Local Area Augmentation System

LAAS

The Local Area Augmentation System (LAAS) will augment the Global Positioning System to provide an all-weather approach, landing, and surface navigation capability. LAAS focuses its service on a local area (approximately a 20-30 mile radius), such as an airport, and broadcasts its correction message via a very high frequency (VHF) radio data link from a ground-based transmitter.

LAAS will have a profound impact on aviation navigation. LAAS will yield the extremely high accuracy, availability, and integrity necessary for Category I, II, and III precision approaches. It is expected that the end-state configuration will pinpoint the aircraft's position to within one meter or less with a significant improvement in service flexibility and user operating costs. Curved approach paths, not possible using the current instrument landing systems, will be possible for Category I, II, and III precision approaches. Approaches will be designed to avoid obstacles, restricted airspace, noise sensitive areas, or congested airspace. Unlike current landing systems, LAAS has the potential to provide multiple precision approach capabilities to runways within the LAAS coverage area. Duplication of equipment solely for the purpose of serving multiple runways can be eliminated. Also, airports with the need for precise surface area navigation may use the accuracy of LAAS for the position determination of aircraft. Using this capability, controllers will know the location of all airport service vehicles and taxiing aircraft to assist in the prevention of runway incursions in low visibility conditions. Furthermore, aircraft operators will benefit from the reduction of expenses associated with purchasing a variety of radionavigation equipment. Potentially, WAAS and LAAS could use the same aircraft avionics to accomplish both the WAAS and LAAS missions, reduce avionics maintenance costs, and realize savings in air crew training.

The development efforts of the LAAS are focused on two main areas -- the LAAS ground equipment and the LAAS avionics. On September 28, 1998, RTCA published the LAAS Minimum Aviation System Performance Standards (MASPS). This document allocated overall LAAS requirements between the ground equipment and the avionics. The development efforts of the avionics are captured in the LAAS Minimum Operational Performance Standards (MOPS), which was completed in February 2000. The development efforts of the ground equipment is captured in the LAAS specification, submitted to the Federal Aviation Administration (FAA) Specification Review Board in July 1999 and signed in November of that year. The FAA used a prototype LAAS ground station to perform validation testing of this specification. The LAAS Interface Control Document, which brings these two pieces together, was completed on September 28, 1998, along with the MASPS.

The FAA has already successfully demonstrated the feasibility of GPS-based Category III precision approaches and has completed the proposed architecture for LAAS. This architecture was successfully presented and approved by the International Civil Aviation Organization (ICAO) Global Navigation Satellite System (GNSS) Panel in February 1997.

To ensure that LAAS will be compatible with international standards, participation in the International Civil Aviation Organization's (ICAO) Global Navigation Satellite System Panel (GNSS-P) has been ongoing. Standards and Recommended Practices (SARPs) for the Ground-Based Augmentation System (GBAS), for Category I only, have been approved by the ICAO Air Navigation Commission with an applicability date of November 1, 2001. The FAA is currently coordinating the Category II/III specification through the ICAO GNSS-P.

The FAA took a significant step forward on April 30, 2003 by awarding a contract for the Category I Local Area Augmentation System (LAAS) to Honeywell International Inc. of Minneapolis, MN. The contract provides for 10 Limited Rate Initial Production (LRIP) systems beginning in 2006. Four of the systems will be used for test and evaluation, and training. The remaining six will be installed at major commercial airports, each with the single LAAS providing approach guidance for multiple runway ends. Air-carriers will use the six systems to assess operational benefits while in daily revenue service. LAAS will significantly enhance the safety and efficiency of air travel by increasing the accuracy, availability, continuity and integrity of the information received from GPS. The current contract has three phases. Phase I, valued at $16.7 million, provides for the software and hardware design. Phase II and III, with values totaling $340 million, are contract options that cover the development and full production of the system. If the Phase II option of the contract is exercised, the operational LRIP LAAS will be installed at airports in Juneau, Phoenix, Chicago, Memphis, Houston and Seattle. The first system is scheduled to be operational by late 2006.

The activities associated with the development of Category I LAAS are viewed as a "stepping-stone" to Category III. The FAA is continuing with research and development (R&D) activities on Category III LAAS to define high-level system performance requirements and to mitigate critical technical risk areas. Standards are being developed through RTCA and the International Civil Aviation Organization (ICAO) processes. Based on results of the Category II/III R&D efforts, and the LAAS benefit assessment, the FAA will make a decision on the feasibility of pursuing Category III, full-scale development and production.

For futher information regarding LAAS, please contact:
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