neering, integration, installation and test of seven modern ATC radar, processing, display and communication control facilities across Canada (1979-1982).

• Systems Engineer – System definition contractor for VTM System for Port of Hong Kong (1982-present). Interior Communication System integrator for Canadian Patrol Frigate CD phase finalist (1981-1982).

More current programs are:

• Ships Interior Communications – Supply STM SHINCOM (integrated system) to DND (1982-present). Contracted to supply system for new frigate program (1983) and SRP-II follow-on ships.

• TACAN Navigation Equipment – Contracted by DND to supply 30 TACAN ground beacons across Canada as well as naval versions for Canadian Patrol Frigate (1984-present), and SRP-II. 12 TACAN ground beacons for Royal Norwegian Air Force.

• Voice Recorders – Cockpit Voice Recorder to Panavia Tornado (1975-present).

• Flight Recorder/Locator Systems USN, Canadian, USAF and European programs (1970 to date). Aircraft include P3, C130, 707, F104G, Tornado (Joint program with Dornier), others. Contained Crash Survivable PDR/Maintenance Recorder: RAF Hawk.

• Mechanical Strain Recorder – (present) – USAF F-16, others.

• Helicopter Icing Detection Units – Various commercial North Sea, others. AISLIS R&D contractor for US Army.

• Helicopter CPI – Various military, North Sea commercial.

• Other CPI – Military and civil applications; Canada, the US and Europe.

• Avionics Production – Subcontract manufacture of advanced avionics subsystems for CF18 (SMS and CSCS for LSI: 1982-present). Established second source to US Navy.

KEYWORDS: Aircraft Navaids; Avionics; Build-To-Print; Crash Position Indicator (Deployable); Emergency Locator Beacons; Flight Data Recorders; Ice Detector; Integrated Naval Communications; ILS; R&O (Avionics); Subcontract Manufacturing.

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LITTON SYSTEMS CANADA Ltd

ADDRESS: 25 Cityview Drive
Rexdale, Ontario, Canada
M9W 5A7

CONTACT: Mr D Hughes, Director of Marketing, RADAR/FIS/INS – (416) 249-1231

HISTORY: Litton Systems Canada Ltd (LSL), a major operating division of Litton Industries, has a long and successful history of designing and manufacturing highly sophisticated electronics equipment for military and commercial use in a world-wide market. LSL was launched nearly 30 years ago with a contract to assemble and test the guidance and control systems in the LN3 Inertial Navigation System (INS) for the Canadian Forces CF-104 Starfighter. LSL's facilities were rapidly expanded and improved, and test facilities were established to support the manufacture of gyroscopes, accelerometers and inertial platforms. The original INS has subsequently been modified and improved, and at LSL, a whole family of guidance systems has evolved to support the European Starfighter program and for use in aircraft manufactured by Grumman, Lockheed, Canadair, deHavilland, McDonnell and General Dynamics. A Litton guidance system, the LN35, was the one chosen for the US Cruise Missile.

CAPABILITY: LSL has become a dominant force in the INS marketplace, providing both spinning wheel and ring laser gyros for the military and commercial marketplace. The LTN-72 system has achieved phenomenal success and is the most widely used INS throughout the world. The LTN-72 is a reliable, self-contained, all-weather, world-wide navigation system that is totally independent of ground-based navigation aids. In 1982, LSL underwent a major expansion and upgrading of its INS capabilities to allow the manufacture of ring laser gyro based inertial systems. Litton Canada has a world product mandate to build commercial RLGs for Litton Industries. These systems, the LTN-90, LTN-90-100 and the LTN-92 are now on board aircraft such as the A310, A300-600, E-6A, Dash 7 & 8, and The Challenger 601.

Research and Development money is now being spent on the next generation of INS – the Fibre Optic Gyro (FOG). Litton hopes to have its FOG system out of the engineering lab and onto the production floor within five years.

Utilizing the wealth of experience acquired in LN3 INS design and production testing, in 1962 LSL developed a punched-tape programmer controlled Mobile Automated Test Set for first level maintenance support of the INS used on board to F-104 and P-3 aircraft. LSL developed its first computer-controlled Automatic Test Equipment (ATE) in the late 1960s. This system, the Litton Automated Test Set (LATS), is utilized by LSL as factory test equipment, as well as by a number of commercial and military customers as depot test stations. The LATS has been expanded to accommodate the testing requirements of the F-18 and other modern aircraft and helicopters. The expanded Litton Automated Test Set (ELATS) is used as a depot test station in support of new aircraft programs. ELATS and RF ELATS (for testing RF systems) has been purchased by the Canadian Air Force, the Royal Australian Air Force, the Royal Australian Navy, and one European NATO Air Force. LSL offers an Hydraulic ELATS as well.

In June 1967, the company began broadening the scope of the projects it pursued and competed for and won the contract for the supply of CCS-280 Command and Control System for the Canadian DDH-280 class destroyers.

Now twenty one years later, LSL has headed up a team of Canadian Industrial firms to reconstruct Canada's four Tribal Class Destroyers. The Tribal Update and Modernization Project (TRUMP) has seen LSL chosen as the prime contractor in the refurbishment of the four ships the company help build. The first destroyer entered dry dock in the fall of 1987 on schedule. Litton Canada is now one of the largest marine systems houses in Canada.

LSL's expertise in the Marine environment includes the Automatic Data Link Plotting System (ADLIPS). ADLIPS is a complex, low-cost, shipborne computer-assisted, real-time command, control and tactical data communications system which can be fully integrated with existing ships' systems.

Previous indepth experience in the development of software in both the inertial and systems engineering fields made LSL the logical choice for the contract to develop the Data Interpretation and Analysis Center for the Maritime Command of the Canadian Forces. The DIAC correlates current and historical data enhancing mission planning and control.

The expertise acquired in Systems Engineering was also responsible for the design and development of Litton Integrated Security Systems. These computer-based systems combine complete perimeter detection, surveillance, access control and radio communication to provide the necessary level of protection. The company has obtained contracts for the system for implementation at a Middle East Air Force Base. Canada systems have been installed in Maximum Security Penitentiaries and Nuclear Power Generating Stations.

In order to ensure that its products and areas of expertise stay abreast of the current technology, LSL is committed to a high investment in research and development. Recently, this effort, combined with assistance from a joint Canadian/US development contract, resulted in the next-generation aircraft cockpit displays. LSL has developed a solid-state, multi-colored modular, flat panel display system using light emitting diode technology for use in the military and commercial