

HMCS-CNAV SACKVILLE Oceanographic Research History

The HMCS SACKVILLE is Canada's last corvette but it is also one of Canada's earlier oceanographic research vessels. There are not many of Canada's early oceanographic or hydrographic vessels left from the 50ths and 60ths or before.. Most of them have been retired and scrapped. At the end of the world war two Canada had a big Navy so there were many military ships available for use as oceanographic research vessels or hydrographic survey vessels. As a result of the developments in anti submarine war fare it was realize that the physical oceanographic conditions off Canada's coast would have to be surveyed and understood if Canada hoped to improve it's anti submarine warfare capability in these areas. This along with a world-wide growth in oceanographic research including Canada resulted in the Sackville starting to be used in 1951 for this purpose primarily in physical oceanographic data collection. As time went by in the later 50's other research disciplines started to use it also for Biological, Chemical, Geological, and Geophysical as well as defense research.

During the 30 year's of the Sackville's oceanographic research it traversed all Canada's east coast from the Labrador Sea south to George's bank and the Gulf of St Lawrence and River regions plus cruises to Bermuda areas and the Caribbean sea and east to the Azores in the Atlantic ocean.

A general description of the HMCS-CNAV SACKVILLE history can be seen in the publication, "HMCS SACKVILLE, 1941-1985", by Marc Milner.

Users and Cruises

The *Sackville* carried out oceanographic research from 1951 until 1982. The major users included the Atlantic Oceanographic Group (AOG), the Defense Research Establishment Atlantic (DREA), the Bedford Institute of Oceanography (BIO), the Geological Survey of Canada (GSC) Ottawa, the Dominion Observatory Ottawa, Dalhousie University and the Nova Scotia Research Foundation.

In 1951, the vessel was known as the HMCS *Sackville* (# 532) and was run with a military crew. In August 1953, she was converted to a civilian crew and renamed the CNAV *Sackville* (# 113). The first scientific cruises were run by AOG. Cruise numbers were preceded by an "S" and ran from S-1 in 1951 to S-81 in 1964. DREA started using the vessel during this period and they had their own numbering system. See "HMCS *Sackville* 1941-1985" by Marc Milner for some details on naval research.

Beginning in 1965, cruises were numbered using the BIO cruise numbering system. The first was Cruise 65-004. The last BIO cruise, in 1975, was Cruise 75-002. DREA was the sole user from 1975 until 1982 when the vessel was decommissioned.

The *Sackville* carried out over 150 oceanographic cruises (not including DREA) over her 32 year career as a research vessel. ([Link to cruise list here](#))

Scientific Facilities

For the early cruises, the vessel was basically a military corvette with guns removed. For the physical oceanographic requirements which consisted of water sampling bottle casts and bathythermograph (BT) work to measure the water temperature from surface to depths was done from a winch on the starboard waist while a steam towing winch on stern was occasionally used for deeper casts. The vessel, with only a single screw, had poor station keeping ability. Sometime in the late 1940's, a damaged boiler was removed and the boiler room space was later converted to a laboratory. Sometime in the late 1950's, probably 1959 or 1960, a combined oceanographic laboratory and winch room was added after of the engine room casing near the stern. This provided a much improved capability and working area for oceanographic sampling. In 1964, a flume stabilizing system and bow thruster were added to improve ship stability and station keeping ability but these were not particularly useful and were removed a few years later. In 1968, the old naval open bridge was replaced with a two-deck fully enclosed bridge. Also additional cabin space for scientific staff was created by enclosing the main deck on each side between the break in the foc'sle and the new laboratory and winch room aft, and the bow area gunnels were raised to provide better working conditions on the fore deck. Many other small improvements were made to improve living conditions and scientific capability at various times. ([Link to pictures of ship as a research vessel](#))

Research Programs

During her long career as an oceanographic vessel, the *Sackville* carried out research in all the basic disciplines of marine research. For example:

- Physical oceanographic programs consisted primarily of bottle casts and bathythermograph (BT) deployments to collect information on water characteristics (i.e. temperature, salinity, oxygen) that could be used to map different water masses and determine major ocean circulation patterns. ([link to an expanded write up on physical oceanographic research](#))
- Biological oceanographic research used a variety of plankton nets, water bottles and bottom grabs to sample marine organisms living in the water column and on the sea floor. ([link to expanded biological research description](#))
- Chemical oceanographic samples were collected by both bottom grabs and cores as well as water samples to determine the chemical characteristics of the water column and sediments, both naturally-occurring materials (i.e. nutrients, organic carbon) and contaminants (i.e. petroleum hydrocarbons). These were usually a part of a biological, physical oceanography or geological cruise.
- Marine geological research collected bottom grabs, dredge samples and core samples to map the bottom type. This research was often supported by seismic reflection profiling. ([link to expanded geological research description](#))
- Marine geophysical research detonated large explosive charges for determining the deep crustal structure underlying the Scotian Shelf, Gulf of St. Lawrence and

Labrador Shelf. Also bottom gravimeter surveys were carried out in the Gulf of St Lawrence and on the Scotian Shelf. Proton magnetometer surveys were also carried out along with seismic reflection profiling using various sound sources such as sparkers, boomers and small air guns. ([Link to expanded geophysical research description](#))

- The military research carried out by DREA predominately dealt with the needs of anti-submarine research such as physical oceanography and ocean acoustics. Information on the research carried out by DREA during the time Sackville was used as a research vessel can be found in the following publications. "Knots, Volts and Decibels An Informal History of the Naval Research Establishment, 1940-1967" by John R. Longard and Seas, Ships and Sensors, An Informal History of the Defence Research Establishment, 1968-1995 by Robert L. Gaede and Harold M. Merklinger.

It was common for several of these programs to be carried out simultaneously on the same cruise.

Memories of Sackville Research Cruises

Over the life of the Sackville's research cruises there are people among us who have a varied and interesting memories of their time on the Sackville. These are as follows:([Links to these here](#))

Neil Campbell's memories of the cruises and history in the 1950's

Dave Mckeown's memories of a cruise in the 1970.'s to recover a sunken Navy helicopter

Don Gordon's memories of a biological cruise on Sackville

Keith Manchester's memories of his first cruise on Sackville in 1962

Some of John Lazier's remaining memories aboard CNAV Sackville in 1960-61