Challenges for EER Solutions in European Arctic Waters

Tor E. Berg
Ship Technology,
Norwegian Marine Technology Research Institute (MARINTEK)
Trondheim, Norway

Ørjan Selvik
Ship Technology,
Norwegian Marine Technology Research Institute (MARINTEK)
Trondheim, Norway

Rune Rautio
Akvaplan-niva
Kirkenes, Norway

Alexei Bambulyak
Akvaplan-niva
Tromsø, Norway
and
Norwegian University of Science and Technology
Trondheim, Norway

Andrey Marichev
Scientific and Research Institute of Natural Gases and Gas Technologies (Gazprom VNIIGAZ)
Moscow, Russia

ABSTRACT

This paper discusses the status and development prospects of Arctic escape, evacuation and rescue (EER) solutions in the Greenland and Barents Seas, and briefly describes two recent maritime rescue operations in Norwegian waters. Successful outcomes of maritime EER operations in Arctic waters depend on a number of factors, including design of escape routes, available means of evacuation, distance to available SAR resources, type of rescue units, early information/detection related to maritime accidents, and metocean and ice conditions. Selected items are discussed below.

KEY WORDS: Arctic; escape; evacuation; rescue; traffic surveillance

INTRODUCTION

European Arctic waters comprise the areas from Eastern Greenland to the Barents Sea. There are some major differences between preferred escape, evacuation and rescue (EER) solutions for Greenland, Iceland, Norway and Russia. This is mainly due to differences in national EER philosophies, organization and availability of search-and-rescue (SAR) resources. In Norwegian waters, the preferred EER solution is based on governmental SAR helicopters, while ships operated and coordinated by state salvage departments are the most important tools for Russian EER at sea. This difference reflects the distinctions between the Norwegian and Russian Arctic waters in terms of distances, infrastructure and conditions. Norway has approximately 20% winter ice cover, while most of Russia’s Arctic waters are covered by ice in winter. Russia’s SAR system in the Arctic is based on icebreakers and ice-class salvage vessels.

This paper discusses the current status of and development prospects for Arctic EER solutions for the Greenland and Barents Seas, and briefly describes how successful outcomes of maritime EER operations in Arctic waters depend on a number of factors such as the design of escape routes, available evacuation means, distance to available appropriate SAR resources, early information about and detection of maritime accidents, and metocean and ice conditions. The challenges we discuss include:

- Traffic surveillance and detection of maritime accidents
- Operability of evacuation means under Arctic conditions
- Transit speed for seaborne rescue vehicles
- Transfer of personnel from lifeboat/life rafts to helicopter or rescue vessel.

We have reviewed information prepared by the International Organization for Standardization (ISO) and International Maritime Organization (IMO), outcomes of the DNV and Gazprom VNIIGAZ-led Barents 2020 Health, Safety and Environment (HSE) project, and papers presented at conferences such as the Arctic Technology Conference (ATC), International Ocean and Polar Engineering Conference (ISOPE), International Conference on Ocean, Offshore & Arctic Engineering (OMAE) and International Conference on Port and Ocean Engineering under Arctic Conditions (POAC). In addition, some preliminary results from an ongoing project on EER in ice-covered water have been used. ISO offers the following definitions of EER (ISO, 2000):

- Escape:
  - Act of personnel moving away from a hazardous event to a place where its effects are reduced or removed.

- Evacuation:
  - Planned method of leaving the installation in an emergency.

- Rescue:
  - Process by which those who have entered the sea directly or in survival craft/liferaft are retrieved to a place where medical assistance is available.