Transport Canada –
Marine Transportation in the Canadian Arctic

Presentation to the International Maritime Statistics Forum

Centre of Excellence in Economics, Statistics, Analysis and Research (CEESAR)
May 21st, 2014 – Copenhagen, Denmark
Outline of this Presentation

- Context of the Canadian Arctic
- Provide an overview of Transport Canada’s role in the Arctic
- Present recent study of marine activity in Canada’s Arctic
  - Objectives and scope
  - Results
  - Trends and factors influencing activity
- Data Limitations
- Next Steps
Context of the Canadian Arctic

- In 2011, the population in the study area was 162,100 individuals. Northern communities have a younger and faster-growing population in Canada.

Inuit organizations are active stakeholders in the marine transportation industry.

Marine infrastructure varies in the region, supporting a variety of activities related to community resupply, fishing, and mining/exploration.
Context of the Canadian Arctic

Many proposed plans for 22 major projects in Canadian Territories

Resource development in the Canadian Arctic depends on:

- Commodity price
- World demand
- International market for capital risk
- Ownership structure
- Implementation costs
Context of the Canadian Arctic

Marine transportation sector in northern Canada is a niche

- Small market
- Lack of infrastructure
- Ice conditions
- Sailing season

Length of Cargo Ship Sailing Season in Northern Canada by Region (days)
Canadian Arctic – TC Policy Rationale

The challenges

- Increased global commercial interests in the Canadian Arctic
- Climate change and reduced predictability of the weather;
- Increased demand for safety and infrastructure;
- Sensitive northern ecosystems;
- Vast geography;

Proposed response

- A framework to guide the deployment of limited federal resources towards:
  - Improving safety and efficiency of marine transportation
  - Facilitating community resupply and responsible resource development
Canadian Arctic – TC’s Roles

Northern Strategy Priority Areas
- Promoting social and economic development
- Protecting environmental heritage
- Exercising sovereignty
- Improving and devolving Northern governance

World-Class Tanker Safety System
- Analytical support to Pan-Canadian Risk Assessment (North of 60) for Tanker Safety Expert Panel (TSEP)
- Potential to focus federal resources toward enhancing Canada’s prevention and response capacity for spills of oils and pollutants in the Arctic
  - Presentations to TSEP on January 22, 2014 (results will be presented in June 2014)

Northern Transportation Action Plan (TC)
- Focus Area 1: Supporting Northern Supply Chains
- Focus Area 2: Tailoring Regulatory/Policy Frameworks to Northern Realities
- Focus Area 3: Operating Within A Fragile Northern Environment

Marine Sector Review (TC)
- Northern Component
  - Adaptation to climate change
  - Regulatory review
  - Address infrastructure and service gaps
Marine Transportation North of the 55th Parallel Study

Objectives
  - Build baseline knowledge on the economic and safety aspects of marine transportation in the North;
  - Shed light not only on the “what” but the “why”;
  - Leverage new GIS data;
  - Identify policy issues;
  - Discuss the impact of future resource development projects.

Scope
  - Marine transportation only from Labrador to the Yukon;
  - Examines community resupply, resource development, recreational boating, fishing and cruises;
  - Analysis based on data (2007-13) and stakeholder interviews.
Marine Traffic 2011-2013
Results

- Internal vessel movements included in the study area increased by more than 25% in 2010, but remained steady to 2012 at just above 900 trips.
- However, other vessel movements (in/out/transit) have fluctuated since 2007.

- General cargo ships represent the most vessel activity in the study area, accounting for 359 voyage legs in 2012, followed by tugs (307 legs) and tankers (220 legs).
Results

- In 2011, 2.02 million tonnes of goods have been carried to or from the northern Canada.
- 38% of the marine traffic in the study area consisted of metallic ores, which mainly originate from Voisey’s Bay on the Labrador coast and Deception Bay in Nunavik.
Results

- Tonnage of marine cargo unloaded to communities remained stable from 2008 to 2011 while that of cargo unloaded at mining sites increased steadily (more than tripling by 2011).
Inbound Flow

Total inbound tonnage to the Arctic was 0.7 million tonnes in 2001. Petroleum products and general cargo, respectively, represented 64% and 34% of that total.
Outbound Flow

Total tonnage moving out of the Arctic was 1.3 million tonnes in 2011. 60% of which was metallic ores (which are exclusively outbound flows).
Outlook of the Resources Development

Impact on marine traffic generated from the proposed resource development projects will depend on many factors:

- Volumes to be shipped (inbound and outbound)
- Size of the vessel
- Length of the navigation season
- Ice-class of the vessel
- Delivery commitments
- Infrastructure

<table>
<thead>
<tr>
<th>Project</th>
<th>Product</th>
<th>Marine inbound</th>
<th>Marine outbound</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voisey’s Bay*</td>
<td>Nickel-copper</td>
<td>General and project cargo, diesel</td>
<td>Ore concentrates (500-600 kt/y)</td>
<td>2005-2035</td>
</tr>
<tr>
<td>Raglan*</td>
<td>Nickel-copper</td>
<td>General and project cargo, diesel</td>
<td>Ore concentrates (150-200 kt/y)</td>
<td>1997-2023</td>
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<tr>
<td>Nunavik Nickel*</td>
<td>Nickel-copper</td>
<td>General and project cargo, diesel</td>
<td>Ore concentrates (160 kt/y)</td>
<td>2013-2022?</td>
</tr>
<tr>
<td>Meadowbank*</td>
<td>Gold</td>
<td>General and project cargo, diesel</td>
<td>Waste (containers)</td>
<td>2010-2017</td>
</tr>
<tr>
<td>Baffinland</td>
<td>Iron ore</td>
<td>General and project cargo, diesel</td>
<td>Ore (3.5 Mt/year eventually ramped up to 20 Mt/year)</td>
<td>2017-20??</td>
</tr>
<tr>
<td>Hopes Advance Bay</td>
<td>Iron ore</td>
<td>General and project cargo, diesel</td>
<td>Ore concentrates (20 Mt/year)</td>
<td>2017-2040</td>
</tr>
<tr>
<td>Roche Bay</td>
<td>Iron ore</td>
<td>General and project cargo, diesel</td>
<td>Ore concentrates (5.5 Mt/year)</td>
<td>2017-2032</td>
</tr>
<tr>
<td>Kiggavik</td>
<td>Uranium (yellow cake)</td>
<td>General and project cargo (81 kt/y), diesel (57 kt/y)</td>
<td>Waste (containers) and limited amounts of concentrate in drums.</td>
<td>2019-2031</td>
</tr>
<tr>
<td>Meliadine</td>
<td>Gold</td>
<td>General and project cargo (40 kt/y), diesel (100 kt/y)</td>
<td>Waste (containers)</td>
<td>2018-2031</td>
</tr>
<tr>
<td>Izok Corridor</td>
<td>Zinc-copper-lead</td>
<td>General and project cargo, diesel</td>
<td>Ore concentrates (2 Mt/year)</td>
<td>2017-2029</td>
</tr>
<tr>
<td>Back River</td>
<td>Gold</td>
<td>General and project cargo, diesel</td>
<td>Waste (containers)</td>
<td>20?? + 10-15 years</td>
</tr>
<tr>
<td>Hackett River</td>
<td>Zinc</td>
<td>General and project cargo, diesel</td>
<td>Ore concentrates (500 kt/year)</td>
<td>2020-2035</td>
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<tr>
<td>Hope Bay</td>
<td>Gold</td>
<td>General and project cargo (40 kt/y), diesel (76 kt/y)</td>
<td>Waste (containers)</td>
<td>2015-2030</td>
</tr>
</tbody>
</table>
Data Limitation

- Commodity movement database
  - For the moment, the most recent year is 2011
  - Commodity description limited for general cargo movement
- Mackenzie Valley and Inuvialuit regions considerably underestimated
  - Database does not cover well the tug and barge industry
- Vessel positions information still limited
- Challenge to combine database
  - S-AIS, Coastal AIS, Vessel Movement and Commodity Movement databases
Next Steps

- Enhance the marine traffic analysis with improved data
- Support work on Canadian Arctic logistics and supply chains
  - Connectivity and efficiency
  - Resiliency
- Northern resource development and its impact on marine transportation demand
- Analysis on future marine traffic and routes
  - Northwest Passage
  - Major corridors
Links

Transport Canada:
http://www.tc.gc.ca

Environment Canada – Canada Ice Service:
http://www.ec.gc.ca/glaces-ice/

Arctic Council:
http://www.amap.no/

Arctic Maritime & Aviation Transportation Infrastructure Initiatives
http://arcticinfrastructure.org/

Natural Resources Canada
http://www.nrcan.gc.ca/mining-materials/mining

Marine Transportation North of the 55 parallel Study
Available on demand
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