Fisheries and Oceans Canada | Pêches et Océans Canada

Canadian Coast Guard | Garde côtière canadienne

Safety First, Service Always






Canadian Coast Guard Services in the Arctic

Centre for Foreign Policy Studies
June 5, 2015
Presented by Daniel Breton
Senior Director, World Class Strategies

Canada

Purpose

- Discuss CCG's vision for its role in the Arctic, and how it will work with others to promote safe navigation and efficient, effective responses to marine incidents.
  - CCG's Mandate and Services in the Arctic
  - Northern Marine Transportation Corridors (NMTC) initiative

CCG's Mandate

- **The CCG owns and operates the federal government's civilian fleet, and is a Special Operating Agency within DFO. The CCG:**
  - Delivers programs and services to Canadians to ensure safe and accessible waterways and to facilitate maritime commerce
  - Provides vessels and helicopters to enable fisheries enforcement activities, and on-water science research for Fisheries and Oceans and other science departments
  - Supports maritime security activities

- **CCG programs include:**
  - Marine Communications and Traffic Services (MCTS)
  - Aids to Navigation Services,
  - Icebreaking Services
  - Search and Rescue
  - Environmental Response

Programs: Marine Communications and Traffic Services

- The Canadian Coast Guard MCTS centres provide distress and safety call monitoring and coordinate responses, broadcast maritime safety information (weather and navigational warnings), screen vessels entering Canadian waters, deliver information and advice to regulate marine traffic movement, and take appropriate action to ensure the safe and efficient movement of vessels in Canadian waters.
- MCTS are delivered through a network of centres and supporting remote sites (radio towers, radar sites, etc).

Programs: Aids to Navigation

- The **Aids to Navigation** program involves the provision of short-range marine aids numbering over 17,000, including visual aids (fixed aids, lighthouses and buoys), aural aids (fog horns), radar aids (reflectors and beacons) and long-range marine aids, including electronic aids, such as the Differential Global Positioning System (DGPS).
- The benefit to mariners is safe, accessible and effective vessel transit in Canadian waters.

Programs: Icebreaking Services

- Coast Guard provides ice information, routing advice, flood control, harbour breakouts, vessel escorts through ice infested waters, and frees beset vessels.
- The focus of operations is on the East Coast, Great Lakes and St. Lawrence River system in the winter and the Arctic in the summer.
- Between June and November, Coast Guard operates up to six icebreakers in the Arctic, one of which (CCGS Amundsen) is dedicated to science activities, while the remaining vessels are normally dedicated to Coast Guard services.

Programs: Search and Rescue

- Led by the Minister of National Defence, Search and Rescue is a co-operative effort by federal, provincial, and municipal governments.
  - Coast Guard is the lead for the maritime component, which includes alerting, detection, response, co-ordination, and rescue. There are about 6,000 marine incidents a year and about 2,900 lives are saved (97% of lives at risk).
- Working together with the Canadian Armed Forces, the Coast Guard participates in three Joint Rescue Coordination Centres, located in Halifax, Trenton, and Victoria. These jointly staffed centres are manned 24-hours a day, seven days a week. Further, the Canadian Coast Guard operates a Marine Rescue Sub-Centre in Quebec City, to further assist with (bilingual) coordination efforts.
- The Coast Guard Auxiliary (CCGA), a key Search and Rescue partner, is a national organization of 4000 volunteers and 1100 vessels dedicated to Search and Rescue readiness and response activities who respond to approximately 20% of maritime calls for assistance each year. Coast Guard provides funding of $5.0 million annually to the Auxiliary through a contribution agreement.

Programs: Environmental Response

- The Canadian Coast Guard is lead federal agency to ensure an appropriate response to ship sourced pollution in Canadian waters. The objectives of the CCG's Environmental Response Program are to minimize the environmental, economic, and public safety impacts of marine pollution incidents, including ship-source oil and chemical spills.
- The Environmental Response Program is national in scope, and equipment and personnel from across the country are available for deployment in the Arctic and elsewhere as required.
- The CCG maintains international agreements for mutual aid in the Arctic with the US, Denmark, and Arctic Council states.

Arctic: Setting the Context for Future Vision

- Significant growth in marine transportation demand is expected in the near-term, especially with the expansion of mining activities and new production projected to come online

- Without action, challenges will be exacerbated (enhancing the risk of a serious incident) and/or valuable opportunities lost

- Taking action in the North requires long lead times – should begin now
  - Collaboration is required with Territories, industry, Aboriginal organizations and stakeholders
  - The season to take action is short and logistics are complex

Northern Marine Transportation Corridors

What are Northern Marine Transportation Corridors?

- Corridors are shipping routes and/or areas within which key navigational information services such as hydrography, icebreaking and aids to navigation would be prioritized.
- Rather than requiring vessels to use the Corridors, the NMTC approach will incentivize their use.

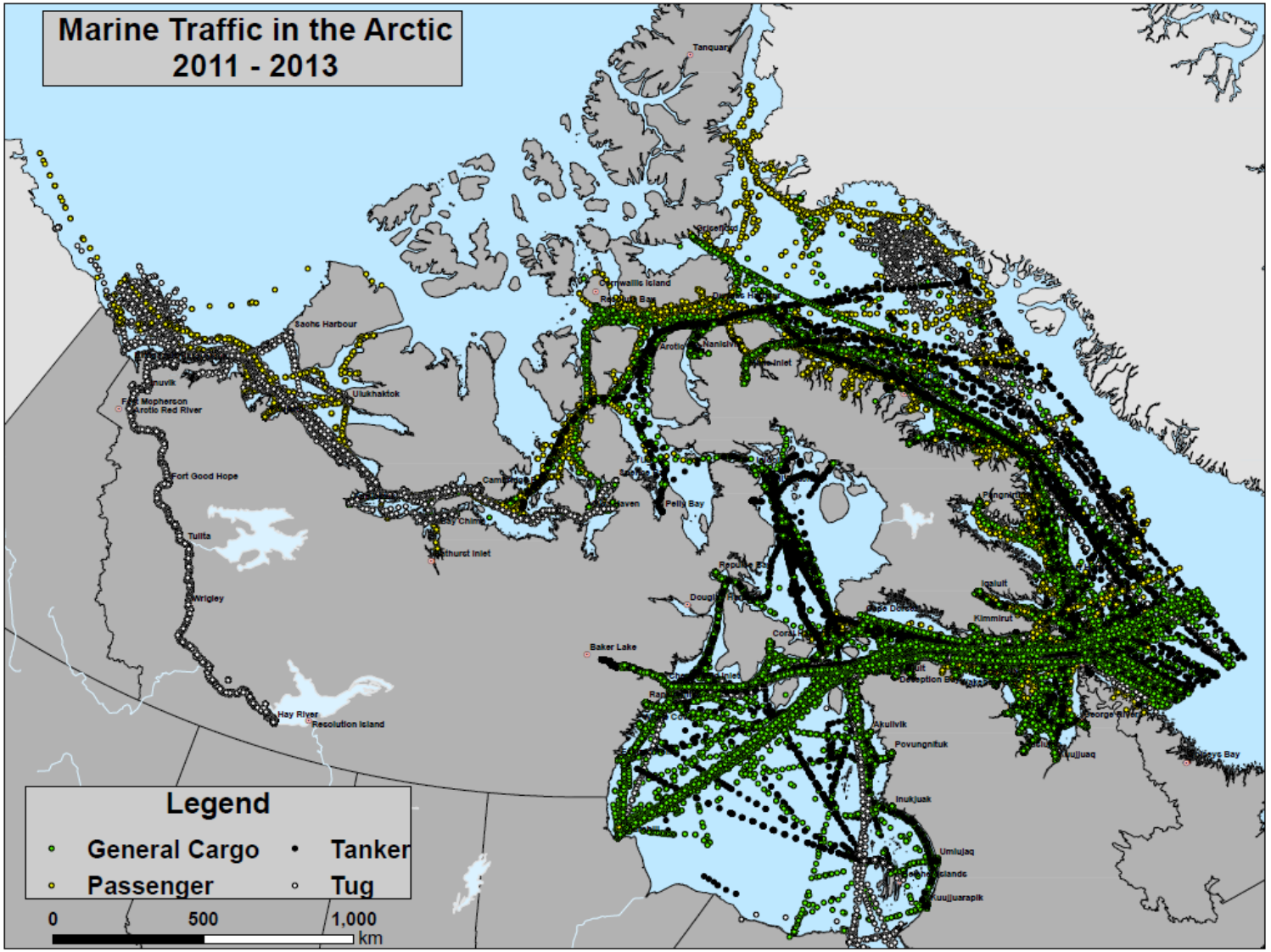
Why develop Northern Marine Transportation Corridors?

- To enhance marine navigation safety in the North, greater predictability for mariners, and reduced risk of incidents
- develop a pragmatic planning framework for future Arctic investments.

Who would benefit from Northern Marine Transportation Corridors?

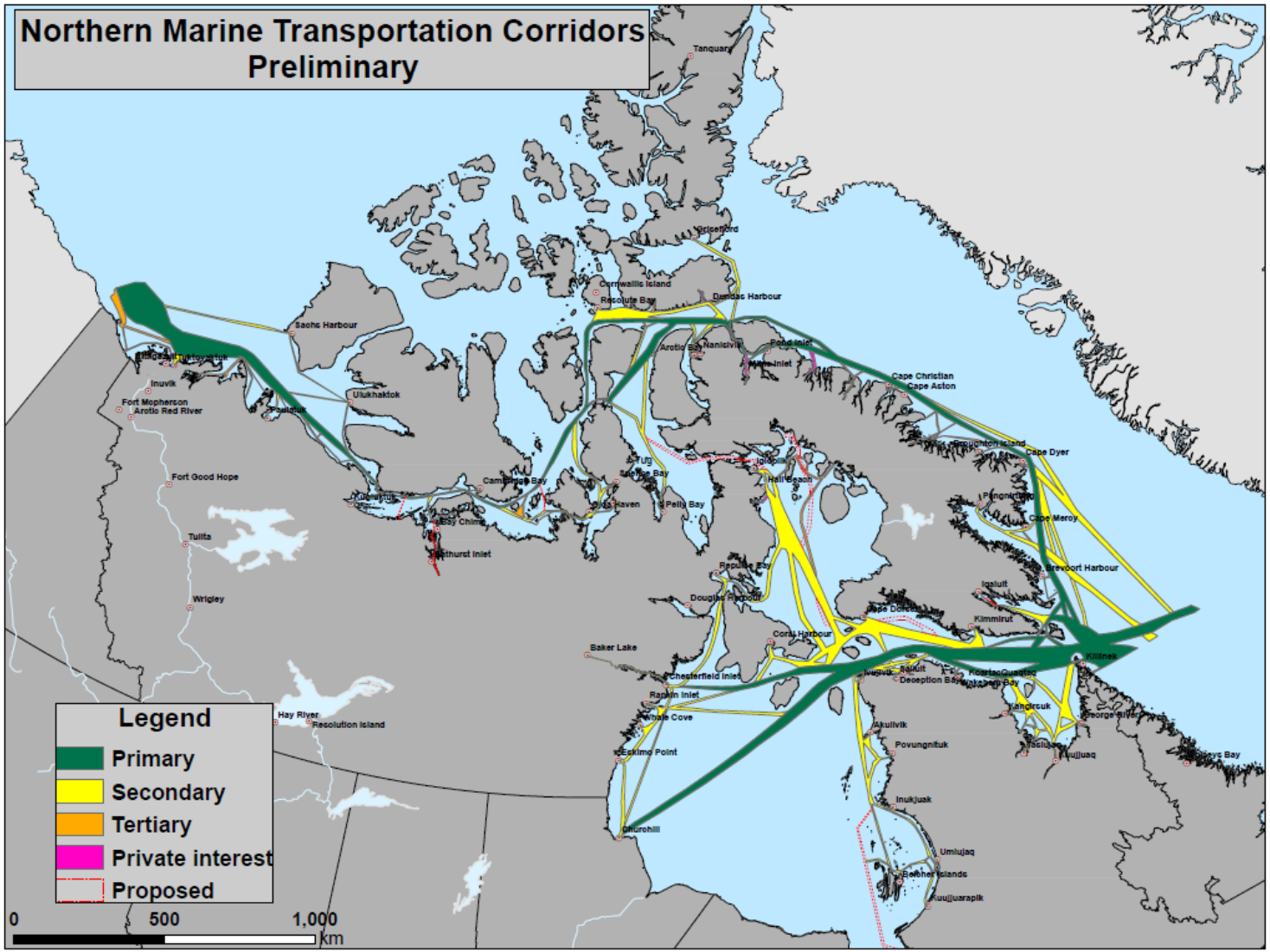
- Key beneficiaries will be mariners, communities, and other government departments operating in the Arctic.
- Marine navigation is an important enabler of economic development in the Arctic; NMTCs will support the federal Northern Strategy.

Defining the NMTCs



Source: AIS Data, ExactEarth & Canadian Coast Guard. LRIT data and INNAV, Canadian Coast Guard. Other contributors: DND, provincial airlines, Transport Canada and Radarsat.
Compilation: Peter J. Bartlett, Canadian Coast Guard.
Basemap: ESRI.

Defining the NMTCs (cont'd)



General Review of Services

Traffic Patterns

- **77% of marine traffic in 2011-2013 occurred either within or at a distance of 5NM of the Corridors.**

Bathymetry

Beaufort Sea Area

- Primary corridors = 89.5%
- Secondary corridors = 90.2%
- Tertiary corridors = 72.8%

Eastern Arctic

- Primary corridors = 45.6%
- Secondary corridors = 38%
- Tertiary corridors = 51.1%

Icebreaking 2006-2013 (NORDREG only)

- 87.3% of escorts provided were within the Corridors or at a distance of 5NM.

Aids to Navigation (NORDREG only - 340 aids in 2013)

- Assuming a theoretical but realistic range adapted to each type of fixed aids, 96.2% were aligned to provide services for the Corridors.

Environmental Response 2002-2013 (NORDREG only)

- 73.4% of marine pollution Incidents were within the Corridors or at a distance of 5NM.

Search and Rescue 2000-2013 (NORDREG only)

- 57.5% of SAR incidents for which CCG provided assistance were within the Corridors or 5NM.

Assessment of Risk within NMTCs

- CCG and CHS developed a navigational risk matrix using Information collected by navigation officers with commercial sailing experience in the Arctic
- Methodology used was validated by commercial master mariners and Coast Guard commanding officers
- Data was collected based on an equation that focused on:
  - Traffic volume; probability of groundings; access to mitigation measures (e.g. aids to navigation); channel width, length, and depth; and tidal variations
- CCG has completed the navigation risk assessment of the NMTC and is now in the process of prioritizing the findings to inform options for implementing the NMTC

Engagement around NMTCs

- Domestic stakeholders:
  - Validation of identified corridors
  - Validation of findings of risk methodology
  - Discussion with insurance companies around incentivizing use of Corridors
- International partners, through existing for a, including Arctic Council, EPPR, ACGF, bi-laterally with US
- Provincial/territorial governments, industry, ENGOs
- Aboriginal groups
  - Preliminary engagement will be coordinated with TSEP II engagement process (2015-2016)
- Insurance companies

Engagement (cont'd)

In addition to stakeholder buy-in, NMTCs have also been endorsed by:

- Commissioner of Environment and Sustainable Development, on the grounds that initiative would be effective in focussing resources used by federal government for operations in the Arctic
- TSEP II Report, on the basis that Government could prioritized its delivery of programs (i.e. ice charting, icebreaking, aids to navigation) to create a predictable environment for mariners

Assessing Marine Domain Awareness within NMTCs

"MDA is the effective understanding of anything associated with the maritime domain that could impact the security, safety, economy or environment of Canada"

- Canada's MDA Strategy, 2011

- Effective MDA is particularly critical in remote and isolated areas, such as the Arctic, where mariners face an extremely challenging operating environment, there are limited resources available to assist, and the need for timely threat and hazard identification is essential.
- By focusing services and traffic into the NMTCs, the CCG and its partners will be able to maintain a greater level of MDA than currently possible.

Implementing NMTCs: Polar Icebreaker

As the centrepiece of Canada's *Northern Strategy*, the Polar Icebreaker will:

- Exercise sovereignty in Canada's Arctic waters
- Support efforts to monitor, protect and patrol the Arctic's land, sea and sky and ensure public safety
  - Support operations of DND's Arctic Offshore Patrol Vessels, aircraft and land forces
  - Support response to criminal activities, including illegal fishing, and help enforce compliance with vessel reporting regimes and safety standards requirements
- Facilitate shipping and maritime economic activities
  - Help meet changing and growing demand for year-round marine access in the NMTCs
  - Monitoring and response capability for safe, secure and responsible development of Northern Resources (Search and Rescue, Environmental Response)
  - Minimize risks (vessel escort, emergency towing, icebreaking)

Implementing NMTCs: Polar Icebreaker

VESSEL PARTICULARS

- IACS UR PC2 (Icebreaker +)
- Length approximately 149m
- Beam approximately 28m
- Draught 10.5m
- Displacement 23,700 tonnes
- Fully integrated diesel electric
- Installed power of 40MW
- Maximum Speed of 18 knots
- Economic Cruising Speed of 12 knots
- Icebreaking Speed of 3 knots in 2.5m level ice
- Full power endurance of at least 25 days
- Complement of 60 crew / 40 msn personnel
- 270 days logistical endurance
- 2 x medium lift helicopters
- Modular mission payload capabilities

Implementing NMTCs: Polar Icebreaker

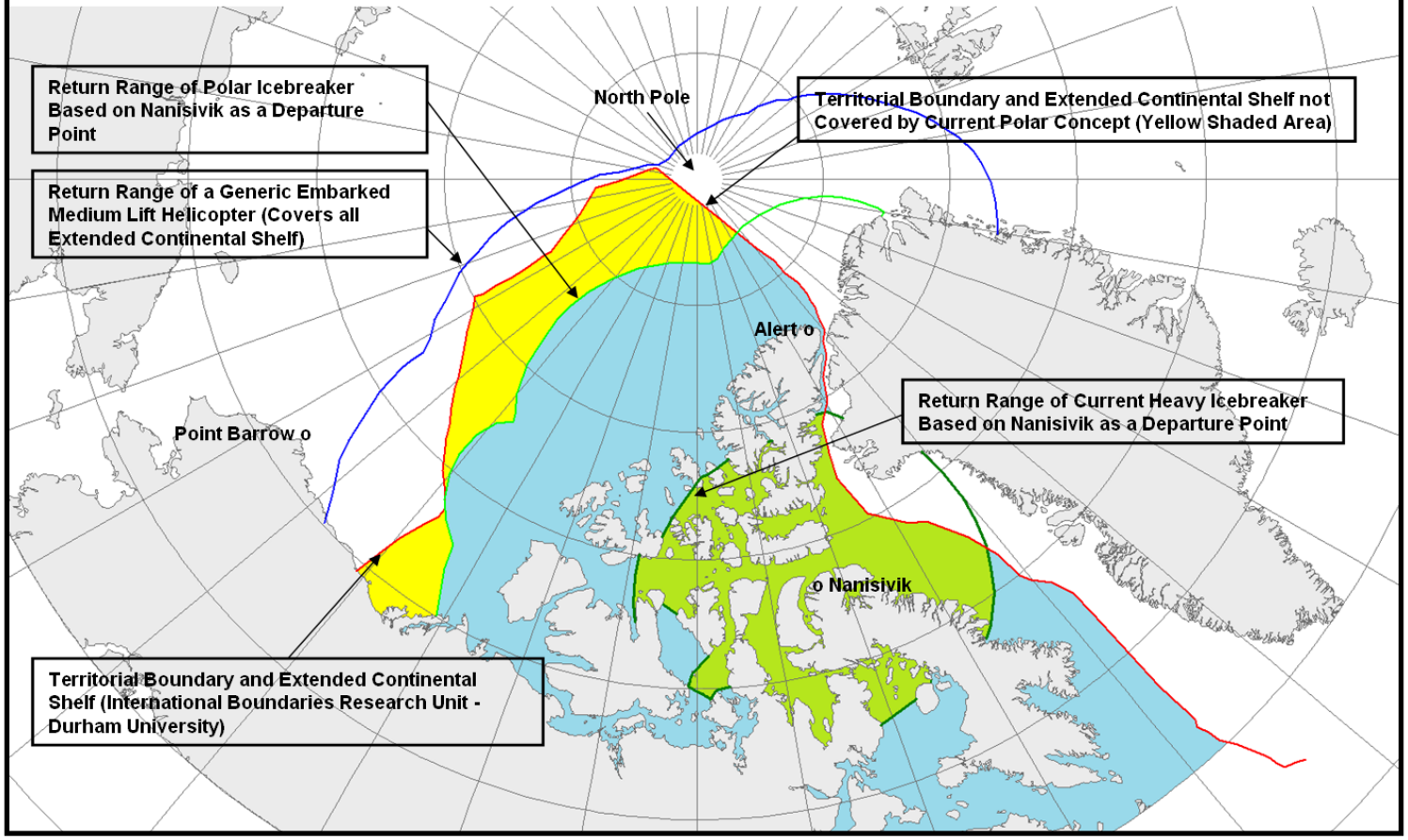
- Key features:
  - Capable of sustained operations in the Arctic for 270 days in very difficult ice conditions
  - Can accommodate a crew of approximately 60 (with space for an additional 40 program personnel), two medium-lift helicopters and a large cargo/equipment carrying capacity
  - Modular mission payload approach to ensure the vessel is operationally adaptable and capable of meeting current and future program needs
- Compared to Coast Guard's most capable icebreaker, CCGS *Louis S. St-Laurent*.

Heavy Icebreaker	Polar Icebreaker
• Capable of two season operations • Continuously break ice up to 1.3 m thick • Operations dependent on prevailing ice conditions	• Capable of three season operations • Continuously break ice up to 2.5 m thick • Operate where it is needed, when it is needed • Conduct over-winter operations, as required

Implementing NMTCs: Polar Icebreaker

Polar Icebreaker Operational Range

- **design ice conditions (2.2m, 500kPa, 85% MCR)**
- **Nanisivik Naval Facility as point of departure and return**
- **14 days on scene endurance with 15% reserve of fuel**



NMTC: Path Forward

Budget 2015

- Economic Action Plan 2015 provides $30.8 million over five years to enhance the safety of marine transportation in the Arctic and further strengthen environmental protection and marine incident prevention, preparedness and response south of the 60th parallel.
- Measures related to the Arctic include targeted investments of $17.0 million over five years to strengthen marine navigation safety by improving charting of the seafloor, designing navigation aids, engaging local and Aboriginal communities, as well as strengthening prevention, preparedness and response capacity.
- Measures in waters south of the 60th parallel include targeted investments of $13.8 million over five years to fund scientific research on the behaviour of oil in freshwater in order to contribute to the knowledge base to effectively respond to oil spills in some of the highest risk areas in Canada, and to increase marine oil spill response capacity in the St. Lawrence River.
- Through these investments, the Government is taking steps to ensure Canadian goods can be safely transported to market.

NMTC: Path Forward (cont'd)

- Application of the Corridors framework will facilitate responsible economic development, guide planning for the delivery of CCG services north of 60, and inform decision-making with respect to future assets that may be needed to serve the Arctic.

- Targeted investments will facilitate the provision of essential services to communities, mariners and stakeholders in Canada's Arctic and:

  - improve the management of internal Arctic waters through use of risk-based decision-making;
  - reduce the likelihood of marine incidents;
  - support the commercial marine industry; and,
  - improve conditions to enable economic development and improve the well-being of northern communities.

- Each phase will build on the last; NMTC implementation will occur as an iterative process.

Summary

- Marine transportation is fundamental to future Arctic developments.
- But providing services in the Arctic is challenging at best and clearly expensive, so a pragmatic approach is required.
- CCG sees Northern Marine Transportation Corridors serving as an operational framework to guide federal investments in the Arctic.
- Intradepartmental linkages and external engagement will continue to be a priority.