Swedish Icebreakers capable of Arctic rescue operations

The Swedish ice breaker fleet has the possibility of providing, in addition to their primary duty and good record, rescue services in Arctic regions. SSPA was commissioned by the Swedish Maritime Administration, SMA, to identify the measures, operational limits and capabilities required for providing rescue services in remote Arctic waters. The study of the ODEN, FREJ and ATLE ice breakers has concluded that each of these vessels have the capacity for rescuing up to 500 passengers from an evacuated cruise ship. The icebreakers could also serve as oil spill recovery vessels, if equipped with proper tools. The technology exists, but logistics and strategies need to be improved.

Swedish icebreakers are on duty during the long winter months in order to support shipping activities in the Baltic Sea. During summer, when more of the Arctic region is more open for shipping and operations, the fleet has the resources and capacity for rescue, firefighting and oil spill cleanup operations. The study shows that the SMA icebreaker fleet could help bring about a higher level of safety and environmental protection.

The Arctic Council

The remote and environmentally sensitive Arctic region, with its ice covered waters and fragile coastal areas, is increasingly at risk due to climate change and man-made threats. There are now higher demands on rescue and emergency preparedness due to more shipping activity in the Arctic waters and in the Northeast Passage for the purpose of resource exploitation and also pleasure, i.e. exotic cruises for tourists. Exploration drilling for hydrocarbons will also most probably begin soon. These issues are highlighted by the Arctic Council, now chaired by Sweden until 2013. Now that the SAR (Search and Rescue) agreement has been accepted, the focus is on rescue and spill response issues.

Oil spill recovery

ODEN is one of the most powerful icebreakers currently in use. However, all three vessels, ODEN, FREJ and ATLE, have the capacity and design suitable for being modified and equipped with the necessary tools for mechanical recovery of spilled oil. The SSPA study has concluded that storage capacity facilities exist for 1000 m³ or more onboard. There is also enough loading/storage capacity and deck space for flexibly mounted modern offshore recovery systems. Furthermore, these installations and operational plans would not hinder the icebreakers’ main duty, i.e. serving the merchant fleet in the Baltic Sea during winter.

Logistics

Any operation that is conducted in the Arctic region must be self-supporting, i.e. everything that is needed for the operation must be taken along. The lack of infrastructure and available services put high demands on the onboard storage capacities for both fuel and supplies when operations are underway during longer periods in
All icebergs originate from glacier ice. Icebergs and larger floes are separate from the glacier when reaching the sea.

The Swedish icebreaker FREJ has the capacity to participate in rescue and spill response forces in Arctic Waters.

**Ice breakers provide loading capacities for various fluids.**

**The Swedish Icebreakers capable of Arctic rescue operations**

**PHOTO ERLAND WILSKE, SSPA**

summer. The Swedish fleet is able to operate independently for several months.

Because of the long distances and lack of infrastructure, standby positions must be defined according to the main operations that are being conducted. For example, standby positions can be defined strategically along cruise ship routes, or in the vicinity of where exploitation activities are underway.

For all operations in the Arctic region, there are considerable logistical challenges. For example, oil spill recovery operations are often interrupted because storage tanks become full and logistics are unbalanced. Better logistic solutions and management are thus required for successful Arctic operations, which is no easy task.

**Response strategies**

Compared to open water conditions, recovery capacity decreases considerably with the presence of ice and in lower temperatures. Field tests confirm this. For example, all parts of technical systems must be winterized. SSPA has suggested that operational and strategic steps must be taken so that more accurate forecasts can be made about various operational and environmental situations.

SSPA now systematically defines various operational conditions (also based on SSPA’s Oil in Ice Code) as part of the gap analysis of capacity data for different equipment on the market.

**Strategies and Oil in Ice Management required**

In addition to the need for defining equipment capacities, operational strategies must also be developed and validated. Crews must be further trained in order to operate icebreakers in various spill situations, such as how to control and recover oil in drifting pack ice.

SSPA thus concludes that an “Oil in Ice Management” strategy must be an established and fully integrated component of any effective “Ice Management” strategy. The Swedish icebreaker fleet crews have a great deal of experience in ice management from their activities in the Baltic Sea and Arctic regions. SSPA has a vast amount of knowledge in oil spill recovery techniques and management. There are thus unique cooperation opportunities that facilitates opening up new markets and a higher level of rescue and environmental protection in the Arctic region.

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