NOVATEL
GPS
The sky's the limit

Units mounted on golf carts can tell you how far your ball is from the green. Earthquakes can be monitored and endangered wildlife tracked. And aircraft, from jumbos to small private planes, can benefit from incredible improvements in en route and terminal guidance. All from the same satellite system that is GPS.

Indeed, the availability of navigation signals from GPS, and dramatic advances in GPS receiver technology, have given rise to an exciting new industry in Canada.

Such receivers have changed from the single channel, 19-inch rack-mounted monoliths of the 70s to today's 12-channel, credit card-sized cards with spectacular performance.

These dramatic size reductions and technological advances have paved the way for GPS applications which track, monitor and locate just about anything on the surface of the earth! And, in essence, the only limit to possible applications is one's imagination.

At the forefront of this new technology is **NovAtel Communications Ltd.** in Calgary, Alberta. A prominent GPS receiver supplier to original equipment manufacturers, the company's patented narrow correlator technology supplies position accuracies which had previously been reserved only for military users.

With a strong track record in the surveying, agricultural and marine industries, NovAtel has now set its sights on the world of aviation. For it is convinced that soon the enormous efforts in theoretical modeling, evaluation, trials and proving of GPS as a landing system will result in all categories of landing capability, as the issues of accuracy, availability, and integrity are resolved.

In this regard, the company got off to a flying start when its patented GPSCard was launched in 1991, receiving, as it did, the **Institute of Navigation's Better Mousetrap Award** for the most significant technological contribution to the GPS industry.

Today, NovAtel, together with its partner **Litton Aero Products Division**, is working to provide the most advanced en route and landing GPS sensor products for use in the air as well as in differential GPS ground stations. Building a better "mousetrap" and committed to helping to make GPS landings a reality.

ATS
Revolutionizing Air Traffic Control

Air Traffic Controllers are the invisible half of the team dedicated to making your trip as safe and expeditious as possible. The pilots in the cockpit and the controllers on the ground form a team, where their primary link is via radio. Although the pilots control the plane, every aspect of the flight is under Air Traffic Control.

There are two main types of facilities from which controllers issue their clearances. Namely, an ATC tower located at an airport and terminal/enroute control centres, which are hidden away, invisible from passengers! In an ATC tower, there are usually three control positions. These comprise the ground controller, issuing directives to aircraft on the ground; the main tower controller, responsible for flying aircraft within the airport vicinity; and those two controllers will be supported by one or more assistant controllers, who may well be controllers in training.

The other type of control centre, which may be located away from the primary airport in the district, is responsible for sequencing aircraft for the enroute phase and in the terminal area, typically an imaginary area of up to 60 miles around the primary airport. One problem for enroute centres is that most of the surface of the earth is not covered by radar. This is especially true over the oceans, as radars only have a range of about 200 miles.

A new technology soon to be implemented and called GPS (please see page 52) will enable airplanes to automatically use three or more satellites to calculate their position within a few metres.

Thus, Air Traffic Controllers need extensive training, and certification by the Civil Aviation authority in their country. In Canada, Transport Canada is responsible for all aspects of the provision of Air Traffic Services, including the supply and certification of Air Traffic Controllers.

Out of some 2,000 Air Traffic Controllers who may apply each year in Canada, only a few hundred enter the first phase of the actual training program. The training starts with some six months of