



NORSK LUFTAMBULANSE  
NORWEGIAN AIR AMBULANCE



# Incident title: Disaster exercise

## Reporter

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**Role in incident:** Author works as Chief of Medicine for ground EMS units in health care district and as HEMS doctor in FinnHEMS 50. The author did not directly participate in the exercise.

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## Incident location



## Summary

Country:  Finland

The disaster exercise was organised on the coast of Oulu, the largest city in northern Finland with 196,382 inhabitants. There is a university hospital located in Oulu and it functions as a major trauma center for the entire northern part of Finland with about 750,000 inhabitants. The land area of the catchment area is about 50% of the land area in Finland. Oulu is known as a technology city and is also an important university city (Oulu University).

Oulu airport is located in Oulunsalo, about 15 kilometres from Oulu center. It is the second largest airport in Finland. The road-network is well-developed and the university hospital is easily accessed by ground ambulance. Hailuoto is the third largest island of Finland with a population about 1000 inhabitants. Hailuoto is accessed by ferry and transport from Hailuoto center to Oulu center (ferry and

driving time by car) is about one hour. The organisation responsible for administration of pre-hospital emergency medical services is Oulu University hospital (Northern Ostrobothnia Health Care District). Emergency medical services are operated by Fire Brigades (urgent missions) and privately owned ambulances (non-urgent missions). The physician-staffed helicopter emergency medical services are operated by FinnHEMS. The only HEMS unit, FinnHEMS 50, has its base in Oulu airport. EMS have four tiers: first responders (fire brigade), basic- and advanced level ambulances and FinnHEMS 50. Field commander on duty has the operational commando for EMS- units on daily basis. Field commanders have education as paramedics. Dispatch center has catchment area for the whole of the North of Finland. All 112 calls are answered by specially-educated operators, units are dispatched based on risk evaluation and operational procedures.

## EMS background

**1. Was an EMS coordinating centre (the centre responsible for dispatching and coordinating EMS units on-scene) available in the affected country/ies before the incident? \***

Yes

**2. Does a dialling number to Emergency Services exist? \***

Yes

**2-1. Is there a single and unique dialling number to EMS or one common dialling number for all Emergency Services (fire, police and EMS)? \***

One common dialling number for all Emergency Services

**3. Can a major incident be declared directly by the person receiving an alert at the EMS coordinating centre? \***

No

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

**5. 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
- Coast guard

**6. 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

**6-1. Please specify which voluntary organizations are available \***

Red Cross, Voluntary maritime rescue associations (Finnish Lifeboat Institution), Voluntary rescue services (Vapepa)

**6-2. Please specify if the voluntary organizations available require authorization from police or other authorities to participate in the response phase \***

Authorization is required from the incident commander.

**7-1. Are there any regional hospital/s with trauma specialty that exists within the EMS catchment system that was affected by the major incident? \***

Yes

**7-1.1. Please state the number of regional hospital/s with trauma specialty within the EMS catchment system that was affected by the major incident \***

1

**7-1.2. Is the number given above exact or estimated? \***

Exact

**7-2. Are there any regional hospital/s without trauma specialty that exists within the EMS catchment system that was affected by the major incident? \***

No

**7-3. Are there any local hospital/s without trauma specialty that exists within the EMS catchment system that was affected by the major incident? \***

No

**7-4. Are there any other type of hospital/s that exists within the EMS catchment system that was affected by the major incident? \***

No

**8-1. Is a pre-hospital on-scene triage system in use daily on a national level? \***

Yes

**8-1.1. Please specify which pre-hospital on-scene triage system/s are in use daily on a national level: \***

START

**8-2. Is a pre-hospital on-scene triage system in use daily on regional levels? \***

Yes

**8-2.1. Please specify which pre-hospital on-scene triage system/s are in use daily on regional levels: \*** START

**9-1. Is a pre-hospital on-scene triage system for major incidents in use on a national level? \*** Yes

**9-1.1. Please specify which pre-hospital on-scene triage system/s for major incidents are in use on a national level: \*** START

**9-2. Is a pre-hospital on-scene triage system for major incidents in use on regional levels? \*** Yes

**10. Does the pre-hospital on-scene triage system for major incidents include direct tagging/labelling of patients? \*** Yes

**11. For those employees within the pre-hospital EMS system who are intended to work on-scene: is major incident training mandatory? \*** Yes

## Incident characteristics

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

**12-3. Is this incident coupled to another incident? \*** Yes

**12-3.1. Please specify which other incident this major incident is coupled to: \*** The first scenario was the unsuccessful landing of a training plane "VINKA" (one person involved). The second scenario started, when a large route plane, Airbus A320 (118 passengers/crew) had to wait before landing. The Airbus wing had a minor collision with a fighter plane. The Airbus then had to perform an emergency landing on the sea. At the time, the whereabouts of the fighter plane (2 persons) was unknown.

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

- Rural/countryside area
- Offshore/maritime (ocean, river, lake)

**14-1. Did the EMS make use of wheeled vehicles to access patients for treatment at incident scene? \***

Yes

**14-1.1. Were there any delays in accessing patients by wheeled vehicles? \***

Yes

**14-1.2. Please describe reasons for delay, which could include reasons such as: security issues, congested roads due to traffic, weather conditions: \***

Patients were delivered to the triage point by boats and helicopters.

**14-2. Did the EMS make use of railway system to access patients for treatment at incident scene? \***

No

**14-3. Did the EMS make use of air transport to access patients for treatment at incident scene? \***

Yes

**14-3.1. Were there any delays in accessing patients by air? \***

Yes

**14-3.2. Please describe reasons for delay, which could include reasons such as: security issues, congested roads due to traffic, weather conditions: \***

Only two helicopters in use.

**14-4. Did the EMS make use of boat transport to access patients for treatment at incident scene? \***

No

**14-5. Did the EMS access patients for treatment at incident scene by foot? \***

No

**14-6. Did the EMS make use of other means to access patients for treatment at incident scene? \***

No

**15-1. Did the EMS make use of wheeled vehicles to evacuate patients from the incident scene? \***

Yes

**15-1.1. Were there any delays in evacuating patients by wheeled vehicles? \***

No

**15-2. Did the EMS make use of railway system to evacuate patients from the incident scene? \***

No

**15-3. Did the EMS make use of air transport to evacuate patients from**

Yes

**the incident scene? \***

**15-3.1. Were there any delays in evacuating patients by air? \*** No

**15-4. Did the EMS make use of boat transport to evacuate patients from the incident scene? \*** Yes

**15-4.1. Were there any delays in evacuating patients by boat? \*** No

**15-5. Did the EMS evacuate patients from the incident scene on foot? \*** No

**15-6. Did the EMS make use of other means to evacuate patients from the incident scene? \*** Yes

**15-6.1. Please describe how patients were evacuated by other means? \*** By helicopter

**15-6.2. Were there any delays in evacuating patients as specified in 15-6.1.? \*** Yes

**15-6.3. Please describe reasons for delay, which could include reasons such as: security issues, congested roads due to traffic, weather conditions: \*** Only 2 helicopters (one HEMS and one SAR) and 6 boats were available. This made evacuation of a large number of people very difficult

**16-1. Was there damage to electrical power that affected EMS response? \*** No

**16-2. Was there damage to telecommunication that affected EMS response? \*** No

**16-3. Was there damage to other modes of communications that affected EMS response? \*** No

**16-4. Was there damage to road that affected EMS response? \*** No

**16-5. Was there damage to rail that affected EMS response? \*** No

**16-6. Was there damage to the EMS or health structure that affected EMS response? \*** No

**16-7. Was there other damage to infrastructure that affected EMS response? \*** No

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

2

**17-1. Is the number given above exact or estimated? \***

Exact

**18-1. Was ongoing violence or risk of further violence a threat to rescuers on scene? \***

No

**18-2. Was fire a threat to rescuers on scene? \***

No

**18-3. Was collapsing building/s a threat to rescuers on scene? \***

No

**18-4. Was climate a threat to rescuers on scene? \***

Yes

**18-4.2. Please specify the climate and how this affected the rescuers on scene \***

Strong wind from the sea.

**18-5. Was lack of electricity a threat to rescuers on scene? \***

No

**18-6. Was lack of water/food a threat to rescuers on scene? \***

No

**18-7. Were other hazard/s a threat to rescuers on scene? \***

No

**19-1. Was on going violence or risk of further violence a threat to patients on scene? \***

No

**18-2. Was fire a threat to patients on scene? \***

No

**19-3. Was collapsing building/s a threat to patients on scene? \***

No

**19-4. Was climate a threat to patients on scene? \***

Yes

**19-4.2. Please specify the climate and how this affected the patients on scene \***

Strong wind and falling into the water (hypothermia)

**19-5. Was lack of electricity a threat to patients on scene? \***

No

**19-6. Was lack of lack of water/food a threat to patients on scene? \***

No

**19-7. Were other hazard/s a threat to**

Yes

patients on scene? \*

**19-7.1. Please specify the hazards and how this affected the patients on scene \***

Hoist operations, performed by helicopters, affected the patients (downwash, cold, wind, noise).

## EMS response data

**20-1. Did the first medical team to arrive on-scene assume the role of medical commander? \***

Yes

**Date**

2015-09-24

**Hour**

10

**Minutes**

02

**20-1.2. Is the time given above exact or estimated? \***

Exact

**20-2. Did the first medical team to arrive on-scene begin to make an assessment of scene safety? \***

Yes

**Date**

2015-09-24

**Hour**

10

**Minutes**

07

**20-2.2. Is the time given above exact or estimated? \***

Exact

**20-3. Did the first medical team to arrive on-scene communicate a situation report to EMS coordinating centre? \***

Yes

**20-3.1. Was this done according to a pre-existing system or mnemonic? (E.g. METHANE)? \***

Yes

**20-3.2. Please describe the mnemonic used in the report to EMS coordinating centre \***

Pre-existing system is that the field commander declares the major incident and instructs the officers to start triage. Later, officers for treatment and transport sections are assigned. The field commander contacts the dispatch center to get more resources and communicates with other authorities continuously.

**Date**

2015-09-24



<b>Hour</b>	10
<b>Minutes</b>	15
<b>20-3.4. Is the time given above exact or estimated? *</b>	Estimated
<b>20-4. Did the first medical team to arrive on-scene request additional resources? *</b>	Yes
<b>20-4.1. Please specify what type of resources were requested *</b>	The field commander ensured that helicopters, ambulances and medical teams from hospital had been dispatched due to local protocol.
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	33
<b>20-4.3. Is the time given above exact or estimated? *</b>	Exact
<b>20-5. Did the first medical team to arrive on-scene initiate any safety related actions? *</b>	Yes
<b>20-5.1. Please describe the safety related actions initiated by the first medical team to arrive on-scene *</b>	Landing sites for helicopter were declared in co-operation by rescue services.
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	45
<b>20-5.3. Is the time given above exact or estimated? *</b>	Exact
<b>20-6. Did the first medical team to arrive on-scene delegate responsibility for other tasks on scene? *</b>	Yes
<b>20-6.1. Please describe which other tasks the first medical team to arrive on-scene delegated responsibility for *</b>	One of the medical teams (ambulance) was allocated the task of being triage officer, another officer was allocated for the treatment point (HEMS physician) and one for as transport officer.
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	38
<b>20-6.3. Is the time given above exact or estimated? *</b>	Exact

<b>20-7. What kind of medical personnel assumed the role of on-scene medical commander? *</b>	During the scenario, a field commander unit was staffed by two paramedics with "field commander" competence. The field commander on duty functions as medical incident commander due to local systemic procedure. This was important as it made communication easier and avoided work over-load for the medical incident commander.
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	33
<b>21-1. Were additional medical staff who responded to the major incident summoned by: *</b>	On-scene medical commander
<b>21-2. Were medical pre-hospital resources used in the major incident response coordinated by: *</b>	On-scene medical commander
<b>21-3. Who was responsible for briefing medical staff of the situation during the pre-hospital major incident medical response? *</b>	<ul style="list-style-type: none"> <li>• On-scene medical commander</li> <li>• Other</li> </ul>
<b>21-3.1. Please specify who else was responsible for briefing medical staff during the response *</b>	Officer for the treatment point was responsible for briefing of medical staff providing pre-hospital care of the patients.
<b>22-1. Was communication achieved between medical personnel at the incident? *</b>	Yes
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	04
<b>22-1.2. Was this communication managed by: *</b>	<ul style="list-style-type: none"> <li>• On-scene medical commander</li> <li>• EMS coordinating centre</li> </ul>
<b>22-2. Was communication achieved between the different task forces involved (police, fire fighters, health, political leaders etc)? *</b>	Yes, between some of the task forces
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	10
<b>22-2.3. Please specify between whom it was/was not achieved and between</b>	It was achieved between EMS, Fire Brigade (rescue services), Police and Coast Guard.

<b>whom it should have been achieved *</b>	
<b>22-3. Was communication achieved between the scene and the EMS coordinating centre? *</b>	Yes
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	02
<b>22-3.2. Was this communication managed by: *</b>	<ul style="list-style-type: none"> <li>• On-scene medical commander</li> <li>• EMS coordinating centre</li> </ul>
<b>22-4. Was communication achieved between the scene and receiving hospital/s? *</b>	Yes
<b>Date</b>	2015-09-24
<b>Hour</b>	10
<b>Minutes</b>	33
<b>22-4.2. Was this communication managed by: *</b>	On-scene medical commander
<b>22-5. Was communication achieved between medical response personnel and the general public? *</b>	No
<b>22-5.4. Why was communication not achieved? *</b>	While this incident occurred on the sea, Coast Guard was responsible for information to general public.
<b>23. Describe the structure of the medical incident command during the major incident *</b>	On scene medical incident command was located in the same place as where the police and rescue services had their command point. This made the direct communications between commanders possible. Medical incident command consisted of on duty field commander and his colleague, who worked as assistant but had the same competence level.
<b>24-1. Was VHF radio used for communication during the major incident response? *</b>	No
<b>24-2. Was Tetra radio used for communication during the incident response? *</b>	Yes
<b>24-2.1. Was there any failures with the Tetra radio communication during the incident response? *</b>	No
<b>24-3. Were other type of radios used for communication during the</b>	No

**incident response? \***

**24-4. Were mobile phones used for communication during the incident response? \*** Yes

**24-4.1. Were there any mobile phone failures during the incident response? \*** No

**24-5. Was land line telephone used for communication during the incident response? \*** No

**24-6. Was communication to the public (such as television, social media) used during the incident response? \*** No

**24-7. Were other means of communication used during the incident response? \*** No

**25. Are the same communication systems mentioned above in use on a daily basis? \***

- Tetra radio
- Mobile phone
- Communication to the public (such as television, social media)?

**Date \*** 2015-09-24

**Hour \*** 10

**Minutes \*** 00

**26-1.1. Is the time given above exact or estimated? \*** Exact

**Date \*** 2015-09-24

**Hour \*** 10

**Minutes \*** 02

**26-2.1. Is the time given above exact or estimated? \*** Exact

**Date \*** 2015-09-24

**Hour \*** 10

**Minutes \*** 20

**26-3.1. Is the time given above exact or estimated? \*** Exact

**Date \*** 2015-09-24

<b>Hour *</b>	10
<b>Minutes *</b>	43
<b>26-4.1. Is the time given above exact or estimated? *</b>	Exact
<b>Date *</b>	2015-09-24
<b>Hour *</b>	10
<b>Minutes *</b>	02
<b>26-5.1. Is the time given above exact or estimated? *</b>	Exact
<b>Date *</b>	2015-09-24
<b>Hour *</b>	10
<b>Minutes *</b>	20
<b>26-6.1. Is the time given above exact or estimated? *</b>	Exact
<b>Date *</b>	2015-09-24
<b>Hour *</b>	12
<b>Minutes *</b>	04
<b>26-7.1. Is the time given above exact or estimated? *</b>	Exact
<b>Date *</b>	2015-09-24
<b>Hour *</b>	16
<b>Minutes *</b>	02
<b>26-8.1. Is the time given above exact or estimated? *</b>	Exact
<b>Date *</b>	2015-09-24
<b>Hour *</b>	12
<b>Minutes *</b>	26
<b>26-9.1. Is the time given above exact or estimated? *</b>	Exact
<b>Date *</b>	2015-09-24
<b>Hour *</b>	16
<b>Minutes *</b>	24
<b>26-10.1. Is the time given above exact or estimated? *</b>	Exact

<b>27-1. Were there any delays in the timings mentioned in question 26? *</b>	Yes
<b>27-1.1. Please describe delays in timings</b>	The major delay resulted from the fact that the accident was on the sea. The patients had to be evacuated by helicopters or boats to the primary triage point.
<b>28-1. Were lay persons with no field care education present? *</b>	No
<b>28-2. Were non-EMS personnel with basic life support (BLS) competency present? *</b>	Yes
<b>28-2.1. Please state number of persons/personnel *</b>	15
<b>28-2.2. Is the number given above exact or estimated? *</b>	Estimated
<b>28-3. Were EMS professionals who were not physicians, but with BLS competency present? *</b>	Yes
<b>28-3.1. Please state number of persons/personnel *</b>	11
<b>28-3.2. Is the number given above exact or estimated? *</b>	Exact
<b>28-4. Were EMS professionals who were not physicians, but with Advanced Life Support (ALS) competency present? *</b>	Yes
<b>28-4.1. Please state number of persons/personnel *</b>	12
<b>28-4.2. Is the number given above exact or estimated? *</b>	Exact
<b>28-5. Were on-scene physicians with ALS competency present? *</b>	Yes
<b>28-5.1. Please state number of persons/personnel *</b>	3
<b>28-5.2. Is the number given above exact or estimated? *</b>	Estimated
<b>28-6. Were other type of personnel/persons present at the incident scene? *</b>	Yes
<b>28-6.1. Please specify other *</b>	There were personnel in fire brigade who were BLS-competent.
<b>28-6.2. Please state number of</b>	15

persons/personnel \*

**28-6.3. Is the number given above exact or estimated? \*** Estimated

**29-1. EMS: Vehicle? \*** Yes

**Number** 12

**Date** 2015-09-24

**Hour** 10

**Minutes** 20

**29-2. EMS: Helicopter? \*** Yes

**Number** 1

**Date** 2015-09-24

**Hour** 10

**Minutes** 15

**29-3. EMS: Boat? \*** No

**29-4. EMS: Other? \*** No

**29-5. Civilian: Vehicle? \*** Yes

**Number** 2

**Date** 2015-09-24

**Hour** 12

**Minutes** 25

**29-6. Civilian: Helicopter? \*** No

**29-7. Civilian: Boat? \*** No

**29-8. Civilian: Other? \*** No

**29-9. Other emergency services: Vehicle? \*** No

**29-10. Other emergency services: Helicopter? \*** Yes

**Number** 2

**Date** 2015-09-24

**Hour** 10

**Minutes** 30

**29-11. Other emergency services:** Yes

**Boat? \***

**Number** 6

**Date** 2015-09-24

**Hour** 10

**Minutes** 30

**29-12. Other emergency services:  
Other means of transport? \*** No

**30-1. Was there any equipment  
available on-scene to provide care  
for patients exposed to hazardous  
materials? \*** No

**30-2. Was there any search and  
rescue equipment available on-  
scene? \*** Yes

**30-2.1. Please specify equipment \*** 2 SAR- helicopters and 6 boats.

**Date** 2015-09-24

**Hour** 10

**Minutes** 30

**30-3. Was there any alpine/rescue  
equipment available on-scene? \*** Yes

**30-3.1. Please specify equipment \*** SAR- helicopters and boats from Coast Guard.

**Date** 2015-09-24

**Hour** 10

**Minutes** 30

**30-4. Was equipment from the coast  
guard available on-scene? \*** Yes

**30-4.1. Please specify equipment \*** 2 SAR- helicopters, 2 boats

**Date** 2015-09-24

**Hour** 10

**Minutes** 30

**30-5. Were support vehicles  
available on-scene? \*** Yes

**30-5.1. Please specify equipment \*** Volunteers, 4 boats

**Date** 2015-09-24

**Hour** 11



<b>Minutes</b>	00
<b>30-6. Was other type of equipment available on-scene enabling EMS to do their job? *</b>	No
<b>31. Number of receiving hospitals *</b>	1
<b>32-1.1. Distance from incident scene where pre-hospital medical response was initiated to hospital I by air line in kilometers *</b>	11-30
<b>32-1.2. Type of hospital I *</b>	Major hospital with trauma specialty
<b>32-1.3. Were patients conveyed to this hospital by EMS? *</b>	Yes
<b>32-1.3.1. Were six or more patients conveyed to this hospital by EMS? *</b>	Yes
<b>32-1.3.2. Numbers of patients conveyed to this hospital by EMS *</b>	19
<b>32-1.4. Were patients conveyed to this hospital by non-EMS? *</b>	No
<b>32-1.5. Were patients conveyed in the first hour after the incident? *</b>	No
<b>32-1.6. Were patients conveyed between 1 and 2 hours after the incident? *</b>	No
<b>32-1.7. Were patients conveyed between 2 and 3 hours after the incident? *</b>	Yes
<b>32-1.7.1. Were six or more patients conveyed between 2 and 3 hours after the incident? *</b>	No
<b>32-1.8. Were patients conveyed between 3 and 4 hours after the incident? *</b>	Yes
<b>32-1.8.1. Were six or more patients conveyed between 3 and 4 hours after the incident? *</b>	Yes
<b>32-1.8.2. Number of patients conveyed between 3 and 4 hours after the incident *</b>	7
<b>32-1.9. Were patients conveyed after 4 hours or more following the incident? *</b>	Yes

**32-1.9.1. Were six or more patients conveyed after 4 hours or more following the incident? \*** Yes

**32-1.9.2. Number of patients conveyed after 4 hours or more following the incident \*** 12

**32-1.10. Does a pre-existing patient distribution plan exist? \*** Yes

**32-1.11. Please explain any pre-existing patient distribution plan/s and give any comments on decision making, delays etc. \*** According to the local protocol, all patients should be transported to the Oulu University hospital.

## Patient characteristics

**33-1. Were more people than those who were directly affected at risk from incident (e.g number of passengers on a train/ship)? \*** Yes

**33-1.1. Pertaining to question 33-1; were there more than six people at risk from the incident? \*** No

**34-1. Gender: Were any males affected? \*** Yes

**34-1.1. Were six or more males affected? \*** Yes

**34-1.2. Number of males affected \*** 7

**34-1.3. Is the number given above exact or estimated? \*** Exact

**34-2. Gender: Were any females affected? \*** Yes

**34-2.1. Were six or more females affected? \*** Yes

**34-2.2. Number of females affected \*** 12

**34-2.3. Is the number given above exact or estimated? \*** Exact

**34-3. Were there any unidentified/missing victims? \*** No

**35-1. Were there any neonates (0-30 days) requiring attention of EMS? \*** No

**35-2. Were there any infants (1 month-2 years) requiring attention of EMS? \*** No

**35-3. Were there any young children (2-6 years) requiring attention of EMS? \*** No

**35-4. Were there any children (6-12 years) requiring attention of EMS? \*** No

**35-5. Were there any adolescent (12-18 years) requiring attention of EMS? \*** No

**36-1. Were there any dead on-scene/dead before any medical care was provided? \*** Yes

**36-1.1. Were six or more dead on-scene? \*** Yes

**36-1.2. Number of dead on-scene \*** 33

**36-1.3. Is the number given above exact or estimated? \*** Exact

**37-1. Were there any dead before arrival at hospital (initial treatment started, but dead before transport to hospital)? \*** No

**38-1. Were there any dead upon arrival at hospital? \*** No

**39-1. Were there any deaths of those admitted to the hospital within 30 days of the event? \*** No

**39-2. Is data collection of thirty day mortality of those admitted to hospital considered complete? \*** No

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

**40-1. Who performed the pre-hospital on-scene triage? \***

- Physician
- EMS personnel

**40-2. Which triage system was used?** START

<b>*</b>	
<b>41-1. Were there any patients in category red = immediate? *</b>	Yes
<b>41-1.1. Were there six or more patients in category red? *</b>	Yes
<b>41-1.2. Number of patients in category red *</b>	11
<b>41-1.3. Is the number given above exact or estimated? *</b>	Exact
<b>41-1.4. Please provide the data source from which these numbers originate *</b>	Notes taken during the field exercise
<b>41-2. Were there any patients in category yellow = urgent? *</b>	Yes
<b>41-2.1. Were there six or more patients in category yellow? *</b>	Yes
<b>41-2.2. Number of patients in category yellow *</b>	9
<b>41-2.3. Is the number given above exact or estimated? *</b>	Exact
<b>41-2.4. Please provide the data source from which these numbers originate *</b>	Notes taken during the field exercise
<b>41-3. Were there any patients in category green = minor/delayed? *</b>	Yes
<b>41-3.1. Were there six or more patients in category green? *</b>	Yes
<b>41-3.2. Number of patients in category green *</b>	65
<b>41-3.3. Is the number given above exact or estimated? *</b>	Exact
<b>41-3.4. Please provide the data source from which these numbers originate *</b>	Notes taken during the field exercise
<b>41-4. Were there any patients in category black = deceased? *</b>	Yes
<b>41-4.1. Were there six or more patients in category black? *</b>	Yes
<b>41-4.2. Number of patients in category black *</b>	33

<b>41-4.3. Is the number given above exact or estimated? *</b>	Exact
<b>41-4.4. Please provide the data source from which these numbers originate *</b>	Notes taken during the field exercise
<b>41-5. Were there any patients in other categories than those mentioned above? *</b>	No
<b>42-1. Were there patients with minor injuries? Here defines as: patients attended by EMS or medical staff at a primary health care facility, but not admitted to hospital *</b>	Yes
<b>42-1.1. Were there six or more patients with minor injuries? *</b>	Yes
<b>42-1.2. Number of patients with minor injuries *</b>	65
<b>42-1.3. Is the number given above exact or estimated? *</b>	Exact
<b>42-1.4. Please provide the data source from which these numbers originate *</b>	Notes taken during the field exercise
<b>43. Was there any over-or undertriage? *</b>	Yes
<b>43-1. What was the % of overtriage and % of undertriage?</b>	No exact method to measure this was available.
<b>43-2. Please state any definition for triage precision calculations as well as the data source</b>	Notes taken during the field exercise
<b>44-1. Did more than six patients seek care at a hospital? *</b>	No
<b>44-2. Was the total number of patients admitted to hospital six or more? *</b>	Yes
<b>44-2.1. What was the total number of patients admitted to hospital? *</b>	19
<b>44-2.2. Is the number given above exact or estimated? *</b>	Exact
<b>44-2.3. Please provide the data source from which these numbers originate *</b>	Notes taken during the field exercise
<b>44-3. Were six or more of the admitted patients discharged within</b>	Unknown

**24 hours? \***

**45-1. Did any patients sustain blunt trauma? \*** Yes

**45-1.1. Did six or more patients sustain blunt trauma? \*** Yes

**45-1.2. Number of patients with blunt trauma \*** 11

**45-1.3. Is the number given above exact or estimated? \*** Estimated

**45-1.4. Please provide the data source from which these numbers originate \*** Notes taken during the field exercise

**45-2. Did any patients sustain penetrating trauma? \*** Yes

**45-2.1. Did six or more patients sustain penetrating trauma? \*** No

**45-3. Did any patients sustain burns? \*** Yes

**45-3.1. Did six or more patients sustain burns? \*** No

**45-4. Did any patients sustain drowning? \*** Yes

**45-4.1. Did six or more patients sustain drowning? \*** No

**45-5. Did any patients sustain asphyxiation? \*** No

**45-6. Did any patients sustain hypothermia? \*** No

**45-7. Did any patients sustain intoxication/poisoning? \*** No

**45-8. Did any patients sustain infectious disease? \*** No

**45-9. Did any patients sustain acute psychiatric symptoms? \*** Yes

**45-9.1. Did six or more patients sustain acute psychiatric symptoms? \*** Yes

**45-9.2. Number of patients with acute psychiatric symptoms \*** 33

**45-9.3. Is the number given above** Exact

**exact or estimated? \***

**45-9.4. Please provide the data source from which these numbers originate \***

Notes taken during the field exercise

**45-10. Did any patients sustain nuclear or radiological injury? \***

No

**45-11. Did any patients sustain biological injury? \***

No

**45-12. Did any patients sustain chemical injury? \***

No

**45-13. Did any patients sustain other type of injury? \***

No

**46-1. Were any patients admitted to critical care area? \***

Yes

**46-1.1. Were six or more patients admitted to critical care area? \***

Yes

**46-1.2. Number of patients admitted to critical care area \***

18

**46-1.3. Is the number given above exact or estimated? \***

Estimated

**46-1.4. Please explain how you define critical care \***

Critical care area is emergency operation or intensive care unit.

**46-1.5. Please provide the data source from which these numbers originate \***

Notes taken during the field exercise

## Key lessons

**47. 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

**47-1. In what area/s did the problem/s occur? \***

- Nature of the incident itself
- The EMS response

**47-3.1. What was the problem encountered? \***

Insufficient capacity to evacuate the patients from the remote locations (sea etc.) The capacity of helicopters in transport was not recognised. In the study area, HEMS is primarily used to transport physician and hems crew member to the critically injured patient. HEMS transports are performed seldom. During the exercise, it was observed, that helicopters could have transported many patients (flight time only a few minutes to the hospital vs. driving time over 15 minutes). While firemen, available on scene, were used as drives in ambulances, the regular ambulance crew was separated. This caused some disorientation; level of ambulances was difficult to determine and the number of available EMS- providers were difficult to find out. However, triage, fast transport of severely injured patients and basic life support are the most important things in mass casualties.

**47-3.2. How did responders attempt to address the problem? \***

More resources were called in and they co-operated with the Coast Guard and fire brigade. Briefings were held between officers.

**47-3.3. How would you recommend addressing / avoiding a similar problem at a future major incident? \***

To train EMS providers to work in this positions.

**47-4.1. What was the problem encountered? \***

The problem was insufficient capacity to evacuate patients from sea.

**47-4.2. How did responders attempt to address the problem? \***

A primary triage point was established in a large factory house on the beach, while waiting for patients to arrive.

**47-4.3. How would you recommend addressing / avoiding a similar problem at a future major incident? \***

It is a challenge to evacuate patients from sea. It may be beneficial to have a plan for evacuation points along the coast.

**48. 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

**48-1. In what area/s did the success/es occur? \***

Issues related to pre-incident situation in the country/region

**48-1.1. What element of the response went particularly well? \***

During the last year, a lot of effort has been put into training EMS in communication during major incidents. There have been mandatory trainings for all EMS providers during the last year.

**48-1.2. What recommendations would you make for the response to future major incident responses? \***

There should be plans for pre-defined scenarios, for example, how the EMS should act in flight accidents. In addition, the role of HEMS and HEMS crew (on duty and called from home) should be defined.