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THE CANADIAN COAST GUARD

(Prepared by the Canadian Coast Guard, Ministry of Transport, Ottawa.)

The Canadian Coast Guard has played a vital part in the nation's development since Confederation, although it has been known by its present name only since January 26, 1962.

Before Confederation, several provincial fleets operated independently. These were brought together as a single marine service in 1867 and became the embryo of the fleet which is now the responsibility of the Ministry of Transport. From a small beginning, the fleet has expanded into an organization comprising more than 140 vessels of all types, of which 60 are watchkeeping ships. These include nine full icebreakers and nine other ships in the category of light icebreaking lighthouse and buoy tenders.

The Canadian Coast Guard was never an armed service in the strict sense. In the period before the First World War, however, some Marine Service ships employed as fisheries-protection cruisers carried small guns that were also used for naval training. To this extent, the Marine Service of the former Department of Marine and Fisheries anticipated the Naval Service Act by which, in 1910, the Royal Canadian Navy was brought into existence.

The Marine Service, then principally engaged in lighthouse and buoy operations and in some icebreaking during the early winter, has since been occupied with the business of keeping shipping channels safely marked and in search-and-rescue operations.

Modernization and expansion to its present size and strength has occurred within the past few years as a result of two principal factors — the development of a sudden new demand for icebreaker support for shipping in the Canadian Arctic and new industrial development of the Gulf of St. Lawrence, creating a requirement for icebreaker assistance to shipping throughout the winter.

At the same time, marine search-and-rescue activities increased. In addition to the needs of commercial shipping and the fishing industry, there was a growing safety problem arising from the expansion of pleasure-boating across Canada.

Discontinuance of the old name Canadian Marine Service and adoption in January 1962 of the designation Canadian Coast Guard came in recognition of the increased size and scope of the fleet.

With the change in name came a change in appearance of both ships and men. The vessels adopted the official colours of Canada, with red hulls and white superstructures. Coast Guard ships are easily recognized as they go about their business.

A civilian service

The duties of the Canadian Coast Guard are civilian in nature. No armament is carried on the ships. The fleet has no military functions.

It carries on with the important duties it has always performed. It maintains and supplies shore-based and floating aids to navigation in Canadian waters. These include the Atlantic and Pacific coastal areas, the St. Lawrence River and Great Lakes, the channels of both the Eastern and Western Arctic, Hudson Bay, the Mackenzie River system and other inland waters. The territory covered is vast, and the duties involved are equally extensive.

Since its beginning, the fleet has carried out icebreaking. In the earliest years, this work was done mainly to aid the Prince Edward Island Ferry Service and in the St. Lawrence when flooding caused by ice was a serious problem.

Following flood-control icebreaking, merchant ships began taking advantage of the ready-cut channel, and now shipping into Montreal continues throughout the winter.

As the development of the sea-route from Churchill, Manitoba, to Europe became a factor in Canada's maritime economy, there came a need for icebreaker assistance to commercial shipping using that route. Then came the opening-up of the Canadian Arctic, with its icebreaker requirements to within a few hundred miles of the North Pole. New icebreaking problems also were met as commercial shipping operations in the Gulf of St. Lawrence were successfully carried out throughout the winter months.

Emphasis was placed on building icebreakers and the Coast Guard was brought up to its present strength. The fleet of modern icebreakers includes the world's largest and most powerful conventionally-powered icebreaker, CCGS *Louis S. St. Laurent*, commissioned in 1969. Another full icebreaker commissioned the same year is the CCGS *Norman McLeod Rogers*, which serves principally in the Gulf of St. Lawrence.

Weather ships

The duties of the Canadian Atmospheric Environment Service include the maintenance of weather observations at Station "Papa", some 900 miles west of Canada's Pacific coast. Observations there are of considerable importance to international meteorology. To provide the service in that frequently stormy part of the Pacific Ocean, the Canadian Coast Guard operates the two sister weather-oceanographic ships *Quadra* and *Vancouver*.

Tremendous task in the North

Increasing responsibility for the resupply of civilian and military installations in widely-separated parts of the Arctic was assumed by the Department of Transport in 1954. In the beginning, much of this work was carried out by United States agencies, but the Canadian Coast Guard assumed an increasing share of the task each summer until, by 1961, its operations covered the whole Canadian Arctic. It now handles virtually all such work in the Eastern Arctic and assists other Canadian agencies and firms in the Western Arctic.

In the Eastern Arctic, the supply work is carried out by convoys of chartered merchant ships, which are escorted by Coast Guard icebreakers. The icebreaker captains act as commodores of the convoys. Assisting them are smaller Coast Guard northern-supply vessels, which are capable of working in the relatively shallow waters of a great many Arctic freight-landing areas.

Growth of the Arctic operations brought with it a requirement for ice-reconnaissance services, which are now carried out by fixed-wing aircraft flying out of such ports as Churchill, Frobisher Bay on Baffin Island and Resolute Bay on Cornwallis Island, in the High Arctic. These flights, which are under the direction of the Canadian Atmospheric Environment Service, provide information on ice conditions in the sea-lanes and in all areas where convoys operate. In addition, photographs transmitted from space satellites are being used with success in the assessment and forecasting of Arctic ice conditions.

Helicopters carried aboard the icebreakers are used for close-range reconnaissance. They carry trained ice-observers provided by the Canadian Atmospheric Environment Service, whose ability to detect "leads" through the ice not visible from a ship has resulted in tremendous savings in time for the convoys. The helicopters are also very useful in ship-to-shore personnel movements and for carrying light freight.

The handling of cargo between ship and shore is performed by a fleet of landing-craft and barges maintained in the North and

operated by the Coast Guard. Civilian contractors provide such truck and stevedore services as are needed. The amount of cargo handled each year in the supply operations amounts to about 100,000 tons.

Supply convoys in the Western Arctic operate from Tuktoyaktuk at the mouth of the Mackenzie River, down which freight is brought from the south by barge. A Coast Guard icebreaker, based at Victoria, British Columbia, makes the long trip round Alaska to Tuktoyaktuk, and from there provides escort to the supply vessels. These operate eastward, between the mainland and Victoria and King William Islands, as far as Spence Bay and Shepherd Bay at the southwestern end of Boothia Peninsula.

Assistance to Gulf shipping

In winter, the Canadian Coast Guard icebreakers play a vital part in the ever-increasing shipping operations in the Gulf of St. Lawrence. The movement of the icebreakers is directed by an ice-operations officer, who maintains contact with commercial vessels, provides routing instructions for them and directs such icebreaker assistance as they may need.

Information on ice conditions is provided by the Ministry's Canadian Atmospheric Environment Service. Where possible, merchant shipping is organized into convoys for passage under escort by ice-breakers through areas where difficult ice conditions prevail.

Throughout the season, cargoes move regularly in and out of ports on the north shore of the Gulf, such as Sept-Îles, Port Cartier and Baie Comeau, as well as from the paper-producing ports of Corner Brook and Botwood, Newfoundland, and Dalhousie, New Brunswick. New ports and new industries are contributing to the flow of winter trade each year.

The winter traffic is of particular importance to the north shore, for it means that industrial life does not have to come to a halt because of the freeze-up, as was the case in the earlier years.

Aid to marine science

In the Arctic, and to a growing extent in the Gulf of St. Lawrence and other home waters, advantage is taken by scientists, such as oceanographers and hydrographers from other government agencies, of the opportunity to further their knowledge of those waters that can be penetrated only by icebreakers.

In the course of High Arctic operations of the past several summers, the ships carried scientific research parties into many parts of the Far North, in some cases into waters hitherto uncharted. Among

these achievements were the penetration of Nansen Sound to the edge of the permanent ice-pack, following the route from Eureka Sound to Resolute Bay by way of Penny Strait, and the circumnavigation of Prince of Wales and King William Islands.

In the autumn of 1969 and the spring of 1970, the Canadian Coast Guard provided icebreaker escort to the United States tanker *Manhattan,* a large vessel specially reinforced to work in ice. In 1969 the tanker sailed through the Northwest Passage and back to test the feasibility of building huge icebreaking tankers to establish regular oil transportation from the rich new oilfields at Prudhoe Bay, Alaska, to the eastern seaboard. In the spring of 1970, the *Manhattan* conducted tests in the hard winter-ice of Baffin Bay. The CCGS *John A. Macdonald* escorted the tanker in 1969, when she became the first industrial ship to transit the Northwest Passage. The CCGS *Louis S. St. Laurent* provided assistance during the second voyage.

Ocean cable repair

The fleet includes the world's only icebreaking cable-repair ship, CCGS *John Cabot,* which entered the service in 1965. The vessel has a number of notable achievements in the Far North, locating and repairing cable breaks under the worse conditions of sub-zero temperatures, blizzards and the pitch darkness of the Arctic winter. The *John Cabot* played a vital role in the rescue of the mini-submarine *Pisces III* in 1973.

Great Lakes studies

On the Great Lakes, CCGS *Porte Dauphine* is operated on behalf of a group of research organizations working in the fields of limnology and meteorology.

Search and rescue

The Canadian Coast Guard search-and-rescue service provides the marine element in the national air-sea rescue organization in support of the general responsibility of the Canadian Armed Forces.

This phase of operations provides expert marine advice to the Canadian Armed Forces in such undertakings. It also acts as co-ordinator of the marine aspects of search and rescue and organizes both public and private vessels for these tasks.

The first step in strengthening the search-and-rescue capabilities of the fleet was the construction of five 95-foot cutters specially equipped for such work and three 70-foot cutters also designed for this purpose. Two of the larger cutters are posted on the Atlantic coast and two on the Pacific coast. The fifth operates on the Great Lakes in summer and on the Atlantic coast in winter. The three smaller cutters operate on the Great Lakes.

A further development was the decision to build a larger cutter 234 feet in length and designed for deep-sea rescue operations under the heaviest of sea and weather conditions. CCGS *Alert*, which may serve as a model for similar vessels in the future, was completed by Davie Shipbuilding Limited, Lauzon, Quebec, in the autumn of 1969 and serves on the east coast.

It also was decided to acquire a number of new shore-based lifeboats of self-righting design for inshore coastal rescue duties. Ten such craft are in service or projected at various stations throughout Canada.

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