

in 1973, 23.7 million tons were domestic cargo and 6.6 million tons were foreign traffic; downbound, 33.5 million tons were domestic freight and 11.4 million tons were carried to and from foreign ports.

On the Montreal — Lake Ontario section, upbound traffic amounted to 27.6 million tons in 1973 and downbound traffic to 30.0 million tons, an increase of 7.4% over 1972. Almost 56.8% of the former was accounted for by iron ore shipped from St. Lawrence ports to Hamilton and Lake Erie and the downbound traffic consisted largely of overseas shipments of grain. There were 87 more upbound transits and 76 more downbound transits in 1973 than in 1972, indicating a slight increase in the number of vessels using this portion of the Seaway. Bulk commodities made up 89.9% of the total traffic through the section in 1973, the principal commodities through the St. Lawrence canals being iron ore, wheat, corn, fuel oil, manufactured iron and steel, and barley. Traffic patterns show that 30.4% of the total movement was between Canadian ports, 38.3% between Canadian and United States ports, and 31.1% consisted of foreign trade to and from Canada and the United States. The small remainder was traffic between ports in the United States.

There were 6,815 transits through the Welland Canal in 1973, with a cargo volume of 23.7 million tons upbound and 43.5 million tons downbound; bulk cargo accounted for 92.4% of the traffic. Although many vessels pass through both the St. Lawrence and Welland canals on "through" trips, there is a substantial amount of local traffic between Great Lakes ports which involves only the Welland Canal. These movements are largely of iron ore, grain and coal. The Welland Canal traffic was 9.6 million tons greater than that reported for the Montreal — Lake Ontario section.

Income of the St. Lawrence Seaway Authority for 1973 amounted to \$28.4 million, made up of toll revenue of \$24.6 million assessed for transits through the Seaway locks between Montreal and Lake Erie and sundry revenues (rentals, wharfage, bridge revenue, etc.) of \$3.8 million. Total expenses for 1973 amounted to \$27.6 million of which operation and maintenance expenses amounted to \$19.3 million, regional headquarters, headquarters administration and engineering expenses to \$7.3 million and construction to \$985,158 (Table 15.21).

15.4.4 Federal government marine services

Headquarters organization. The Marine Services of the Ministry of Transport has seven branches — Aids and Waterways, Marine Safety, Canadian Coast Guard, Marine Pilotage, Marine Telecommunications and Electronics, Marine Finance and Marine Personnel — each headed by a director responsible to the Deputy Administrator (Marine Services), Canadian Marine Transportation Administration. An additional unit, the Marine Emergency Office, also reports to the Deputy Administrator.

The Aids and Waterways Branch has two divisions — Marine Aids and Waterways Development.

Marine Aids Division is responsible for planning, policy development and program administration related to a national system of marine aids to navigation and traffic control, and for research and development in these two areas. These responsibilities include the installation, operation and maintenance of electronic navigation systems such as Decca, Loran A and Loran C. They also include the development of port entry systems which involve radar surveillance, traffic control and conventional floating and shore-based aids to navigation. The Division develops standards and guidelines for the operation and maintenance of over 20,000 marine aids to navigation consisting of lightstations, buoys, fog signals and shore-based unattended lights. It carries out research and development related to new atomic and solar power sources as well as on conventional battery and hydro sources. The Marine Aids Division is responsible for administering the Navigable Waters Protection Act.

The Waterways Development Division is responsible for developing national plans, policies and programs to improve commercial navigable waterways and for related research, including hydraulic model studies carried out in co-operation with other government agencies.

The Marine Safety Branch has three divisions — Steamship Inspection, Nautical Services and Air Cushion Vehicles. The Branch is responsible for administering the parts of the Canada Shipping Act related to operating Canadian ships and ships within Canadian waters; it is charged with the registering of shipping, licensing ships, certifying ships' officers and engaging and discharging ships' crews. Other responsibilities include safety inspection of ships, handling