

**Annual Report 2017**

Railway

September 2018

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# Foreword

The Accident Investigation Board for Civil Aviation and Railways (Accident Investigation Board) is an independent institution falling within the jurisdiction of the Ministry of Transport. Its main task is to investigate damage, accidents and incidents in the aviation and railway sectors in Denmark, and also in the aviation sector in Greenland and the Faroe Islands.

The Accident Investigation Board's investigations are not intended to apportion blame or liability but rather have the solely preventative purpose of improving railway safety and avoiding damage and accidents in the future.

By means of this annual report, the Accident Investigation Board seeks to:

* provide information about investigation activities carried out during the year;
* explain the implementation status of the recommendations made by the Accident Investigation Board; and
* provide statistical information about the damage, accidents and incidents investigated by the Accident Investigation Board.

The annual report contains general information about the investigation activities; it does not contain detailed information about individual investigations. Reports and accounts of individual instances of damage, accidents and incidents may be found on the website of the Accident Investigation Board ([www.aib.dk](http://www.aib.dk/)).

Chapter 2 contains a brief introduction to the Accident Investigation Board.

Chapter 3 provides an overview of the Accident Investigation Board's investigation activities in 2017. It includes figures for cases received and concluded, which provides a greatly simplified picture, since investigations vary widely in their scope and form.

Chapter 4 provides an overview of the implementation status of the recommendations made by the Accident Investigation Board, which may be studied in greater depth in Annex 2.

# Accident Investigation Board

The Accident Investigation Board for Civil Aviation and Railways (Accident Investigation Board) is an independent institution falling under the jurisdiction of the Ministry of Transport. The investigatory duties of the Accident Investigation Board in the aviation and railway sectors are laid down in the Aviation Act (Consolidation Act No 1036 of 28 August 2013) and the Railways Act (Act No 686 of 27/05/2015).

The Accident Investigation Board’s main task is to investigate damage and incidents in the aviation sector in Denmark, Greenland and the Faroe Islands, and accidents and incidents in the railway sector in Denmark. If Danish passengers or Danish-registered aircraft or rolling stock are involved, the Accident Investigation Board may participate in investigations carried out by the investigatory authorities of other countries.

The Accident Investigation Board's investigations are not intended to apportion blame or liability but rather have the solely preventative purpose of avoiding damage and accidents in the future.

## Mission and vision

The Accident Investigation Board works to pursue the following mission:

**The Accident Investigation Board's mission**

Through impartial investigations, the Accident Investigation Board must make recommendations with a view to preventing damage, accidents and incidents on railways and in aviation.

The role and duties stated in the mission statement are absolutely fundamental to the Accident Investigation Board's work and, in addition to its mission statement, the Accident Investigation Board's vision serves to guide its activities.

**The Accident Investigation Board's vision**

The Accident Investigation Board will develop and continue to:

* supply investigation results of a highly professional nature within a sufficient period of time for ensuring that the results are of decisive importance in preventing similar events;
* ensure that our role is objective and impartial, and that there is never any doubt regarding our integrity;
* make our Board attractive, both as a place to work and as part of the wider context.

## Organisation of the Accident Investigation Board

The organisational structure of the Accident Investigation Board includes investigation units for aviation and railways, as well as a Head and Secretariat.

On 1 April 2017, the Accident Investigation Board was reduced by a total of three full-time equivalent posts and now has a total of eight full-time equivalent posts, with two in the Secretariat, two in the Railway Unit, and four in the Aviation Unit. The Head of the Aviation Unit is also the Head of the Accident Investigation Board, and the Head of the Railway Unit is the Deputy Head of the Accident Investigation Board.

# Investigation activities during the year

## Railway sector

In 2017, the Accident Investigation Board received 119 reports of accidents and incidents in the railway sector, compared to 135 in 2016.

Following an assessment of the Accident Investigation Board's duty to investigate and the expected safety lessons learned, it was decided not to continue the investigations in relation to 110 cases, and those cases were closed.

If the result of a preliminary investigation does not indicate that an investigation would lead to significant results with regard to safety, the preliminary investigation is closed with the preparation of a summary, known as Section 83, which includes a brief description of the accident or incident, possibly supplemented by the Accident Investigation Board's assessment.

## Overview of cases in 2017

The table below provides a summary of cases received and cases closed in 2017.

The total number of reports received is given first. Some reports are filtered out by a preliminary assessment, while the others (designated as 'Incoming 2017 after filtering') result in a preliminary investigation being launched.

The number of investigations following preliminary filtering is then divided up into damage/accidents and incidents.

The investigations that were completed in 2017 are divided up depending on whether or not they were completed within one year of the occurrence. This division represents a common European objective for investigations to be completed within one year, wherever possible.

The numbers of investigations pending at the beginning and end of 2017 are given last.

|  |  |
| --- | --- |
| Accident Investigation Board, railways |  |
|  |  | 2017 |
| Incoming cases 2017 |  |  |   |
| Number of reports  |  | 119  |
| Filtered out after preliminary assessment (NA) |  | 109  |
| Incoming 2017 after filtering |  | 10  |
|   |  |  |   |
| Investigations closed in 2017 |  |  |   |
| Accounts and reports published < 12 months |  | 10 |
| Accounts and reports published > 12 months |  | 0 |
| Cases closed following preliminary investigation |  |  | 2 |
|  |  |  |  |
| Cases pending |   |   |   |
| Cases pending as at 31 December 2017 |  | 7 |
| Cases pending as at 31 December 2016 |  | 9 |

Note: Accounts and reports include simplified accounts (Section 83 cases).

# Recommendations

The Accident Investigation Board may, as a result of the investigations that it carries out, make recommendations with the aim of preventing future damage and accidents. As an independent investigatory entity, the Accident Investigation Board makes recommendations to relevant safety authorities that have the task of identifying the necessary initiatives to be taken in collaboration with the undertakings affected, and the powers to implement such initiatives in the relevant sector.

The railway sector is gradually developing towards a more common European framework, but it continues to be primarily a specifically national sector, so the recommendations are made to the Danish Transport Authority, which is the relevant safety authority in Denmark.

## Railway

The table below shows the status of recommendations in the railway sector over the last five years as a whole.

| Recommendations issued | Implementation status of recommendations |
| --- | --- |
| Complied with/Closed | Pending |
| Year | Total |  | % |  | % |
| 2013 | 4 | 4 | 100 | 0 | 0 |
| 2014 | 5 | 5 | 100 | 0 | 0 |
| 2015 | 3 | 3 | 100 | 0 | 0 |
| 2016 | 4 | 3 | 75 | 1 | 26 |
| 2017 | 7 | 0 | 0 | 7 | 100 |
| Total  | 23 | 16 | 70 | 7 | 30 |

\* Previously, the figure was calculated in October the following year and consequently cases closed the following year have been included.

From 2017 onwards, the figure will only contain the number of recommendations closed in the year covered by the annual report.

The annual report for 2016 contained one pending recommendation for the railway sector, and the Accident Investigation Board made a total of seven recommendations in 2017. Of these eight recommendations in total, one was complied with/closed in 2017, so there are now seven pending.

An overview of all pending recommendations, together with the recommendations which were closed in 2017, is to be found in Annex 1.

# Statistics of reported incidents

A common European database (ERAIL, administered by ERA) is used in the railway sector, equivalent to the one implemented for the aviation sector.

It is worth reading the statistical overviews for the railway sector in conjunction with the Danish Transport Authority's 'Safety Report for the Railways 2016', which is based on annual reports from operators and infrastructure managers in Denmark. These reports also cover the accidents and incidents that the Accident Investigation Board has not investigated. They discuss the trend in accidents over a number of years and place the accidents within the context of the level of traffic on the railway (in millions of train-kilometres).

# Annex

### Status of issued or closed recommendations in the railway sector

*Clarification of the terminology used by the Accident Investigation Board:*

***Pending:*** *All cases where implementation has not been decided upon, or where implementation has been launched but not completed.*

***Complied with:*** *All cases where a recommendation is regarded as having been fulfilled to all intents and purposes, on the basis of an 'in compliance' notification from the Danish Transport Authority.*

***Closed:*** *'Closed' covers cases where the recommendation has not been complied with directly but initiatives have been implemented and the Danish Transport Authority, as the safety authority, has deemed such initiatives to be adequate and does not intend to take any further action.*

***Refused:*** *The Danish Transport Authority or other authorities to which the recommendation was addressed have refused to do anything.*

**Issued in 2017**

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| **(Trainee) train preparer killed as the result of a derailment in Høje Taastrup, 12 December 2016 (620-2016-9)** |
| The accident resulted from a combination of failure to comply with the rules governing shunting and the fact that trainees can work without supervision under the applicable guidelines. The investigators also discovered that there was a practice of both starting shunting without duly obtained authorisation and resuming shunting after ATC emergency breaking without obtaining due authorisation. |
| **DK-2017 R 5 of 06/12/2017** | Status: Pending |
| The Danish Transport, Construction and Housing Authority ensures that for all trainees in the field of railway safety training, there are guidelines on trainees’ area of responsibility, i.e. whether, and if so in what circumstances, trainees may perform safety-critical work fully or partially without supervision. |
| Response to the recommendation: | Remarks:  |
| **DK-2017 R 6 of 06/12/2017** | Status: Pending |
| The Danish Transport, Construction and Housing Authority, together with Banedanmark, ensures that potential safety-critical practices are picked up and corrected by the safety management systems |
| Response to the recommendation: | Remarks:  |
| **DK-2017 R 7 of 06/12/2017** | Status: Pending |
| The Danish Transport, Construction and Housing Authority, together with Banedanmark and the relevant operators, ensures that the conditions laid down in the ATC instructions for the resumption of running after ATC emergency braking are satisfied |

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| **Person struck on a rail crossing, Kværndrup, 23 May 2016 (611-2016-242)** |
| As is clear from the above, since 1999 the warning and safety measures at the rail crossing at Kværndrup station have not been adapted to the changed operating and safety conditions (increased speed, increased train traffic, changed stopping patterns etc.), including the consequences of inadequate maintenance of the platform edge |
| **DK-2016 R 1 of 22/05/2017** | Status: Pending |
| The Accident Investigation Board recommends that the Danish Transport, Construction and Housing Authority ensure that a risk analysis of passenger safety at Kværndrup and Stenstrup stations be performed, including whether the applicable regulations have been complied with since 1999 (changed traffic, increased line speed etc.), and ensure that the necessary safety measures be carried out. |
| Response to the recommendation: | Remarks:  |
| **DK-2017 R 2 of 22/05/2017** | Status: Pending |
| The Accident Investigation Board recommends that the Danish Transport, Construction and Housing Authority ensure that a risk analysis of passenger safety at rail crossings be performed, where no early warning system or other, similar safety measures are installed, including whether the existing regulations are adequate. The risk analysis should also include other crossings between platforms which passengers may perceive as rail crossings. |
| Response to the recommendation: | Remarks:  |
| **DK-2017 R 3 of 22/05/2017** | Status: Pending |
| The Accident Investigation Board recommends that the Danish Transport, Construction and Housing Authority ensure that clear and relevant rules concerning the use of early warning systems and signage at rail crossings be drawn up. |
| Response to the recommendation: | Remarks:  |

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| **Train derailed on departure from Lundby station, 20 October 2016 (611-2016-250)** |
| During retraining from urban-suburban trains to long-distance trains the engine driver involved appears in practice not tohave checked and tested the normal operation of the ATC on moving to the sidings and – judging bythe movement at Lundby station – to have tested running to and from the left track to a sufficientdegree. |
| **DK-2017 R 4 of 24/09/2017** | Status: Pending |
| The Accident Investigation Board recommends that DSB ensure that training plans for retraining engine drivers include driving situations with ‘irregularities’ which can occur in day-to-day operations to an extent which ensures that engine drivers are familiar with these situations. It should further ensure that all driving situations in the training plan be performed and assessed by the drivers as the basis for the engine driver's further approval. |

**Closed in 2016**

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| Passenger got wrist caught in doors and was dragged along by train – Vejle, 23 February 2013 |
| Passengers made active attempts to prevent the door from closing, combined with the fact that the doors were not checked and rechecked before starting off in this situation or, if they were checked, the checks did not work as safely as assumed. |
| **DK-2016 R 4 of 29/12/ 2016** |   |
| That the Danish Transport, Construction and Housing Authority ensure that a passenger-safety analysis be performed in conjunction with the departure procedure when operating a driver-operated MF-class train and its doors, including whether relevant personnel have adequate knowledge of how the door system works and whether they have adequate, up-to-date knowledge of the current safety measures relating to the closure of doors and the starting of a driver-operated MF-class train and of trains with similar door types, viewed in relation to the functionality of the door system in question (that the red door-warning lights in the driver's cab are extinguished and the doors can be recorded as closed without any error being reported, and that items of up to 80 mm may be caught in the doors without any certainty that it will be detected. |
| Response to the recommendation:TBST stated that DSB has:Carried out further training of engine drivers with a focus on the closure of doors and protection against catching during the summer of 2017.Mounted yellow warning pictograms at on all train classes (other than Øresundstog), which are designed to warn passengers against blocking the doors on departure. Pictograms are mounted on most train classes at the end of 2017.Drawn up an updated memorandum (following from recommendation DK-2016 R 4 of 29/12/2016) with 4 options for the Safety Board. Options 1-3 have been decided upon and are still ongoing. Option 4 concerns further training for personnel other than engine drivers and is dealt with in a separate point below.Decided on clearer marking of emergency brakes and emergency door opening, initially on the MF class trains, with the possibility of roll-out to other classes. The change is being carried out in the first half of 2018.Decided to carry out amended further training on protection against catching for train personnel and platform managers. The training will be amended and carried out in the first half of 2018. | Remarks: The Danish Transport, Construction and Housing Authority stated that they consider DSB to have carried out a thorough analysis of the conditions surrounding boarding and alighting accidents in relation to both driver-only operation and operation with train guards. The Authority states that the analysis further shows that boarding and alighting accidents are not a problem which relates in particular to driver-only operation. The Authority considers that by the initiatives set out above DSB has considered the Accident Investigation Board's recommendations and observations and the initiatives have been implemented to such an extent that the case can be closed. The Authority stated that it will follow up the implemented initiatives with follow-up oversight of DSB. |

**Issued in 2012-2016**

None pending.