

Norwegian Emergency Towing Service – Past – Present and Future

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ABSTRACT: The Norwegian Coastal Administration (NCA) is an agency of the Norwegian Ministry of Transport and Communications, and is responsible for services related to maritime safety, maritime infrastructure, transport planning and efficiency, and emergency response to acute pollution and drifting vessels. NCA has five regional Vessel Traffic Service centres. Of those, Vardø VTS has the special task of monitoring high-risk maritime traffic in Norwegian territorial waters, including the sea areas around Svalbard. Based on the history of ship incidents in Norwegian waters and lack of commercial tug resources in Northern Norway and the Svalbard area, the government decided in 2005 to establish a national emergency towing service. The establishment and coordination of this service was assigned to the Norwegian Coastal Administration. This paper briefly describes the development of the Norwegian Emergency Towing Service (NETS), how the service has changed over the years and plans for the coming years. Some cases involving emergency towing vessels are described. The paper also reviews the development of a national competence plan for senior officers on vessels employed by the Norwegian Emergency Towing Service.

1 INTRODUCTION

Based on shipping accidents in Norwegian waters in the 1990s, the government launched a study to map groundings and drifting vessel incidents. Possible means of reducing the number of such cases were investigated. One measure was the establishment of a national emergency towing service to prevent drifting vessels from grounding in coastal waters. Another was to improve oil-spill preparedness to mitigate the consequences of spills from vessels that had grounded or were involved in collisions in coastal waters. This paper describes the establishment of the Norwegian Emergency Towing Service (NETS), describes individual cases involving vessels in this system, the training package for senior officers on vessels chartered for the service and finally, the

approved plan for the future organisation of the NETS.

2 TRAFFIC STATISTICS AND NUMBERS OF DRIFTING VESSELS

The Norwegian Coastal Administration (NCA) collects and analyses vessel movements in Norwegian waters. Information is available on the NCA website Havbase.no. A brief description of the content and applications of [Havebase.no](http://Havbase.no) has been drawn up by NCA (NCA, 2014).

Figures 1-2 (taken from Havbase.no) show the traffic crossing the international marine boundary lines at Nordkapp (North Cape) and the

Norwegian/Russian border in 2018 by vessel type. Since November 2018, a large-scale LNG transfer operation takes place close to Honningsvåg, Finnmark county. Ice strengthened LNG vessels carrying Yamal LNG transfer their cargo to conventional LNG vessels for delivery of the reloaded cargo to customers in North-West Europe. It is also worth to mention that the size of cruise vessels visiting Northern Norway and Svalbard is increasing. This will, if emergency towing is needed, require larger towing vessels to control the motion of drifting cruise vessels. Further, expected change of Northern Sea Route transits and eventually use of the Transpolar Sea Route, will increase the number of large vessels sailing through the Norwegian Search and Rescue (SAR) region.

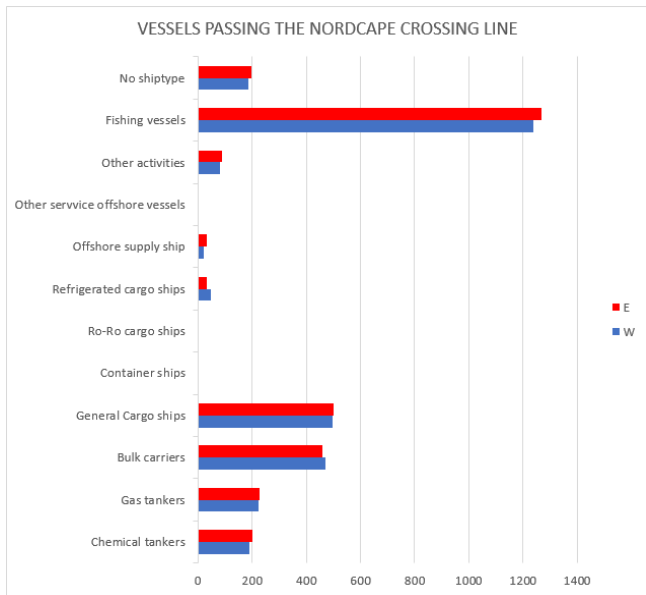


Figure 1. Vessels crossing the line at North Cape in 2018 (Source: Havbase.no).

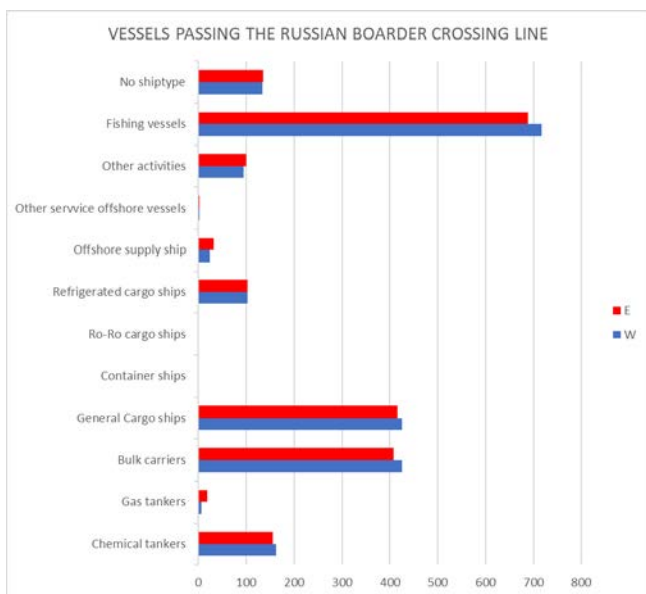


Figure 2: Vessels crossing the line at the Norwegian/Russian boarder (Source: Havbase.no).

The vessel traffic centre in Vardø is responsible for surveying unplanned vessel movements in Norwegian waters and making contact with vessels whose tracks deviate from plan.

Vardø has reported the following numbers for observed drifting vessels for the period 2011 – 2018 within Norwegian territorial waters (Table 1). Of special interest for NETS are vessels involved in incidents or accidents in the waters around Svalbard, as such events are very far from available emergency towing vessels.

Table 1. Number of drifting vessels recorded in Norwegian territorial waters.

Year	2011	2012	2013	2014	2015	2016	2017	2018
Drifting vessels (until 12.09)	223	188	176	170	136	156	165	115

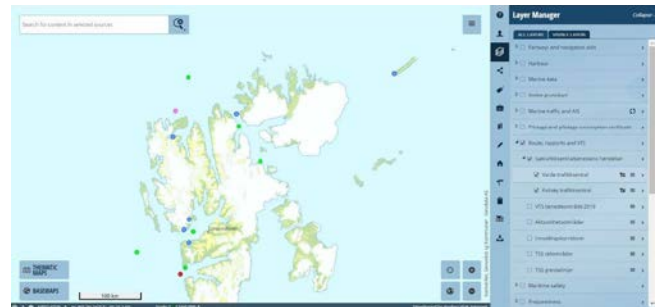


Figure 3. Vessel incidents/accidents in Svalbard waters (from Havbase.no).

3 HISTORY OF NATIONAL TOWING PREPAREDNESS

The Norwegian Emergency Towing Service started in 2003 as a collaboration between NCA and the Norwegian Coast Guard (NCG). Initially the service was restricted to parts of northern Norway (from Røst to the Russian border). A government white paper (Ministry of Fisheries and Coastal Affairs, 2005) offered a basic description of a national emergency towing preparedness system. As a follow-up of this proposition, NCA's director appointed a work group with the mandate to evaluate the need for a national emergency towing preparedness system for the entire Norwegian coastline. The work group issued a report that recommending the establishment of a national governmental towing preparedness system for the parts of the coastline at the highest risk of suffering environmental damage. These areas were Sørlandet (traffic volume), Rogaland (oil terminals), Stadt (harsh weather) and Troms-Finnmark (lack of commercial towing resources). For the other coastal regions, it recommended that the government should sign preparedness agreements with commercial towing companies.

From the start in 2003, three vessels (two commercially contracted and a Coast Guard vessel) formed the Emergency Towing Service (ETS) in Northern Norway. In 2009 the government funded the Emergency Towing Service in southern Norway, and a contract was signed with a commercial tug operator. From 2010 NETS was paid for by NCA through the national budget. Based on experience from the first years of NETS a new commercial tug was chartered to improve emergency preparedness on the coast of western Norway. Another working group

was appointed in 2011 to draw up a concept evaluation report discussing the future organisation of the national ETS. They concluded that smaller commercial tugs could be used along the coast of southern Norway and offshore supply type vessels equipped for emergency towing should be necessary in Northern Norway (NCA 2014). An updated description of the vessels used by the ETS can be found on NCA's website (NCA 2018) (in Norwegian).

4 SHORT PRESENTATION OF RECENT CASES

The Norwegian Coastal Administration and SINTEF Ocean have arranged annual workshops for crews on the emergency towing vessels. These workshops have also been open to other Norwegian commercial towing companies and Nordic Coast Guards. At these workshops, the masters on emergency towing vessels have presented specific cases as a starting point for discussions, experience sharing and knowledge building. This section summarizes a number of such cases in the northern part of the Norwegian Sea and the Norwegian sector of the Barents Sea. It also provides a brief discussion of search and rescue (SAR) and oil spill prevention connected with the fishing vessel Northguider's grounding in Hinlopen (northern part of Svalbard).

4.1 Fishing vessel "Kamaro" – October 2012

Late October 2012 the fishing vessel "Kamaro" suffered an engine failure in the northern part of the Norwegian Sea, south of Bear Island. Another fishing vessel from the same fishing company was close by and managed to establish a towing connection. The weather deteriorated to a strong gale and heavy seas. The towline broke and the vessel drifted out of control. The Norwegian Emergency Towing Service dispatched one of its vessels, the Coast Guard vessel "KV Harstad" to the drifting vessel to establish an emergency towing line. The tow to the mainland commenced and was expected to take two days. Due to the weather conditions and the risk of capsize, it was decided to evacuate the crew. Two helicopters (A Super Puma from the Bristow company and a Lynx from the Royal Norwegian Navy) were scrambled. The initial plan was to lift the 14 crew members from the deck of "Kamaro". On location, the helicopter crew found it too risky to follow the plan due to the extreme motions of the vessel (reported wave height was 15 m). Crew members had to jump overboard, were picked up from the sea by the helicopter and flown to a mainland hospital. With two men still on board, the emergency towline broke. "KV Harstad" managed to establish a new towline. Due to the possibility of a second towline failure in the heavy seas, another Coast Guard vessel "KV Barentshav" was allocated to assist "KV Harstad". The emergency towing situation was successfully completed and "Kamaro" was towed to Tromsø.



Figure 4. Drifting fishing vessel "Kamaro" (photo Norwegian Coast Guard).

4.2 Small cargo vessel "MV Tove" – Egersundbanken January 2014

On January 14 2014 the small cargo vessel "MV Tove" suffered main machinery problems and started to drift. A large tug started to connect a towline to the disabled vessel. Under the harsh environmental conditions, this attempt failed. The NCG vessel "KV Bergen" was directed to "MV Tove" and arrived approximately 14 hours after the engine failure. The direction of drift of the vessel indicated that at some point, it would drift into an oil field, either on the Norwegian or British side. The weather forecast showed no major improvement the next days, and it was decided to attempt to connect an emergency tow line under the prevailing extreme weather conditions. Figure 5 shows photos of the towing operation. "MV Tove" was drifting in a north-westerly direction at a speed of 4 knots. "KV Bergen" managed to connect an emergency tow line to the stern of "MV Tove" at 01:40 January 15. A pneumatic line thrower (PLT) was used to transfer the hauling line to connect the 22mm fibre rope being used as an emergency towing line. In the morning of January 19, the tow was transferred to a tug chartered by the ship owner.



Figure 5. Drifting vessel "MV Tove" (photo Norwegian Coast Guard).

4.3 Fishing vessel "Northguider" – Hinlopen Svalbard December 2018

The vessel was fishing north of Svalbard, when it in Arctic utter darkness ran aground in the Hinlopen

Strait (Figure 6), grounding in Kinnvika on Nordaustlandet, which is a national park. The vessel was flooding and had a heavy list. The Joint Rescue Coordination Centre in Bodø received an emergency call from the master of "Northguider". The SAR resources of the Governor of Svalbard were mobilised and two helicopters took off from Longyearbyen. Just two hours after the emergency call, the first 10 crew members were rescued and returned to Longyearbyen. One hour later the second helicopter rescued the remaining four crew members. The airborne capacity of the helicopters were fully used in this operation (airborne time remaining at the end of the operation was less than 10 minutes).



Figure 6. Location of grounding of fishing vessel "Northguider" 28th December 2018 (from <https://sysla.no/maritim/norsk-fiskebat-nod-ved-svalbard-15-om-bord/>).

"Northguider" had approximately 300,000 litres of fuel on board. Due to the risk of oil pollution of the national park, the NCA in collaboration with the shipowner (represented by a master and two chief engineers) and the emergency preparedness and response company Ardent, immediately started to plan an operation to empty the tanks to prevent a possible oil spill. As the grounding area usually has drifting or fast ice in winter, "KV Svalbard", the only NCG vessel with ice classification was mobilised. This vessel was located on the Norwegian mainland, it first sailed to Longyearbyen to pick up additional equipment for Arctic operations as well as representatives from the Governor of Svalbard, oil-spill removal experts from NCA, the shipowner and Ardent. The main challenges that the operation presented were darkness, low temperature, drifting ice, current and unknown and poorly charted shallow waters. The nature of the location prescribed the use of dedicated 1000 liters intermediate bulk containers (IBC) installed on two KV "Svalbard" Polarcirkel workboats. In total these workboats transferred 332.000 liters of fuel oil from "Northguider". In February 2019, the Governor of Svalbard and Norwegian Coastal Administration agreed to delay the salvage operation until August 2019 when the breeding season for sea birds ends.

5 BASIC EDUCATION AND TRAINING OF SENIOR OFFICERS ON EMERGENCY TOWING VESSELS

The Norwegian Coastal Administration chose SINTEF Ocean as its partner in the development of courses for

masters of vessels contracted for the national Emergency Towing Service. A curriculum was drawn up that included competence tables similar to those used by the International Convention on Standards of Training, Certification and Watchkeeping (STCW) (Figure 7). Two modules were developed in 2016, through collaboration with towing vessel masters and the Norwegian Coast Guard as shown in Figure 8. The first module is a theoretical course lasting two days, while module 2 is a practical exercise with at least two vessels led by an experienced tug master.

The first module introduces the background for and the objectives of the Norwegian ETS. Its duration is two days and it is held at NCA's Emergency Preparedness division in Horten. The second consists of planning and performing a training exercise to establish an emergency towing line on a selected case vessel and is a one-day event. The contents of the first module are shown in Table 2.

By the end of 2018 40 masters and other relevant persons (NCA and NGC) had completed this module. Participants have included personnel from commercial tug/offshore companies whose vessels have been chartered for the Emergency Towing Service, the Norwegian Coast Guard, Norwegian Coastal Administration and other operational personnel involved in emergency preparedness.

The Module 2 course takes form of a practical towing seminar, where two or more vessels are come together for practical operational training and experience sharing. This module is led by an experienced tug master. The duration of the towing seminar is two days, during which the crew trains on connecting emergency tow lines to the vessels. During the course, both safe job analysis and toolbox talks are provided before the tow line is connected. Both heavy and light tow gears are used, and how to connect to a drifting vessel under black-out is described. Evaluation and discussions on how to use equipment follow the exercise, providing useful insight into current equipment, and possible new equipment that will make the next emergency tow connection easier.



Figure 7. Curriculum of the course for masters on vessels employed by the national ETS.

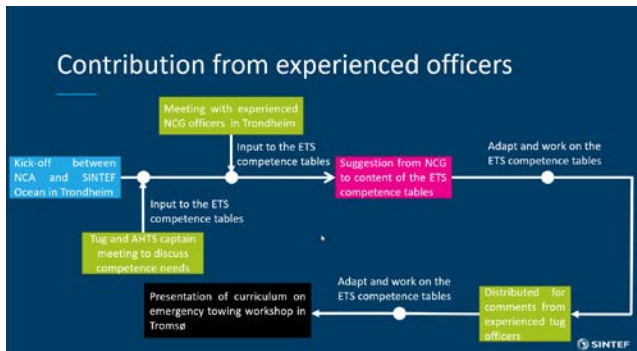


Figure 8. Steps in the development of the curriculum for masters of Norwegian ETS vessels.

Table 2. Module 1 course for masters on vessels in the Norwegian Emergency Towing Service.

Day 1	Day 2
Introduction	Understand and apply hydrodynamic forces close to a drifting vessel
Basic information – organisation of the Norwegian Coastal Administration and The Norwegian Emergency Towing Service	
Important rules and regulations	Stability – own ship and vessel
Tasks for Vardø VTS (NOR VTS)	Pivot point
Visit to Horten VTS	Safety of own crew – during connecting the tow line and during an emergency towing operation
Review of curriculum for incident/accident the national ETS and methods for documentation of operational experience and competence	How to write reports and use them for knowledge-sharing and improving the current curriculum
Basic handling of own ship close to a drifting vessel	Onboard manuals and procedures for establishing and performing an emergency towing operation
Methods for connecting an emergency towing line on a vessel needing assistance, Part 1 and 2	Course summary and participant feedback
Summary: Day one	

6 ANNUAL EMERGENCY TOWING WORKSHOP

Since 2014, NCA has arranged an annual emergency towing workshop in Tromsø. Representatives of other Nordic Coast Guards have taken part in some of these workshops. The main topics at these workshops have been presentations of drifting vessel cases, capabilities of emergency towing vessels, knowledge sharing and ways of extracting learning elements from real-life cases and training exercises. Additionally, time is allocated for group work on various topics. One of the topics for group work in 2016 was "How can operating safety for tug crew be enhanced during an emergency tow?". Some key points from this group work were:

- Perform a Safe Job Analysis with everyone involved
- Be thorough in the planning phase – good work here improves the probability of success
- Training and equipment checking – be familiar with the equipment on your vessel and its limitations
- Introduce systematic experience transfer
- Backup – mobilise a third vessel to assist in harsh weather and cases close to the coast

Outcomes of these workshops have specific proposals for improved emergency and ocean towing. Responses from participants have pointed to a need for a meeting place to exchange experience and discuss ways to improve tools for connecting an emergency towline on different types and sizes of drifting vessels, especially under harsh weather conditions.

The planned workshop in 2018 was canceled as important NCA and NCG representatives were involved in an environmental protection and salvage operation following the collision and grounding of the Norwegian frigate "Helge Ingstad" on November 8th, 2018. NCA and SINTEF Ocean are currently discussing arrangements for future emergency and ocean towing workshops.

7 FUTURE PLAN FOR NATIONAL EMERGENCY TOWING PREPAREDNESS

It has been decided that from 2019 onwards, the NCG will be responsible for vessels in the ETS. At first, the NCG will continue a contract with the AHTS "Strilborg" as one of the vessels in northern Norway. The second vessel will be a NCG vessel. Four vessels will share the ETV duty ("KV Harstad" and three vessels from the Barentshav class). Commercial vessels will continue to be chartered for ETV operations along the southern part of the coast in 2019. From 2020, the NCG will be responsible for all vessels in NETS.

Recently, the capacity of the ETVs has been a topic of discussion, as a result of based on various incidents involving explorer cruise vessels in Arctic waters. It is well known that currently available SAR resources will be insufficient for larger cruise vessels. Norway has seen a significant increase in the number and tonnage of such vessels in our waters. Handling incidents with such vessels in Svalbard waters will be a major challenge. The largest vessel visiting Longyearbyen in 2018 was MSC "Meraviglia", with a capacity of 6000 persons (passengers and crew) (Figure 9). In the summer season of 2019 66 cruise vessels are scheduled to visit Longyearbyen.

Rescuing of passengers from a drifting cruise vessel in Svalbard waters will be a complex operation, due to lack of rescue resources in the area. The best solution will be to establish an emergency towing line to prevent the vessel from grounding in coastal waters. The question is whether NETS' vessel resources will be able to make a safe connection and stop the drift of vessels with extreme superstructures. The Governor of Svalbard's service vessel "Polarsysse" has a bollard pull (BP) of approximately

50 tonnes and operates out of Longyearbyen during nine months of the year. The vessel has the following additional classes ICE 1 B, Wintericed BASIC. Only one of the NCG vessels, "KV Svalbard", has ice class (DNV Icebreaker Polar-10 PC) and approximately 100 tonnes BP. Other NCG vessels operating in Northern Norway, such as "KV Harstad" and Barentshav class vessels, also have approximately 100 tonnes BP.



Figure 9. MSC Meraviglia at Longyearbyen port (photo Tore Stensvold)

8 SUMMARY

The National Emergency Towing Service (NETS) in Norway started in 2003 as a collaboration between the Norwegian Coastal Administration and the Norwegian Coast Guard as a tool to deal with accidents similar to those experienced in Norwegian coastal waters in the 1990s. Commercial tug and offshore companies were invited to bid for contracts to operate emergency towing vessels. Initially, the area served by NETS was limited to Northern Norway, but it was subsequently expanded to cover all Norwegian waters. The mandate for the NETS specifies that it should not compete with commercial tug companies when their vessels are in a position and able to solve problems with drifting vessels.

In collaboration with SINTEF Ocean, the Norwegian Coast Guard has developed a training

programme for masters on emergency towing vessels and relevant onshore personnel. Knowledge and experience sharing are important elements of the training programme. Feedback from participants indicate a high level of satisfaction with the present programme.

Additional studies of how existing resources could handle major incidents involving cruise vessels in Svalbard waters are urgently needed.

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