

Raytheon Canada Limited

400 Phillip Street
Waterloo, Ontario
Canada N2J 4K6

Tel: (519) 885-0110

Fax: (519) 885-8620

Telex: 069-55431

Twx: 610-365-3469

J.M. Stewart, President and General Manager
G.R. Beaumont, Director, Marketing

Ground controlled approach system

■ Raytheon Canada's ground controlled approach (GCA) system uses the most advanced, militarized radar and display equipment, which meets or exceeds operational requirements for the control and recovery of high-performance jet aircraft, even during severe weather conditions. Two separate radars make up the complete GCA system: the airport surveillance radar (ASR), which provides primary surveillance coverage for the control of aircraft to a range of approximately 110 km (60 nautical miles); and the precision approach radar (PAR), which displays all approaching aircraft and tracks as many as six targets on final approach, simultaneously. Raytheon's ASR comes in two configurations: fixed-site, designated the ASR-910; and the mobile version, AN/TPN-24. Each system consists entirely of solid-state electronics except for the thyratrons and magnetrons. The AN/GPN-22 PAR design is based on limited-scan phased-array technology pioneered by Raytheon. It is the only PAR specifically designed for the control of high-performance aircraft and today's increased traffic volumes. The system includes an operations centre which contains the radar displays and communications facilities required to perform airfield surveillance and final approach control functions. Raytheon's GCA has proven system availability of greater than 98 per cent. The technology was

developed to meet the operational needs of the United States Air Force, and is available in either mobile or fixed-site versions.

Navigational aids

Raytheon Canada's navigational aid product line includes VHF omnidirectional range (VOR) (both standard and doppler) and distance measurement equipment (DME). The standard and doppler VOR equipment is available in both single and dual channel configurations complete with antenna and self-monitoring facilities. This equipment is entirely solid-state and has been engineered as modular units for ease of maintenance. The Raytheon Canada DME is a complete ground station consisting of a dual transponder, dual monitors and antenna. This all-solid-state equipment is designed to meet, as is the VOR, all applicable ICAO standards. If required, the VOR and DME can be supplied complete with shelter and stand-by power supplies. Both the VOR and DME equipment are in extensive use in Canada and throughout the world.

ASR-8000 Series surveillance radars

The Raytheon Canada ASR-8000 Series radar family comprises a number of advanced primary radars capable of detecting aircraft in the most adverse clutter and weather environments. The ASR-8000 System can operate in either L or S band by changing three modules in the transmitter and one in the receiver. Design flexibility also permits the system to be installed as either a terminal area radar, or an en route system. The state-of-the-art radars are equipped with a quadrature 3-pulse digital Moving Target Detector (MTD) incorporating a 65 536 cell adaptive clutter map.

ASR-9000 Series surveillance radars

As part of a nation-wide program to modernize Canada's air traffic control system, Raytheon's ASR-9000 Series radar family is being produced for the Government of Canada. The new L-band ASR-9000 Series primary surveillance radar is totally solid-state, and employs the most advanced digital processing techniques. This highly modular series of radars is available in two configurations. The basic model in the series provides approach control up to a 150 km (80 nautical miles) range and a 7 620 m (25 000 ft.) altitude. The other version provides coverage over approximately 220 km (120 nautical miles) and up to 15 240 m (50 000 ft.) altitude.

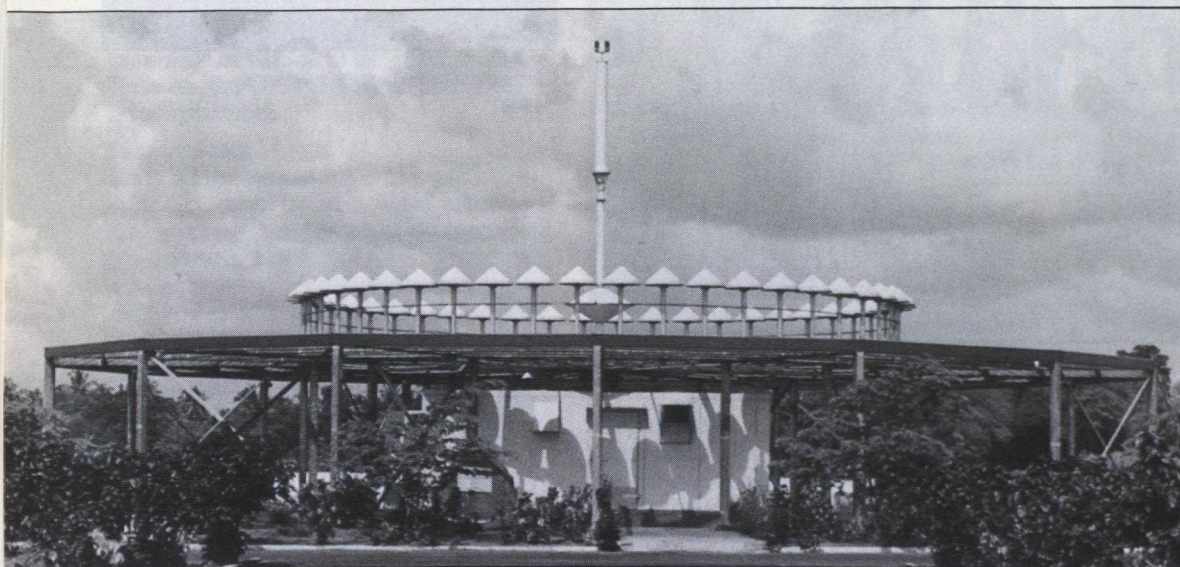
RAMP primary surveillance radar

Raytheon Canada is currently prime contractor to the Canadian government for radar site equipment in the Radar Modernization Project (RAMP), the largest air traffic control radar system update and expansion in the world. The new RAMP solid-state radar offers enhanced reliability and ease of maintenance, compared to previous generations of equipment, and is finding rapid acceptance in international markets.

Radar data processing and displays

Raytheon Canada is also prime contractor to the Canadian government for display site equipment in the RAMP program. The display system employs a distributed architecture, using Local Area Network (LAN) techniques and can readily be configured to address the needs of air traffic service centres, terminal control centres, local and remote tower displays and area control centres.

Raytheon also remains in the forefront in raster display technology for air traffic control and military applications. Its latest SC 2000 display system is capable of driving a 2048 line \times 2048 pixel colour monitor at a non-interlace frame rate of 60Hz.



VOR installation



ASR-910 airport surveillance radar