemore station on the Strathspey Railway, 29 September 2023

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## Summary

At 18:05 hrs on Friday 29 September 2023, the steam locomotive Flying Scotsman, travelling tender first, collided with the Royal Scotsman coaches on the approach to platform 3 at Aviemore station on the Strathspey Railway, Badenoch and Strathspey. These coaches, which normally operate on the mainline railway, were due to be hauled on the Strathspey Railway by Flying Scotsman as part of a planned movement to Boat of Garten station.

The collision occurred at 7 mph (11 km/h) during a move in preparation for the coupling of the locomotive to the coaches. Two people in the coaches were taken to hospital as a consequence of the accident. The collision also caused minor damage to the locomotive tender and damage to the coaches involved, which were taken out of service.

The collision occurred because the driver was not aware of the proximity of the locomotive to the coaches and so did not control its speed accordingly. This was due to the driver's view of the track ahead being limited and because, immediately before the collision, no one in the cab warned the driver that the locomotive was approaching the coaches. The driver's expectation, based on previous experience, was that the coaches would be located further away from the approaching locomotive.

The Strathspey Railway Company's ineffective management of the visit of the locomotive to the railway was identified as an underlying factor.

RAIB has made one observation regarding the number of people in the cab of the locomotive at the time of the accident.

RAIB has made one recommendation. It is addressed to the Strathspey Railway Company and relates to a review of the arrangements for foreseeable abnormal operations, such as visiting railway vehicles and special events, to ensure that the risks are identified, assessed and mitigated.

RAIB has identified two learning points. The first is a reminder of the importance of train crew maintaining an effective lookout while driving on a line-of-sight basis and knowing who is responsible for maintaining that lookout. The second is the importance of complying with rules regarding the number of people in a locomotive cab and ensuring that roles during movements are clearly understood.

# Introduction

## Definitions

- 1 Metric units are used in this report, except when it is normal railway practice to give speeds and locations in imperial units. Where appropriate the equivalent metric value is also given.
- 2 The report contains abbreviations and acronyms, which are explained in appendix A. Sources of evidence used in the investigation are listed in appendix B.



# The accident

## Summary of the accident

- 3 At 18:05 hrs on Friday 29 September 2023, the steam locomotive Flying Scotsman collided with a rake of stationary passenger coaches on the approach to platform 3 at Aviemore station, on the Strathspey Railway, Badenoch and Strathspey (figure 1). The coaches were part of the Royal Scotsman charter train. It was intended that the locomotive would stop and subsequently be coupled to the coaches to haul them on the Strathspey Railway to Boat of Garten station (figure 2).
- 4 The locomotive was travelling, with its tender leading, at 7 mph (11 km/h) when the accident occurred. Two people who had been on the passenger coaches were taken to hospital as a result of the collision.

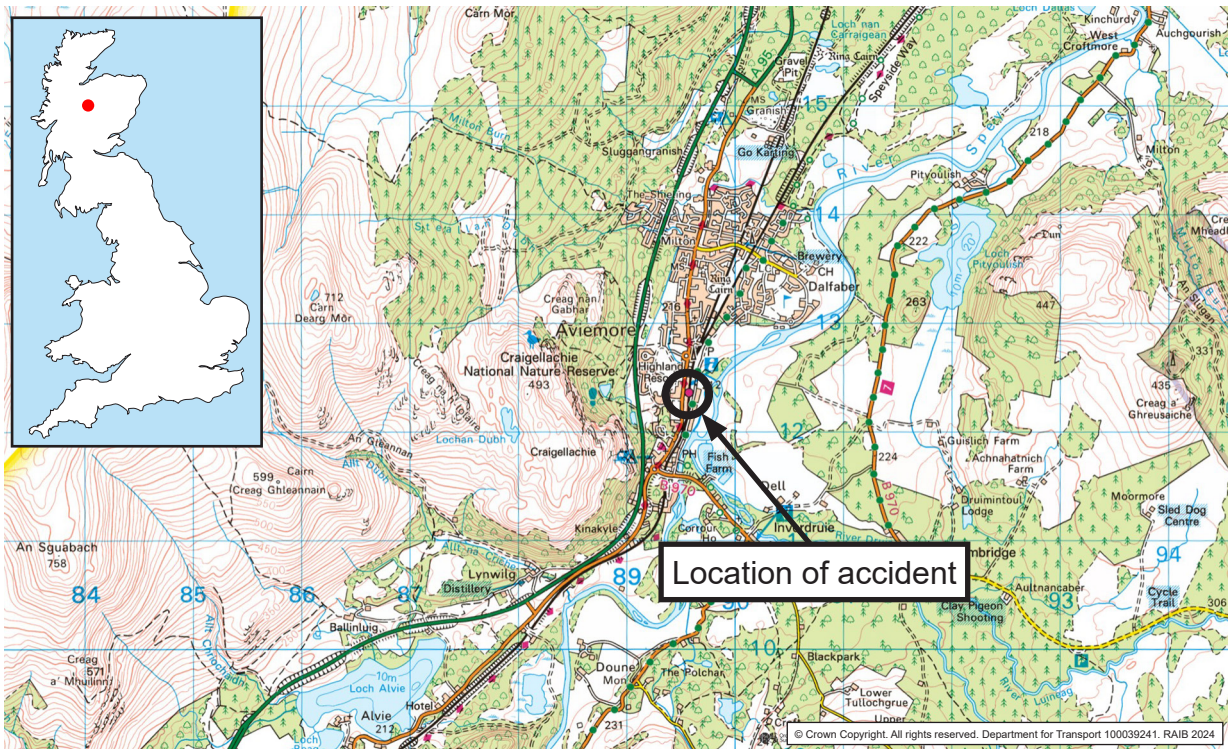


Figure 1: Extract from Ordnance Survey map showing location of accident at Aviemore.

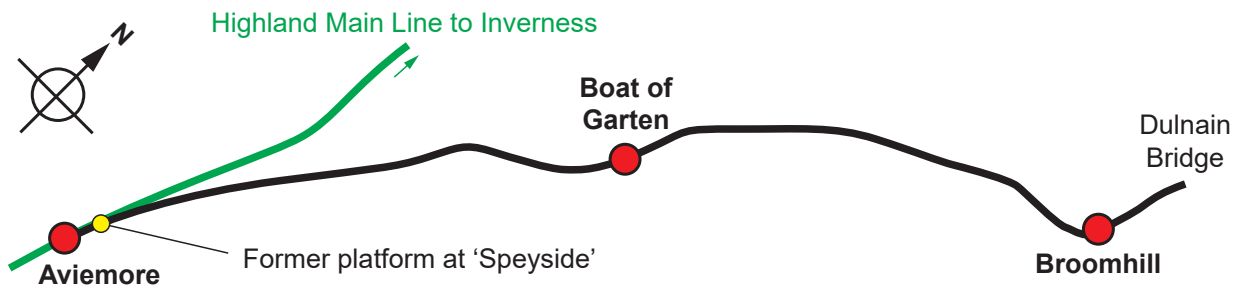


Figure 2: Overview of the Strathspey Railway showing significant locations.

- 5 The accident also caused a buffer on the leading coach to become locked with the gangway on the locomotive tender, and the locomotive tender received superficial damage to its paintwork. Four of the coaches also received varying degrees of internal damage including detached or broken fittings. Bottles of wine and spirits were dislodged from racks and shelves in areas of the coaches that were only accessible to members of staff.

## Context

### Location

- 6 Aviemore station is the southern terminus of the Strathspey Railway, which is a heritage railway. The station is also located on Network Rail's Highland Main Line between Perth and Inverness. Platform 3 is used exclusively by trains on the Strathspey Railway. A physical connection, to the south of the station, allows trains to move between the Strathspey Railway and Network Rail's national network.
- 7 The railway line from Aviemore towards Boat of Garten and Broomhill stations was formerly a through route, closed to passenger services by British Railways in 1965. The line remained open for freight traffic until 1968. The Strathspey Railway Company (SRC) partially reopened the route in stages as a heritage railway, with operations starting in 1978. SRC now operates passenger services north from Aviemore to Boat of Garten, 5 miles (8 km) from Aviemore, before reaching its current northern terminus at Broomhill, 10 miles (16 km) from Aviemore. Serviceable track exists as far north as Dulnain Bridge, approximately 1 mile north of Broomhill station, although it is not currently used for passenger services.
- 8 From the period of the reopening as a heritage railway until 1998, SRC trains' southern terminus was at a platform known as Aviemore (Speyside). This platform ceased to be used for passenger trains once agreement had been reached for SRC trains to run into platform 3 at Aviemore station to the south. The Speyside platform is located adjacent to SRC's locomotive depot and remains in use for operational purposes such as exchanging tokens between signallers and train crew. The southern end of the Speyside platform is approximately 235 metres from the northern end of platform 3 at Aviemore station.
- 9 The movement of Flying Scotsman from the Speyside platform towards Aviemore station was under the authority of a 'calling-on signal' (a subsidiary signal which allows a train to enter a section of line occupied by other rail vehicles). This meant that, at the time of the accident, the locomotive was being moved on the 'line-of-sight' principle. In this situation, it is the responsibility of a train's driver to ensure that the railway ahead is clear of obstructions. A stop board is located between the Speyside platform and Aviemore station. This is no longer part of the system used for controlling trains but is still used as a location landmark by drivers.

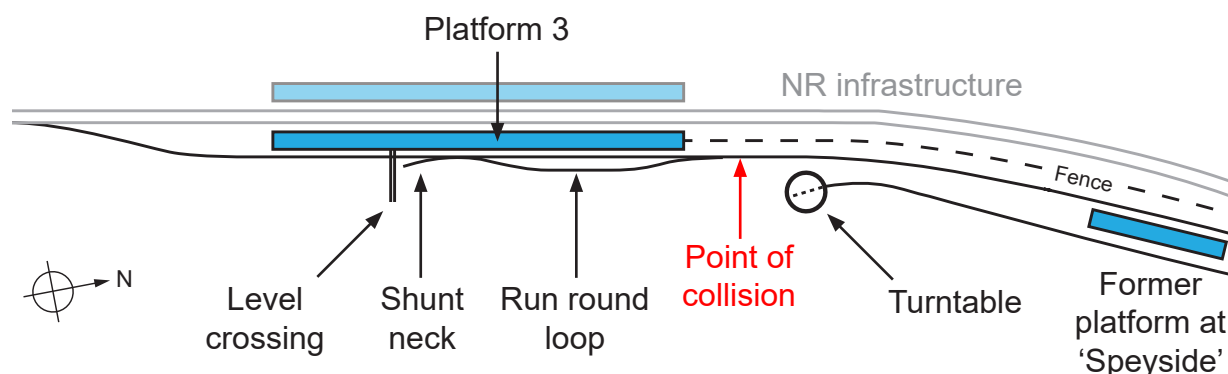


Figure 3: Track layout.

### Organisations involved

- 10 The Strathspey Railway is a heritage railway operated by SRC. SRC owns the majority of the track which forms the Strathspey Railway, although the Aviemore station building and the track leading to platform 3 are leased by SRC from Network Rail. SRC is responsible for all maintenance activities on the Strathspey Railway, including the section leased from Network Rail.
- 11 The National Railway Museum (NRM), part of the Science Museum Group, owns Flying Scotsman.
- 12 Riley and Son (E) Ltd (Rileys) is a locomotive engineering company that was contracted by NRM to act as custodian of Flying Scotsman. It provided two staff who accompanied the locomotive while it was at the Strathspey Railway.
- 13 Belmond Royal Scotsman (Belmond) operates the Royal Scotsman train tours. The coaches making up the train are owned by a subsidiary company of Belmond, the Great Scottish and Western Railway company (GS&WR). Assenta Rail (Assenta) provides engineering support, including maintenance, for the Royal Scotsman coaches.
- 14 Network Rail owns Aviemore station, including the adjacent Highland Main Line.
- 15 GB Railfreight (GBRf) is contracted by Belmond to operate the Royal Scotsman train on the national network. It provides a locomotive, driver and guard for that operation.
- 16 All of these organisations freely co-operated with the investigation.

### Locomotive and coaches involved

- 17 Flying Scotsman is a former London and North Eastern Railway steam locomotive. It currently carries its British Railways number, 60103. Built in 1923, it was withdrawn from mainline operations by British Railways in 1963 and is now owned by NRM. Flying Scotsman has a tender which is used to carry both coal and water for the locomotive. This tender is coupled to the locomotive immediately behind the driving cab (figure 4). During 2023 it undertook a tour of Great Britain as part of its centenary celebrations.

- 18 Although a preserved locomotive, Flying Scotsman is certified for use on the mainline railway in Great Britain. It has modifications to the original design which allow it to do this, including air brakes and the fitment of Automatic Warning System (AWS) equipment, Train Protection and Warning System (TPWS) equipment and an on-train data recorder (OTDR). Flying Scotsman is not fitted with a closed-circuit television system.



Figure 4: Flying Scotsman and tender (courtesy of SCMG Enterprises Ltd).

- 19 The rake of ten coaches involved was operated by Belmond to provide its Royal Scotsman luxury rail tours. While the format and route taken by Royal Scotsman tours can vary, the coaches are used in the same formation for all tours. The great majority of the Royal Scotsman tour itinerary uses the mainline rail network and the visits to the Strathspey Railway are the only routine operations which take place on heritage railway infrastructure. Passengers and staff remain on the train while it is travelling on the Strathspey Railway and sleep on the train when it is stabled overnight. Kitchen and dining facilities are also provided on the train.
- 20 The coach directly impacted in the collision is known as an 'observation lounge car' (figure 5). This vehicle, number 99965, has a largely open internal space with chairs and sofa-style seating. The leading end of this vehicle, impacted by Flying Scotsman, has a veranda/observation area. Although covered, this area is open to the environment.
- 21 At the time of the accident, a class 37 diesel-electric locomotive was coupled to the southern end of the Royal Scotsman train.
- 22 The condition and performance of the locomotives and coaches involved did not contribute to the cause of this accident.

### External circumstances

- 23 At the time of the accident, the weather was fine, mild and dry with no significant wind. There was no mist, fog or other weather feature affecting visibility. Although sunset was at 18:56 hrs, video footage taken at the time of the accident shows that it was light when the accident occurred. RAIB found no evidence that external circumstances affected this accident.



Figure 5: The observation lounge car.

## Background information

### The visits of the Royal Scotsman to the Strathspey Railway

- 24 The Royal Scotsman visits the Strathspey Railway around 40 times each year between April and October, using the railway as an overnight stop. This arrangement has been in place for many years and is considered routine business by SRC. The usual process adopted sees the train arrive from the national network hauled by a diesel locomotive provided by GBRf. GBRf drivers are required to be accompanied by a qualified SRC driver when carrying out movements on SRC infrastructure. To assist in managing the working hours of GBRf drivers once the train has moved onto the Strathspey Railway, the GBRf locomotive is detached and stabled in a siding near to the disused platform at Speyside (paragraph 8). An SRC diesel locomotive is then attached to the north end of the train before taking it to Boat of Garten station, where it is stabled overnight.
- 25 SRC normally uses dual-cabbed diesel locomotives to haul the Royal Scotsman to Boat of Garten. This means that the locomotives have a cab at each end and consequently that the driver can drive from the cab nearest to the train when approaching and subsequently coupling, giving them a direct and clear view of the coaches. The SRC locomotive is always crewed by Strathspey Railway drivers.
- 26 The following morning, the train is returned to Aviemore by the SRC locomotive, which is detached on arrival. The GBRf loco then recouples to the train for the return to Network Rail's Highland Main Line and the continuation of the tour.

### The visit of Flying Scotsman to the Strathspey Railway

- 27 At the time of the accident, Flying Scotsman was in the care of Rileys, which was the custodian of the locomotive on behalf of NRM. This relationship began in 2013 and was defined in an agreement between NRM and Rileys. As custodian, Rileys was permitted to make the locomotive available to heritage railways ('borrowers') wishing to host it. Rileys was required to maintain the locomotive and to provide a 'custodian's representative' to accompany it wherever it was used in such a way.
- 28 During the planning of the locomotive's centenary tour, the Strathspey Railway was identified as a location that Flying Scotsman could visit in Scotland. SRC agreed to host Flying Scotsman during the second half of September 2023. It was agreed with NRM and Rileys that the locomotive would operate trains on five days and that the locomotive would be on static display for up to 15 days. This arrangement was defined in a 'borrower's agreement' between NRM, Rileys and SRC which stipulated the conditions under which the locomotive would be operated. This agreement also mandated that a custodian's representative had to be present on the locomotive at all times when operational. This was to ensure that Flying Scotsman was operated according to NRM's requirements, which included the supervision of locomotive crews.

### People in the locomotive cab

- 29 There were six people in the cab of the locomotive at the time of the accident: a driver, a fireman, a custodian's representative, SRC's operations manager, an apprentice fitter and a GBRf driver. The significance of the number of people in the cab is discussed at paragraph 80.
- 30 The driver had only just taken over as driver of Flying Scotsman (see paragraph 52). The driver was familiar with the normal operation of the Royal Scotsman train on the Strathspey Railway, having been involved with it previously, and held the necessary competencies to operate steam locomotives on the Strathspey Railway.
- 31 The driver had many years' experience of the operation of steam and diesel locomotives. They had previously worked for Rileys and for a charter train operator on the mainline. Although a volunteer on the Strathspey Railway, they also held a salaried role with SRC and had experience of several different traction types. This included Flying Scotsman, having previously driven it at another railway. The driver had acted on behalf of Rileys as custodian's representative on Flying Scotsman the weekend before the accident.
- 32 The fireman had been a volunteer at Strathspey Railway since 2015. Although a volunteer, they also held a salaried role with SRC. The fireman held the necessary competencies to work as a fireman on steam locomotives on the Strathspey Railway. On a steam locomotive, the fireman is responsible for managing the boiler and assisting the driver when required to do so.
- 33 The custodian's representative was self-employed but was engaged by Rileys to act on the company's behalf. They had over 40 years' professional experience in the railway industry and had worked in the heritage and charter train sectors since 2006. The custodian's representative was a qualified driver for another heritage railway and had previously worked as fireman for Flying Scotsman on the mainline railway. They had worked as Rileys' representative on Flying Scotsman for most of the 2023 season but did not hold any formal competencies for the Strathspey Railway (nor were they required to).
- 34 SRC's operations manager joined the railway in July 2022 having previously worked at another heritage railway. They were a salaried employee of SRC, and held competencies as a diesel locomotive driver, guard and responsible officer (see paragraph 61) on the railway. The operations manager reported to the SRC operations director, one of nine directors of SRC, each with responsibility for specific areas of the business. The operations manager was familiar with how the Royal Scotsman was operated at the Strathspey Railway.
- 35 An apprentice fitter working for Rileys had accompanied Flying Scotsman during its centenary tour and was assisting the custodian's representative. They were training to become a fireman but took no active part in the operation of the locomotive at the time of the accident.
- 36 A GBRf driver was also in the cab because the Strathspey Railway had an agreement with GBRf to return mainline drivers back to Aviemore after their own locomotives were stabled for the night. Although in the cab at the time of the accident, they also took no active part in the operation of the steam locomotive.

### Braking performance of Flying Scotsman

- 37 Analysis of OTDR data from a previous occasion where Flying Scotsman had been brought to a stand as a light locomotive and tender indicates that, under normal braking conditions, it can stop from 9 mph (14 km/h) in around 21 metres.

### Royal Scotsman coaches

- 38 The Royal Scotsman train involved in this accident comprised eight former East Coast Main Line Pullman coaches (dating from the 1960s) and two Mk3 sleeper coaches (built during the 1980s) which are used as staff accommodation. The observation lounge car, which was directly struck by Flying Scotsman, was converted from one of the 1960s Pullman coaches.
- 39 The coaches are certified for 75 mph (121 km/h) operation on the mainline railway. Unlike the majority of mainline passenger coaches, those involved in this accident have several unusual internal features. These include sofa-type seating in the observation lounge car and other loose furnishings which are not secured to the vehicle structure (paragraph 20).
- 40 The age of the Pullman coaches means that they were built before current standards for train interior crashworthiness (sometimes referred to as 'passive safety') were issued. These vehicles were converted for their current use on behalf of GS&WR in 1989, returning to operation in 1990. The work was overseen and approved by engineering staff from British Rail's Special Trains Unit. Detailed records of the approval work undertaken by British Rail at the time are no longer available. Since the initial conversion, various engineering consultancies have advised and supported GS&WR and Belmond with the coaches. A number of changes have been made in the intervening period to their interiors, including the installation of fixed dining tables and new 'banquette' seating. In 2020 Belmond undertook a risk assessment of the operation of the Royal Scotsman. This identified a hazard entitled 'Furniture Movement' and described the existing risk controls as:

*'Some loose seating changed to fixed banquet type. 30 years operations with no incidents. Operate on single track mostly. Operate at low speeds mostly with a max speed of 75 mph. Loco's are fitted with TPWS.'*

The risk assessment also contained the following 'further information' about the coaches:

*'Based on grandfather rights, has been granted and proven fit for purpose. All furniture low level, low centre of gravity.'*

- 41 Belmond stated that this risk assessment has been reviewed annually and the train subject to a health and safety audit, examples of which were provided to RAIB for 2021, 2022 and 2023.



## The sequence of events

### Events preceding the accident

- 42 After the dates were chosen for Flying Scotsman to visit the Strathspey Railway (paragraph 28), SRC identified that the dates coincided with two occasions when the Royal Scotsman would also visit overnight. The Royal Scotsman coaches are fitted with air brakes. The Strathspey Railway's own steam locomotives are only fitted with a vacuum brake system and are therefore incompatible with the Royal Scotsman coaches. SRC's diesel locomotives are fitted with air brakes so are normally used to haul the Royal Scotsman coaches from Aviemore to and from Boat of Garten (paragraph 24). Flying Scotsman is fitted with air brakes.<sup>1</sup> This gave rise to the opportunity of combining the two events and hauling the Royal Scotsman coaches from Aviemore to Boat of Garten using Flying Scotsman.
- 43 During the summer of 2023, SRC discussed with NRM, Rileys and Belmond arrangements to combine the visit of the Royal Scotsman and Flying Scotsman. Belmond later stated that they did not take any active part in the detailed arrangements, viewing the plan as a variation to their longstanding arrangement with Strathspey Railway to take the Royal Scotsman to Boat of Garten overnight using a diesel locomotive. The operational arrangements for the visit of Flying Scotsman were mostly handled by SRC's operations manager and included creating a roster for staffing the locomotive.
- 44 Flying Scotsman arrived at the Strathspey Railway during the evening of Thursday 14 September 2023. The locomotive had not been to the railway before, so a gauging run was undertaken to ensure that it would not foul the railway's infrastructure. This was successful and the locomotive's first scheduled use was planned for 15 September, when it operated a passenger train. Flying Scotsman was then used operationally and on static display between 15 September and 28 September without any reported incidents. When operating, it hauled eight SRC coaches between Aviemore and Broomhill.
- 45 The day of the accident was not originally scheduled as one of the five operational days agreed between Rileys, NRM and SRC for Flying Scotsman. However, this use of the locomotive was still within the scope of the 'borrower's agreement' with the Strathspey Railway (paragraph 28). Evidence indicates that agreement between the parties for the movement using Flying Scotsman to take the Royal Scotsman from Aviemore to Boat of Garten was not finalised until the day before the accident.
- 46 During the afternoon of 29 September, Flying Scotsman was taken from Aviemore to Broomhill on the rear of a scheduled SRC service train. Following its arrival at 15:51 hrs, the steam locomotive was detached and moved further north to Dulnain Bridge (paragraph 7) for some promotional photography. Once the service train had departed Broomhill, Flying Scotsman was able to return south to Aviemore in preparation for coupling to the Royal Scotsman coaches once they arrived.

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<sup>1</sup> Flying Scotsman is fitted with both air and vacuum brakes. This allowed use of the locomotive with SRC's own coaches, and also with the Royal Scotsman coaches. The air brake system was in use at the time of the accident.

- 47 At 13:45 hrs, the Royal Scotsman left Edinburgh Waverley station as timetabled, hauled by a GBRf class 66 locomotive. The train was recorded as arriving at the Strathspey Railway at 17:54 hrs. Although booked to arrive at 18:25 hrs, SRC was able to accept it at this earlier time.
- 48 On arrival at Aviemore, the Royal Scotsman was stopped so that the rear of the train was well clear of the points at the south end of platform 3 (figure 6). The Royal Scotsman does not have a defined stopping point on platform 3 at Aviemore station as it is not intended that passengers get off there. This was because SRC had stabled a class 37 diesel locomotive in the adjacent loop ready to be attached to the rear of the Royal Scotsman (see paragraph 100).

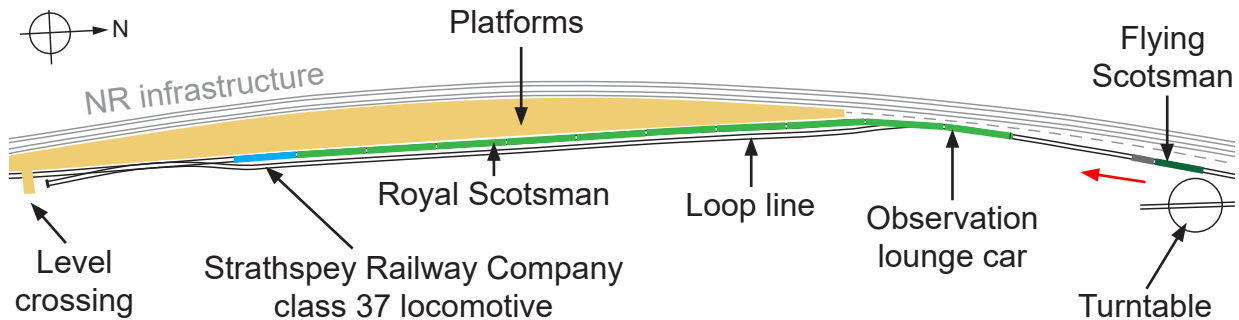


Figure 6: Position of Royal Scotsman coaches at Aviemore at the time of the collision.

- 49 The GBRf driver who drove the train onto the Strathspey Railway handed over the class 66 locomotive to a colleague who was also qualified as a locomotive driver and had been on the Royal Scotsman as the train's guard during the journey from Edinburgh. This second driver agreed to take the locomotive, once detached from the train, north to a siding close to Speyside platform where it would be stabled. Although the siding where the locomotives are stabled is only around 400 metres from Aviemore station (figure 2), this means that GBRf drivers must be accompanied by a Strathspey Railway conductor driver with the appropriate route knowledge when making this movement.
- 50 At approximately 17:42 hrs, Flying Scotsman arrived, from Dulnain Bridge, at the disused platform at Speyside (figure 3), where a change of driver was planned to take place. While at Speyside, the SRC operations manager left Flying Scotsman's cab and walked to Aviemore station so they could accompany the GBRf locomotive, as the conductor driver, for its short journey to the siding where it would be stabled overnight.
- 51 By this time, the class 37 locomotive (paragraph 21) had been coupled to the southern end (rear) of the Royal Scotsman, an activity which had been managed by the SRC operations manager using a handheld radio. The GBRf locomotive was then moved from Aviemore station to its stabling siding near Speyside, with the GBRf driver and the SRC operations manager onboard.
- 52 The SRC operations manager and GBRf driver then left the GBRf locomotive and walked to the Speyside platform and climbed into the cab of Flying Scotsman, which was waiting there. The planned replacement driver for Flying Scotsman also entered the cab of the locomotive at Speyside shortly afterwards.

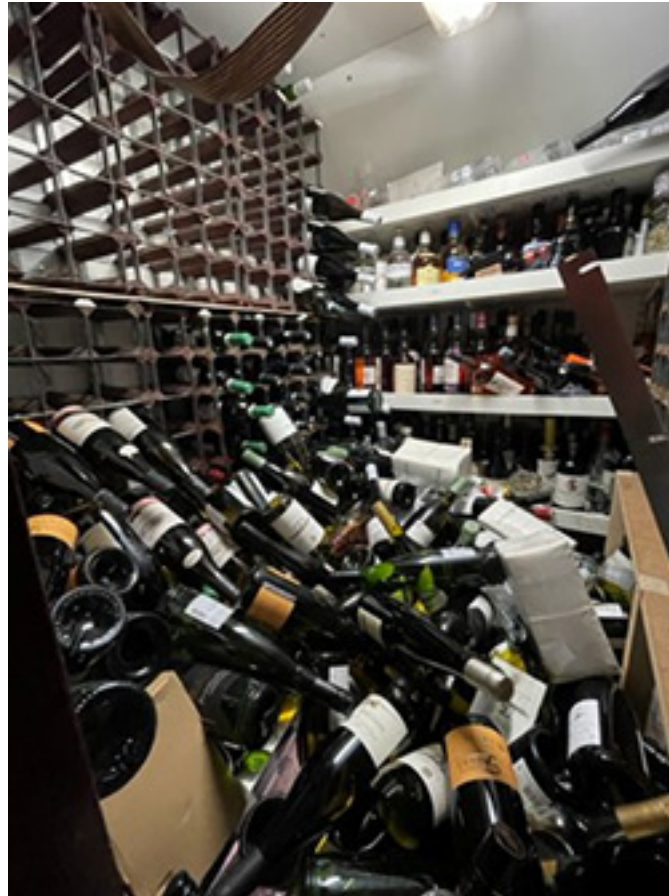
- 53 An SRC guard was expecting to work the Royal Scotsman on the journey to Boat of Garten and was therefore awaiting the arrival of Flying Scotsman. However, they were unaware that the locomotive was about to set off from Speyside. As a consequence, the guard was at the southern end of the Aviemore station platform, close to the Class 37 locomotive.
- 54 Witness evidence indicates that the scheduled replacement driver was the last person to enter the cab. The operations manager, the fireman, the apprentice fitter and the custodian's representative had previously been in the cab since the locomotive left Dulnain Bridge (paragraph 46). The custodian's representative was on the fireman's side of the cab (figure 10), either on or in the immediate vicinity of the fireman's seat. During the short journey from the Speyside platform to Aviemore station, the driver was on their seat operating the controls and the fireman was tending the fire from a central position in the cab. The SRC operations manager, GBRf driver and fitter were in the space behind the driver's and fireman's seats.
- 55 The passengers on board the Royal Scotsman coaches had been informed that Flying Scotsman would be hauling the train to Boat of Garten. A small number of them gathered on the veranda of the observation lounge car to watch the Flying Scotsman approach and couple. They had been advised against doing so by Belmond staff because of the risk from particles of hot soot from the steam locomotive. At least one passenger was recording the approach of Flying Scotsman with a mobile phone.

## Events during the accident

- 56 At 18:03 hrs, Flying Scotsman set off, driven tender first, from the Speyside platform and headed south towards Aviemore station, a journey of 344 metres. The SRC Rule Book<sup>2</sup> requires that locomotive drivers obtain the guard's permission before coupling to a train. The driver intended to stop short of the Royal Scotsman coaches and seek this permission on arrival at Aviemore station.
- 57 Flying Scotsman's OTDR shows that the train stayed within the 10 mph (16 km/h) maximum permitted speed for the entire journey, and that for the last 10 seconds of the journey it was travelling below 8 mph (13 km/h).
- 58 Immediately before the collision, the driver looked out of the window on their side of the cab. As they did so, the custodian's representative, who already had their head out of the window on the fireman's side of the cab, shouted a warning to the driver, who immediately made a full-service application of the locomotive's brakes. This happened too late to prevent the collision, which occurred at about 7 mph (11 km/h).
- 59 The impact caused at least one person on the veranda of the observation coach to fall to the floor. A passenger standing inside the observation coach also clashed heads with another passenger. Numerous wine bottles fell from a large wine rack and some glass bottles containing spirits were dislodged from a shelf in a kitchen area (figure 7). These areas were not accessible to passengers but were used by staff, although none were in the vicinity at the time.

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<sup>2</sup> The Strathspey Railway Company Ltd, Rules and Regulations, issue 4 dated April 2011.



*Figure 7: Wine bottles dislodged during the accident (courtesy of the Strathspey Railway Company).*

- 60 The Royal Scotsman coaches were displaced as a result of the collision. Marks left on the railhead showed that the observation coach (the first to be struck) was pushed back approximately 600 mm. The amount each coach was displaced reduced along the length of the train resulting in the coach at the south end (attached to the class 37 locomotive) being pushed back by 114 mm. The class 37 locomotive was not moved by the impact.

### Events following the accident

- 61 Following the collision, Flying Scotsman was secured and the SRC operations manager and other staff on board the Royal Scotsman train began to check on the welfare of the staff and passengers involved. The emergency services were informed and the site was attended by Police Scotland, the Scottish Ambulance Service and the Scottish Fire and Rescue Service. SRC has a person acting in the role of responsible officer when trains are running. The responsible officer is in overall charge of the railway and is the person to whom other staff must report incidents and accidents. At the time of the accident, they were at Boat of Garten station, waiting for the planned arrival of the Royal Scotsman train. The SRC responsible officer was informed of the accident and made their way to Aviemore station by road to assist.

- 62 At 20:19 hrs, at the request of the Scottish Fire and Rescue Service, the adjacent Highland Main Line was blocked to traffic by Network Rail signallers as a precaution to enable the emergency services to deal with the accident. After responders were confirmed clear, the line was reopened to traffic at 20:57 hrs.
- 63 The passenger who had clashed heads with another passenger, reporting a brief loss of consciousness as a result, was taken to hospital by ambulance for further checks. A member of Belmond staff was also taken to hospital as a precautionary measure. Neither were detained in hospital overnight.
- 64 RAIB was notified of the accident at 18:50 hrs, and arrangements were made to gather evidence in advance of RAIB inspectors attending the site.
- 65 The Royal Scotsman train was taken out of service with staff and passengers being accommodated in hotels. The Royal Scotsman coaches were subsequently moved to where they are routinely maintained (Hamilton, near Glasgow). Two coaches were considered unsafe to move by rail so were transported by road. Flying Scotsman initially remained at the Strathspey Railway although it did not operate any of the further planned train services.
- 66 On 5 October 2023, RAIB inspectors attended the Strathspey Railway and examined the site and the locomotive. They also undertook a reconstruction of the accident using Flying Scotsman and some substitute coaches. RAIB inspectors subsequently went to Hamilton to examine the Royal Scotsman coaches.

## Analysis

### Identification of the immediate cause

- 67 **The collision occurred because the driver of Flying Scotsman did not know that the locomotive was in close proximity to the Royal Scotsman coaches and did not control its speed accordingly.**
- 68 Video footage taken from three different locations shows the locomotive tender colliding with the stationary coaches. Witness evidence indicates that the driver did not intend to couple the locomotive to the coaches during that move, instead intending to stop short before coupling (paragraph 56).

### Identification of causal factors

- 69 The accident occurred due to a combination of the following causal factors:
- During the movement, the driver's visibility of the Royal Scotsman coaches was limited as a result of track curvature and driving position (paragraph 70).
  - Immediately before the collision, no one in the cab warned the driver that the locomotive was approaching the Royal Scotsman coaches (paragraph 76).
  - The driver had an expectation that the Royal Scotsman coaches were positioned further south than they were (paragraph 99).

Each of these factors is now considered in turn.

#### The physical layout of the track and configuration of the locomotive

- 70 **During the movement, the driver's visibility of the Royal Scotsman coaches was limited as a result of track curvature and driving position.**
- 71 The driver's position at the locomotive controls is on the left-hand side of the cab when travelling in the normal direction of operation (that is, with the locomotive's chimney leading) (figure 10). The driver's position (see paragraph 75) means that their view of the line in the direction of travel is inherently restricted when reversing (travelling tender first) around a left-hand curve.
- 72 During its site visit, RAIB undertook a reconstruction of the accident to understand the view available to the locomotive crew. Flying Scotsman was reversed towards a set of carriages positioned where the Royal Scotsman coaches were at the time of the collision.
- 73 RAIB observed that, from the driver's side of the cab, the end of the coaches closest to the locomotive first became partially visible when the locomotive was around 81 metres from them. It was not until that distance was reduced to around 62 metres that RAIB considers that the presence of the coaches would be fully apparent to a person looking out from the driver's side of the locomotive cab (figure 8). For a person looking out from the fireman's side of the cab, while obstructions may have impeded the view of the Royal Scotsman coaches during the initial part of the movement from Speyside to Aviemore station, an unimpeded view of the nearest part of the rake was available for more than 230 metres on the approach (see paragraph 93, figures 8 and 11).



Figure 8: The view along the driver's side of the tender when the locomotive is 62 metres from the coaches (left) contrasting with the view along the fireman's side at Speyside (right) with the position of coach end (circled).

74 The track through platform 3 at Aviemore station is straight but, north of the platform, it starts to curve to the east, with the tightest curvature immediately north of the platform (figures 3, 6 and 9). The curve then eases towards the disused platform at Speyside.

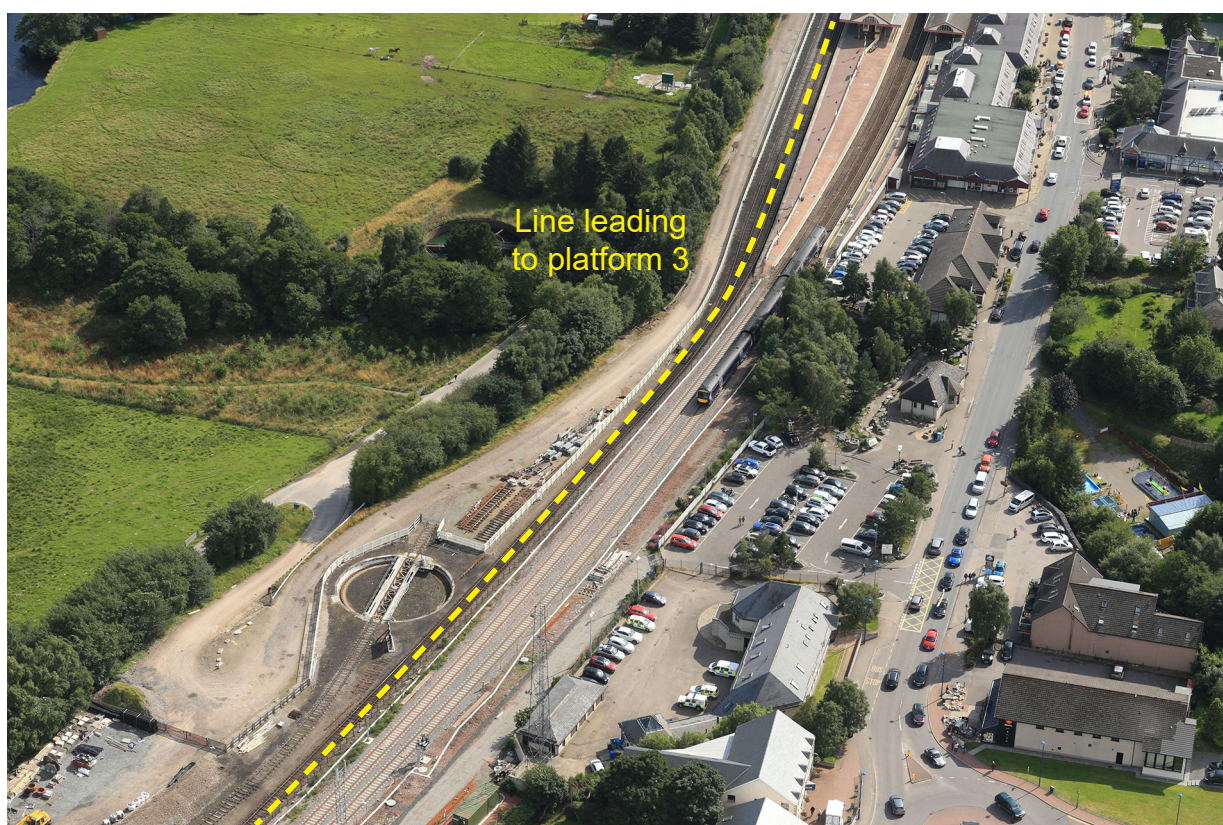


Figure 9: Aviemore station and features north of Aviemore (turntable and track leading to it) (courtesy of Network Rail).

75 At the time of the accident, the locomotive was moving in the reverse direction, with the tender leading. This meant that the driver needed to turn to look behind them to see the line ahead, while using the driving controls. The reconstruction undertaken by RAIB (paragraph 73 and figure 8) showed that the tender restricts the driver’s view ahead when the locomotive is operating with the tender leading and approaching a left-hand curve.



Figure 10: Driver at the controls, with fireman’s seat on the right.

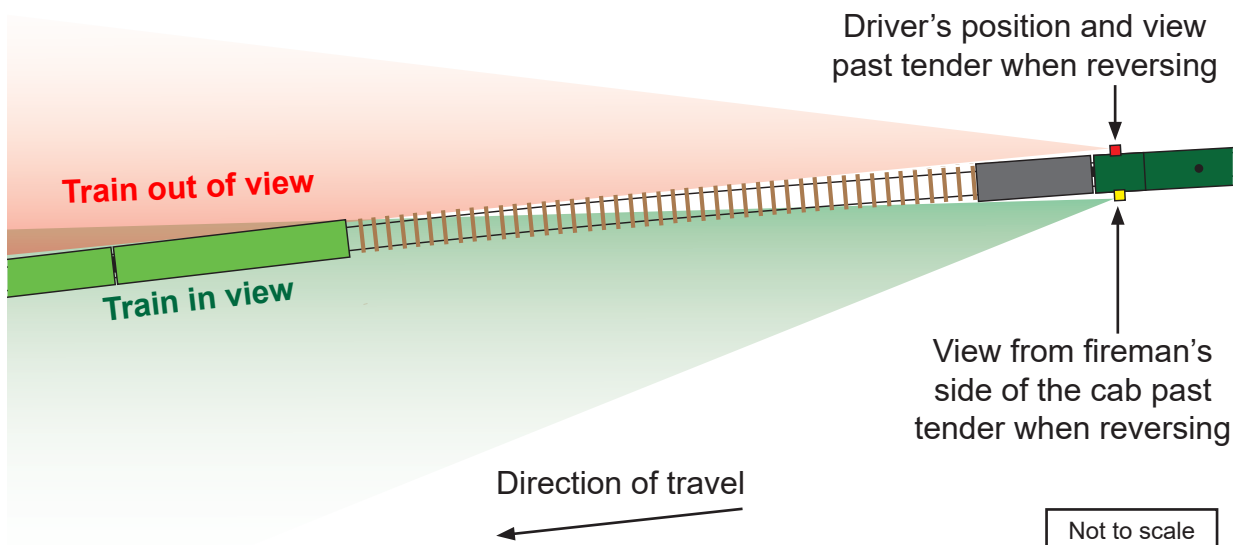


Figure 11: Representation of the view from each side of the locomotive cab when reversing on a left-hand curve in the direction of travel.



### The absence of a warning to the driver

#### **76 Immediately before the collision, no one in the cab warned the driver that the locomotive was approaching the Royal Scotsman coaches.**

- 77 Witness evidence indicates that no warning was provided to the driver that the locomotive was approaching the Royal Scotsman coaches until the last moments before the collision. At this point it was too late for the driver to take any effective action to reduce the speed of the locomotive and avoid the accident.
- 78 This causal factor arose due to a combination of the following:
- a. There was ambiguity of roles within the cab (paragraph 79).
  - b. The location and actions of the custodian's representative created a perception among others in the cab that the custodian's representative was looking out and providing direction to the driver, when they were not doing so (paragraph 84).
  - c. The presence of freight wagons on the turntable siding and a large sign may have restricted visibility of the coaches from the fireman's side of the locomotive in the early stages of the movement (paragraph 90).
  - d. There was no briefing or plan for the movement, and no one had been tasked to assist the driver with observing the line in the direction of travel (paragraph 94).

Each of these factors is now considered in turn.

### Ambiguity of roles

#### **79 There was ambiguity of roles within the cab.**

- 80 At the time of the accident, there were six people in the cab of Flying Scotsman (paragraph 29). Rule 1.9 of the SRC Rule Book requires that the number of people in the cab of any locomotive is limited to four. Neither the apprentice fitter (paragraph 35) nor the GBRF driver (paragraph 36) played any role in the movement. To meet the requirements of the relevant operating rules and the agreement between Rileys and SRC (paragraph 28), operation of Flying Scotsman required (as a minimum) the presence of the driver, the fireman and the custodian's representative.
- 81 Witness evidence strongly indicates that there was no clear consensus as to who was controlling the movement or could be regarded as being in charge in the cab. Most witnesses agreed that the locomotive driver would normally have ultimate authority of this type of movement. This is supported by section 2.2.2 of the SRC Rule Book which states that '*the driver must observe all signals and speed restrictions and keep a good look-out at all times. He is responsible for the safe and proper working of the train...*'. However, the presence of the SRC operations manager, who had co-ordinated the driver change and arranged for the class 37 to be attached to the south end of the Royal Scotsman (paragraph 51), caused some witnesses to consider that this individual was controlling the move.

- 82 A clause in the 'borrower's agreement' (paragraph 28) mandated the presence of the custodian's representative on the locomotive when in operation. It also empowered them to intervene or stop any activity they judged to be detrimental to the locomotive. Their role in advising crews and safeguarding the locomotive against mishandling may also have contributed to the lack of a clear understanding as to who was in control of the movement.
- 83 RAIB found no evidence of poor working relationships between the locomotive crew. Witness evidence was clear that there were no unnecessary conversations, distractions, or a lack of attention to the tasks being undertaken.

*Perception created by the position and actions of the custodian's representative*

**84 The location and actions of the custodian's representative created a perception among others in the cab that the custodian's representative was looking out and providing direction to the driver when they were not doing so.**

- 85 The custodian's representative had taken a position on the fireman's seat at the start of the move from Speyside. The fireman, who would normally use this seat, was standing up and managing the locomotive's fire and boiler.
- 86 Witness evidence indicates that, shortly after the locomotive set off from Speyside, the driver asked for the locomotive's drain cocks to be closed. Drain cocks are valves used to release water that has condensed in the locomotive cylinders, to prevent damage. On this locomotive this task would normally be done by the fireman, at the direction of the driver, although in this case it was the custodian's representative who responded and closed the valves. Partway through the 344 metres journey towards Aviemore station, the driver asked about the status of the lineside stop board (paragraph 9). This was because they incorrectly believed that the stop board was still in use, and so sought confirmation that it allowed the locomotive to proceed. The custodian's representative responded that the board was not displaying an instruction to stop.
- 87 Immediately before the collision, and for at least 10 seconds before that, the custodian's representative had their head out of the window on the fireman's side of the cab. No one else was looking out of that side of the locomotive. The design of the locomotive and the layout of the infrastructure (paragraphs 70 to 75) mean that the position occupied by the custodian's representative was the best location to provide a view towards the Royal Scotsman coaches.
- 88 Witness evidence indicates that these actions created a perception among the other people in the locomotive cab that the custodian's representative was observing the movement and providing directions to the driver. However, the custodian's representative stated that they did not consider that they were undertaking that role.
- 89 Immediately before the collision, the custodian's representative realised that the locomotive was about to collide with the coaches. They shouted a warning, which the driver heard. At this point, the driver had just moved to look out of their side of the locomotive and had also just seen the coaches coming into view (paragraph 58).

### The view from the fireman's side of the locomotive

- 90 The presence of freight wagons on the turntable siding and a large sign restricted visibility of the coaches from the fireman's side of the locomotive in the early stages of the movement. This is a possible factor.
- 91 Evidence from witnesses, corroborated by a video taken by a passenger onboard the Royal Scotsman, shows there was a rake of freight wagons stabled in the line that leads to the turntable (figure 12). These wagons were not in position when RAIB undertook its reconstruction on 5 October 2023.
- 92 The turntable lies to the north of Aviemore station with its centre approximately 125 metres from the north end of platform 3. Adjacent to the north-west corner of the turntable is a large blue sign (figure 12) advertising the Strathspey Railway. The sign is 3.8 metres wide by 1.3 metres tall with the bottom edge approximately 1.5 metres from the ground. Below that sign, attached to the same posts, is a smaller sign which fills most of the gap underneath the main blue sign.
- 93 RAIB investigated the possible effect that the presence of the freight wagons and the sign could have had on the view from the locomotive. RAIB concluded that the presence of the freight wagons and blue sign may have obstructed the view of the Royal Scotsman coaches from the fireman's side of the cab while at Speyside platform and when leaving it. However, by the time Flying Scotsman reached a point 230 metres from the Royal Scotsman, there would have been an unobstructed view of the coaches from the fireman's side of the locomotive.



Figure 12: The turntable with inset of Strathspey Railway sign (main image courtesy of Network Rail with RAIB annotations).

### Briefing and planning of the movement

- 94 **There was no briefing or plan for the movement, and no one had been tasked to assist the driver with observing the line in the direction of travel.**
- 95 Witness evidence confirms that there was no briefing nor a documented plan for the movement of Flying Scotsman from Speyside platform to Aviemore station. Although the people in the cab were aware that the locomotive configuration and the track layout would reduce the driver's visibility (paragraphs 71 to 75), no one had been specifically instructed to assist the driver with observing the line ahead.
- 96 While the driver knew they had been rostered to drive the locomotive, and was prepared to do so, they were uncertain whether they would be personally at the controls or conducting another driver. They only had their role confirmed when they arrived at the cab at Speyside and saw that the driver's seat was unoccupied, having been vacated by the driver who had operated the locomotive during the earlier part of the day. Witnesses described the movement being planned spontaneously, with the SRC operations manager dealing with the arrangements as needed.
- 97 Flying Scotsman departed from Speyside at 18:03 hrs, shortly after the driver had joined the locomotive. Witness evidence suggests that there may have been some time pressure to complete the movement. One witness reported that they had previously been told that the move was planned for 18:30 hrs and was surprised when the SRC operations manager said they wanted to get underway sooner.
- 98 Regular SRC services are timetabled to take 18 minutes for the journey from Aviemore to Boat of Garten station. Photographers had been arranged by NRM for when the train reached Boat of Garten station. Sunset on the day of the accident was at 18:56 hrs, meaning that there was a need to arrive earlier than this, to allow the photography to take place. Had Royal Scotsman arrived at Aviemore at its scheduled time (18:25 hrs, paragraph 47), then it is unlikely that this could have been achieved. This may have increased the time pressure on the SRC operations manager to complete the movement as expeditiously as possible.

### The driver's expectations

- 99 **The driver had an expectation that the Royal Scotsman coaches were positioned further south than they were.**
- 100 A locomotive being coupled to the north end of the Royal Scotsman is a normal operation on the Strathspey Railway (paragraph 24). However, for the planned movement north from Aviemore with Flying Scotsman on 29 September 2023, it was decided to also couple a class 37 diesel locomotive on the south end (the rear) of the Royal Scotsman. Flying Scotsman would then be detached at Boat of Garten station leaving the class 37 locomotive coupled to the train, and Flying Scotsman would return to Aviemore. The class 37 locomotive would be used to bring the Royal Scotsman train back south to Aviemore the following morning.
- 101 The effect of adding the class 37 locomotive to the train was that the rear of the Royal Scotsman needed to be clear of the points at the south end of Aviemore station (figure 3). This was to allow the class 37 locomotive to move from the adjacent loop onto the rear of the train. Such a movement is not required for the usual operation of the Royal Scotsman on the Strathspey Railway.

102 Although accounts described some variation in the position of the Royal Scotsman train in normal circumstances, the need to couple the class 37 locomotive to the rear meant that, on the day of the accident, the Royal Scotsman coaches were two to three coach lengths further north than would usually be the case (figure 13). The driver's expectation, based on their previous experience of similar movements, was that the Royal Scotsman coaches would be further south than they actually were.

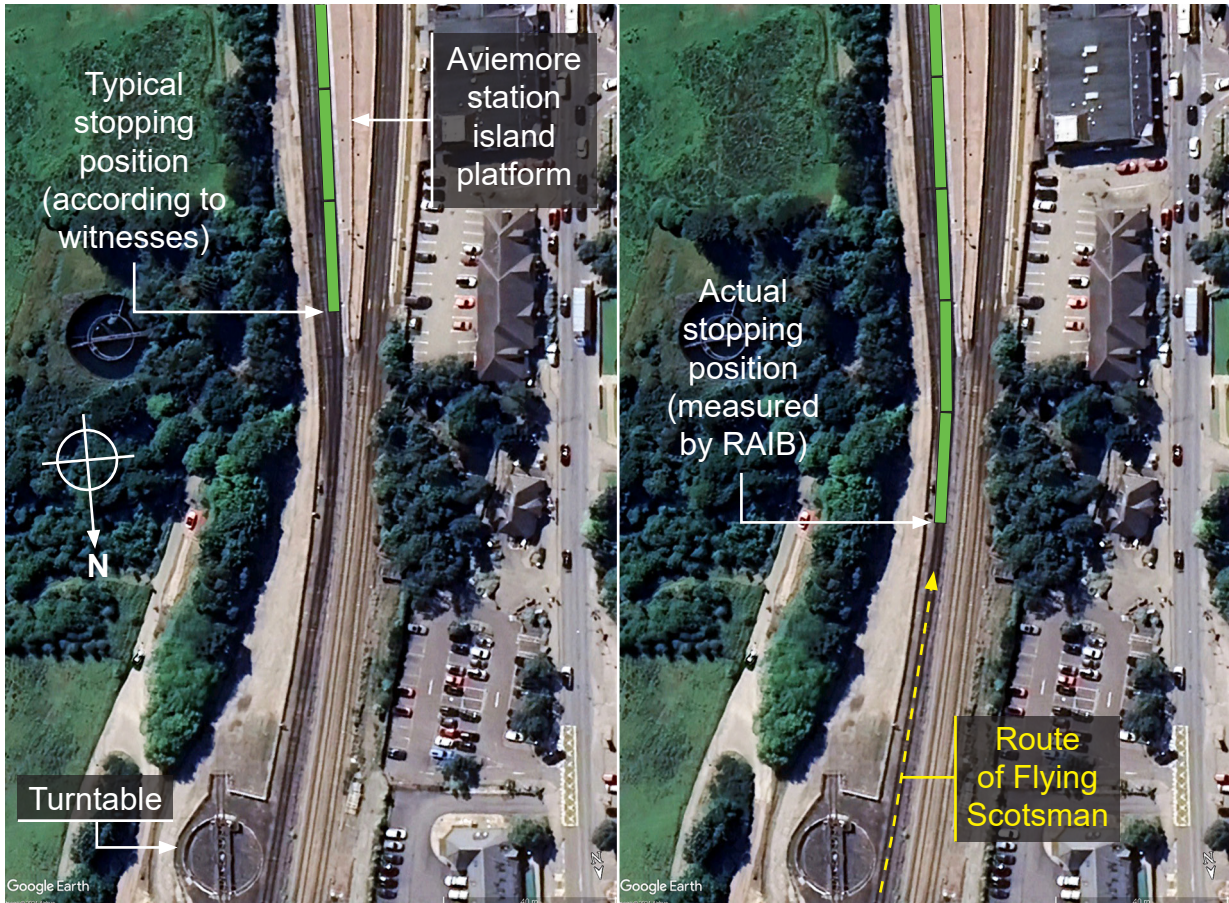


Figure 13: Positions of Royal Scotsman coaches on the day of the accident (right) compared with a normal day (courtesy of Google with RAIB annotations).

103 The driver, therefore, saw no need to further reduce Flying Scotsman's speed (or stop) on approach, believing that the locomotive was still some distance from the Royal Scotsman coaches. The driver's belief that the coaches were further south than they actually were also removed any concern at the absence of any direction or warning from the custodian's representative (who the driver believed was observing) about the proximity of the coaches.

## Identification of underlying factor

### Management of the visit of Flying Scotsman to the Strathspey Railway

#### 104 SRC did not effectively manage the visit of Flying Scotsman to the railway.

- 105 The visit to the Strathspey Railway by Flying Scotsman was outside of SRC's normal operating practices. Although Royal Scotsman visits were regarded as normal by SRC, the decision to haul the Royal Scotsman with Flying Scotsman represented an additional activity outside normal operations.
- 106 Witness evidence indicates that the planning of the visit of Flying Scotsman was handled largely by SRC's operations manager. At the time of the accident, SRC had processes in place which considered some of the risks associated with visiting locomotives such as axle loading and gauging. SRC did not, however, have a documented process for managing other operational safety risks associated with visiting locomotives or for planning special events outside the scope of the normal train service operation. As a result, there was no documented assessment of the operational changes or risks that the visit of Flying Scotsman might have potentially brought to the railway.
- 107 Although agreement had been reached previously for the use of Flying Scotsman with the Royal Scotsman (paragraph 43), there was no clear plan for the delivery of this operation. There was also no documented assessment of the changes involved in hauling the Royal Scotsman with Flying Scotsman or an assessment of the risks that these changes may have created. These changes included:
- reversing a steam locomotive with a large tender towards the coaches, when compared with the routine use (on the Royal Scotsman) of a diesel locomotive with a cab at both ends (paragraph 25)
  - the impact that additional and external organisation's footplate crew may have had on clarity of roles during the movement (paragraph 79)
  - the change to the train's position at Aviemore station resulting from the use of an additional locomotive on the rear of the train (paragraph 99).
- 108 The need to reach Boat of Garten before the reduced level of ambient daylight made photography difficult, possibly created some time pressure (paragraph 98). Flying Scotsman had been taken to Dulnain Bridge earlier in the day (paragraph 46). Although SRC stated that this movement was agreed with the custodian's representative, it had not been approved by NRM and was carried out informally. This is further evidence that the use of Flying Scotsman that day had not been thoroughly planned.
- 109 The SRC operations director had intended to provide more support and supervision of the SRC operations manager's arrangements for the Flying Scotsman visit but reported that their own workload with other staff-related matters was consuming most of their available time. They had begun to prepare some additional documented arrangements for the Flying Scotsman visit but did not complete them. The SRC operations director explained that they had confidence in the SRC operations manager's abilities and so made the judgement that their own time was best used attending to other matters.

110 Witnesses reported poor working relationships at the railway in the months leading up to the accident. Although affecting a wide range of staff, this reportedly undermined the relationship between some operational staff and a small number of SRC directors. The SRC operations manager was at the centre of this challenging situation, and this may have been a distraction for them and other staff at the railway. RAIB considers that this environment possibly influenced the level of engagement, collaboration and consultation between the SRC operations manager and others at the railway, as well as the amount of support which the SRC operations manager received from others in the planning of the Flying Scotsman visit. However, RAIB found no evidence of poor interpersonal relationships between the operational staff directly involved in the operation of Flying Scotsman on the day of the accident.

## Observation

### The number of people in the cab of Flying Scotsman

**111 At the time of the collision there were six people in the cab of Flying Scotsman, in contravention of SRC rules.**

112 At the time of the collision there were six people in the cab of Flying Scotsman. SRC has a rule limiting the maximum number of people in the driving cab to four (paragraph 80). While the driver, the fireman and custodian's representative were required to be there, the presence of the three others meant that the movement was not compliant with SRC's Rule Book. Such rules are usually in place to reduce the risk of distraction.

113 However, RAIB found no evidence of distraction of the operational crew or unnecessary conversations (paragraph 83) at the time of the collision.

## Previous occurrences of a similar character

114 A collision between a locomotive and a passenger train at Grosmont on the North Yorkshire Moors Railway in September 2021 ([RAIB safety digest 08/2021](#)) occurred because the locomotive was being driven from the trailing end and the driver's view of the line ahead was restricted.

115 In November 2006, a locomotive collided with a rake of coaches at the Swanage Railway in Dorset ([RAIB report 35/2007](#)). An identified causal factor was the use of the trailing cab by the driver of the locomotive involved.

## Summary of conclusions

### Immediate cause

116 The collision occurred because the driver of Flying Scotsman did not know that the locomotive was in close proximity to the Royal Scotsman coaches and did not control its speed accordingly (paragraph 67).

### Causal factors

117 The causal factors were:

- a. During the movement, the driver's visibility of the Royal Scotsman coaches was limited as a result of track curvature and driving position (paragraph 70, **Learning point 1**).
- b. Immediately before the collision, no one in the cab warned the driver that the locomotive was approaching the Royal Scotsman coaches (paragraph 76, **Recommendation 1**). This causal factor arose due to a combination of the following:
  - i. There was ambiguity of roles within the cab (paragraph 79, **Recommendation 1**).
  - ii. The location and actions of the custodian's representative created a perception amongst others in the cab that the custodian's representative was looking out and providing direction to the driver when they were not doing so (paragraph 84, **Recommendation 1**).
  - iii. The presence of freight wagons on the turntable siding and a large sign restricted visibility of the coaches from the fireman's side of the locomotive in the early stages of the movement (paragraph 90). This is a possible factor.
  - iv. There was no briefing or plan for the movement, and no one had been tasked to assist the driver with observing the line in the direction of travel (paragraph 94, **Recommendation 1**).
- c. The driver had an expectation that the Royal Scotsman coaches were positioned further south than they were (paragraph 99, **Recommendation 1**).

### Underlying factor

118 SRC did not effectively manage the visit of Flying Scotsman to the railway (paragraph 104, **Recommendation 1**).

### Observations

119 At the time of the collision there were six people in the cab of Flying Scotsman, in contravention of SRC rules (paragraph 111, **Learning point 2**).



## Actions reported as already taken or in progress relevant to this report

### Actions reported that address factors which otherwise would have resulted in an RAIB recommendation

- 120 Since the accident, SRC has developed a new standard operating procedure to manage 'special events and special train planning'.<sup>3</sup> This procedure formalises the approach to planning such events and requires the nomination of a 'promoter' for the event who has responsibility to ensure relevant persons within the railway are involved in the planning. As part of an organisational change, SRC has also recruited a full-time general manager to take charge of all aspects of the operation of the railway.
- 121 SRC has also issued a standard operating procedure for managing the access to locomotive driving cabs.<sup>4</sup> This procedure is intended to reinforce compliance with the existing rule limiting the number of persons permitted in locomotive cabs (paragraph 110).

### Other actions

- 122 Since the accident, Belmond has reviewed the risk assessment for the Royal Scotsman considering the learning from this accident. As a result, Belmond has modified the way wine bottles are stored on board the Royal Scotsman coaches. This updated risk assessment also takes into account the movement of furniture during a collision.

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<sup>3</sup> SOP30 – Special Events and Special Train Planning, issue 1 dated Jan 2024.

<sup>4</sup> SOP28 – Access to Locomotive Driving Cabs (Footplate Passes), issue 1 dated Jan 2024.

## Recommendation and learning points

### Recommendation

123 The following recommendation is made:<sup>5</sup>

- 1 *The intent of this recommendation is to ensure that the risk incurred by abnormal, but foreseeable, operations at the Strathspey Railway are effectively identified, assessed and mitigated.*

Strathspey Railway Company should review the implementation of its new standard operating procedure to manage special events and special train planning to ensure it is effectively identifying, assessing and mitigating the risks associated with such events.

Strathspey Railway Company should develop and implement a timebound plan to make any changes to its organisation, processes, rules and procedures identified as appropriate following this review (paragraphs 117b, 117b.i, 117b.ii, 117b.iv, 117c and 118).

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<sup>5</sup> Those identified in the recommendation have a general and ongoing obligation to comply with health and safety legislation, and need to take this recommendation into account in ensuring the safety of their employees and others.

Additionally, for the purposes of regulation 12(1) of the Railways (Accident Investigation and Reporting) Regulations 2005, this recommendation is addressed to the Office of Rail and Road (ORR) to enable it to carry out its duties under regulation 12(2) to:

- (a) ensure that recommendations are duly considered and where appropriate acted upon; and
- (b) report back to RAIB details of any implementation measures, or the reasons why no implementation measures are being taken.

Copies of both the regulations and the accompanying guidance notes (paragraphs 200 to 203) can be found on RAIB's website [www.gov.uk/raib](http://www.gov.uk/raib).

## Learning points

124 RAIB has identified the following important learning points:<sup>6</sup>

- 1 Train crew are reminded about the importance of maintaining an effective lookout while driving on a line-of-sight basis and knowing who is responsible for maintaining or assisting with that lookout (paragraph 117b.iv).
- 2 Train crew and operations managers are reminded of the importance of complying with rules regarding the number of people in locomotive cabs and of arriving at a clear understanding of the role of each person in the cab during train movements (paragraphs 119 and 117b.i).

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<sup>6</sup> 'Learning points' are intended to disseminate safety learning that is not covered by a recommendation. They are included in a report when RAIB wishes to reinforce the importance of compliance with existing safety arrangements (where RAIB has not identified management issues that justify a recommendation) and the consequences of failing to do so. They also record good practice and actions already taken by industry bodies that may have a wider application.

## Appendices

### Appendix A - Glossary of abbreviations and acronyms

AWS	Automatic Warning System
GBRf	GB Railfreight
GS&WR	Great Scottish and Western Railway Company
NRM	National Railway Museum
OTDR	On-train data recorder
RAIB	Rail Accident Investigation Branch
SRC	Strathspey Railway Company
TPWS	Train Protection and Warning System

## Appendix B - Investigation details

RAIB used the following sources of evidence in this investigation:

- information provided by witnesses
- the SRC Rule Book and procedures
- information taken from the locomotive's OTDR
- videos recorded by members of the public on the train and on land adjacent to the railway during the accident
- photographs taken by Police Scotland and SRC staff immediately after the accident
- photographs and videos taken during a reconstruction of the accident and during site visits along with measurements
- maintenance and inspection records for the rolling stock involved
- weather reports and observations at the site
- a review of previous RAIB investigations that had relevance to this accident.

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