

computational design techniques. Their product line includes:

- Challenger business jet aircraft
- CL-215 multi-purpose amphibious aircraft
- CL-89, CL-227 and CL-289 unmanned airborne surveillance system

They have active subcontract work on the Boeing 767; Lockheed CP-140, P-3C, McDonnell Douglas F/A-18A, F-15, and Grumman EF-111A. They specialize in machining to close tolerances (0.001 inch) with a high degree of repeatability. They have an integrated heat treating and stretch-forming system capable of treating and forming aluminum alloy sheets 40 ft x 8 ft x 0.375 in.

Their CL-89 Airborne Surveillance System (unmanned) was designed for use at the Army Division level. It is fitted with either a photographic or infrared line scanning sensor and is reusable. It is launched from a mobile zero-length launcher and recovered with a two-stage parachute system employing inflatable air bags to absorb landing shocks. This drone is stocked in the arsenals of the UK, West Germany, France, and Italy.

The CL-289 is a longer updated version being developed jointly with Dornier GmbH of West Germany. This new vehicle will carry both a photographic sensor and an infrared line scan (IRLS) sensor and will cover a 150 kilometer range at speeds in excess of 700 kph. A real-time data transmission link is associated with the IRLS System. Onboard computers carry the flight instructions for both the CL-89 and CL-289.

The third model, CL-227, is an hourglass-shaped, remotely piloted vehicle still in the development stage. It is designed as a highly survivable surveillance and target acquisition system for use at medium range. It has VTOL capability and is launched and recovered from a mobile two-meter diameter platform. It can transmit real-time data.

Average Work Force: Engineers - 296
PhD - 12
Machinists - 300
Others - 3957

Gross Sales: 1980 - \$116.2M
1981 - \$265.7M
1982 - \$429.4M

Plant Size: 2,700,000 sq ft (under cover)

Equipment: Their special equipment includes:

- Two Cincinnati profilers; numerically-controlled; 5-axis: Each bed 212 ft long, 13 ft 4 in wide. Each bed has 3 gantries with 3 spindles each.
- One Ingersoll profiler; numerically-controlled; 3 axis: Bed 96 ft long, 17 ft 5 in wide. Single gantry with 3 spindles.
- Nine Wilson profilers; tracer-controlled; 3 axis: Some 6 spindle, some 4 spindle.
- Several Kearney and Trecker 3 and 5 axis profilers; numerically controlled.
- Two Autoclaves; one 15 ft dia, one 12 ft dia, for metal-to-metal, honeycomb and composite bonding.
- Heat-treat, stretch forming system. Electrically-heated furnace takes sheets 40 ft by 8 ft. 1000-ton stretch press takes sheets 50 ft by 8 ft and 1/2 in thick.

Experience: The Canadair experience over the past two years include subcontracts for vertical stabilizers for the EF-111A, components for the Lockheed P-3C and CP-140, rear fuselage sections for Boeing 747SP and 767, components for the McDonnell Douglas F-15 and F/A-18A, and shipsets of components for the Lockheed C-5A. Current products include

Challenger business jet, CL-215 multipurpose amphibian, three surveillance systems and subcontracts.

Keywords: 1 = Aircraft; 12 = Machining; 17 = Software Services; 19 = Testing/Test Equipment; Airframe = 1; Components = 1; Composites = 1; Extended Length = 12; Forging = 12; Heat Treating = 12; Metal Working = 12; Casting = 12; RPV = 1; Drones = 1; Computational Design = 1, 17; Aerodynamics = 1; Fracture Analysis = 19; Flutter Analysis = 19; Coating = 12.

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CANADA SYSTEMS GROUP

Advanced Technology Systems Division

(Formerly Digital Methods Ltd)

Code: CSG

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Contact: Mr. P. Smithers, Director of Systems Development - (613) 225-1171

History: Canada Systems Group is a Canadian owned high technology company. Their technical experience is in the field of computer systems and programming. CSG was established in 1971 to provide computer based information services to industry and government. The large parent company has its head office in Mississauga, Ontario, with branches and division in other Canadian and US cities.

Capability: The Advanced Technology Systems Division's expertise lies in the areas of - 1) analysis, design and specification of real time control systems; 2) analysis, design, specification & implementation of information retrieval and data base systems; 3) analysis and organization of associated manual systems; 4) project management; 5) technical support; and 6) training. The activities of the Division are mostly concerned with micro/minicomputers.

Average Work Force: Engineers - 40
Others - 10

Gross Sales: 1980 - \$3.5M
1981 - \$4.0M
1982 - \$4.0M
1983 - \$3.0M (Projected)

Plant Size: 12,000 sq ft

Equipment: Machines currently used by Canada Systems Group are Hewlett Packard 2114, 2116, 21MX, Series 3000, Digital Equipment Corp (LSI-11, PDP-10, PDP-11), Data General NOVA and ECLIPSE series, Motorola 6800, and Intel 8080.

Experience: Canada Systems Group has extensive experience with a large number of federal and provincial government agencies and with various business and industrial organizations. Private sector contracts include some in the US and UK. Typically, less than 5% of their sales are to the US. Typical projects handled by the Division are studies, simulator systems, systems software design and implementation, computer graphics for air traffic control, satellite ground control systems (software design and program and implementation), VTOL/STOL data handling system design & implementation, computer aided graphics, and telex switching systems (software development). Other project areas include computer dispatch, supervisory control, and data acquisition. The company has no past contracts with the USAF or other DOD agencies.