aibn
Accident
Investigation Board
Norway








ANNUAL REPORT 2018

ACCIDENT INVESTIGATION BOARD NORWAY

RAILWAY DEPARTMENT

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Introduction

The Accident Investigation Board Norway (AIBN) is a multimodal organisation covering four transport modes. In year 1989, it was set up to investigate air accidents and serious incidents. The first railway accident investigation started 1 July 2002. Today, the AIBN is a multi-modal body investigating accidents and serious incidents in aviation, railways (including LTR, tramways and metros), road transport and the marine sector. The different transport modes are organised in different departments within the AIBN reporting to the Director General. The multi-modal concept has been very successful in relation to stimulating cooperation, how to approach an investigation, methodology, sharing relevant safety issues and learning from the other transport sectors. In year 2002, the AIBN's mandate was expanded to cover railway accidents and serious incidents, in 2005 road accidents and in 2008 marine accident, investigations were included in our mandate.

Rail accident investigation in Norway is subject to the Directive for the Accident Investigation Board Norway, laid down by the Ministry of Transport on 12 June 2002. The AIBN itself decides the scale of the investigations, including an assessment of the investigation's expected safety benefits with regard to resources required.

The new Directive (EU) 2016/798 is planned for 2020.

The AIBN is independent, focus entirely on safety, and not apportion blame or liability, nor do we enforce law or carry out prosecutions. The most important elements in the railway safety investigations are to improve the safety of railways, learning from experience and preventing accidents from recurring. Over the years, the investigations have increasingly addressed the human element, focusing on the system of interaction between human factors, technology and organisational factors. In addition, the AIBN addresses Safety Management System (SMS), safety culture etc.

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Regulation

Railway accident investigation in Norway is regulated in detail by the Norwegian Act of June 3rd 2005, No.34, relating to notification, reporting and investigation of railway accidents and railway incidents, and regulations stipulated pursuant to the Act. The act includes railway, metro, LTR and tramways.

EUs safety directive for railway was adopted and made official March 1st 2006 as Regulation 2006-03-31 nr 378. *Regulation for official investigation of railway accidents and serious incidents etc.* ("The Railway Investigation regulation").

Mandate

AIBN shall investigate accidents and incidents in the aviation, railway, road and marine sectors.

The objective of the investigations is to elucidate matters deemed significant for the prevention of transport accidents. The AIBN shall not apportion any blame or liability under civil or criminal law.

The AIBN itself decides the scale of the investigations conducted, including an assessment of the investigation's expected safety benefits with regard to necessary resources.

Budget

The 2018 total budget is NOK 74156000,-

Organisational flow charts

Relationship between the AIBN and other national bodies:

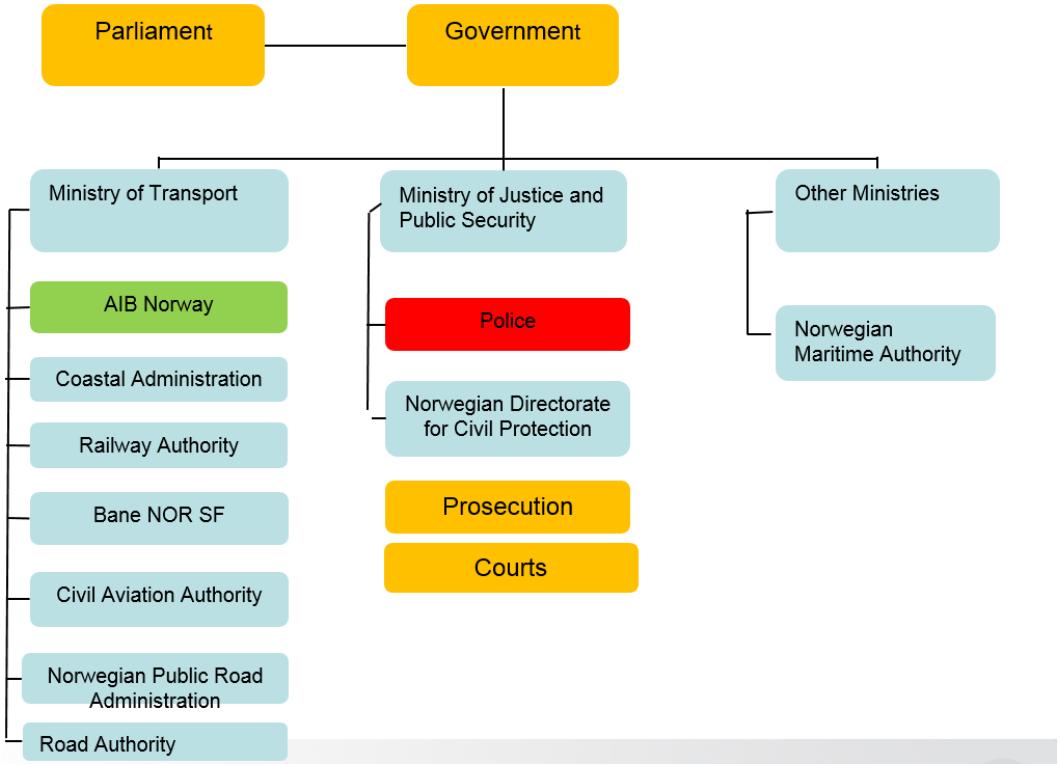

Figure 1: AIBN and other national bodies.

Relationship between the AIBN and the railway sector:

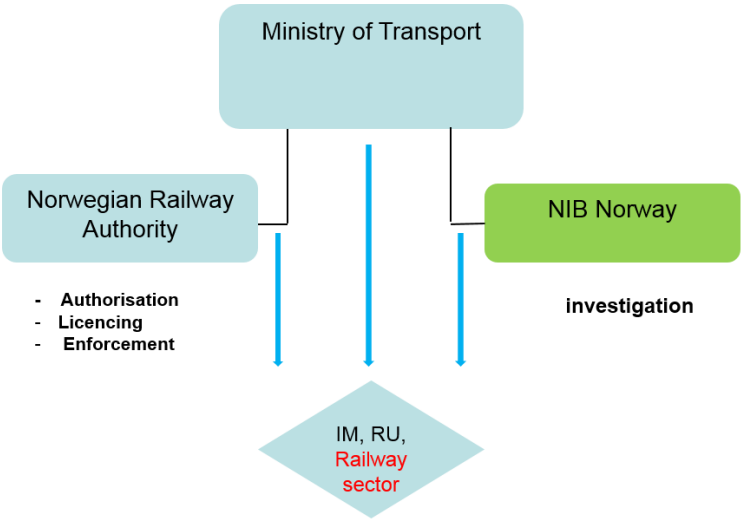

Figure 2: AIBN and the railway sector.

Accident Investigation Board Norway (AIBN) - Organisation

The AIBN organisation as of 31st December 2018:

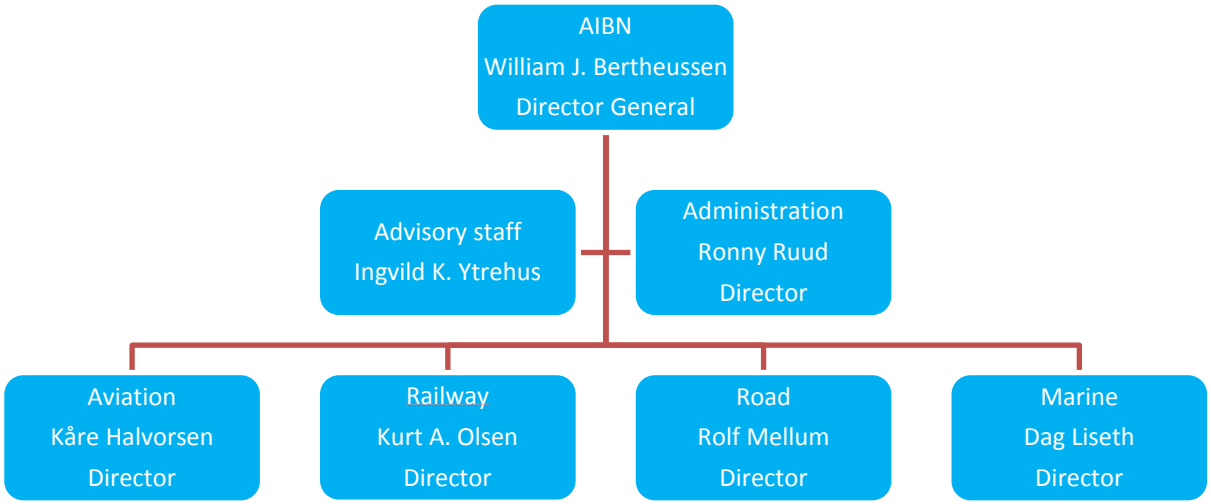

Figure 3: The AIBN organigram.

The AIBN employs 5 railways investigators with either a professional railway or investigation background, and who have been given extensive and bespoke training concerning railway operations, railway engineering and investigation skills.

All investigators carry an AIBN identification card, which identifies their powers at the scene of an investigation.

The AIBN railway investigators have the power to:

- Enter railway property, land or vehicles.
- Seize anything relating to the accident and make records.
- Require access to and disclosure of records and information.
- Require people to answer questions and provide information about anything relevant to the investigation.

Notifications of accidents and serious incidents – key numbers

The AIBN, Railway department received totally 263 notifications by telephone in 2018. The number of notification includes rail-, metro- and tram traffic including LTR. According to the Norwegian Railway Authority (responsible for official statistics), the total number of reported accidents and incidents is on the average level compared to the previous years.

49 accidents were registered including 27 fatalities. Trespasses and suicides are included.

Eleven accident or serious incident safety investigations started this year.

The AIBN, Railway department was involved in ten safety investigations as of 31st December 2018.

Figure 4: Key numbers, notified railway accidents and serious incidents.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Serious railway incidents	201	166	219	146	183	192	160	205	170	197	206
Railway accidents	62	32	33	35	28	42	37	40	34	32	49
Total	272	198	252	181	211	234	197	245	204	229	255
Published reports	**9**	**11**	**9**	**10**	**9**	**9**	**7**	**9**	**7**	**8**	**11**

Table 1: Key numbers, reported railway accidents and serious incidents (not official statistics).

Other activities

During 2018, several meetings have been arranged with the Norwegian Railway Authority, IMs and the operators, including metro and tram operators. The meetings have focused on closing safety recommendations, accident reporting and classification, organisational changes, point of contact etc.

Norway, Sweden, Denmark, Finland, Estonia, UK and Ireland are members of the Nordic Network of Accident Investigation Bodies (NRAI). The network organises one meeting per year, where the main objective is to inform each other about safety investigations in progress, safety learning, European Union Agency for Railways (ERA) network and task force meetings and any other business common to the Nordic Region. ERA participates in the NRAI meetings.

The AIBN has heavily involved in preparing a common Peer Review programme and review criteria where all investigating bodies are encouraged to participate to monitor their effectiveness and independence. Three pilot peer reviews were conducted in 2018.

Investigation reports

The Accident Investigation Board, Norway, Railway Department, published eleven final investigation reports, within 12 months after the date of the occurrence. This gives approximately two reports pr. year for each Investigator. See appendix A for details.

Key elements of the report (roadmap):
The AIBN reports follow the Directive 2004/49/EC of the European Parliament annex V (Principal content of accident and serious incident investigation report) and include the following key elements:

- Notification of the accident
- Summary (in Norwegian and English language)
- Facts
- Investigations carried out
- Analysis
- Conclusion
- Planned and implemented measures
- Safety recommendations (in Norwegian and English language)
- References
- Appendices

Safety recommendations

The Accident Investigation Board Norway, the Railway department, published seventeen safety recommendations in 2018. An overview of the recommendations, see appendix B.

Status of the safety recommendations, (see actions taken for the 2018 safety recommendations below):

Year:	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Open:	0	0	0	0	0	0	0	5
Closed:	16	9	6	9	9	8	8	12
Total:	**16**	**9**	**6**	**9**	**9**	**8**	**8**	**17**

Table 2: Number of safety recommendations.

Accident Investigation Board, Norway

Lillestrøm, September 30, 2019

Appendix A - Published reports 2018

See link: http://www.aibn.no/Jernbane/Avgitte-rapporter

No:	Identification:	Date of occurrence:	Report published:
1	On Thursday 2 February 2017, a 16-year-old girl died when she fell between the platform and a metro train leaving Holstein station. The girl had just disembarked the metro train and was on her way to the exit when she made a 'dance-like' move and stepped between the platform and the side of the train. The train had started moving, and the driver did not see the girl falling. The investigation has not uncovered any faults as such in the platform, train or Sporveien T-banen AS's procedures. Some areas where there is room for improvement have been identified. A similar incident took place in 2013, when a 17-year-old boy died at Høyenhall after falling down between the side of the train and the platform. Following the accident, Sporveien T-banen AS conducted a risk analysis and proposed several measures for implementation. Some of the proposed measures were not implemented, however. The AIBN submits three safety recommendations following this investigation. The recommendations concern raising passenger awareness of the risks of falling onto the track, considering measures on the trains and following up that the gap between the train and the platform is under control and is kept at a minimum.	02.02.2017	24.01.2018
2	Many incidents have been registered in connection with the extensive maintenance work and infrastructure development that have taken place on the national railway network in recent years. The Accident Investigation Board Norway (AIBN) has conducted a class investigation into issues relating to incidents in connection with work on and near tracks. The results of an extensive questionnaire survey among people approved by Bane NOR SF for work as	Class investigation	09.04.2018

	principal site safety supervisors (PSSS) have been important in this work. They have a special responsibility for ensuring safety during work on and near tracks. The AIBN would like to draw attention to the following results as particularly interesting: - It is well known among the PSSSs that work on and near tracks relatively often takes place without permission. This is frequently a result of a conscious choice based on the perception that the situation is safe and under control. - External PSSSs experience language problems that could result in misunderstandings more often that those employed by Bane NOR SF. - One in four are of the opinion that, generally speaking, PSSSs have inadequate knowledge of the lines, and it is pointed out that PSSSs from external enterprises do not have the same access to information about the worksite as those employed by Bane NOR SF. - In the AIBN's opinion, the fact that that as many as one in five PSSSs say that what actually takes place on construction sites does not comply with the regulations gives cause for concern and is something that Bane NOR SF should look into. Nor is it uncommon for employees to be sent away from a worksite because they are working without permission. The investigation has contributed to increased knowledge of PSSSs views on a number of issues. On this basis, the AIBN submits two safety recommendations to Bane NOR SF. One concerns work without permission, and the other access to information before work commences.		
3	At 04:15 on Friday 14 April 2017, one wagon of a freight train derailed on track 3 at Loenga station on the Hovedbanen line. At 04:15 on Friday 14 April 2017, one wagon of a freight train derailed on track 3 at Loenga station on the Hovedbanen line. The wagon was number 12 in the train, and it derailed to the right in the direction of travel. The derailed wagon continued for approximately 400 metres before it hit a structure supporting the overhead contact line, and pulled down	14.04.2017	11.04.2018

	the contact line. The train stopped when it lost traction power. The wagon came to rest against one of the pillars of Geita bridge, without causing any structural damage to the bridge. Damage was registered to sleepers, a point machine and the support structure. The wagon was so damaged that it was not considered worth the expense to repair it. The investigation found a track fault in the form of twist at the derailment site. The maximum twist found was 33.20 mm over a 9-metre measurement basis, and 15 mm over a 2-metre measurement basis. This exceeds the action limit set by Bane NOR SF in its technical regulations. When performing measurements on tracks not under load, this shall be considered a limit requiring immediate action. Bane NOR SF's project, the Follo line, had performed work on the site prior to the derailment. A track fault was identified during this work. Attempts were made to repair it after the work was completed. The track was reopened for traffic despite the fact that there was still a track fault. The Accident Investigation Board Norway (AIBN) is of the view that the track should not have been reopened to traffic until the fault had been repaired. An inspection of the derailed wagon on the day of the accident found that the rear coupler was fully tightened. The coupler had bounced off the towing hook connecting it to the next wagon without causing visible damage to the towing hook or coupler. In the AIBN's view, the most important causal factor for the derailment was that the track was opened to traffic with a twist exceeding the action limit at the derailment site. The AIBN submits a safety recommendation to Bane NOR SF as a result of the accident. It concerns follow-up after track corrections have been performed.		
4	At 18:40 on Saturday 24 June 2017, train 2388 collided with a passenger car on Kroken VB level crossing at milepost 217.250 km on the Røros line. At 13.08 on 5 July 2017, train 2384 collided with a passenger car on Strømsøyen level crossing at milepost 336.623 km on the Røros line.	24.06.2017	12.06.2018

	None of the level crossings are secured by road barriers. Both level crossings are on the Røros line, they are private, and are not secured by road barriers. The Accident Investigation Board Norway (AIBN) therefore chose to conduct a joint safety investigation of the accidents. Unsecured level crossings are mainly found on smaller roads, on private roads and as agricultural crossings between fields and forest properties. Safety at unsecured level crossings is based on road users seeing or hearing the train in time and waiting to cross until it is safe. It is important that road users are informed that they are responsible for deciding whether it is safe to cross. Road users' behaviour at level crossings is influenced by their surroundings, because people's perception and understanding of the situation differ. This means, in the AIBN's view, that a technical barrier is needed that alerts road users of oncoming trains at unsecured level crossings. It is important that sufficient means are made available to allow Bane NOR SF to continue its work on removing, reducing and upgrading level crossings. The AIBN proposes one safety recommendation. It concerns asking Bane NOR SF to consider barriers that are better able to attract the attention of road users at unsecured level crossings.		
5	During shunting at the shunting yard in Stavanger the 18th of June 2017, three wagons rolled uncontrolled and collided with parked wagons in track 26. One person onboard the runaway wagons had to jump off the train and sustained serious fractures in both legs. Delays and changes during the process had made the driver's work situation stressful. He was responsible for all couplings in addition to the driving, and felt a strong sense of responsibility for planning the different steps of the shunting operation during the process. At one point, there was a misunderstanding about who was to connect the coupling between two wagons, and this resulted in the task not being carried out. Personnel with the qualifications required to shunt and couple wagons should participate in such extensive shunting operations. This would allow the driver to	18.06.2017	12.06.2018

	focus more on the driving. The advance description and risk assessment of this assignment were inadequate, and clearer communication could have reduced the driver's stress level. In a project that involves many parties, there is always a risk of the parties developing different understandings of how activities influence each other and interpreting messages differently. Runaway rolling stock was not clearly emphasised in Bane NOR SF's safety, health and working environment (HSWE) plan, and the driver did not participate in the safe job analysis conducted before the work. If he had participated, it would have been possible to discuss compensatory measures in connection with potential changes to the plans. The investigation has shown that perceived time pressure and changes during the process increased the driver's stress level. The AIBN submits two safety recommendations to BANE NOR SF. They concern asking Bane NOR SF to strengthen its safety management with a view to identifying changes in projects where the enterprise is the construction client, and assessing the consequences of changes of rules.		
6	On Thursday 22 February 2018, a person died after falling between train 1015 and the platform at Fetsund station. While the train was standing at the station, the person did not give the impression that he was planning to board the train. The person only approached the train and attempted to open one of the doors after they had been closed and locked. The person leant against the side of the train and fell down between the train and the platform when the train started moving. After embarkation and disembarkation, the train crew followed the ordinary departure procedure. After the doors had been closed and locked, the driver checked the main departure signal again and set the train in motion. The train driver saw what was happening and applied the emergency brake. The train quickly came to a stop, but the accident could not be avoided. The platform was covered in snow at the time of the accident, but it was well cleared and sanded. The distance between the side of the train and the platform is 34 cm. The gap is bridged by steps that slide out at	22.02.2018	03.07.2018

	each door when it is opened for embarkation and disembarkation. When the driver notified the traffic controller of the accident, he was told to call the emergency services himself. The guidelines state that the driver shall notify the traffic controller of dangerous situations and accidents, and that the traffic controller shall handle the further notification of the emergency services. The Accident Investigation Board Norway AIBN will not make any safety recommendations based on this safety investigation.		
7	On Tuesday 3 October 2017, a passenger train derailed at Svorkmo station on the Thamshavn line. The train consisted of a two-axle locomotive and two passenger carriages. It was carrying 28 primary school pupils and 4 other passengers. The train derailed as a result of gauge spread at Svorkmo station. The sleepers were from the 1950s, and the rails are fastened with base plates and dog spikes. The gauge spread arose because the dog spikes did not have sufficient grip in the wooden sleepers to withstand the loads from passing rolling stock. In particular, two-axle locomotives traversing a curve will exert force on the tracks and cause higher lateral loads. The line is now owned and operated by Orkla Industrial Museum, which is a branch of the Museums of Sør-Trøndelag (Museene i Sør-Trøndelag AS). The museum has been working on replacing sleepers on parts of the line. At the time of derailment, a stretch of approximately 5.9 kilometres, corresponding to 8,500 sleepers, remained. The sleepers at the derailment site had not been replaced. Orkla Industrial Museum has described their inspection activities in the safety management system, but no acceptance criteria have been established for inspection of safety-critical objects in the infrastructure. The Accident Investigation Board Norway (AIBN) submits one safety recommendation. It concerns requesting the Museums of Sør-Trøndelag to review and improve the inspection and maintenance of S-marked objects.	03.10.2017	01.08.2018

8	On Thursday 26 October 2017, the first carriage of CargoNet AS's train 8702 derailed at Trondheim central station. A brake shoe was overlooked during the departure check, and this lead to the accident. The carriage that derailed tipped over on its side and its cargo, which consisted of an armoured vehicle, fell off. The carriage then tipped back and broke free from the train before colliding with a portal on a bridge and coming to a stop. The railway infrastructure sustained major damage, and the rolling stock sustained some minor damage. The examination of the rolling stock and infrastructure shows that there was a brake shoe under the left wheel of the carriage that derailed. It is described in the railway undertaking's safety check procedure that it must be checked that there are no brake shoes on the tracks. It was dark and raining at the time, and a fence limited the possibility of walking along the side of the carriage. When the train started moving, the brake shoe slid along the track until the first crossing, where it caught and derailed the first carriage. The AIBN submits two safety recommendations, one to Bane NOR SF and one to CargoNet AS. The recommendations concern considering measures to reduce the risk of inserted brake shoes being overlooked and ensure that the procedure for safety checks and function-testing of the brakes is performed correctly.	26.10.2017	15.08.2018
9	On Thursday 23 November 2017, a container fell off freight train 5790 near Finneid bridge just south of Fauske station. The train was southbound from Bodø to Trondheim. The Nordlandsbanen line runs parallel to the E6 road where the incident occurred, and the swap body came to rest between the railway line and the road. No one was injured in this incident. The investigation has shown that the wind forces in connection with the storm Ylva was powerful enough to rotate a container off the freight train. Containers and swap bodies on freight wagons are held in place and secured by means of spigots. Their design is based on the principle that it should be easy to load and unload containers and swap bodies onto/off freight wagons and heavy goods vehicles, while they should also prevent the containers from falling off. CargoNet AS does not use additional locks	23.11.2017	18.10.2018

	during their transports. Nor are other railway undertakings in Norway or Europe known to do so. When the train was unloaded after arriving in Trondheim, the soft top of a swap body was found to be damaged. An inspection showed damage to the structural members of the Stokkalia snow shed. Pieces of beams found in the container combined with the damage to the soft top showed that the damage had been caused by the swap body. The top of a swap body container is opened and closed using a manual hydraulic pump. On older models such as the one in question, the pressure in the hydraulic system locks the roof in the closed position. The hydraulic system had been torn from its fastenings, and the investigation suggests that the swap body's top cannot have been completely closed after loading in Bodø. Wind calculations carried out in connection with the investigation show that a gust of wind must exceed 33 m/s to tip an empty 25-foot swap body with Lagab legs off a two-axle container freight wagon. The values used in the calculation are conservative, as the analysis did not take the speed of the train into account. The Accident Investigation Board Norway (AIBN) is of the opinion that Bane NOR SF must review its weather preparedness and consider establishing a system to notify railway undertakings of weather situations when strong winds can be expected. At the same time the AIBN propose that railway undertakings establish procedures that describe necessary measures for safe train operations when receiving notification from the infrastructure manager of strong wind. The AIBN proposes two safety recommendations based on this investigation. The first concerns expanding Bane NOR's weather preparedness to include notifying railway undertakings of strong winds. The second recommends that railway undertakings should have procedures in place to assess cargo securing when receiving notifications of strong winds and extreme weather conditions from the infrastructure manager.		
10	At 23.05 on Tuesday 23 January 2018, train 135 collided with a road grader at Høium level crossing on the Østfoldbanen line. Four passengers sustained minor injuries in the collision. The train had been	23.01.2018	05.11.2018

	given the signal to proceed, but this is no guarantee that the level crossing is free of larger objects. The train sustained significant body damage to the front and around the first bogie. The road grader was a total write-off, and there was minor damage to the road safety system. 10 metres of rails, 2 rail welds and 12 concrete sleepers had to be replaced. Another 600 concrete sleepers have subsequently been replaced. The road grader was removing ice and snow from the road when its engine failed. The grader remained standing between the barriers, with the cab, engine and bogie on the level crossing. The driver was unable to restart the engine, and there was no light on the road grader. Neither the marker lights nor the emergency lighting were working. The driver then attempted to warn of the danger, but did not make contact before the train came. The signal displayed to the train driver indicated that it was safe to proceed. A road safety system that displays the signal indicating that it is safe to proceed is not confirmation that the level crossing is clear. Technical solutions exist that can detect large objects on a level crossing and will prevent the train being given the signal to proceed. Obstacle detection systems are not in use in Norway at present. In addition, most level crossings are not equipped with location information and information about where to call in the event of a dangerous situation. The Accident Investigation Board Norway (AIBN) proposes two safety recommendations: It is recommends that Bane NOR SF consider posting contact and location information at all level crossings, and consider strengthening the barriers in the road safety systems as part of the work to update the signal system.		
11	At 23.29 on Saturday 16 December 2017, the auxiliary pushing locomotive of timber train 8061 ran into the rearmost wagon. The locomotive was operated from the rearmost driver's cab and was not coupled to the timber wagons. The collision was so powerful that parts of the timber load shifted and fell off the train. Several logs ended up on the platform and in the tracks at Grorud station in Oslo. A local train left Grorud shortly before the accident, and crossed the scene of the accident around 20 seconds before the	16.12.2017	05.12.2018

	collision. There were no people on the platform, and therefore the logs did not cause any personal injuries. The collision occurred because the driver of the auxiliary locomotive did not have visual control of the distance to the train and lost track of the speed so that it became too high. In order to understand how this accident could occur, the Accident Investigation Board Norway (AINB) has looked more closely at the factors that contributed to the driver's behaviour deviating in some aspects from the expected behaviour pattern. An increased stress level and disrupted sleep pattern have most likely had a negative impact on the driver's assessment and behaviour in the situation in question. Relevant regulatory frameworks and procedures, the traffic controller's detection and alarm systems, and cargo securing when transporting short logs are also included in the investigation. The AIBN submits one safety recommendation for railway undertakings to establish and comply with guidelines that systematically reduce the risk of a high stress level, drowsiness and fatigue leading to reduced safety in operations.		

Appendix B - Safety recommendations

The safety recommendations are translated from Norwegian language. The Norwegian text remains the official version of the safety recommendations. Should ambiguity arise between the two, the Norwegian text takes precedence.

See link: http://www.aibn.no/Jernbane/Avgitte-rapporter

Report No.	Rec. No.	Safety recommendation:	Ministry of Transportation and Communication Status report.	Status:
2018/01	01	On Thursday 2 February 2017, a 16-year-old girl died when she fell between the platform and a metro train leaving the station. Falling between the platform and the train entails a great risk of serious personal injury or death. Sporveien T-banen AS	Status: The processing of the safety recommendation has been concluded. Grounds: Sporveien T-banen AS has implemented a safety campaign targeting young people between the ages of 13 and 18 years. In addition, special signposting of places where the gap between the train and the	Closed

		has previously concluded that physical barriers between the edge of the platform and the track would be too costly and uncertain a measure to introduce on existing platforms.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Sporveien T-banen AS to consider measures to raise passenger awareness of the risk of falling onto the track.	platform is particularly wide has been considered.	
2018/01	02	On Thursday 2 February 2017, a 16-year-old girl died when she fell between the platform and a metro train leaving the station. There are gaps big enough for a person to fall onto the track between each carriage and where the train sets are connected.The Accident Investigation Board Norway recommends that the Norwegian Railway Inspectorate follow up Sporveien T-banen AS's further work to consider measures on train sets to reduce the risk of persons falling between the train and the platform.	Status: The processing of the safety recommendation has been concluded. Grounds: Sporveien T-banen AS has conducted a study to consider whether it is possible to widen the connecting sections towards the side of the train. Testing of such a measure in 2018/2019 is under consideration. It has been decided that steps will be taken to find possible measures to reduce the risk of accidents in areas where two train sets are connected (the connecting section). It is being evaluated whether light signals should be used in combination with the existing audio signals to show that the doors are closing.	Closed
2018/01	03	On Thursday 2 February 2017, a 16-year-old girl died when she fell between the platform and a metro train leaving the station. At Holstein station, the distance between the side of the train and the edge of the platform was measured to 160 mm in a gentle curve. The ideal distance is approx. 100 mm for straight tracks, and the gap is bigger in curves. Regular inspection and maintenance	Status: The processing of the safety recommendation has been concluded. Grounds: Sporveien T-banen AS measured the distance between the train and the platform on all platforms in the metro system in December 2017. Protruding safety ledges to prevent falls onto the track have been installed on 16 platforms. Voksenlia and Voksenkollen stations had these installed in 2018. Testing of under-platform lighting, as installed at Nationaltheateret station, is being	Closed

		of stations is required to ensure that they meet the distance requirements. Sporveien AS was planning to carry out an extra inspection of the distance between the train and the platform in December 2017.The Accident Investigation Board Norway recommends that the Norwegian Railway Inspectorate follow up that Sporveien T-banen AS has the distance between the train and the edge of the platform under control and that it is kept to a minimum.	planned. The stations selected for this are Midtstuen and Høyenhall. The testing is planned for 2018–2019. Adding rubber edges to the platform edge to reduce the gap between the trains and the platform is also under consideration. Procedures for adjusting and packing tracks will be followed up in order to ensure optimum distance between the train and the platform.	
2018/02	04	Four in ten principal site safety supervisors have worked on or near tracks without permission. This has often been done intentionally because the work is deemed to be safe. Such an unfortunate practice circumvents important safety barriers and increases the risk of hazardous situations arising.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to conduct an analysis of the underlying causes for work being carried out on or near tracks without permission, and take steps to counteract it.		Open
2018/02	05	Principal site safety supervisors employed by enterprises other than Bane NOR SF find that they have less access to information before construction work. It could have a negative effect on safety if both groups do not have the same opportunity to facilitate safe work.The Accident Investigation Board Norway recommends that the		Open

		Norwegian Railway Authority request Bane NOR SF to map the differences between internal and external principal site safety supervisors' access to information and investigate what consequences this has for the facilitation of safe wrk on and near tracks.		
2018/03	06	On 14 April 2017, Green Cargo AB's freight train 45930 derailed on track 3 at Loenga station on the Hovedbanen line. A track fault exceeding the permitted limit value for twist was measured at the derailment site. Excavation work was carried out at the site 12 days before the derailment. The track fault was identified and Bane NOR made two attempts to correct it after the work was completed, but it nonetheless exacerbated up until the time of the derailment.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to review and improve the procedures for follow-up after track corrections.		Open
2018/04	07	On Saturday 24 June and Wednesday 5 July 2017, two car drivers died in level crossing accidents on the Røros line. The crossing of such unsecured level crossings is based solely on the road user seeing or hearing the train in time. The barriers currently in use are not always sufficient to attract the attention of road users due to flaws in people's perception, understanding and behaviour.The Accident Investigation Board Norway		Open

		recommends that the Norwegian Railway Authority ask Bane NOR SF to consider barriers that are better able to attract the attention of road users at unsecured level crossings.		
2018/05	08	On Sunday 18 June 2017, an employee was seriously injured when wagons started to roll uncontrolledly during shunting at Stavanger shunting yard. Bane NOR SF was the construction client and had overriding responsibility for safety in connection with the construction work. Runaway rolling stock was not assessed as a risk in the construction client's safety, health and working environment plan. Moreover, the driver was not involved in the safe job analysis conducted the day before the work started, and subsequent changes to the assignment were not sufficiently communicated ween the parties involved.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to strengthen its safety management system with a view to detecting changes in circumstances in projects where the enterprise is the construction client.	Status: The processing of the safety recommendation has been concluded. Grounds: Bane NOR SF has reviewed and, where relevant, updated requirements in their governing documents (HSWE handbook, HSWE plan and the group procedure 'HMS/SHA' (HSE/HSWE)). In addition, the requirements for knowledge of the Construction Client Regulations for different roles (construction site manager, health, safety and working environment adviser, quality control engineer, environmental adviser, project manager) have been clarified.	Closed
2018/05	09	On Sunday 18 June 2017, an employee was seriously injured when wagons started to roll uncontrolledly during shunting at Stavanger shunting yard. A change in Bane NOR SF's regulations resulted in changes to the	Status: The processing of the safety recommendation has been concluded. Grounds: Bane NOR SF has implemented several measures. They have updated the functional specifications for 'signaller'. They have also ensured that train drivers	Closen

		competence requirements for personnel qualified to assist during shunting. During this shunting operation, the driver had to carry out many of the tasks of a shunter. An increased workload can result in increased risk of incidents or accidents.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to consider the consequences of the change in regulations regarding shunting competence.	will be trained to stop work operations when they consider that they cannot be carried out safely. Bane NOR SF will also update the traffic safety training of managers and planners to ensure that they are even better qualified to ensure the necessary staff with the right competence.	
2018/07	10	On Tuesday 3 October 2017, museum train 344 consisting of a locomotive and two passenger carriages derailed at Svorkmo station on the Thamshavn line. The derailment was caused by gauge spread resulting from the poor quality of the sleepers. Sleepers are S-marked objects, and this requires a particular focus in connection with maintenance and inspection etc. No tolerance limit values have been established for S-marked objects.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request the Museums of Sør-Trøndelag to review and improve the procedure for inspection andmaintenance of S-marked objects.	Status: The processing of the safety recommendation has been concluded. Grounds: The recommendation was followed up through an audit focusing on maintenance. It was stated during the audit that the undertaking was working to follow up the AIBN report, including by establishing new acceptance criteria and improved procedures for inspection and maintenance of S-marked objects.	Closen
2018/08	11	On Thursday 26 October 2017, the first carriage of CargoNet AS's train 8702 derailed at a set of points at	Status: The processing of the safety recommendation has been concluded.	Closed

		Trondheim central station. A brake shoe was overlooked during the departure check, which lead to the derailment. It was dark and raining at the time, and a fence limited the possibility of walking along the side of the carriage.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to consider, in consultation with the railway undertakings, measures to reduce the risk of inserted brake shoes being overlooked.	Grounds: Bane NOR SF has raised the issue of overlooked brake shoes at a central safety and quality coordination meeting attended by the railroad undertakings. It has been decided that a risk assessment for overlooked brake shoes, in which the railroad undertakings are to take part, will be conducted by the end of June 2019. Bane NOR SF also writes that they have several measures in place to reduce the risk of brake shoes being overlooked, for example in the driver's rule book (*Førerens regelbok Bane NOR (STY-603526)*). Moreover, a survey focusing on practice and suggestions for further measures has been conducted among train drivers. In Bane NOR SF's assessment, the measures that have been implemented work well in day-to-day operations and will continue to be the most expedient measures in the time ahead.	
2018/08	12	On Thursday 26 October 2017, the first carriage of CargoNet AS's train 8702 derailed at a set of points at Trondheim central station. A brake shoe was overlooked during the departure check, which lead to the derailment. It is described in the railway undertaking's safety check procedure that it must be checked that there are no brake shoes on the tracks. Internal audits have uncovered cases of failure to comply with the procedure.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request CargoNet AS to ensure that the procedure for safety checks and function	Status: The processing of the safety recommendation has been concluded. Grounds: Following an internal investigation, CargoNet AS found the safety check in question to be of inadequate quality and followed up the matter in relation to the personnel involved. The incident was discussed at a joint meeting between Bane NOR SF and the emergency services. In addition, brake tests and parking were topics discussed at safety meetings in 2017. CargoNet AS's safety department has conducted a concrete inspection focusing on safety checks to verify whether they are carried out in accordance with the regulations and whether the applicable regulations are expedient.	Closed

		testing of brakes is performed correctly.		
2018/09	13	On Thursday 23 November 2017, the wind tipped an empty 25-foot swap body container off freight train 5790 near Finneid bridge south of Fauske station. The Nordlandsbanen line runs parallel with the E6 road at that point, and the swap body came to rest between the railway line and the road. Wind calculations show that a gust of wind must exceed 33 m/s to tip a swap body of this kind off a two-axle freight wagon. Bane NOR SF's instructions concerning measures to be taken in connection with adverse weather conditions are inadequate as regards the implementation of measures when strong winds are forecast.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to expand its weather preparedness to include notifying railway undertakings of strong winds.	Status: The processing of the safety recommendation has been concluded. Grounds: Bane NOR SF will update and publish information about sections of track exposed to harsh weather conditions in the section descriptions for the national railway network (*Strekningsbeskrivelsen*) by 1 June 2019.	Closed
2018/09	14	On 23 November 2017, the wind tipped an empty 25-foot swap body container off freight train 5790 near Finneid bridge, south of Fauske station. The Nordlandsbanen line runs parallel with the E6 road at that point, and the swap body came to rest between the railway line and the road. Wind calculations show that	Status: The processing of the safety recommendation has been concluded. Grounds: The undertakings state that they observe the guidelines and limitations imposed by Bane NOR SF when receiving notifications of strong winds or other extreme weather conditions. Green Cargo has introduced a procedure whereby loading of containers and swap bodies with a total weight of less	Closed

		gusts of wind in excess of 33 m/s can tip an empty 25-foot swap body off a two-axle freight wagon. It is currently not common practice to employ extra securing of empty or lightly loaded containers and swap bodies when strong winds are forecast.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request the railway undertakings to consider introducing guidelines for considering measures to ensure safe train operation when receiving notifications of strong winds from the infrastructure manager.	than 5 tonnes is stopped for all departures that may be affected by the notification. CargoNet AS is introducing a requirement that the type of swap body in question will not be permitted unless they weigh 10 tonnes in cases where winds in excess of 30 m/sec. are forecast on the section the train will drive on.	
2018/10	15	At 23.06 on Tuesday 23 January 2018, train 135 collided with a road grader that had broken down at Høium level crossing on the Østfoldbanen line. The driver tried to warn of the danger, but had problems contacting the proper authority. No place name or contact information was posted at the level crossing.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority recommend Bane NOR SF to post emergency telephone numbers and location information at all level crossings.	Status: The processing of the safety recommendation has been concluded. Grounds: Bane NOR SF is planning several measures, including which categories of level crossings it is expedient to post such signs or similar at, which phone number it would be expedient to instruct members of the public to call, and whether this should be the same number at all level crossings, and clarifying the form and location of a potential sign for use on public roads with the Norwegian Public Roads Administration. The conclusions from the above-mentioned assessment and an implementation plan is scheduled to be available by 1 June 2019.	Closed
2018/10	16	At 23.06 on Tuesday 23 January 2018, train 135 collided with a road grader at Høium level crossing on the Østfoldbanen line. Because of	Status: The processing of the safety recommendation has been concluded.	Closed

		the road grader's position between the barriers, the signal indicating that it was safe to proceed was displayed to the train driver. Bane NOR SF has no systems in place that can alert the train driver to obstacles at level crossings with road safety systems.The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to consider strengthening the barriers in the road safety systems in connection with the work to upgrade the signal system.	Grounds: Bane NOR SF is in the process of conducting a more thorough comprehensive analysis of the need for obstacle detection in which possible solutions will be mapped regardless of existing agreements. The work is expected to be completed by 1 April 2019.	
2018/11	17	At 23.29 on Saturday 16 December 2017, timber train 8061 was driven with an uncoupled auxiliary locomotive from Alnabru towards Lørenskog. At Grorud station it ran into the rearmost wagon so that logs fell off several wagons and ended up on the platform and in the tracks. A high stress level due to technical problems and delays, in addition to a disrupted sleep pattern, most likely had a negative impact on assessment and behaviour in the sitation in question. The Accident Investigation Board Norway recommends that the Norwegian Railway Authority requests the railway undertakings to strengthen their safety management in order to identify increased risk of human errors in high-pressure operational situations.		Open

Appendix C – Directive for the Accident Investigation Board Norway

Laid down by the
Ministry of Transport and Communications on 12 June 2009.

1 Organisation
The Accident Investigation Board Norway (AIBN) is an administrative agency that reports to the Ministry of Transport and Communications. The AIBN is an independent body as regards professional issues.
The areas of road, air and railway transport are the responsibility of the Ministry of Transport and Communications. Marine transport is the responsibility of the Ministry of Trade and Industry.
The Ministry of Transport and Communications cannot instruct the agency in professional matters in those areas for which the AIBN is responsible. With the exception of such matters as stated in Section 476, seventh subsection of the Norwegian Maritime Code, the same applies to the Ministry of Trade and Industry within the marine sector.

2 Objective
The AIBN shall investigate accidents and serious incidents in the aviation, railway, road and marine sectors.
The objective of the investigations is to elucidate matters deemed to be significant for the prevention of transport accidents. The AIBN shall not apportion any blame or liability under civil or criminal law.
The AIBN itself decides the scale of the investigations to be conducted, including an assessment of the investigation's expected safety benefits with regard to necessary resources.
Details of the objectives within the various transport sectors:

Aviation
The AIBN shall investigate aviation accidents and serious aviation incidents within the framework stated in Act No. 101 of 11 June 1993 relating to Aviation (the Aviation Act), Chapter XII Notification, reporting and investigation of civil aviation accidents and civil aviation incidents etc., and regulations stipulated pursuant to the Act. Reference is also made to Council Directive 94/56/EC of 21 November 1994 establishing the fundamental principles governing the investigation of civil aviation accidents and incidents.

Railways
The AIBN shall investigate railway accidents and serious railway incidents within the framework stated in the Act of 3 June 2005, No. 34, relating to notification, reporting, and investigation of railway accidents and railway incidents etc. (the Railway Investigation Act), and regulations stipulated pursuant to the Act.

Road traffic
The AIBN shall investigate serious road accidents and road incidents within the framework stated in the Act of 18 June 1965, No. 4, relating to road traffic (the Road Traffic Act),

Chapter VII Investigation of traffic accidents etc., and regulations stipulated pursuant to the Act.

Marine
The AIBN shall investigate marine accidents within the framework stated in the Norwegian Maritime Code of 24 June 1994, No. 39, Chapter 18 (II) Maritime inquiries, and regulations stipulated pursuant to the Code and obligations Norway has assumed under international law.

3 Delineation
The activities of the AIBN do not comprise areas of responsibility that come under the Police and Prosecution Authority, the Armed Forces, the Norwegian Railway Inspectorate, the Norwegian Public Roads Administration, the Norwegian Civil Aviation Authority or the Norwegian Maritime Directorate.
The AIBN shall also cooperate with other parties to the extent necessary, where this may be beneficial in terms of resource use and user-friendliness.

4 Duties
Within the framework of current legislation the responsibilities of the AIBN shall include:

• investigating transport accidents/incidents as mentioned in Item 2,

• preparing reports containing a statement from the AIBN on the causes of the accident/incident and any recommendations on matters the responsible party should consider rectifying to prevent re-occurrences of the same or similar nature, but without outlining specific solutions.

• performing special duties of significance for safety as may be imposed on the agency by the Ministry of Transport and Communications, and for maritime matters in consultation with the Ministry of Trade and Industry, pursuant to statutes and regulations,

• representing the Ministry of Transport and Communications and/or the Ministry of Trade and Industry as required, or participating in meetings with the said ministries in various international organisations and forums within the relevant transport sectors.

• issuing comments/statements on matters submitted by the Ministry of Transport and Communications, and for maritime matters in consultation with the Ministry of Trade and Industry, to the extent requested by the ministries, assisting in processing cases, etc.

The AIBN shall report to the Ministry of Transport and Communications in the course of the year and in a separate annual report on the agency's activities and results.
The activities shall be conducted within the framework of current statutes, rules and regulations. Cases shall be considered in accordance with generally accepted administrative principles and applicable rules for case processing in the public sector.

5 Day-to-day management
Day-to-day management of the AIBN is exercised by the Director General. The Director General is appointed by the King upon recommendation from the Ministry of Transport and Communications.
The Director General shall:

• inform the Ministry of Transport and Communications of important matters that come under the AIBN's area of responsibility,

• ensure good quality in cases submitted to the Ministry of Transport and Communications,

• decide all cases that do not require submission to a higher authority,

• ensure that the AIBN is run efficiently in accordance with current statutes, rules and regulations and the requirements stipulated in the management dialogue,

• ensure that there are documentable systems for internal control and risk management, and that evaluations are conducted of the agency's efficiency, goal achievements and results.

Within limited areas the Director General may delegate authority to other employees of the AIBN and issue further instructions for the performance of the delegated authority in general or for individual cases.

6 Authority to issue a directive

The Ministry of Transport and Communications has the authority to stipulate a new directive or make changes in the directive.

7 Entry into force

This directive enters into force on 12 June 2009.
From the same date the directive for the AIBN of 21 June 1999 with subsequent changes is repealed.