THE ICE PATROL

The mental picture of an errant iceberg ripping through the hull of an unsuspecting ocean liner is one that Hollywood has firmly established in most minds. As with most celluloid images, it's more illusion than fact. In the day and age of radar, icebergs are easily detected and easily avoided. In northern waters however, ice in general is a very major problem.

Shipping in the north is no longer the sole province of the intrepid adventurer. With permanent settlements dotting the northern islands and the burgeoning exploration for resources, regular supply ships are a necessity. And increased shipping has demanded an increase in the scope and sophistication of ice observing and forecasting.

in November, 1972 Canada became one of the world leaders in ice observing, with the unveiling of two specially equipped Electra aircraft. The two aircraft are operated by Nordair Limited under a five year

Nordair Electra on the ground at Frobisher Bay. Note the observer's canopy and the remote sensing equipment mounted underneath.



A convoy of supply ships follow a channel created by an icebreaker.



contract with the Atmospheric Environment Service of the Department of the Environment, Toronto.

Ice reconnaissance in Canada however, started long before the arrival of the Electras. As early as 1927 aerial ice reconnaissance in Hudson Bay and the Hudson Strait was being conducted by the RCAF. By 1955 the RCAF was working in conjunction with the U.S. Navy during summer sea lift operations. In 1959 the ice program was taken over in toto by the Atmospheric Environment Service, Department of the Environment, phasing out all marine service Ministry of Transport personnel from airborne duty.

The following year the Royal Canadian Navy established an Ice Forecasting Central in Halifax to collate and interpret the data compiled by the ice observers. By 1966 the government had signed its first long term contract to provide two modified Douglas DC-4 aircraft to carry out aerial reconnaissance for a 5-year period. The DC-4's were replaced by the Electras in November of 1972.

The two long-range Electras carry such sophisticated equipment as high resolution and auxillary nose radar for continuous operation when visibility or low-ambient light conditions limit visual observation. The radars permit accurate mapping of significant ice features and their locations. This radar mapping is compared with a map drawn by an observer seated in



Ice observers are stationed onboard icebreakers to interpret the facsimile maps received from the ice patrol aircraft.



The variety of Arctic ice formations is unlimited.



a special canopy located above and behind the cockpit. Precision navigation gear such as inertial navigation systems and Omega systems offer accurate georgraphical positioning for the observer while he is plotting the ice formations.

Other special equipment includes laser profilometers and thermal mappers to provide accurate linear traces of ridges and thermal patterns on the ice surface. Modern aerial cameras are used to record features in key areas for detailed study. Airborne facsimile transmitters are used to send the ice chart directly from the aircraft to ships requiring tactical support.

The ice reconnaissance program is a cold weather operation. It follows the ice south to the Great Lakes, Gulf of St. Lawrence in the winter, and north to the arctic in the summer. The strain of extreme unrelenting cold on both the men and the equipment is hard to imagine without first hand experience. Particularly in the north, there is almost a total absence of hangars or even temporary shelters for the planes, and the personnel are forced to tolerate make-shift accommodations.

For the past thirty years men have been talking about the potential of the north. As the demand for resources starts to exceed the supply as is already the case in gas and oil, development in the north is going to become a greater priority. Development will require vast amounts of equipment. The supply of equipment depends on regular shipping. The ships depend on the ice observers to show them a safe path. The ice observers are ready.

The communications position where the ice patrol maintains contact with shipping. The unit in the background is the facsimile transmitter used to send ice charts to icebreakers.





Brute Force Radair Station aboard Nordair Ice Reconnaissance aircraft.



The remote sensing station controls the infrared linescan, laser profilometer and panoramic camera systems.