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Canada's crash position indicator contributes to aviation safety

Almost 25 years of effort at the National Research Council's National Aeronautical Establishment (NAE), has resulted in the design of a unique system for locating a downed plane, its passengers and the flight recorder. Called the Crash Position Indicator (CPI), this invention of Harry Stevinson, an engineer with NAE's Flight Research Laboratory, is manufactured and marketed by the Avionics Division of Leigh Instruments Ltd., at Carleton Place, Ontario.

When planes crash in remote areas of the world, such as Canada's North, searching for them without the aid of an emergency radio beacon's distress signal is like looking for a needle in a hay stack. Rescue may take days when the chances of survival of the injured may hinge on only a few hours. While early recovery of passengers is one of the key arguments for using emergency radio beacons on aircraft, another important consideration is the recovery of the aircraft or its flight recorder so that the problem causing the crash can be determined and thereby avoided in future flights.

Twenty-five years ago, aviation people were aware of the need for a reliable emergency radio beacon. Beacons carried inside aircraft were practically useless in many crashes because they were either destroyed, buried or sunk. A successful beacon would somehow have to escape from the plane just before the crash. At the same time, the best system fired the beacon device from a mortar, but it never gained popular acceptance. There were simply too many vulnerable devices involved — a parachute, a shock absorber, two orienting arms, an external extendable antenna, and a flotation bag; added to this, the mortar system did not necessarily have the time to fire the device clear.

What was needed

Harry Stevinson, electrical engineer-cum-inventor who joined the Flight Research Laboratory in 1945, decided to try to

build an escape device system without moving parts which would contain the transmitter, antenna and the delivery system all in one package. He believed that, if the device were mounted externally on the plane's body and attached by a spring-loaded latching mechanism which released on impact, the air rushing against the CPI's leading edge would strip it away from the plane almost instantaneously. At the same time, its shape would provide enough lift to carry it a safe distance away from the crash scene but produce enough speed-reducing drag to land safely nearby. The outer protective skin and shock absorbing foam would have to be tough, transparent to radio waves, and the antenna capable of transmitting a



Harry Stevinson points to a CPI attached to a Canadian Forces' plane. The leading edge, held by a spring-loaded latch, is forced up when released, allowing the on-rushing air to lift the CPI away from the plane. High-speed planes are equipped with flush mounted CPI's.

National Aeronautical Establishment

Twenty-two years ago today...
Lester B. Pearson succeeded Louis St. Laurent
as Leader of the Liberal Party of Canada.