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Space age SOS: search and rescue by satellite

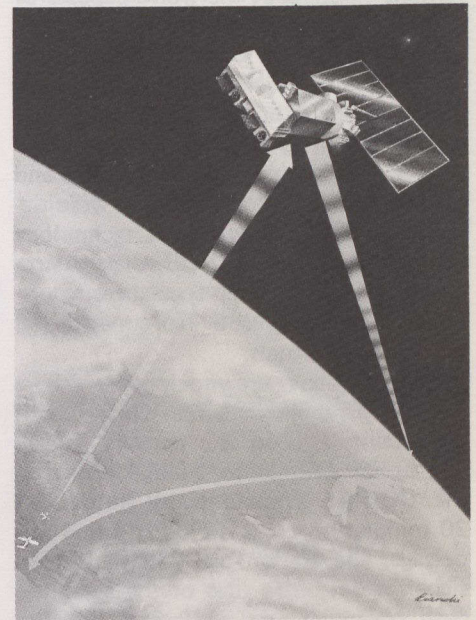
On September 9, 1982, a small aircraft carrying three people crashed in a forest in northeastern British Columbia. Although the pilot and his passengers had been injured, they were able to repair the antenna of their radio transmitter, damaged by the impact, and send out a distress signal. As a result of a Soviet satellite relaying the distress signal, they were found less than 28 hours after the accident.

The satellite, COSPAS 1, is the first link in a new international network to locate distressed ships and aircraft. It has been tested since September 1982 by Canada, the United States, France and the Soviet Union, and is expected to save many lives in the years to come, as well as millions of dollars in rescue costs.

It could also open up new markets for a Canadian company which makes one of the key components, the ground station that receives the distress signals relayed by satellite.

When an aircraft crashes in a remote area of Canada, the high Arctic for example, the Department of National Defence must launch expensive search and rescue operations, requiring several aircraft and dozens of people. Locating a downed aircraft could take several days, yet the survival of injured people may hinge on being rescued only a few short hours after the crash. The time lost because distress signals from ships or aircraft are not immediately picked up, as well as the delay in organizing a rescue operation, underscore the need to quickly pinpoint the origin of such signals.

Since the early 1970s, most commercial and non-commercial aircraft have been equipped with beacons (radio transmitters) which send out distress signals. The concept, developed by Canada's Department of Communications, relies on the beacon surviving when a plane crashes (see box). Unfortunately, the efficiency of these beacons is limited by their low signal power (less than one tenth of a



watt); normally, their signals can be picked up only within a range of 50 to 70 kilometres. Mountains too may block the signal transmission, reducing its range even more.

Finally, the batteries for the beacons only last 48 hours. The distress signal could, therefore, cease before a rescue team has a chance to locate the distressed ship or aircraft.

International team

The idea of using satellites to monitor distress signals is now new. It goes back to the 1950s before the advent of the satellite era. Canada and the United States began working independently at first, but got together in 1977 to develop the SARSAT program (Search and Rescue Satellite). Shortly after, they were joined by France.

The USSR, which had developed a similar project called COSPAS, reached an agreement with the SARSAT group in 1977 on joint technical specifications which have increased the efficiency of this world-wide system for locating distressed ships and aircraft.



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