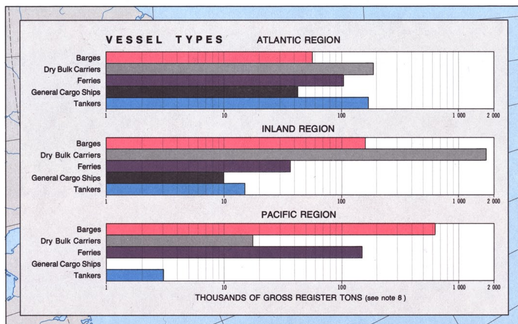

NOTES

1. For the purposes of this map, infrastructure refers to the basic framework components of the commercial water transportation system — namely ports, waterways, and vessels.

   The port is the fundamental feature in this overall system providing the vital link or interface between land and water. It is where, through the use of mechanical and/or human effort, cargo is either transferred from water to land and vice versa, or is transshipped from larger to smaller vessels and vice versa.

   Data for ports south of 55°N (and for Churchill, Cornwallis Island (Resolute), Déception, Frobisher Bay, Nanisivik, Stewart and Tuktoyaktuk) refer to total tonnage of loaded and/or unloaded, international and/or domestic cargo handled in 1982 (Statistics Canada cat. 54-210 and 54-211). Data for all other northern ports refer to selected loaded and/or unloaded domestic cargo only (see Note 4).

2. Commercial port administration, management and development in Canada is primarily the responsibility of the Canadian Marine Transportation Administration of Transport Canada. Ports thereby administered fall under the control of the Canada Ports Corporation Act, the Harbour Commissions Act or the Public Harbours and Port Facilities Act.

   Canada Ports Corporation is a newly-created corporate structure formed under the Canada Ports Corporation Act, 1982, that is responsible for the administration of fifteen commercial ports (formerly National Harbours Board ports). Responsibilities include the control and development of all land use within port limits. These ports generally have a high degree of autonomy but operate as a unit in fulfilling national policy objectives.

   Harbour Commissions were formed under the Harbour Commissions Act, 1964, and at present provide administration for nine commercial ports. These ports have similar administrative powers to the Canada Ports Corporation and are highly autonomous; however, Harbour Commissions are usually based on local municipal government initiatives, hence operate primarily to fulfil local concerns. There are two Harbour Commission ports (Toronto and Hamilton) which operate under their own separate legislation.

   The ports administered by the Canada Ports Corporation and Harbour Commissions are of primary importance to domestic and international water transportation in Canada. These ports collectively handled more than 60% of Canadian commercial waterborne cargo in 1982.

   Other ports refer to public harbours and facilities, fishing and recreational harbours, private facilities, provincial government facilities and undeclared harbours in the Arctic and northern Quebec. In a few cases a port identified in this class may have administrative overlap (e.g. it may be both a public harbour or facility and a fishing and recreational harbour). As far as commercial significance is concerned, the public harbours and facilities under direct administration by Transport Canada (Public Harbours and Port Facilities Act) handle the bulk of the commercially significant tonnage in this administration type. Public harbours or wharves under the jurisdiction of the Department of Fisheries and Oceans which are used entirely for fishing and recreational purposes (Fishing and Recreational Harbours Act) have not been included because these ports are not normally involved in commercial shipping.

   Statistical reporting areas refer to ports, or groups of ports, which relate to areas and have either no administration or lack a common administration type. These areas, which are used for statistical reporting purposes (Statistics Canada, cat. 54-210), occur primarily on the British Columbia coast.

3. Following Statistics Canada's reporting procedure, data for some ports shown on this map include that for smaller ports in their immediate geographical area as indicated below. Ports identified with an asterisk (*) are listed separately by Statistics Canada (cat. 54-210) but have been grouped on the map due to scale limitations. Port administration refers to that of the named port.

NEWFOUNDLAND
- Corner Brook: Curling, Hughes Brook, Humbermouth
- Long Pond: Manuels
- Stephenville: Flat Bay; Flat Point, St. George's, Turf Point

NEW BRUNSWICK
- Newcastle: Northwest Bridge

NOVA SCOTIA
- Liverpool: Brooklyn
- Port Hawkesbury: Point Tupper
- Sydney: Point Edward

QUEBEC
- Québec: Lévis*
- Sept-Îles: Clarke-City, Pointe-Noire*

ONTARIO
- Oakville: Bronte
- Sault Ste. Marie: Marks Bay, Mill Point
- Toronto: Lakeview*
- Windsor: Ojibway, Riverside, Sandwich, Walkerville

BRITISH COLUMBIA
- Campbell River: Duncan Bay
- Crofton: Crofton
- Nanaimo: Harmac
- North Fraser: Duck Island
- Port Hardy: Hardy Bay
- Vancouver: Burnaby, Dollarton, English Bay, False Creek, Ioco, North Arm, Port Moody, Roberts Bank*

NORTHWEST TERRITORIES
- Cornwallis Island: Resolute

Energy, Mines and Resources Canada / Énergie, Mines et Ressources Canada

THE NATIONAL ATLAS OF CANADA 5th EDITION

CANADA
WATER TRANSPORTATION INFRASTRUCTURE

Produced by the Geographical Services Division, Surveys and Mapping Branch, Energy, Mines and Resources Canada. Printed 1986.

Copies of this map may be obtained from the Canada Map Office, Energy, Mines and Resources Canada, Ottawa, or your nearest map dealer. Quote MCR 4112.

Des exemplaires de cette carte sont disponibles en français. Précisez MCR 4112F.

© 1986. Her Majesty the Queen in Right of Canada, Department of Energy, Mines and Resources.

Scale 1:7 500 000 or 1 centimetre represents 75 kilometres

75 0 75 150 225 300 375 450 kilometres

Lambert Conformal Conic Projection, Standard Parallels 49°N and 77°N.
Modified Polyconic Projection, North of Latitude 80°.

NOTES (continued)

4. More than 96% of the total Canadian waterborne domestic cargo tonnage in 1982 (66 million tonnes) consisted of bulk commodities, half of this tonnage being dry bulk commodities. The importance of the dry bulk trade to domestic shipping is further reflected by the fact that 50% of Canada's domestic fleet (excluding barges) by number of vessels, and approximately 81% of its total carrying capacity, was represented by dry bulk vessels in 1982.

   Selected domestic cargo movements shown on the map indicate the following:

   Major cargo movements in the Great Lakes-St. Lawrence Region refer to the movement of major dry bulk commodities — namely, grain, iron ore and coal. The actual routing location has been derived from Canadian Hydrographic Service Charts and generally represents preferred navigational routes recommended by the Dominion Marine Association and the Lake Carriers Association of Canada.

   Major cargo movements in the North (including the Mackenzie River and Athabasca area) refer to the domestic movement of general cargo and wet bulk commodities (particularly fuel oil) to locations north of 55°N. These flows, while not large in terms of total tonnage, are vitally important in terms of the resupply of Arctic communities, government and military service sites, and sites for companies undertaking exploration and development in the North.

   In the Eastern Arctic, the major resupply system identified on the map is that which is coordinated by the Canadian Coast Guard ("sealift" operation) and represents the region's main cargo movement for community resupply purposes. In 1982, the "sealift" handled approximately 47 000 tonnes of general cargo and wet bulk commodities, the majority of which was loaded at Montréal.

   In the Western Arctic (and Athabasca area) the major resupply system identified represents cargo movement by the Northern Transportation Company Limited (NTCL) which is responsible for approximately 80% of all cargo movement in the region. In 1982, NTCL handled approximately 295 000 tonnes of cargo on the Mackenzie River, about 20 000 tonnes of cargo on the Athabasca River and Lake Athabasca, and approximately 17 000 tonnes in the Keewatin and Hudson Bay areas. The major loading points were Hay River, Norman Wells, Fort McMurray and Churchill.

   Cargo routings indicated in the North represent a generalized routing structure. Due to varying ice conditions in this region during the shipping season (which generally runs from June to October), there are no preferred navigation routes.

   Major Domestic Cargo Movements on the Pacific Coast

   The main domestic cargo handled on the Pacific Coast is forest products — primarily logs. The domestic log trade in 1982 (approximately 11 million tonnes) consisted of a complex network including 54 loading and 40 unloading ports, many of which are classified as statistical reporting areas. Due to scale limitations, this log movement could not be included on the map.

5. Ferries and scheduled coastal services shown on the map represent major interprovincial or international services operating in Canadian waters during 1982. Services between major islands such as Vancouver Island and the mainland of Canada have been included.

6. ***Vessel Traffic Services Zones*** (VTS) refer to areas for which services have been established by the Canadian Coast Guard (Transport Canada) to enhance the safe and expedient movement of marine traffic. Responsibilities include the monitoring of vessel movements, the prevention of accidents at the approaches to busy waterways or ports, the provision of updated weather information, and the recommendation of courses of action to be taken in the event of an emergency.

   The ***Eastern Canada Traffic Regulating System*** (ECAREG) and the ***Arctic Canada Traffic System*** (NORDREG) are two other vessel traffic services zones in Canada. The former applies to the Gulf of St. Lawrence and east coast waters within Canadian Territorial Sea Limits south of 60°N; the latter zone refers to those waters of Ungava Bay, Hudson Bay and James Bay south of 60°N. Also included in NORDREG are the waters to which the Arctic Waters Pollution Prevention Act applies (see below) with the exception of Mackenzie Bay and Kugmallit Bay south of 70°N and east of 139°W. Both of these systems are intended to assist vessels in their safe and efficient movement in these waters; for example, information on ice conditions, ice routing and icebreaker assistance can be obtained.

   Shipping Safety Control Zones were created under the terms of the Canadian Arctic Waters Pollution Prevention Act, 1970, to regulate the type of ships operating in the Arctic. The main purpose of this Act is to guard against pollution by the establishment of criteria concerning the type of vessel that can safely operate in the Canadian Arctic in terms of its dimensions, hull strength and propulsion unit. There are sixteen shipping safety control zones which cover an area from 60°N to the North Pole. For each of the fourteen categories of vessel identified by the Act, a shipping season for each zone was created. Navigation seasons for each category for all sixteen zones are listed in the *Canada Gazette* (1981).

7. ***The Great Lakes-St. Lawrence Seaway*** is a major international waterway which has played an important role in the economic development of Canada and the North American interior. Officially completed in June 1959, through the joint cooperation of the Canadian and United States governments, it includes the waters of the five Great Lakes and connecting waterways and the St. Lawrence River. The St. Lawrence River is generally considered part of the Seaway; however, this term technically refers to the system of canals, locks and channels under joint jurisdiction which lie between Montréal and Lake Ontario. A ship entering the Seaway at Montréal will rise more than 183 m (600 ft.) by the time it reaches Thunder Bay. At present, the shipping season on the Seaway is restricted to approximately 9 months (normally April 1 to December 15) due to ice conditions.

   The Great Lakes-St. Lawrence Seaway is of fundamental importance to commercial water transportation in Canada. Approximately half of Canada's export grain trade, for example, passes through the Seaway. Generally, this waterway provides for the relatively low cost and efficient movement of bulk commodities for which water transportation is well suited (for example grain, iron ore, coal, fuel oil, fertilizer, pulp and cement). In addition, general cargo such as manufactured goods, for example, iron and steel products, is transported on the Seaway.

   Much of the domestic cargo shipped on the Great Lakes-St. Lawrence Seaway is ultimately intended for overseas markets, for example, roughly 80% of the grain carried. Most bulk commodities imported from or exported to overseas markets are transshipped at Montréal or other lower St. Lawrence ports between "lakers" (vessels which are primarily bulk carriers that operate on the Seaway and are not larger than 222.5 m (730 ft.) long and 23 m (76 ft.) wide to negotiate most locks) and larger ocean vessels which may be too large for Seaway operations.

8. For the purposes of the vessel-type graphs, Canada has been divided into three shipping regions — the Atlantic Region which includes the St. Lawrence River below Montréal; the Inland Region which refers to the Great Lakes, the St. Lawrence River above Montréal, and the Mackenzie River; and the Pacific Region. Due to data limitations, vessels active in other parts of the Arctic are included in the Atlantic Region.

   Vessels refer to (a) all self-propelled vessels greater than 1 000 gross register tons, (b) all cargo-carrying barges of 100 gross tons or more, and those of 10 gross tons or more in service on the Mackenzie River, and (c) all ferries, including passenger or combined passenger/general cargo vessels. In all cases, data refers to those vessels of Canadian registry operating in Canadian waters during 1982. The gross registered tonnage is a volume measure which represents the cubic capacity of permanently enclosed space in a ship and is measured as 2.83 cubic metres to a ton.

9. Ports which handled 100 000 tonnes of cargo or more in 1982, as well as those which are origins or destinations of selected domestic cargo movements, have been named. Most major ferry destinations for those routings indicated on the map have been identified.

Research by R.J. McCalla, Saint Mary's University, Halifax, and P.J. Lloyd, Geographical Research, Geographical Services Division, Surveys and Mapping Branch, Energy, Mines and Resources Canada.

Cartography by Cartography and Toponymy, Geographical Services Division, Surveys and Mapping Branch, Energy, Mines and Resources Canada.

WATER TRANSPORTATION INFRASTRUCTURE

PORT CLASSIFICATION

Domestic and/or international tonnage handled, 1982*

- 10 000 000 tonnes and over
- 1 000 000 - 9 999 999
- 100 000 - 999 999
- less than 100 000 tonnes
  - [1] 10 000 - 99 999
  - [2] 1 000 - 9 999
  - [3] less than 1 000 tonnes

*Data for ports north of 55°N (other than Churchill, Cornwallis Island (Resolute), Déception, Frobisher Bay, Nanisivik, Stewart and Tuktoyaktuk) are incomplete and refer to selected domestic cargo only (see Note 1).

Port Administration

- Canada Ports Corporation
- Harbour Commissions
- Other
- Ports, or groups of ports, which have either no administration or lack a common administration (grouped as statistical reporting areas)

SELECTED DOMESTIC CARGO MOVEMENTS

- Major cargo movements in the Great Lakes-St.Lawrence Region
- Major cargo movements in the North

SELECTED FERRIES AND SCHEDULED SERVICES

- Year-round service
- Seasonal service

VESSEL TRAFFIC ZONES (1982)

Vessel Traffic Services Zones (VTS)

1	Port aux Basques	7	St. Lawrence VTS System
2	Canso	8	Sarnia
3	Fundy	9	Vancouver
4	Halifax	10	Tofino
5	Placentia Bay	11	Prince Rupert
6	St. John's		

- Eastern Canada Traffic Regulating System (ECAREG)
- Arctic Canada Traffic System (NORDREG)
- 10 Arctic Waters Shipping Safety Control Zones

THE GREAT LAKES-ST. LAWRENCE SEAWAY

- Great Lakes-St.Lawrence Seaway

Lock(s)

A	St-Lambert	D	Upper Beauharnois
B	Côte Ste-Catherine	E	Snell
C	Lower Beauharnois	F	Eisenhower
G	Iroquois		
H	Welland Canal (8 locks)		
J	Sault Ste. Marie (4 locks)		

Sources

Alcan Shipping Services Limited. 1977. *Shipping Options for Canadian International Deep Sea Trade.* Summary Report. Prepared for Transport Canada, Research and Development Centre. Ottawa.

Beauchamp, K.B. 1985. *Port Policy For The Canadian Arctic Coast.* A Policy Paper prepared for the Arctic Ocean Programme, Canadian Arctic Resources Committee. Ottawa.

Canada, Canadian Transport Commission, Research Branch. 1982. *Maritime Transport of Bulk Commodities in Canadian Trade.* Report No. 1982/07E. Ottawa.

_____ 1984. *Transport Review. Trends and Selected Issues, 1983.* Ottawa.

Canada, Canadian Transport Commission, Water Transport Committee. 1983. *Canadian Merchant Fleet. Ships of 1000 Gross Tons and Over on Canadian Registry as of December 31, 1982.* (List A). Ottawa.

_____ 1983. *Canadian Merchant Fleet on Canadian Registry as of December 31, 1982. Non Self-Propelled Carriers of 100 Gross Tons and Over and of 10 Gross Tons and Over in Service on the Mackenzie River.* (List H). Ottawa.

_____ 1985. *Origin-Destination Matrix of NTCL Operations in the Western Arctic, 1982.* Unpublished data. Ottawa.

Canada, Canadian Government Office of Tourism. 1982. *Ferries, Bridges and Cruises East.* CGOT Z 1222. Department of Industry, Trade and Commerce. Ottawa.

_____ 1982. *Ferries, Bridges and Cruises West.* CGOT Z 1232. Department of Industry, Trade and Commerce. Ottawa.

Canada, Statistics Canada. 1983. *Coastwise Shipping Statistics, 1982/Statistiques du cabotage, 1982.* Cat. 54-210. Ottawa.

_____ 1984. *International Seaborne Shipping Commodity Statistics, 1982/Statistiques du transport maritime international des marchandises, 1982.* Cat. 54-209. Ottawa.

_____ 1984. *International Seaborne Shipping Port Statistics, 1982/Statistiques portuaires du transport maritime international, 1982.* Cat. 54-211. Ottawa.

Canada, Transport Canada, Canadian Coast Guard. 1981. *Vessel Traffic Management Study. Phase 1, Final Report.* Report No. TP 2544E. Ottawa.

_____ 1983. *Notice to Mariners, Annual Edition. 1983.* Report No. TP 390E. Ottawa.

_____ Fleet Systems Branch. 1983. *Report of the Eastern Arctic Sealift. 1982.* Report No. TP 2506. Ottawa.

Canada Gazette, Part II. 1981. Fishing and Recreational Harbours Act. Fishing and Recreational Harbours Regulations, Amendment. Vol. 115, No. 9, p. 1265. Ottawa.

Consolidated Regulations of Canada 1978. Arctic Waters Pollution Prevention Act. Arctic Shipping Pollution Prevention Regulations. Chapter 353, pp.2237-2273. Ottawa.

_____ Arctic Waters Pollution Prevention Act. Shipping Safety Control Zone Order. Chapter 356, pp. 2283-2289. Ottawa.

Revised Statutes of Canada 1970, First Supplement. 1970. The Arctic Waters Pollution Prevention Act. Chapter 2, pp. 3-25. Ottawa.

Sussman, G. 1978. *The St. Lawrence Seaway: History and Analysis of a Joint Water Highway.* Canada - U.S. Prospects Series. The C.D. Howe Research Institute (Montréal) and The National Planning Association (Washington, D.C.).

Additional material was taken from various maps supplied by the Canadian Hydrographic Service, Department of Fisheries and Oceans, Ottawa.

Personal Communications

H.G. Amos, Northern Transportation Company Limited, Edmonton. G. Cale, CN Marine, Halifax. W. Dancer, Transport Canada, Canadian Coast Guard, Dartmouth. L. Forrest, Transport Canada, Canadian Coast Guard, Ottawa. T. James, Canadian Transport Commission, Water Transport Committee, Ottawa. G. King, Fisheries and Oceans Canada, Bedford Institute of Oceanography, Dartmouth. K. Oglesby, The St. Lawrence Seaway Authority, Ottawa. O. Potvin, Transport Canada, Harbours and Ports Directorate, Ottawa. R. Shaw, Transport Canada, Canadian Coast Guard, Dartmouth. N. Stephens, Transport Canada, Canadian Coast Guard, Ottawa.

Canada