



NORSK LUFTAMBULANSE  
NORWEGIAN AIR AMBULANCE



# Incident title: Train collision

## Reporter

**Dr. Marius Rehn**  
HEMS SpR, Assoc Professor

### Role in incident

Participated in immediate rescue operations as winchman on Sea King 330 Sqn, Rygge, RNoAF  
The content of this report is based on the report: Åstaulykken. Norges Offentlige Utredninger 2000: 30. and the personal accounts of the reporter (MR)

## Incident location



## Summary

**Country:**  Norway

On January 4th, 2000, two trains collided at Åsta station between Rudstad and Rena. The locomotive of the southbound train was severely crushed and tilted to its side. The engine car of the northbound train was completely destroyed, the two front carriages derailed, while the remaining cars received minor damage and stayed on the tracks. The crash resulted in an immediate major fire burning the locomotive and spreading through the trains. The collision and the subsequent fire resulted in 19 fatalities, whereas 67 passengers survived the accident with only minor injuries.

**Population density, terrain:** The area is a rural, farmland region with combined forest and cultivated grounds. The scene was situated close to a main road (State Highway 3) and was directly accessible from the road. Distance from scene using roads are: 7,9 km to Rena and 25,5 km to Elverum

# Incident characteristics

1.1. Date of incident \* 2000-01-04

1.1.2. Time (HH:MM) of incident 13:12

1.2. What was the mechanism/external factor that caused the incident? Please tick for all options that apply. \*

- Transport and industrial incident
- Fire

1.4. Is this incident coupled to another incident? \*

No

1.5. What was the location of the incident scene? Please tick for all options that apply. \*

Rural/countryside area

2.1. What was the EMS' mode of access to treat patients at incident scene? Please tick for all options that apply. \*

- Wheeled vehicles
- Air
- Foot

2.2. Please describe any delays of importance

No significant delays have been identified

3.1. What was the EMS' mode of evacuating patients from the incident scene? Please tick for all options that apply. \*

- Wheeled vehicles
- Air

3.2. Please describe any delays of importance

Many patients were trapped between heavy steel structures. It was not possible to hold the fire in the trains back, and consequently too little time to complete the complicated extrication

4.1. Was there damage to infrastructure that affected EMS response? Please tick for all options that apply. \*

No damage

4.2. Please describe any delays of importance

All water needed for fighting the fire had to be transported to the scene by water tank truck.

4.3. How many sites required separate EMS infrastructure (such as on-scene leadership and casualty clearing stations) in the response phase? \*

1

5.1. Which hazards existed for rescuers on scene? Please tick for all options that apply. \*

- Fire
- Collapsing building/s

**5.2. If possible, please specify what the hazard was and how it affected the rescuers on-scene**

It was impossible to hold the fire back from the area with entrapped victims. The trains could also collapse.

**6.1. Which hazards existed for patients on scene? Please tick for all options that apply. \***

- Fire
- Collapsing building/s
- Climate
- Other

**6.1.1. Please specify other \***

Possible other train traffic

**6.2. Please describe any delays of importance**

It was impossible to hold the fire back from the area with entrapped victims. The trains could also collapse. All water needed for fighting the fire had to be transported to the scene by water tank truck. It would have been preferable to have a greater water supply than what was available

## EMS response data

**7.1. Which (if any) of the following actions were implemented by the medical response \***

- Begin to make an assessment of scene safety
- Communicate a situation report to EMS coordinating centre
- Request additional resources

**7.1.1. Were these actions implemented by the first medical responder to arrive on scene? \***

Yes

**7.1.3. Do you have a dedicated on-scene medical commander in your EMS system? \***

Yes

**7.1.4. What kind of personnel assumed the role of on-scene medical commander in this incident?**

This role was not assumed in this incident

**7.2. Give details of which safety actions were initiated (eg. High visibility vests or personal protective equipment for responders)**

Very variable among the different services and to what extent they were participating in active rescue work. Standard PPE include helmets, boots and flame retardant clothing

**7.3. Give details of which tasks were delegated (eg. Ambulance parking officer, Primary triage officer)**

On-scene: The on-scene commander ("skadestedsleder") could not communicate with the on-scene medical commander ("fagleder sanitet") as it was unclear who held that position. A direct command chain from the on-scene commander to the on-scene medical commander was not established.  
The role of medical incident officer ("operativ leder sanitet") was manned by a named person

**8.1. By whom were additional medical staff who responded to the major incident summoned? \***

- EMS coordinating centre
- Unknown

**8.2. Please give details of which additional staff (eg. bronze, silver and gold officers, tactical advisors etc) were summoned, at what time they were summoned and at what time they arrived at their designated posts**

The medical services failed to be represented in the local incident command (lokal redningsentral). This position should have covered by the military regiment doctor from Oppland regiment. The position was vacant at time of incident and the substitute was exempted from being summoned to the local incident command

**9.1. Were medical pre-hospital resources used in the major incident response coordinated by: \***

- EMS coordinating centre?
- Other means?

**9.1.1. Please specify other means**

No on-scene medical commander was established. The medical incident officer ("operativ leder sanitet") coordinated the resources

## Medical command structure

**10.1. Was there a pre-hospital major incident response plan in place? \***

Yes

**10.1.1. If available, please upload the response plan here**

[NOU\\_2010\\_HOD.pdf \(15314k\)](#)

**10.1.2. How did your actual response differ to the plan and what was the consequence of that?**

The incident investigating committee found that the plans instigated by local police, municipality and hospitals were appropriate and functioned well (c.f.uploaded report). The plan made by the National railway service was not satisfactory

## Medical communication

**11.1. Was satisfactory communication achieved between those who needed to communicate during the incident? \***

No

**11.2. Who managed communication at the incident? \***

- EMS coordinating centre
- Other means

**11.2.1. Please specify other means \***

The role of on-scene medical commander was not held. A direct command chain from the on-scene incident

commander to the on-scene medical commander was not established.  
The role of medical incident officer ("operativ leder sanitet") was manned and that person coordinated resource use

## Mode of communications

**12.1. Which mode/s of communication were used during the major incident response? Please tick for all options that apply. \***

- Radio, VHS
- Mobile phone
- Land line telephone

**12.2. Describe any failure to communication and how it affected the response**

The TETRA system was not available during the Åsta incident, but was later implemented

**13.1. Which of the communication systems are in use on a daily basis? \***

- VHF radio
- Mobile phone
- Land line telephone

## EMS response data

**14.1. Please state number of lay persons with no field care education present at the incident scene \***

Unknown

**14.2. Please state number of non-EMS personnel with basic life support (BLS) competency present at the incident scene \***

99 or more

**14.3. Please state number of EMS professionals who were not physicians, but with BLS competency present at the incident scene \***

99 or more

**14.4. Please state number of EMS professionals who were not physicians, but with Advanced Life Support (ALS) competency present at the incident scene \***

99 or more

**14.5. Please state number of on-scene physicians with ALS competency present at the incident scene \***

13

**14.6. Please state number of other type of personnel/persons present at the incident scene \*** 99 or more

**14.6.1. Please specify other type of personnel/persons \***  
Police: 73  
Fire: 70  
Civil defence: 5  
Defence: 203  
Red cross: 29  
Crisis team: 43  
Church: 12  
Rescue dog teams: 2

## Transport

**15.1.1. Number of EMS vehicles available at the incident scene \*** 22

**15.1.2. Number of EMS helicopters available at the incident scene \*** 4

**15.1.3. Number of EMS boats available at the incident scene \*** 0

**15.1.4. Number of other type of EMS units available at the incident scene \*** Unknown

**15.2.1. Number of civilian vehicles available at the incident scene \*** Unknown

**15.2.2. Number of civilian helicopters available at the incident scene \*** 0

**15.2.3. Number of civilian boats available at the incident scene \*** 0

**15.2.4. Number of other type of civilian units available at the incident scene \*** Unknown

**15.3.1. Number of other emergency services vehicles available at the incident scene \*** Unknown

**15.3.2. Number of other emergency services helicopters available at the incident scene \*** 0

**15.3.3. Number of other emergency services boats available at the incident scene \*** 0

**15.3.4. Number of other units available at incident scene \*** Unknown

# Equipment

**16.1. What kind of equipment was available on-scene enabling EMS to do their job? Please tick for all options that apply \***

- Search and rescue equipment
- Support vehicles
- Other type of equipment

**16.1.1. If any equipment was missing please describe**

Access to water for fighting fires was limited

## Patient surge data

**17.1. Number of receiving hospitals \***

2

**17.1.1. Distance from incident scene where pre-hospital medical response was initiated to hospital I by air line in kilometers \***

31-50

**17.1.2. Type of hospital I \***

Major hospital without trauma specialty

**17.1.3. Date of first patient transported to hospital \***

2000-01-04

**17.1.5. Date of last patient transported to hospital \***

2000-01-04

**17.1.8. If you have more details on the patient surge please provide them in the free-text field below**

30 patients were transported to Hedmark Central Hospital and 1 patient to Ullevål Hospital, Oslo

**17.2.1. Distance from incident scene where pre-hospital medical response was initiated to hospital I by air line in kilometers \***

101-200

**17.2.2. Type of hospital \***

Major hospital with trauma specialty

**17.2.3. Date of first patient transported to hospital \***

2000-01-04

**17.2.5. Date of last patient transported to hospital \***

2000-01-04

**17.2.8. If you have more details on the patient surge please provide them in the free-text field below**

Among the 30 patients taken to Hedmark Central Hospital, no one were severely injured. 27 patients were discharged the following days. Two of the three remaining patients were transferred to other hospitals due to geographical belonging. The last patient remained in Hedmark Central Hospital. One patient was treated at Ullevål Hospital, Oslo

<b>18.1. Number of patients with minor injuries *</b>	30
<b>18.2. Please provide the data source from which these numbers originate</b>	Norges offentlige utredninger 2000: 30 Åsta-ulykken, 4. januar 2000
<b>18.3. What was the total number of patients seeking care at a hospital *</b>	30

## Patient characteristics

<b>19.1. What was the estimated number of people at risk from the major incident? (e.g. number of passengers on a train / ship) *</b>	86
<b>19.2. Please explain how the above number of population at risk was reached *</b>	Norges offentlige utredninger 2000: 30 Åsta-ulykken, 4. januar 2000
<b>20.1. Number of males injured *</b>	Unknown
<b>20.2. Number of females injured *</b>	Unknown
<b>20.3. Number of neonates injured *</b>	Unknown
<b>20.4. Number of infants (1 month - 2 years) injured *</b>	Unknown
<b>20.5. Number of young children (2-6 years) injured *</b>	Unknown
<b>20.6. Number of children (6-12 years) injured *</b>	Unknown
<b>20.7. Number of adolescent (12-18 years) injured *</b>	Unknown
<b>20.8. Number of unidentified/missing victims *</b>	0
<b>21.1. What was the number of dead on-scene/dead before any medical care was provided? *</b>	Unknown
<b>21.2. What was the number of dead before arrival at hospital? *</b>	19
<b>21.3. What was the number of deaths of those admitted to the hospital within 30 days of the event? *</b>	0
<b>21.4. Is data collection of thirty day mortality of those admitted to hospital considered complete? *</b>	Yes

**21.5. Was a pre-hospital triage system used? \***

Unknown

## Triage

**22.1. Number of patients in triage category red = immediate upon first assessment on scene \***

Unknown

**22.2. Number of patients in triage category yellow = urgent upon first assessment on scene \***

Unknown

**22.3. Number of patients in triage green = minor/delayed upon first assessment on scene \***

Unknown

**22.4. Number of patients in triage category black = deceased upon first assessment on scene \***

Unknown

**22.5. Number of patients who were triaged in another category than the previous upon first assessment on scene \***

Unknown

**22.5.1. Please describe the other triage categories \***

Triage categories are not described  
13 patients were transported directly to Hedmark Central Hospital  
One patient was transported directly to Ullevål Hospital  
47 patients were transported by bus to local hotel. 17 of these were later transported to Hedmark Central Hospital (30 patients in total)

**22.6. Was there any over- or undertriage? \***

Unknown

## Types of injury

**23.1. Number of patients with blunt trauma \***

Unknown

**23.2. Number of patients with penetrating trauma \***

Unknown

**23.3. Number of patients with burns \***

Unknown

**23.4. Number of patients drowned \***

0

**23.5. Number of patients with asphyxiation \***

Unknown

**23.6. Number of patients with hypothermia \*** Unknown

**23.7. Number of patients with intoxication/poisoning \*** Unknown

**23.8. Number of patients with infectious disease \*** 0

**23.9. Number of patients with acute psychiatric symptoms requiring medical attention \*** Unknown

**23.10. Number of patients with nuclear or radiological injury \*** 0

**23.11. Number of patients with biological injury \*** 0

**23.12. Number of patients with chemical injury \*** 0

**23.13. Number of patients by other type of injury \*** Unknown

**23.13.1. Please specify other types of injury sustained \*** Burns, inhalation, fractures, crush

**23.14. Number of patients admitted to critical care area \*** Unknown

## Key lessons

**24.1. During the pre-hospital emergency medical response to this major incident, were there any particular problems that may be improved in future major incidents? \*** Yes

**24.2. In what area/s did the problem/s occur? \*** The EMS response

**24.6.1. What was the problem encountered? \*** The on-scene incident commander ("skadestedsleder") could not communicate with the on-scene medical commander ("fagleder sanitet") as it was unclear who held that position. A direct command chain from the on-scene incident commander to the on-scene medical commander was not established.

**24.6.2. How did responders attempt to address the problem? \*** Unknown

**24.6.3. How would you recommend** Implement a national inter-disciplinary system for major

**addressing / avoiding a similar problem at a future major incident? \***

incident management (in progress)

**25.1. During the pre-hospital emergency medical response to this major incident, were there any particular successes that may enhance the response to future major incidents? \***

Yes

**25.2. In what area/s did the success/es occur? \***

The EMS response

**25.6.1. What element of the response went particularly well? \***

Many resources, especially HEMS and SAR units participated. EMS response center requested more resources rapidly

**25.6.2. What recommendations would make for the response to future major incidents? \***

Quickly mobilize enough resources. Have predetermined plans for allocation and execution of leadership. Train and coordinate inter-disciplinary management

## EMS background

**26.1. Was an EMS coordinating centre (the centre responsible for dispatching and coordinating EMS units to the scene) available in the affected country/ies at the time of the incident? \***

Yes

**26.2. Is there one common dialling number for all Emergency Services (fire, police, EMS) \***

No

**26.4. Do you have a separate number for each service, does no number exist? \***

Separate number for each service

**26.5. What is the background of staff in the every-day/normal staffing of EMS services? Please tick for all options that apply. \***

- Basic Life Support by EMS professionals, non-physician
- Advanced Life Support by EMS professional, non-physician
- Advanced Life Support On-scene by Physician

**26.6. What other resources are routinely available to assist the EMS service in a normal setting? Please tick for all options that apply. \***

- Fire brigade
- Police
- Voluntary organizations

**26.6.1. Please specify which voluntary**

Røde Kors (Red Cross)

**organizations are available to assist the EMS service in a normal setting \***

Norske redningshunder (Norwegian Rescue Dogs)  
Folkehjelpa (Norwegian People's Aid)  
Fjellredningstjeneste (Alpine Rescue Service)

**26.7. What other resources can be mobilized in a major incident? Please tick for all options that apply. \***

- Fire brigade
- Police
- Voluntary organizations
- Coast guard
- Military
- Civil protection
- Other resources / Unknown

**26.7.1. Please specify which voluntary organizations are available \***

Røde Kors (Red Cross)  
Norske redningshunder (Norwegian Rescue Dogs)  
Folkehjelpa (Norwegian People's Aid)  
Fjellredningstjeneste (Alpine Rescue Service)

**27.1. Does the country where the major incident took place have a trauma network? \***

Yes

**27.2. Are there any regional hospital/s with trauma specialty that exists within the EMS catchment system that was affected by the major incident? \***

Yes

**27.2.1. Please state the number of regional hospital/s with trauma specialty within the EMS catchment system that was affected by the major incident \***

2

**27.3. Are there any regional hospital/s without trauma specialty that exists within the EMS catchment system that was affected by the major incident? \***

No

**27.4. Are there any local hospital/s without trauma specialty that exists within the EMS catchment system that was affected by the major incident? \***

No

**27.5. Are there any other type of hospital/s that exists within the EMS catchment system that was affected by the major incident? \***

No

**27.6. Is there a pre-hospital triage system in use on a daily basis on a national level? \***

No

**27.7. Is a pre-hospital triage system in use on a daily basis on regional levels? \***

Yes, but different triage systems exist in different regions

<b>27.7.1. Please specify which pre-hospital on-scene triage system/s are in use daily on regional levels *</b>	At the time of incident, many local protocols existed
<b>27.8. Is a pre-hospital triage system in use for major incidents on a national level? *</b>	No
<b>27.9. Is a pre-hospital triage system in use for major incidents on regional levels? *</b>	Yes, but different triage systems exist in different regions
<b>27.9.1. Please specify which pre-hospital on-scene triage system/s for major incidents are in use on regional levels: *</b>	At the time of incident, many local protocols existed
<b>27.10. Does the pre-hospital on-scene triage system for major incidents include direct tagging/labelling of patients? *</b>	Unknown
<b>27.11. For those employees within the pre-hospital EMS system who are intended to work on-scene: is major incident training mandatory? *</b>	Unknown
<b>27.12. Does the region have a major incident plan? *</b>	Yes
<b>27.12.1. How often is the major incident plan tested? *</b>	Unknown
<b>27.13. Is there an in-hospital major incident response plan for each hospital receiving patients? *</b>	Yes
<b>27.14. Is there a regional major incident response plan incorporating all emergency services within the area that the the major incident occurred? *</b>	Unknown

## Additional files upload

<b>28.1. Time of events document</b>	<a href="#">Timeline-of-events_sta.docx (24k)</a>
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