



# ANNUAL REPORT 2019

**Norwegian Safety Investigation Authority**

**Railway Department**

Norwegian Safety Investigation Authority  
Lillestrøm, September 2020

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## Introduction

The Norwegian Safety Investigation Authority (NSIA) 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 NSIA is a multi-modal body investigating accidents and serious incidents in aviation, rail (including LTR, tramways and metros), road transport and the marine sector. The different transport modes are organised in different departments within the NSIA 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 NSIA'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. The mandate will be expanded in 2020 to cover military accidents and serious incidents.

Rail accident investigation in Norway is subject to the Directive for the Norwegian Safety Investigation Authority, 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 regards to resources required.

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

The NSIA 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 organizational factors. In addition, the NSIA addresses Safety Management System (SMS), safety culture etc.

The Accident Investigation Board, Norway (AIBN) became Norwegian Safety Investigation Authority (NSIA) 1<sup>st</sup> of July 2020. NSIA is used in the annual report, except in appendices A, B and C.

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## Regulation

Railway accident investigation in Norway is regulated in detail by the Norwegian Act of June 3<sup>rd</sup>, 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 1<sup>st</sup>, 2006 as Regulation 2006-03-31 nr 378. *Regulation for official investigation of railway accidents and serious incidents etc.* (“The Railway Investigation regulation”).

## Mandate

NSIA shall investigate accidents and incidents in the aviation, rail, road and marine sectors.

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

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

## Budget

The 2019 total budget is NOK 81032000, -

# Organisational flow charts

*Relationship between the NSIA and other national bodies:*

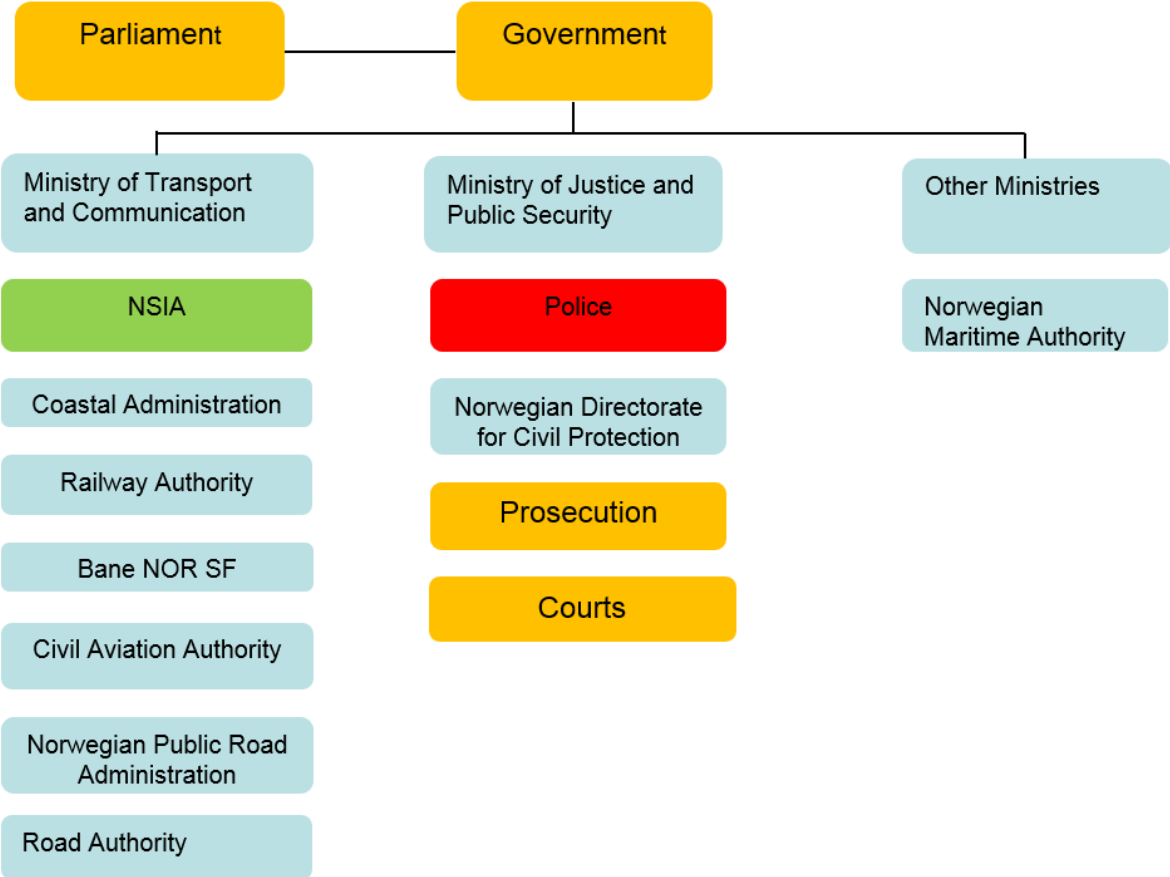


Figure 1: NSIA and other national bodies.

*Relationship between the NSIA and the railway sector:*

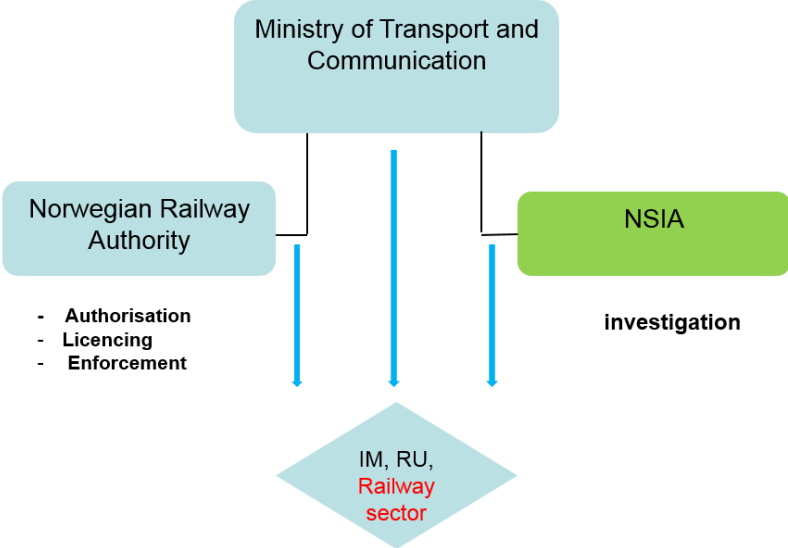


Figure 2: NSIA and the rail sector.

## Norwegian Safety Investigation Authority (NSIA) - Organisation

The NSIA organisation as of 31<sup>st</sup> December 2019:

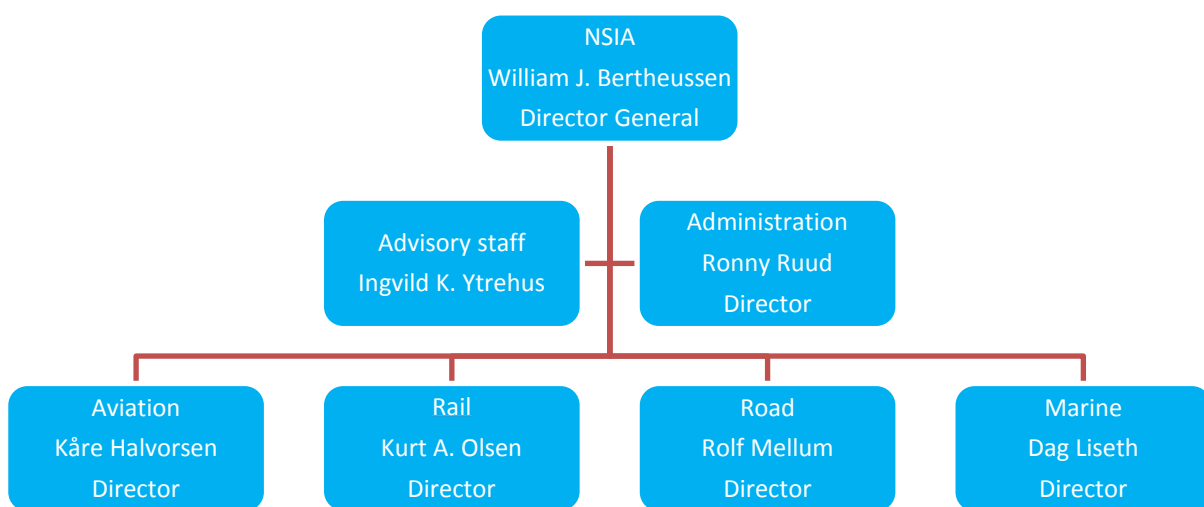


Figure 3: The NSIA organigram.

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

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

The NSIA 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 NSIA, Rail department received totally 198 notifications by telephone in 2019. The number of notifications 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.

25 accidents were registered. Trespasses and suicides are included.

The NSIA started ten accident or serious incident safety investigations in 2019.

The NSIA, Rail department had ten open safety investigations as of 31<sup>st</sup> December 2019.

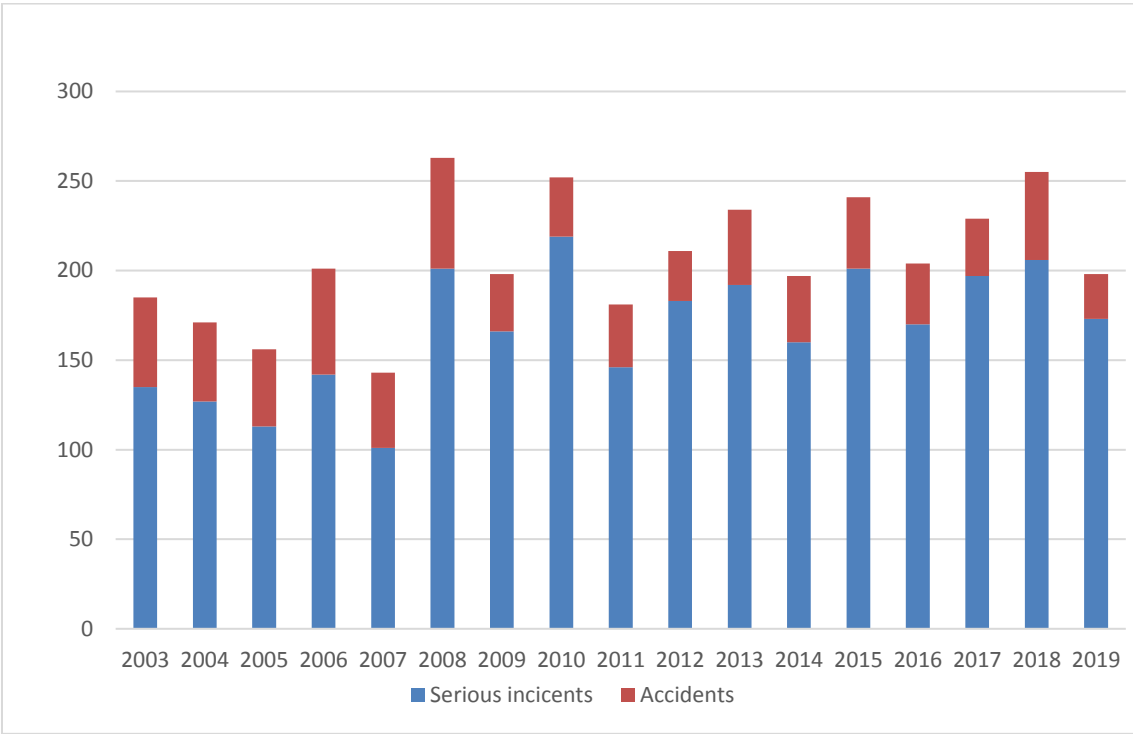


Figure 4: Key numbers, notified railway accidents and serious incidents.



	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<b>Serious railway incidents</b>	166	219	146	183	192	160	205	170	197	206	173
<b>Railway accidents</b>	32	33	35	28	42	37	40	34	32	49	25
<b>Total</b>	198	252	181	211	234	197	245	204	229	255	198
<b>Published reports</b>	<b>11</b>	<b>9</b>	<b>10</b>	<b>9</b>	<b>9</b>	<b>7</b>	<b>9</b>	<b>7</b>	<b>8</b>	<b>11</b>	<b>10</b>

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 NSIA is heavily involved in the common Peer Review programme and review criteria where all investigating bodies are encouraged to participate to monitor their effectiveness and independence.

In 2019 NSIA was peer reviewed. The final report was presented to the NIB network by the lead, RAIB. NSIA is pleased with the review process and is certain that the peer review is a good way forward ensuring an active exchange of views and experience for the purpose of the development of common investigation method etc., ref. article 22 of the Directive (EU) 2016/798.

The NSIA was the lead when reviewing NIB Lithuania.

## Investigation reports

The Norwegian Safety Investigation Authority, Rail department, published ten 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 NSIA 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 Norwegian Safety Investigation Authority, Rail department, published eight safety recommendations in 2019. An overview of the recommendations, see appendix B.

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

Year:	2011	2012	2013	2014	2015	2016	2017	2018	2019
Open:	0	0	0	0	0	0	0	1	3
Closed:	16	9	6	9	9	8	8	16	5
<b>Total:</b>	<b>16</b>	<b>9</b>	<b>6</b>	<b>9</b>	<b>9</b>	<b>8</b>	<b>8</b>	<b>17</b>	<b>8</b>

Table 2: Number of safety recommendations.

Norwegian Safety Investigation Authority

Lillestrøm, September 30, 2020

## Appendix A - Published reports 2019

See link:

No:	Identification:	Date of occurrence:	Report published:
1	<p>On Friday 2 March 2018, two people died when they were hit by train 2173 approximately 450 metres from the Alna stop in Oslo.</p> <p>The driver of northbound train 2274 observed three persons on the track. The driver used the whistle to give the "train approaching" signal and applied the emergency brake, which brought the train to a stop near the culvert south of the Alna stop.</p> <p>The persons were standing to the right of the front of the train bound for Lillestrøm (train 2274) after it had come to a halt. The driver of train 2274 contacted them to try to get them to come on board. While the driver was talking to them, the train bound for Oslo S (train 2173) left the Alna stop. As train 2173 approached the left-hand curve leading down to the culvert, two of the persons ran in front of train 2274 and into the path of the southbound train. As train 2173 approached, the third person also ran onto the other track. The driver of train 2173 saw persons on the track 5–6 metres in front of the train. The train hit two persons, who were both killed.</p>	02.03.2018	19.02.2019
2	<p>On Monday 12 March 2018, two wagons of train 45962 derailed at Blaker station on the Kongsvinger line. The train was enroute from the freight terminal in Drammen to Sweden, and it consisted of one locomotive and 10 empty wagons.</p> <p>As the train was passing a set of points located in a left curve approaching the station, the rear axle of wagon 3 derailed to the right. The wagon with the derailed axle continued through the station until it reached the set of points at the other end. Wagons 3 and 4 then became buffer-locked, resulting in the front axle of wagon 4 also derailing.</p>	12.03.2018	11.03.2019

	<p>The AIBN has been unable to identify exactly what caused the derailment, but has nevertheless chosen to highlight three possible explanations.</p> <p>After the train had derailed, several passenger trains were allowed to pass over the derailment site without the tracks being checked. This could have caused a new derailment. It could also have led to important information being lost, since derailment marks on the rails were no longer visible.</p>		
3	<p>At 08.55 on Tuesday 29 May 2018, an explosion and subsequent fire occurred in the locomotive of train 5301 at the main entry signal to Oslo Central Station.</p> <p>The train was en route from Alnabru to Drammen, and it was standing by the main entry signal B202 OSL at Brynsbakken. It consisted of locomotive El 14 and four empty car transporter wagons.</p> <p>As a result of the explosion, the oil in the voltage regulator was atomised and ignited by sparks. This caused an explosive fire that ignited various components in the locomotive's engine compartment. The train was easily accessible on an open line, and the fire was extinguished by the City of Oslo's fire and rescue service, which quickly arrived at the scene. If an incident of this nature was to occur inside a tunnel, it would take time for the fire and rescue service to initiate extinguishing efforts.</p> <p>The immediate cause of the incident could not be identified on the basis of an examination of the voltage regulator conducted after the incident.</p>	29.05.2018	03.04.2019
4	<p>At 16:20 on Thursday 7 June 2018, a mobile elevating work platform (MEWP) collided and derailed on tunnel track 1 between Ensjø and Carl Berners plass.</p> <p>The MEWP operator had not received adequate instruction in how the brake system worked, and operated the machine in a way that caused the parking brakes to be deactivated during on-tracking. Examination of the MEWP showed that it lacked technical barriers against incorrect operation, which meant that it was possible to deactivate the parking brakes. In the course of the investigation, the MEWP supplier has introduced technical barriers against</p>	07.06.2018	14.05.2019

	<p>incorrect operation, and it is claimed that this will prevent future recurrence of similar incidents.</p> <p>The AIBN has found weaknesses in Oslo Metro AS's control mechanisms relating to supplier management, with inadequate control of operators' level of competence and the condition of hired vehicles.</p>		
5	<p>On Sunday 1 July 2018, at approximately 19:45, Cargo Net AS train 85811 sparked several forest and shrub fires along a section of the Gjøvik line, approximately from kilometre post 12 between Kjelsås and Sandermosen to kilometre post 32 at Hakadal. The traffic controller notified the train driver, and the train was stopped and inspected at Hakadal station. The brakes turned out to have applied unintentionally on wagon number ten.</p> <p>The train had been inspected and the brakes tested prior to departure from Alnabru. When the brakes were released during the brake test, the train's pneumatic feed line was opened, which caused the brakes to re-apply. The feed line was found to have a major air leakage, and it was therefore closed. After that, the brake release system worked as normal. The brake test was completed and approved, and the train was reported to be ready for departure.</p> <p>The wagon's brakes were tested after the incident. On examination, the control valve that caused the unintended braking proved to have a leakage during filling that was difficult to locate. During the tests that followed, this control valve did not set the brakes as intended, but after several further tests, involving pressure reduction in the main line, the leakage stopped. On proceeding with the predefined test programme, the brakes appeared to be in normal working order.</p> <p>After the brake tests, the control valve was removed and sent to Deutsche Bahn's (DB) workshop in Fulda in Germany for further examination. The workshop did not find any fault that could explain the unintended braking or the functional failure that occurred during the brake tests carried out after the incident.</p> <p>A chain mulching unit or a hammer knife mower is used to control vegetation. The fires that broke out show how important it is to regularly spray the ballast</p>	01.07.2018	27.05.2019

	with herbicides and to clear the verges and banks of vegetation.		
6	<p>In the morning of 8 August 2018, a snow shed near Bjørnfjell station on the Ofotbanen line burnt to the ground. Before the fire, a work team had carried out maintenance work on the tracks in the snow shed. The work was part of a major maintenance project carried out in summer 2018. Bane NOR SF was the client. Three days of work on the section between Bjørnfjell and Narvik remained to complete the project.</p> <p>The safe job analysis carried out by the contractor immediately before the work began did not include hot work in the snow shed. No extra fire safety measures were implemented inside the snow shed, and nor was a fire watch posted for one hour after the completion of the last of the hot work as required by Bane NOR SF.</p> <p>The last of the two welding jobs inside the snow shed was done at around 09:20. The last member of the work team left the snow shed at around 10:10, when the construction site restrictions were lifted. The work team had left Bjørnfjell by 10:30. At 10:40, an ore train from LKAB passed the site and the driver claims to have smelled smoke in the snow shed. Witnesses notified the police of the fire at 10:53. It took 48 minutes from the fire service was notified until they arrived on the scene. Gas cylinders left in the snow shed delayed the fire-extinguishing efforts. The structure was reported to be completely burnt down at 13:16.</p> <p>The AIBN's investigation of the incident has identified several factors of importance to safety. The AIBN is of the opinion that the most probable cause of the fire was the hot work carried out in the snow shed. The incipient fire was not discovered in time because of the failure to keep watch after the hot work was completed. The risk of fire in the wooden snow shed had not been sufficiently managed during the preparations for the work. Bane NOR had little focus on the contractor's compliance with fire safety requirements. The safe job analysis (SJA) did not cover hot work in the snow shed. The AIBN is of the opinion that Bane NOR SF, as the client and the party defining the requirements, should to a greater extent follow up when a SJA is to be used, how to carry out a SJA and why.</p>	08.08.2018	02.07.2019

7	<p>On 5 September 2018, work on a stormwater drainage pipe was being carried out underneath the railway tracks by Drammen station. The work was being carried out in connection with a construction project next to the station area.</p> <p>A passage was being drilled several metres below the tracks using the ‘directional drilling’ method, with a diameter of 1,000 mm. Neither the main contractor, including its subcontractor and hired specialist, nor Bane NOR Infrastruktur expected the work to impact the tracks. The work was therefore carried out while normal train traffic continued in the area. In the afternoon, it was discovered that the tracks were moving when trains passed. Both the train traffic and the drilling work were suspended. Within a short period of time, parts of the passage collapsed, affecting two main tracks and the Tangensporet side track. The station was closed to traffic in the direction of Oslo for almost two days due to the repair work.</p> <p>In the Accident Investigation Board Norway’s view, the parties involved have expertise in their own disciplines, but challenges may arise when they have to familiarise themselves with other parties’ work methods, rules and practices. It can be particularly challenging if they expect the other party to also identify defects or deficiencies in technical assessments carried out by others. In some cases, these expectations are unrealistic, with the result that no one has a complete overview of the total risks involved.</p>	05.09.2018	03.09.2019
8	<p>On Sunday 21 October 2018, four special freight cars used to transport military material rolled out from the Auma branch line and onto the Rørosbanen line.</p> <p>On 19 and 20 October 2018, three empty freight car sets consisting of special freight cars to transport military materiel were parked on the Auma branch line. The freight cars were parked there in connection with the NATO exercise Trident Juncture. On Sunday 21 October, one of the sets consisting of five freight cars started to roll uncontrolledly. The first two freight cars rolled across a snow shield, through a derailer and onto the Rørosbanen line. Freight car number three derailed on the derailer and stopped the freight car set from moving further.</p>	21.10.2018	11.09.2019



	<p>The parking of rolling stock on the Auma branch line took place during the period from the morning of Friday 19 October until the early hours of Saturday 20 October. The last freight car set was to be parked on track 2. It had to be split up and placed on either side of a pedestrian crossing. Some of the freight cars were not equipped with parking brakes, and the signaller only found parking brakes on the freight car set to be parked south of the pedestrian crossing. There were two brake shoes available, and it was decided to use them on either side of the pedestrian crossing to prevent the freight cars from rolling towards it. The signaller believed the track to be completely level. The main line and the control valves were not emptied of air when the freight car sets were parked, but the signaller released some air from the main line.</p> <p>The freight cars rolled onto the Rørosbanen line on Sunday 21 October, some time between 10:30 and 11:00, causing the section of track to be identified as occupied. The traffic controller first attempted to release the track by issuing a ‘simulated train passage’ order in the remote control system. The section of track was still registered as occupied, giving indication of a technical fault. The traffic controller therefore had to give southbound regional train 2384 a verbal order to proceed from Tynset to Alvdal. When the train approached Auma, the train driver saw the freight cars on the main track. Because the train had been given an order to proceed with speed restrictions, there was never any danger of a collision.</p> <p>Snow shields are often used in winter to protect the derailleurs from rain, snow and ice. A locally produced snow shield made of 3.3-mm-thick steel plates was used at Auma. The strength of the shield meant that, instead of being crushed, it was only deformed, serving as a guide rail guiding the first wheels over the derailer.</p>		
9	<p>On Thursday 29 November 2018, a lorry driver died in a collision with a passenger train on an unsecured level crossing on the Rørosbanen line. Bjøråneset level crossing was located between Atna and Koppang, on a private road near Atnaveien road that was open to public traffic. It was one of three crossings located a short distance from one another. Bane NOR SF had started planning to replace these three crossings with one crossing in a culvert, but the work had not yet</p>	29.11.2018	27.11.2019

	<p>commenced at the time of the accident. The level crossing is visible to the train driver at a distance of approx. 340 metres, but there is reason to believe that the train would be visible to the lorry driver leaning forward in a sitting position at a distance of 25 metres. The train sounded its sound signal more than 500 metres before the crossing, and it is uncertain whether the lorry driver could hear it. To the train driver, the lorry appeared to be standing still before the level crossing, but the investigation has shown that it was in fact driving at a very low speed.</p> <p>The AIBN would like to draw attention to several important factors relating to safety at unsecured level crossings in this investigation.</p> <ul style="list-style-type: none"> <li>• Ideally, the angle between the road and the railway should be 90° to ensure optimal visibility to both sides.</li> <li>• Bane NOR SF's regulations concerning visibility requirements and design vehicles should place more emphasis on visibility from heavy vehicles.</li> <li>• Bane NOR SF should set visibility requirements for level crossings based on what is assumed to be representative of their daily traffic.</li> </ul> <p>The AIBN is of the opinion that particular attention should be paid to ensuring that the road leading up to a level crossing is sufficiently wide for a vehicle larger than the design requirement to be able to turn into an optimal position. If this is not possible, compensatory measures should be considered.</p> <p>The investigation touches on two transport sectors that may both benefit from the learning points that have emerged. The investigation has therefore been conducted jointly by the Road and Rail departments of the AIBN.</p>		
10	<p>In the early hours of Monday 17 December 2018, a fire broke out and was followed by an explosion in a welding car containing gas cylinders in the metro tunnel between Ensjø and Helsefyr stations. Risk assessments carried out by Sporveien T-banen AS had not identified the risk of fire and explosion associated with placing gas cylinders near the welding car's diesel generator. The AIBN submits one safety</p>	17.12.2018	11.12.2019

	<p>recommendation for Sporveien T-banen AS to strengthen its risk assessments of fire safety.</p> <p>The vehicle contained equipment for welding work and was used by a team of three people welding rail joints. The team evacuated from the tunnel immediately upon detecting the fire, and no one was injured in the accident. The welding car was completely destroyed by the fire, and the heat and blast wave caused some damage to the infrastructure. The accident occurred at a time of night when the metro system is normally closed for maintenance and there are no passengers at the stations.</p> <p>The investigation has found the likely cause of the fire to be an electrical short circuit in the vehicle's diesel generator. A storage cage that contained cylinders of acetylene, propane and oxygen was placed next to the diesel generator. The fire service arrived within minutes of being notified, but since there was no danger to human life firefighters were not deployed to the scene due to the risk of explosion. About 40 minutes after the fire started, an acetylene cylinder ruptured and caused a strong blast wave.</p>		
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## 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: <https://havarikommisjonen.no/Bane/Avgitte-rapporter>

Report No.	Rec. No.	Safety recommendation:	Ministry of Transportation and Communication Status report.	Status:
<a href="#">2019/03</a>	01	On 21 May 2018, an explosion and subsequent fire occurred in the engine compartment of the E1 14 locomotive of freight train 5301. The explosion occurred on an open section of line, but could have happened inside a tunnel or at a station, where the consequences would have	<p><b>Status</b> The processing of the safety recommendation has been concluded.</p> <p><b>Grounds</b> CargoNet AS was ordered to review and submit documentation of measures intended to prevent and reduce the consequences of</p>	Closed

		<p>been far more serious. There have been several similar incidents with this type of locomotive in the past, and the measures implemented have not been sufficient to resolve the problems.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority recommend CargoNet AS to review and document preventive and consequence reduction measures in relation to such incidents.</p>	<p>such incidents. The type of regulator concerned was designed in the 1950s, and there have been challenges associated with its construction ever since it was new. In a lengthy letter, CargoNet replied that they have introduced an extensive programme involving frequent maintenance of the voltage regulator. Among other things, flammable loose equipment has been moved from the engine compartment to the driver's cab. There is a general focus on keeping the area free from oil. Of the original 31 locomotives that were built, CargoNet has 13 still in service. This number will be reduced to eleven in 2019. The plan is to phase out these locomotives in the years to come, until ERTMS is implemented in Norway.</p>	
<a href="#">2019/04</a>	02	<p>On Thursday 7 June 2018, a mobile elevating work platform (MEWP) collided and derailed on tunnel track 1 between Ensjø and Carl Berners plass metro stations. During on-tracking at a gradient of 40‰, it started to run away. The operator had not received adequate instruction in how the brake system worked, and operated the MEWP in a way that caused the parking brakes to be deactivated.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request of Infrastructure Managers that they strengthen their supplier</p>	<p><b>Status</b> The processing of the safety recommendation has been concluded.</p> <p><b>Grounds</b> Bybanen AS was ordered to explain how the safety recommendation had been followed up. The report has been distributed in the organisation. A new, detailed procedure has been drawn up for control of the process of using hired rolling stock. The safety recommendation has been reviewed in a safety meeting with the management. The procedures will be reviewed with the operations department.</p> <p>Bane NOR, Sporveien Trikken and Sporveien T-banen were also ordered to describe their follow-up of the</p>	Closed

		<p>management with a view to detecting any lack of safety-critical competence in hired operators of this type of vehicle.</p>	<p>report. Sporveien has identified shortcomings relating to competence requirements for drivers of maintenance vehicles on closed tracks. The work of reviewing and establishing new competence requirements was expected to be completed in autumn 2019. The reports from all undertakings were taken into consideration.</p> <p>In addition, the report was distributed for information to the following undertakings: ABB AS, Borregård AS, Hellig Teigen AS, LKAB Malmtrafik AB, Museums in Akershus (MiA), the Norwegian Industrial Workers Museum, Oslo Havn KF, Buskerud Museum, Sydvaranger Malmtransport AS, Vest-Agder-museet IKS.</p>	
<a href="#">2019/05</a>	03	<p>On 1 July 2018, train 85811 sparked several forest and shrub fires along the Gjøvik line between Sandermosen and Hakadal. When the train was stopped for inspection at Hakadal station, unintended braking was found in one of the freight wagons. The fires along the track were caused by heat and sparks that developed as a result of friction between the wheels and brake blocks. An irregularity had been observed during the pre-departure brake test. It was remedied, but not followed up by an additional test.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority propose that railway undertakings make sure they have procedures in</p>	<p><b>Status</b> The processing of the safety recommendation has been concluded.</p> <p><b>Grounds</b> On 4 July 2018, the Norwegian Railway Administration (NRA) sent a letter to the railway undertakings ordering them to submit descriptions of their measures to prevent ignition of vegetation from train operation, the operational risk assessments that are made in relation to high fire risk etc., and possible assessments of infrastructure-related matters carried out in consultation with Bane NOR in relation to these issues. The railway undertakings are required to document control of the risks their operations pose to their surroundings.</p> <p>The railway undertakings were then ordered to submit descriptions of <i>a)</i> the measures implemented in their own organisation to prevent ignition</p>	Closed

		<p>place for carrying out additional tests in the event that irregularities arise during the brake test.</p>	<p>of vegetation from train operation; <i>b</i>) the operational risk assessments made in relation to train operation under the prevailing circumstances, for example high risk of forest fires; <i>c</i>) whether the prevailing infrastructure conditions are assessed in consultation with Bane NOR.</p> <p>With reference to the above, the NRA sent a letter to the railway undertakings recommending them to study the report from the NSIA and consider the above-mentioned recommendation.</p>	
<a href="#">2019/06</a>	04	<p>On Wednesday 8 August 2018, a snow shed on the Ofotbanen line near Bjørnfjell station was completely destroyed by fire. Bane NOR SF had ordered maintenance to be carried out on the track that night as part of a bigger project. It is probable that that hot work caused the fire. An ore train passed through the snow shed just a few minutes before the fire was reported. The supplier did not comply with fire safety requirements. The client, Bane NOR SF, did not follow up fire safety requirements properly in connection with hot work carried out in the project.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to evaluate whether the fire safety requirements relating to hot work are effective, expedient and possible to control in relation to work carried out by suppliers.</p>	<p>The processing of the safety recommendation is in progress.</p>	Open

<a href="#">2019/06</a>	05	<p>On Wednesday 8 August 2018, a snow shed on the Ofofbanen line near Bjørnfjell station was completely destroyed by fire. Bane NOR SF had ordered maintenance to be carried out on the track that night as part of a bigger project. It is probable that that hot work caused the fire. An ore train passed through the snow shed just a few minutes before the fire was reported. The supplier's safe job analysis did not include hot work in the snow shed, and the use of safe job analyses in the project has not been in line with the intention.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to implement measures intended to improve the quality of their suppliers' work in relation to safe job analyses.</p>	<p><b>Status</b> The processing of the safety recommendations has been concluded.</p> <p><b>Grounds</b> Bane NOR has developed an action plan with a number of measures designed to ensure follow-up of the safety recommendations. Responsibility for follow-up of the action plan is shared between the Infrastructure Management division and the corporate staff. Deadlines have been established for the implementation of the action plan.</p> <p>The incident was reviewed by Infrastructure Management's management team, and a learning sheet was distributed in the organisation to ensure learning across the divisions. Three immediate measures were implemented in 2018. One of them was a campaign to highlight requirements concerning safe job analyses (SJA) and start-up meetings. SJAs will be prepared electronically, in a dedicated app. Better follow-up of SJAs, with fixed target figures for SJAs performed as part of Infrastructure Management's monthly reporting.</p> <p>The reports submitted to Bane NOR were taken into consideration.</p>	Closed

<a href="#">2019/08</a>	06	<p>On Wednesday 18 October 2018, a parked freight car set whose brakes were not properly engaged started to roll uncontrolledly from the Auma branch line on the Rørosbanen line. It is no longer a requirement that brake systems on freight cars be emptied of air and the brakes released. This causes the brakes to be released over time, and the freight cars may start to roll uncontrolledly.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request traffic operators to strengthen their procedures to ensure that the brakes on freight cars are properly engaged when parked.</p>	<p><b>Status</b> The processing of the safety recommendations has been concluded.</p> <p><b>Grounds</b> Operators involved in passenger transport and goods transport were ordered to describe how the safety recommendations have been followed up. A few of them have implemented measures to improve their procedures. A majority replied that their internal guidelines stipulate that the main line must always be emptied of air, but that the report will be distributed in the organisation. All the reports have been taken into consideration.</p>	Closed
<a href="#">2019/09</a>	07	<p>On Thursday 29 November 2018, a lorry driver died in a collision with a passenger train on an unsecured level crossing on the Rørosbanen line. This vehicle type's sight zones, in combination with the fact that the road and the railway were not perpendicular to each other, made it difficult to see the train. For such vehicles, even a slightly more acute angle between the railway tracks and the right side of the car will reduce the line of sight towards the tracks.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Bane NOR SF to implement measures in relation to unsecured level</p>	The processing of the safety recommendation is in progress.	Open



		crossings where heavy vehicles have limited possibility of positioning themselves at a right angle to the railway line at the level crossing.		
<a href="#">2019/10</a>	08	<p>On Monday 17 December 2018 at approximately 03.00, a fire broke out and was followed by an explosion in a welding car containing gas cylinders in the metro tunnel between Ensjø and Helsefyr stations. Sporveien T-banen AS's risk assessments did not address the dangers of placing gas cylinders next to potential ignition sources on the welding car.</p> <p>The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request Sporveien T-banen AS to strengthen its risk assessments to ensure that they include all use and storage of hazardous materials.</p>	The processing of the safety recommendation is in progress.	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.