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precise data on the spacecraft's orbit, allows the ground station to locate the distress signal's origin with great accuracy. The computer can provide the coordinates of an accident site with a margin of error of 8 to 30 km. The accident in British Columbia was pinpointed to within 22 km.

Once the coordinates of an accident site are received at Shirley's Bay, they are transmitted automatically to the Canadian Rescue Operations Coordinating Centre at Trenton, Ontario. The Centre then contacts the Canadian Forces base closest to the site, and a rescue mission is dispatched.

Since the first rescue operation in British Columbia, the SARSAT-COSPAS satellite search and rescue system has been used successfully dozens of times, and countries such as Brazil and Australia are now interested in participating. The future thus looks very bright for Canadian Astronautics Limited, as well as for other Canadian companies that manufacture special electronic equipment for the SARSAT program such as SED Systems in Saskatoon, and Spar Aerospace in Montreal.

Almost 9 000 rescue missions are organized each year in Canada for distressed ships and aircraft, at a cost approaching \$100 000 000. With the SARSAT system, these costs should be greatly reduced and rescue operations made much more efficient.



In the past, many airplane radio beacons for sending distress signals were either destroyed during impact, buried under wreckage, or lost under water. To get around this problem, Ottawa engineer Harry Stevinson, formerly of NRC's National Aeronautical Establishment, came up with a way of ensuring that such a beacon would escape destruction during a crash.

Stevenson's device, called a Crash Position Indicator or CPI, has no moving parts; it is attached to the body of an aircraft by a spring latch, or it can be fitted into the fuselage. At the moment of impact, it is hurtled away from a crashing aircraft, its streamlined shape allowing it to land safely a short distance away; immediately, it starts to transmit a distress signal, no matter what its orientation (upside down, sideways, whatever). Stevenson, who designed the airfoil and its escape mechanism, worked in collaboration with NRC's W.A. (Bill) Cumming, who designed the antenna, and

David Makow, who built the radio beacon.

Used by air forces in many countries, including Canada, the CPI is built by Leigh Instruments Ltd. of Carleton Place, Ontario. The device can also be equipped with a flight recorder, an electronic instrument which records an aircraft's maneuvers in flight as well as the performance of its systems. This information is vital in determining the cause of an accident and avoiding its reoccurrence. 11