Vessel Traffic Management and Marine Navigation Services in Canada

Shipping Risk Mitigation Research and Practice in Canada Workshop
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Canada

Introduction

- This presentation will provide an overview of Coast Guard's marine navigation services in Canadian waters and how new initiatives can support the mitigation of maritime risks through the advancement of digital service delivery.
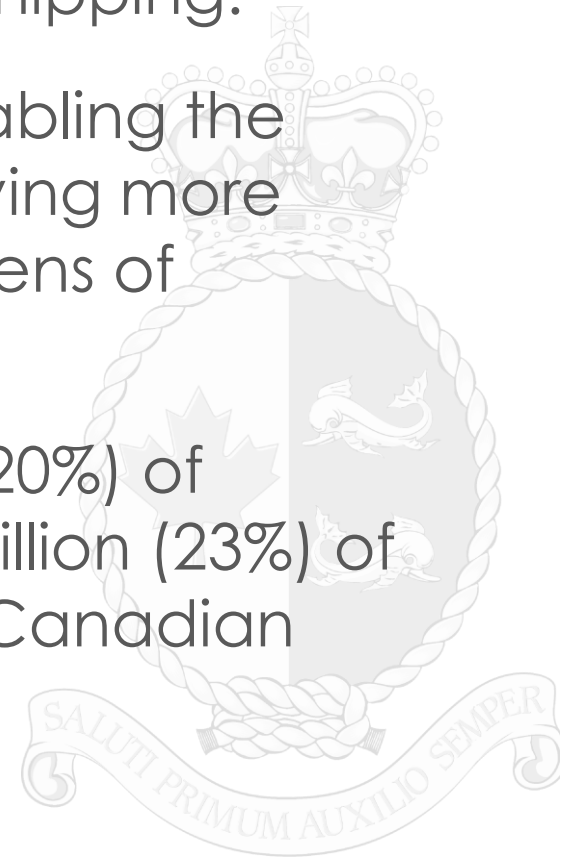
Marine Navigation Services in Canada

Coast Guard's Marine Navigation Programs provide the foundation for safe and efficient marine navigation in Canada's oceans and waterways and include the following core programs:

Marine Communications and Traffic Services	Provides safety radio-communication services, and vessel traffic services on a 24/7/365 basis.
Aids to Navigation	Provides over 17,000 short-range marine aids, including visual aids such as fixed aids, lighthouses and buoys), audible aids such as fog horns, radar aids such as reflectors and beacons, and long-range marine aids, including electronic aids.
Waterways Management	Provides channel management and design to ensure optimization and accessibility of waterways and contribute to their safe use.
Icebreaking	Provides icebreaking and related services to facilitate the safe and timely movement of maritime traffic through and around ice-covered Canadian waters for the benefit of industry and communities.
e-Navigation	Supports fleet and programs to improve shipping through better organization and exchange of data and communications between ships and with shore.

Marine Navigation Services and Shipping in Canada

- Coast Guard's marine navigation programs contribute to economic development in Canada by enabling safe and efficient shipping.

- Coast Guard supports Canada's ocean economy by enabling the safe and efficient flow of $251 billion in marine trade, moving more than 342 million tonnes of critical goods, and supporting tens of thousands of jobs across the country annually.

- In 2020, marine transportation carried nearly $103 billion (20%) of Canada's exports to world markets and brought in $122 billion (23%) of Canada's total imports by value. Combined, 21.1% of all Canadian trade is transported by water.

Whole-of-Government Approach

- Marine navigation is an **interdepartmental effort** in Canada.
  - Coast Guard works closely with other Federal departments such as Transport Canada, Canadian Hydrographic Services, Transport Canada, Environment and Climate Change Canada, to deliver services to mariners in Canadian waters.

- Coast Guard routinely **collaborates and engages with partners and industry** on marine navigation and e-Navigation through various forums such as:
  - National Marine Advisory Board
  - Canadian Marine Advisory Council

Addressing Shipping Risks

- To mitigate levels of risks and to address emerging challenges to shipping in Canada, Coast Guard is working to advance the following initiatives:

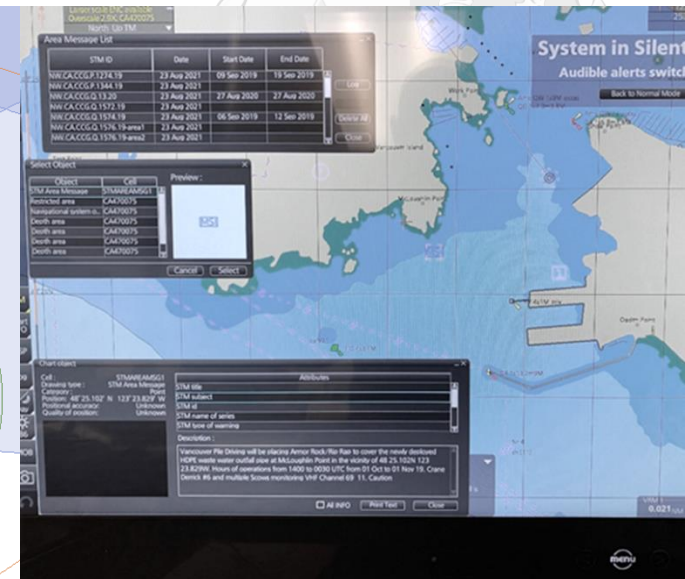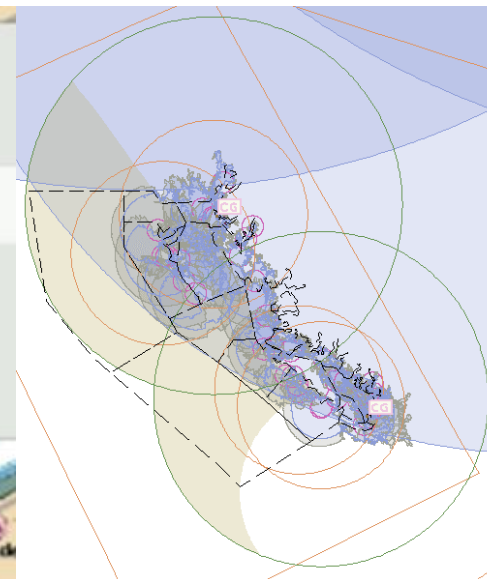| E-NAVIGATION IMPLEMENTATION IN CANADA | SUPPORTING DIGITAL MARINE NAVIGATION SERVICES | ENSURING MARINE NAVIGATION SERVICES CLIMATE RESILIENCY |

→ e-Navigation Implementation

- Modernizing marine navigation services will allow Coast Guard to improve information sharing of its maritime data products and harmonize levels of services that meet **national and international standards** and requirements for the safe use and design of waterways and commercial shipping channels.

- **Canadian e-Navigation priorities** are key drivers of the Modernization initiative:
  - Implementing electronic aids to navigation
  - Digitalizing maritime services
  - Realizing cybersecurity requirements
  - Emergence of autonomous vessels
  - Modernizing vessel traffic management

e-Navigation Updates

Coast Guard has made progress on several e-Navigation initiatives, including:

✓ AIS Application Specific Messages

✓ AIS Application Specific Message - Air Gap

✓ S-123 Marine Radio Service

✓ S-124 Navigational Warning (NAVWARN)

→ Supporting Digital Marine Navigation Services

This initiative will re-design and digitalize Coast Guard's marine navigation services to optimize the efficiency of better delivery of critical services to the shipping industry. It will increase maritime traffic efficiencies by maximizing each vessel voyage along the Canadian marine shipping route, ensuring that Canada can remain globally competitive. Coast Guard will provide dynamic and digital tools, real-time information, and streamlined services to mariners.

Coast Guard will address gaps such as:

- Outdated systems (i.e. Coast Guard's aids to navigation database, Vessel Traffic Management and Information System)
- Reducing/removing redundant reporting requirements
- Need for new data sets and real-time information

→ Ensuring Marine Navigation Services Climate Resiliency

Coast Guard will adapt its marine navigation capabilities to reinforce the maritime trade sector and the Canadian supply chain in response to climate change impacts. Coast Guard will ensure continuous and resilient marine navigation services across Canadian waterways, including in the Arctic, to support maritime trade in Canada.
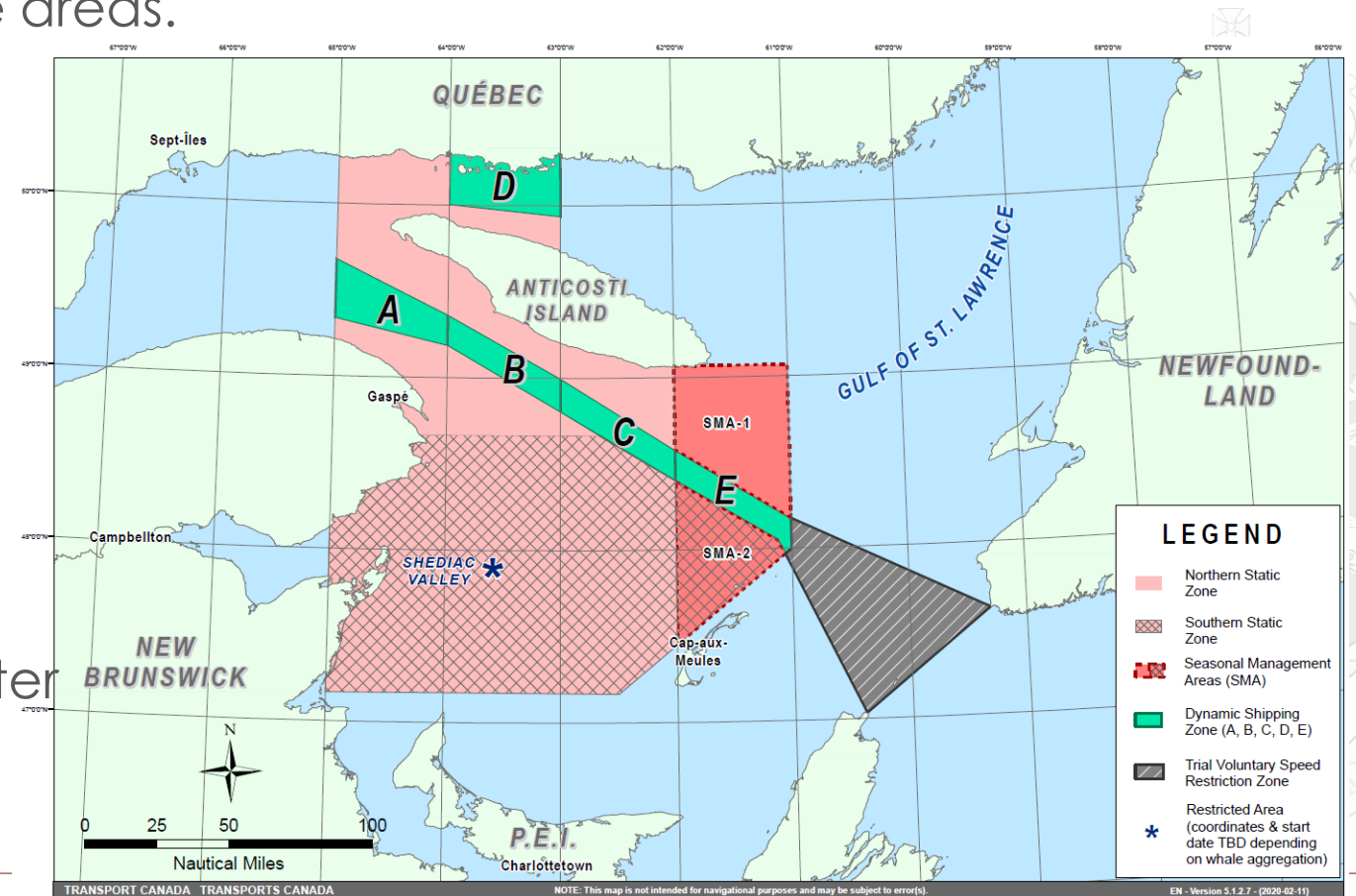
Coast Guard will address challenges created by changing climate patterns such as:

- changing traffic trends such as increased traffic through Canada's Arctic and northern waters
- need for resilient navigational aids
- impact on regular operations

Other initiatives

- Coast Guard supports interdepartmental initiatives for environmental protection, through activities such as vessel traffic monitoring for the protection of marine mammals. Coast Guard works to ensure safe and efficient shipping while ensuring the protection of various marine areas.

- Coast Guard uses electronic, virtual aids to navigation to communicate to mariners slow down areas, interim sanctuary areas, and no-go zones

- Coast Guard broadcasts the location of those virtual aids to navigation to mark the perimeter of the designated zones

Final Thoughts

- Despite operational challenges introduced by COVID-19, modernization efforts and e-navigation initiatives have continued to progress.

- These initiative will continue to be advanced based on engagement and collaboration with partners, and marine stakeholders to identify priority areas for improvements in service delivery.

- Coast Guard will continue to engage with international community to ensure harmonized adaptation of e-navigation and influence international standards to better fit the Canadian context.

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