



ICAO NEWS RELEASE

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"USING SATELLITES TO MAKE CIVIL AVIATION SAFER" THEME OF 1996 INTERNATIONAL CIVIL AVIATION DAY

MONTREAL, 7 December 1996 – "Using Satellites to Make Civil Aviation Safer" is the theme of this year's International Civil Aviation Day, held annually on 7 December since the 50th anniversary of International Civil Aviation Organization in 1994.

Already recognized as the safest method for transporting persons and goods, air travel is becoming even safer with the progressive introduction of satellite technology in four major areas of flight operations, namely communications, navigation, surveillance and air traffic management (CNS/ATM).

The implementation of largely satellite-based systems over the next decade will increase airspace capacity and provide substantive economies in flight operations, while further enhancing the safety and regularity of air transport all around the world.

To understand just how satellites will improve flight operations, let us **look** at their impact on each of the four components of CNS/ATM systems.

COMMUNICATIONS

Timely and accurate data communications between aircraft and ground automation systems, supported by voice communication between pilot and air traffic manager when required, is critical to the safety and efficiency. The two most widely used communications methods have proven effective but nevertheless carry built-in limitations best compensated by the use of satellites.

The shortcoming of "line-of-sight" radio communications systems is their relatively limited range. **As** radio waves travel in a straight line, they are not effective over long distances such as oceanic areas because of the curvature **of** the earth, or in mountain areas where they are blocked by these natural obstacles.

Radio waves which bounce off the ionosphere (the outer layer of the earth's atmosphere) and back down to receiver stations on the ground or in an aircraft are not subject to physical barriers or distance restrictions. They are, however, subject to severe fading and interference in the atmosphere.

Satellite communications, acting as space-based radio relay systems, overcome both limitations between airborne and ground transmitter/receiver stations. Many ground earth stations world-wide are already equipped accordingly and hundreds of aircraft are being fitted to handle this type of communications for both safety and non-safety reasons, such as passenger telephone communications.

NAVIGATION

Navigation instruments enable a pilot to determine the position of an aircraft and direct it to destination, making necessary adjustments along the way. Currently, the accuracy and reliability involved in navigating an aircraft along a prescribed flight plan are largely dependent on radio signals generated by ground navigational aids, with their built-in limitations, as we have seen, especially over oceanic airspace and mountainous regions.

Satellite navigation systems not only eliminate these physical barriers, they also continuously transmit ranging signals, for position determination and precise time reference. In this way, an aircraft can pinpoint its exact location at any given moment to within a few meters, something not currently possible with conventional systems.

This extremely high degree of accuracy of satellite navigation systems, coupled with sophisticated complementary systems, is particularly useful since it provides, at reduced cost, non-precision and precision approach capabilities to thousands of runways otherwise un-usable in low visibility conditions.

SURVEILLANCE

Surveillance is a basic method used by air traffic controllers to determine the relative position of an aircraft in a given airspace, to make sure it maintains the required distance from other aircraft. It is one of the primary tools to manage a specific airspace safely and efficiently, especially in heavy traffic conditions.

Satellites contribute most to increasing safety and efficiency by supporting surveillance systems which permit aircraft to automatically provide information derived from on-board navigation and position fixing systems, including aircraft identification, four dimensional positional and additional data as appropriate. A clear advantage of this method is that it enables air traffic management in non-radar coverage areas such as oceans.

AIR TRAFFIC MANAGEMENT

These major improvements in communications, navigation and surveillance linked to the growing use of satellites will combine to significantly increase the efficiency of air traffic management, which can only lead to a safer civil aviation system.

The objective of the world aviation community is nothing less than a global system of air traffic management that provides aircraft operators the freedom to choose a preferred flight plan with minimum constraints, while maintaining or increasing existing levels of safety.

When considering the ever-increasing demand for transportation by air, efficient air traffic management systems supported by communications, navigation and surveillance systems is the only way international civil aviation will be able to continue its development well into the 21st century.

A TRULY GLOBAL UNDERTAKING

The implementation of ICAO's future-oriented **CNS/ATM** systems is the single, most complex and far-reaching initiative ever undertaken in the history of civil aviation. **As** such, it requires an unprecedented level of collaboration and partnership between governments, aircraft operators, service providers, manufacturers, interested associations and organizations, all working together with the common goal of building the safest global aviation system.

ICAO was created in **1944** to promote the safe and orderly development of civil aviation in the world. **A** specialized agency of the United Nations, it sets international standards **and** regulations necessary for the safety, security, efficiency and regularity of air transport and serves **as** the medium for cooperation in all fields of civil aviation among its **184** Contracting States.