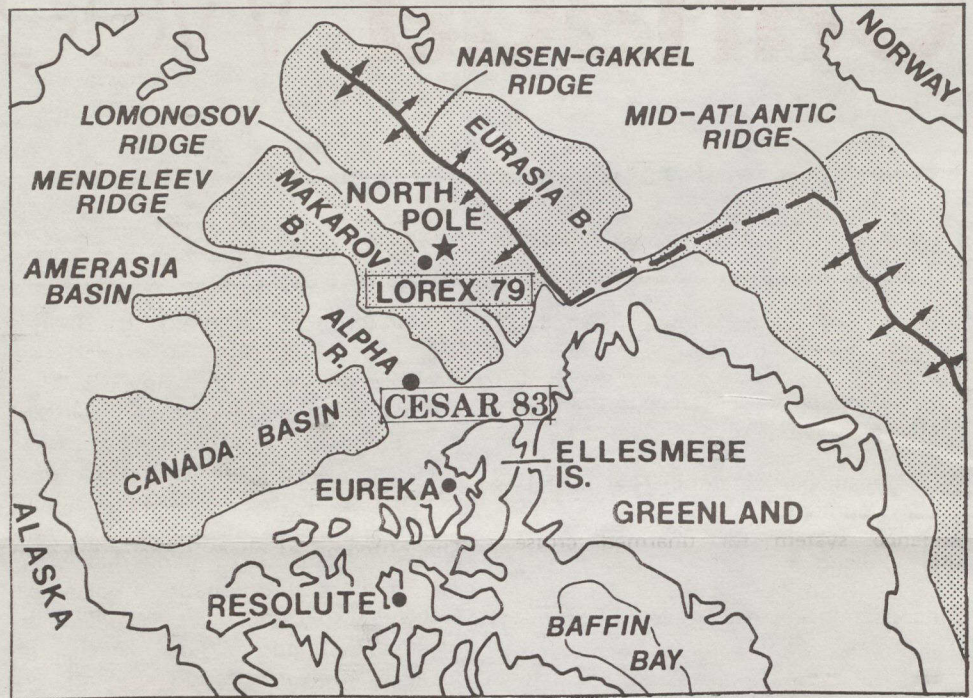


There is a consensus among experts on the evolutionary history of the Eurasia Basin, but the age and origin of the Amerasia Basin remain largely speculative.

The CESAR base camp will be established on the drifting pack ice some 350 kilometres off the coast of Ellesmere Island. There, scientists will carry out gravity, seismic and magnetic measurements, and will probe the ocean bottom by coring, dredging and photographing. They will measure the heat transfer from the ocean floor to the water, determine the amount of nutrients, trace elements and micro-organisms in the water column, measure its temperature and salinity, and determine the speed and direction of ocean bottom currents.

Concurrently with CESAR, the Canadian Hydrographic Service (CHS) will carry out ocean depth sounding and gravity surveys on the continental shelf north of Ellesmere Island to the 1 000-metre isobath. These surveys are part of an ongoing program of hydrographic and gravity mapping of the Canadian Polar Continental Shelf and the Arctic inter-island waters that has been carried out every spring since 1960. They serve to delineate the extent of Canada's sovereignty over its offshore oil and mineral resources, in accordance with international law.

The relatively high cost of logistic support for an offshore operation in the Arctic prevents projects of this type being undertaken each year. Consequently, the operation has been spread over three years; fuel and some equipment were placed in strategic locations during the



summers of 1981 and 1982.

Canadian Forces *Hercules* aircraft will airlift 300 000 kilograms of equipment, supplies and fuel, and scientific and support personnel from Resolute to the CESAR base camp, a distance of 1 200 kilometres, and will evacuate them two months later. During the first week of March, when there is still little daylight, the airlift will be preceded by a reconnaissance flight with an aircraft equipped with side-looking radar. A radar image mosaic of the pack ice will be produced to identify areas containing ice floes sufficiently smooth and large for runway construction. On about March 11 two *Twin Otter* aircraft chartered by the federal government will leave Eureka for the areas identified on the radar mosaic and start the search for a suitable camp site.

The search planes will be manned by personnel with many years of experience in sea ice reconnaissance, and by the chief scientists and a military engineer. Once the site has been chosen the Canadian Forces will parachute in a detachment of engineers together with heavy machinery, explosives, pumps, radio communications, tents and rations for two weeks, to construct two 1 600 metre-by-100-metre runways for the *Hercules* aircraft. The first runway will be built on smooth first-year ice of minimum 1.5-metres thickness; the second will be built on a thick multi-year ice floe, and will serve as an alternative runway for the evacuation should the first runway break up.

Once the runways are completed the main airlift from Resolute will begin.

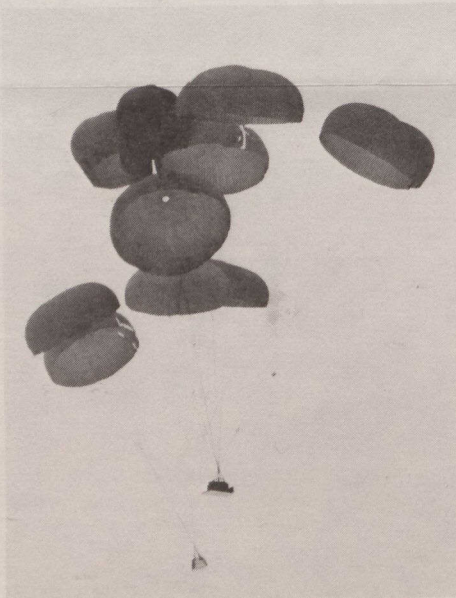
The Polar Continental Shelf Project (PCSP) of the Department of Energy, Mines and Resources will provide \$1.7 million logistic support for the expedition in the Arctic. This includes transfer payments to the Department of National Defence for airlifts and a fund for unforeseen expenditures, for example, an emergency evacuation should the ice break up prematurely. Included in this figure are funds which have been provided by agencies in the United States and other Canadian agencies.

Environmental effects studied

The CESAR experiment forms part of the Department of Energy, Mines and Resources's earth science program, which aims to provide a better understanding of Canada's geological framework as a basis for managing the development and exploitation of Canadian mineral and energy resources and a recognition of how such economic activities might affect the sensitive Arctic environment. Ocean basins are particularly important in this respect because they are dynamic structures forged by the forces of plate tectonics.

In view of the potential of the Polar Continental Shelf for energy resources and of the adjacent Arctic archipelago for both mineral and energy resources, clarification of the role of the Alpha Ridge in the geological evolution of the

(continued on P. 8)



Armed forces personnel rehearse parachute drop of equipment for CESAR.

Department of National Defence