

# Hydrographic Challenges in the Arctic Ocean

Increasing shipping in the Arctic Ocean together with oil and gas exploitation and industrial development due to the recession of ice, require urgent hydrographic and navigational support, to protect safety of navigation and the marine environment. The International Hydrographic Organization (IHO) and its Member States' Hydrographic Offices (HOs) bordering this ocean, respond to these challenges.

While Antarctica is a continent surrounded by an ocean and regulated by the International Antarctic Treaty and its protocols, the Arctic is an ocean surrounded by land: Canada, Denmark - Greenland, Norway, the Russian Federation and USA border the Arctic. The Arctic is undergoing an extraordinary transformation. Marine access in the Arctic Ocean, driven by global climate change, has been changing in unprecedented ways. All shipping in this ocean is set to increase as sea ice retreats and as the Arctic opens up to further industrial development. With predicted reduction in summer sea ice, the Northeast Passage and Northern Sea Route may open for regular commercial navigation. This will have a great impact on global shipping. The number, size and type of ships crossing, visiting and using this region has increased tremendously during the last few years and is going to increase still further. Special maritime infrastructure is needed to support the Arctic challenges. Three major services are already progressed and supported by the IHO in the Arctic in order to increase safety, protect the environment and support maritime requirements.

**1. The provision of adequate and accurate navigational charts and publications.** The Arctic Council in its assessment report indicates that 'gaps in hydrographic data exist for significant portions of primary shipping routes important to support safe navigation and voyage planning in Arctic waters' and that the 'Arctic charting base hydrographic data is not adequate in most areas to support current and future marine activities'. The IHO is working very closely with the Arctic coastal States to improve this situation, noting that hydrographic surveys in the Arctic are logistically difficult, expensive to undertake and highly dependent on weather and ice conditions. Some cartographic coverage exists in parts of the region and the bordering States have in place various hydrographic projects in order to collect data that will result in the production of new charts and the updating of the existing ones. The establishment of the Arctic Regional Hydrographic Commission (ARHC) by the bordering States will accelerate the hydrographic and cartographic procedures and better serve mariners, safety and the environment.

**2. Promulgation of Maritime Safety Information (MSI).** The IHO, IMO and WMO have worked very closely and they have established five new NAVAREAS that will cover the Arctic region and became operational on 1 June 2011. Russian Federation, Norway and Canada have been named co-ordinators and they will promulgate important information that will enhance safety at sea.

**3. Aids to navigation.** The IHO and the Hydrographic Offices of the States bordering the Arctic are supporting IALA to study and progress the establishment of reliable aids to navigation systems. Considering the harsh ice and climate conditions virtual aids to navigation is an option that should be seriously considered.