MPB TECHNOLOGIES INC.

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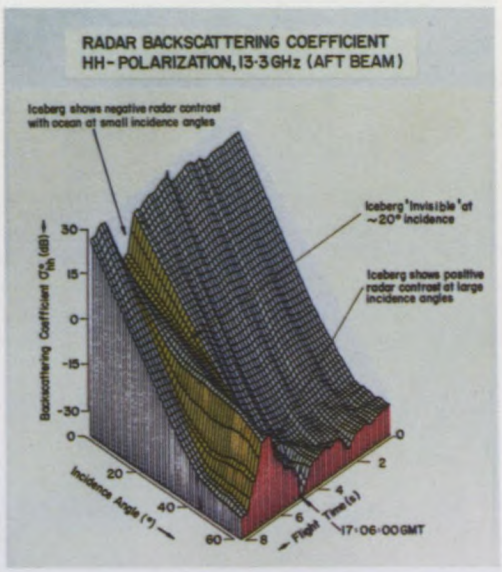
Company background. Federally incorporated in 1976, MPB Technologies Inc. specializes in high-technology systems and products and in contract research and development. The company occupies a modern 2 800 m² (30 000 sq. ft.) building in Dorval, Quebec. Integrated into the building is a modern library, a central computer room, a machine shop, laboratories and production area.

MPB Technologies Inc. develops and produces remote sensing devices using the microwave and millimetre wave region of the electromagnetic spectrum. These include both passive sensors (radiometers) and active sensors (radars and scatterometers).

Products research and development. A ground-based radiometer receiving at six frequencies from 22 GHz to 58 GHz has been built for use by Canada's Atmospheric Environment Service (AES) in determining humidity profiles in the atmosphere. An airborne imaging radiometer is being developed for the Ice Centre of AES. This receives on two polarizations at each of two frequencies, 37 GHz and 90 GHz, using a scanning beam, and produces map-like displays of the surface below the aircraft in pseudo-colour. In addition to presenting brightness temperature maps, special algorithms are used to derive maps of first-year ice fraction, multiyear fraction and total ice fraction.

A C-band scatterometer was designed and built for the Canada Centre for Remote Sensing where it has been operational for three years. The scatterometer is a completely solid state 5.7 GHz CW (continual wave) dual polarized, airborne homodyne radar. It transmits a five-watt CW signal in a fan beam with horizontal or vertical polarization selectable by the operator. This illuminates a strip of the earth's surface directly beneath the aircraft with a two-way 3 db beam width of 120° along-track and 3° cross-track using separate transmit/ receive antennas. Coherent demodulation produces IF (intermediate frequency) signals in phase quadrature, giving unambiguous fore/aft Doppler information. The real-time signal processor has selectable filter circuits for remote sensing over land and sea.



NORDCO LIMITED

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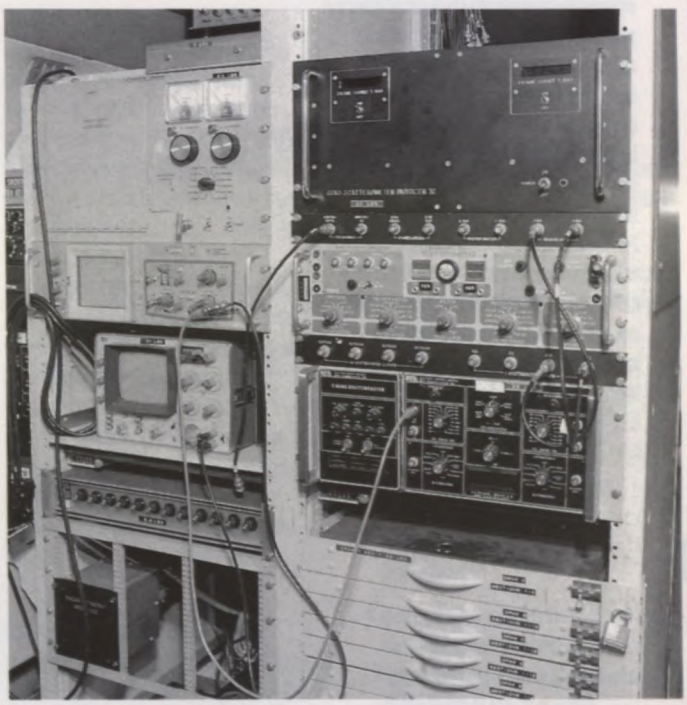
Company background. NORDCO is the largest, independent, multidisciplinary firm in Canada specializing in marine research and resource development. Its main computer is a DEC VAX 11/750 with 15 workstations, including an ARIES III image display and analysis system.

Services. NORDCO offers substantial computing and image processing capabilities for applications in sea surface temperature mapping, utilizing the AVHRR on the NOAA series of polar orbiting satellites, and in enhancing digitized sidescan sonar imagery.

NORDCO is involved in the acquisition, compilation and interpretation of data on coastal geomorphology, oceanographic process, biological resources and socio-economic factors for assessing coastal development planning and effective resource management. Major elements are ice research, geophysical and geological services. "Geo" services are marketed through a subsidiary, the consulting consortium of Geonautics Limited whose member companies have 300 specialists.

Consulting services include remote sensing organization; design and implementation of remote sensing programs for public or private agencies; matching of data needs and available technologies; evaluation and monitoring of remote sensing programs; and technology transfer/enhancement.

Applications services are provided in forestry, hydrology, geomapping; land-uses mapping; ice; and oceans.



Scatterometer results over an iceberg, used to calibrate an airborne radar.

MPB's scatterometer on board the CCRS aircraft is used to calibrate radars and do radar meteorology by inferring wind speed and direction over the ocean.