**Annual Report 2016**

Railway

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| Havarikommissionen | Havarikommissionen |

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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://havarikommissionen.dk/index.php?lang=da)).

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 2016. 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.

# The 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'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 Accident Investigation Board works to pursue the following mission:

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.

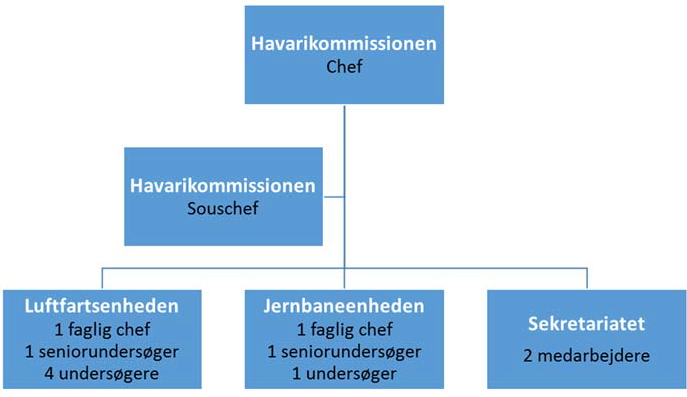
**The Accident Investigation Board's vision**

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.

The Accident Investigation Board employs a total of 11 people, with two in the Secretariat, three in the Railway Unit, and six 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.

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| Havarikommissionen | The Accident Investigation Board |
| Chef | Head |
| Souschef | Deputy Head |
| Luftfartsenheden | Aviation Unit |
| Jernbaneenheden | Railway Unit |
| Sekretariatet | Secretariat |
| faglig chef | Head of Unit |
| seniorundersØger | senior investigator |
| undersØgere | investigators |
| medarbejdere | employees |

# Investigation activities during the year

## Railway sector

In 2016, the Accident Investigation Board received 135 reports of accidents and incidents in the railway sector, compared to 133 in 2015.

Some 124 of these reports concerned 33 suicides or attempted suicides, which the Accident Investigation Board is not required to investigate, and two reports of training. Following preliminary investigations, it was decided not to continue the investigations in respect of 89 of the reports. The Accident Investigation Board launched more detailed investigations in respect of the remaining 11 reports.

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 2016

The table below provides a summary of cases received and cases closed in 2016.

The total number of reports received is given first. Some reports are filtered out by a preliminary assessment, while the others (designated as 'Incoming 2016 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 2016 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 2016 are given last.

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| Accident Investigation Board, railways | |
|  | 2016 |
| Incoming cases 2016 | |
| Number of reports | 135 |
| Filtered out after preliminary assessment | 124 |
| Incoming 2016 after filtering | 11 |
|  | |
| Investigations closed in 2016 | |
| Accounts and reports published < 12 months | 10 |
| Accounts and reports published > 12 months | 1 |
| Cases closed following preliminary investigation | 2 |
|  | |
| Cases pending | |
| Cases pending as at 31 December 2016 | 7 |
| Cases pending as at 31 December 2015 | 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 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 made | | Implementation status of the recommendations | | | |
| Complied with/Closed | | Pending | |
| Year | Total |  | % |  | % |
| 2012 | 8 | 8 | 100 | 0 | 0 |
| 2013 | 4 | 4 | 100 | 0 | 0 |
| 2014 | 5 | 5 | 100 | 0 | 0 |
| 2015 | 3 | 3 | 100 | 0 | 0 |
| 2016 | 4 | 3 | 75 | 1 | 25 |
| Total | 24 | 23 |  | 1 |  |

The annual report for 2015 did not contain any pending recommendations for the railway sector, and the Accident Investigation Board made a total of four recommendations in 2016. Of these four recommendations, three were complied with/closed in 2016, so there is now one recommendation pending.

An overview of all pending recommendations and of recommendations that were complied with / closed in the railway sector in 2016 is given in Annex 1.

# Statistics of reported incidents

A common European database (ERAIL, administered by ERA) is used in the railway sector, equivalent to that which has been 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 million train-kilometres).

# Annex

## Status of 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.

Note: The safety authority (the Danish Transport Authority) has changed its name, firstly to the Danish Transport and Construction Authority and then to the Danish Transport, Construction and Housing Authority.

Issued 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 December 2016** | Status: | Pending |
| 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: | Remarks: | |

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| **Person got foot caught in step (611-2015-232 of 22 October 2015)** |
| A person attempted to force his way on to / aboard the train after the doors had closed, and after the train driver had completed a visual check to ensure that there were no passengers or luggage caught in the external doors. The person's foot became stuck in the step of the door system, and he was pulled along by the train when it started to move. The person fell, his foot came free of the step, and he fell down between the train and the platform, losing his foot in the process. Since the technical systems and the safety instructions in force do not cover situations where objects (less than 45 mm) become stuck in a step after the external doors are closed when a train starts, it should be assessed whether the current safety measures can be regarded as adequate. |

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| **DK-2016 R 3 of 29 September 2016** | Status: | Closed |
| The Accident Investigation Board recommends that the Danish Transport and Construction Authority ensure that it be assessed whether the current safety measures relating to driving with objects caught in an ER-class step or other similar step are adequate. | | |
| Response to the recommendation:  The Danish Transport, Construction and Housing Authority has followed up with Danish State Railways (DSB) both the recommendations made by the Accident Investigation Board and other measures that DSB has taken on its own initiative.  Point 1: DSB has assessed and reviewed the safety instructions and departure procedures for ER-class trains, and has made changes to the repeat checks carried out on driver-operated trains. The Danish Transport, Construction and Housing Authority considers the recommendation to have been complied with.  Point 2: DSB has investigated the options for further safeguarding the traction interlock for the closure of doors and steps, by means of its design. Since no cases of a step having caused a person to become caught have been recorded previously, DSB has decided not to change the design of the rolling stock.  On the basis of the investigation, the Danish Transport, Construction and Housing Authority is of the view that the current measures are adequate.  During 2016, DSB has carried out campaigns to raise customer awareness of the dangers associated with, for example, preventing the doors from closing or otherwise impeding departure. DSB has also, in collaboration with Banedanmark, launched an investigation into the options for additional preventative signs and painting of platforms. | Remarks:  The Danish Transport, Construction and Housing Authority concurs with DSB's assessment that the current measures are adequate and that no further barriers should be established. | |

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| **Passenger train collided with excavator at Herfølge on 28 April 2015** | | |
| The collision between the train and the excavator occurred because train 2475 was given permission (was signalled) to run out onto the Køge-Herfølge section at the same time as a working party on the same section had permission (brief track closure) to cross the track. It is apparently possible for brief track closures to be established on sections of the line that do not have track isolation for detecting trains, without the possibility of location-specific cover, without prior agreement, and without clearly imposing requirements concerning the cover put in place by the station operator. | | |
| **DK-2016 R 1 of 27 April 2016** | Status: | Complied with |
| That the Danish Transport and Construction Authority ensure that Banedanmark clarify whether the requirements that apply to cover for closed tracks by the station operator (Section 73, paragraph 1.4 of the Railway Regulations) also apply to short-term track closures (Section 73, paragraph 1.8 of the Railway Regulations). | | |
| Response to the recommendation:  The Danish Transport, Construction and Housing Authority has explained that, on the basis of a number of incidents indicating that mistakes had been made by the station operator, it has on its own initiative followed up on Banedanmark's handling of incidents and uncovering the reasons for these incidents. Follow-up on the recommendations of the Accident Investigation Authority was therefore partly covered by the casework that has already been done. The Danish Transport, Construction and Housing Authority found that Banedanmark's procedures, methods and tools do not adequately ensure that lessons are learned from incidents. This is still being followed up by monitoring Banedanmark's safety-management system.  On the basis of the two recommendations that have been made, Banedanmark has explained that the regulations do cover these situations, but that they were not followed in some individual cases.  Furthermore, Banedanmark concludes that short-term track closures must not be used without prior agreement, but that such closures are safe when the rules are followed.  The Authority regards the recommendations as having been complied with. | Remarks: | |
| **DK-2016 R 2 of 27 April 2016** | Status: | Complied with |
| That the Transport and Construction Authority ensure that Banedanmark perform a risk assessment of whether short-term track closures should be permitted without prior agreement under Section 73 if, for example, sections with 1986 line blocks (signal blocks) cannot be given location-specific cover by means of a short-circuit loop. | | |
| Response to the recommendation:  The Danish Transport, Construction and Housing Authority has explained that, on the basis of a number of incidents indicating that mistakes had been made by the station operator, it has on its own initiative followed up on Banedanmark's handling of incidents and uncovering the reasons for these incidents. Follow-up on the recommendations made by the Accident Investigation Authority was therefore partly covered by the casework that has already been done. The Danish Transport, Construction and Housing Authority found that Banedanmark's procedures, methods and tools do not adequately ensure that lessons are learned from incidents. This is still being followed up by monitoring Banedanmark's safety-management system.  On the basis of the two recommendations that have been made, Banedanmark has explained that the regulations do cover these situations, but that they were not followed in some individual cases.  Furthermore, Banedanmark concludes that short-term track closures must not be used without prior agreement, but that such closures are safe when the rules are followed.  The Agency considers all recommendations to have been complied with. | Remarks: | |

**Issued in 2012-2015**

None pending.