



ANNUAL REPORT 2019

Norwegian Safety Investigation Authority

Railway Department

Norwegian Safety Investigation Authority Lillestrøm, September 2020

1st edition ISBN 978-82-690725-0-1

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) 1st 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 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

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.





Figure 2: NSIA and the rail sector.

Norwegian Safety Investigation Authority (NSIA) - Organisation

The NSIA organisation as of 31st 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 31st December 2019.

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

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

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
Total:	16	9	6	9	9	8	8	17	8

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	On Friday 2 March 2018, two people died when they were hit by train 2173 approximately 450 metres from the Alna stop in Oslo.	02.03.2018	19.02.2019
	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.		
	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.		
2	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.	12.03.2018	11.03.2019
	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.		

	The AIBN has been unable to identify exactly what caused the derailment, but has nevertheless chosen to highlight three possible explanations. 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.		
3	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. 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. 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. The immediate cause of the incident could not be identified on the basis of an examination of the voltage	29.05.2018	03.04.2019
4	regulator conducted after the incident. 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. 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	07.06.2018	14.05.2019

	incorrect operation, and it is claimed that this will prevent future recurrence of similar incidents. 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.		
5	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.	01.07.2018	27.05.2019
	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.		
	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.		
	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.		
	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		

	with herbicides and to clear the verges and banks of		
	vegetation.		
6	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.	08.08.2018	02.07.2019
	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.		
	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.		
	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.		

7	On 5 September 2018, work on a stormwater drainage	05.09.2018	03.09.2019
	pipe was being carried out underneath the railway	0010712010	0010912019
	tracks by Drammen station. The work was being		
	carried out in connection with a construction project		
	next to the station area		
	noxt to the station area.		
	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		
	the diffing work were suspended. Within a short		
	effecting two main treaks and the Tengeneror side		
	treat. The station was aloged to traffic in the direction		
	track. The station was closed to traffic in the direction		
	of Osio for almost two days due to the repair work.		
	In the Assident Investigation Doard Nerway's view		
	In the Accident Investigation Board Norway's view,		
	dissiplines, but shalloness may arise when they have		
	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.		
0	On Sum have 21 October 2018, form and interventional for intervention	21 10 2019	11.00.2010
ð	On Sunday 21 October 2018, four special freight cars	21.10.2018	11.09.2019
	used to transport minitary material rolled out from the		
	Auma branch line and onto the Rørosbanen line.		
	On 10 and 20 October 2018, three empty freight cor		
	off 19 and 20 October 2018, three empty freight car		
	sets consisting of special neight cars to transport		
	line. The freight care were norted on the Auffa branch		
	with the NATO every area Trident Juncture. On Sunday		
	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 Kørosbanen line. Freight car number three		
	derailed on the derailer and stopped the freight car set		
	from moving further.		
1			

		1	
	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.		
	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.		
	Snow shields are often used in winter to protect the derailers 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.		
9	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	29.11.2018	27.11.2019

	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 metros		
	The train counded its cound signal more than 500		
	The train sounded its sound signal more than 500		
	the large driver could been it. To the train driver the		
	the forty driver could hear it. To the train driver, the		
	forty appeared to be standing still before the level		
	foot driving at a yery law aroad		
	fact driving at a very low speed.		
	The AIBN would like to draw attention to several		
	important factors relating to safety at unsecured level		
	crossings in this investigation.		
	• Ideally, the angle between the road and the		
	railway should be 90° to ensure optimal		
	visibility to both sides.		
	• Bane NOR SF's regulations concerning		
	visibility requirements and design vehicles		
	should place more emphasis on visibility from		
	heavy vehicles.		
	• Bane NOR SF should set visibility		
	requirements for level crossings based on what		
	is assumed to be representative of their daily		
	traffic.		
	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.		
	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.		
10	In the early hours of Monday 17 December 2018, a	17.12.2018	11.12.2019
	fire broke out and was followed by an explosion in a		
	welding car containing gas cylinders in the metro		
	tunnel between Ensjø and Helsfyr 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		

recommendation for Sporveien T-banen AS to
strengthen its risk assessments of fire safety.
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.
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.

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:
2019/03	01	On 21 May 2018, an explosion and subsequent fire occurred in the engine compartment of the El 14 locomotive of freight train 5301. The explosion occurred on an open section of line, but could have happened inside a	Status The processing of the safety recommendation has been concluded. Grounds CargoNet AS was ordered to review and submit documentation of measures intended to prevent	Closed
		the consequences would have	and reduce the consequences of	

		been far more serious. There	such incidents. The type of	
		have been several similar	regulator concerned was designed	
		incidents with this type of	in the 1950s, and there have been	
		locomotive in the past, and	challenges associated with its	
		have not been sufficient to	construction ever since it was new.	
		resolve the problems	In a lengthy letter, CargoNet	
		resorve the proorents.	replied that they have introduced	
		The Accident Investigation	an extensive programme involving	
		Board Norway recommends	frequent maintenance of the	
		that the Norwegian Railway	velte se regulator. Among other	
		Authority recommend	voltage regulator. Allong other	
		document proventive and	things, flammable loose equipment	
		consequence reduction	has been moved from the engine	
		measures in relation to such	compartment to the driver's cab.	
		incidents.	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.	
2019/04	02	On Thursday 7 June 2018, a	Status	Closed
		mobile elevating work	The processing of the safety	
		platform (MEWP) collided	recommendation has been concluded.	
		and defailed on tunnel track 1 between Ensig and Carl	Grounds	
		Berners plass metro stations.	Bybanen AS was ordered to explain	
		During on-tracking at a	how the safety recommendation had	
		gradient of 40‰, it started to	been followed up. The report has	
		run away. The operator had	been distributed in the organisation.	
		not received adequate	A new, detailed procedure has been	
		instruction in how the brake	drawn up for control of the process	
		the MEWP in a way that	of using filted folling stock. The	
		caused the parking brakes to	safety recommendation has been reviewed in a safety meeting with the	
		he desetivated	is viewed in a safety meeting with the	
		be deactivated.	management. The procedures will be	
		be deactivated.	management. The procedures will be reviewed with the operations	
		The Accident Investigation	management. The procedures will be reviewed with the operations department.	
		The Accident Investigation Board Norway recommends	management. The procedures will be reviewed with the operations department.	
		The Accident Investigation Board Norway recommends that the Norwegian Railway	management. The procedures will be reviewed with the operations department. Bane NOR, Sporveien Trikken and	
		The Accident Investigation Board Norway recommends that the Norwegian Railway Authority request of Infrastructure Managers that	management. The procedures will be reviewed with the operations department. Bane NOR, Sporveien Trikken and Sporveien T-banen were also ordered	

		management with a view to detecting any lack of safety- critical competence in hired operators of this type of vehicle.	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. In addition, the report was distributed for information to the following undertakings: ABB AS, Borregård AS, Hellik 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.	
2019/05	03	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. The Accident Investigation Board Norway recommends that the Norwegian Railway Authority propose that railway undertakings make sure they have procedures in	Status The processing of the safety recommendation has been concluded. Grounds 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. The railway undertakings were then ordered to submit descriptions of <i>a</i>) the measures implemented in their own organisation to prevent ignition	Closed

		place for carrying out additional tests in the event that irregularities arise during the brake test.	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. 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.	
2019/06	04	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. 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.	The processing of the safety recommendation is in progress.	Open

2019/06	05	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'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. 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.	Status The processing of the safety recommendations has been concluded. Grounds 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. 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. The reports submitted to Bane NOR were taken into consideration.	Closed

2019/08	06	On Wednesday 18 October	Status	Closed
		2018, a parked freight car set	The processing of the safety	
		whose brakes were not	recommendations has been	
		properly engaged started to	concluded.	
		roll uncontrolledly from the		
		Auma branch line on the	Grounds	
		Rørosbanen line. It is no	Operators involved in passenger	
		longer a requirement that	transport and goods transport were	
		brake systems on freight cars	ordered to describe how the safety	
		be emptied of air and the	recommendations have been	
		brakes released. This causes	followed up. A few of them have	
		the brakes to be released over	implemented measures to improve	
		time, and the freight cars may	their procedures. A majority replied	
		start to roll uncontrolledly.	that their internal guidelines stipulate	
			that the main line must always be	
		The Accident Investigation	emptied of air, but that the report will	
		Board Norway recommends	be distributed in the organisation. All	
		Authority request traffic	the reports have been taken into	
		Authority request traffic	consideration.	
		procedures to ensure that the		
		brakes on freight cars are		
		properly engaged when		
		parked.		
		puncer		
2019/09	07	On Thursday 29 November	The processing of the safety	Open
		2018, a lorry driver died in a	recommendation is in progress.	-
		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		
		will reduce the line of sight		
		towards the tracks		
		The Accident Investigation		
		Board Norway recommends		
		that the Norwegian Railway		
		Authority request Bane NOR		
		SF to implement measures in		
		relation to unsecured level		

		crossings where heavy vehicles have limited possibility of positioning themselves at a right angle to the railway line at the level crossing.		
2019/10	08	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 Helsfyr 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. 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.	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.