

Question 7: Purpose of Experiment

The program is a cooperation between the St. Cloud Regional Airport (STC) and a major developer of ground-based airport equipment - Selex Sistemi Integrati (US division).

The objectives of the program are:

- For STC to observe and confirm operation and capabilities in the United States (at STC) of a Selex Advanced Airport Multilateration (ADAM) system similar to systems installed and operating at two Italy airports.
- For STC to gain operational knowledge of, and experience with, a multilateration system.

Selex will be responsible for providing, installing, configuring, and testing the multilateration system equipment.

STC will use and operate the equipment, and will have On/Off control of the system's transmitters.

The multilateration system to be demonstrated is for aircraft and ground vehicle surveillance (location and identification) on and around the airport.

The ground-based multilateration equipment operates similar to secondary radar to interrogate existing, industry-standard Air Traffic Control transponders (Mode 3/A) on aircraft or ground vehicles being tracked.

The system consists of a number of receiving and transmitting stations in precisely surveyed locations on the airport and determines the 2D/3D target location through the Time Difference Of Arrival (TDOA) principle, that is TDOA between the "arrivals" of one transponder's signal received at several receivers, one of them taken as a reference.

Two types of transmitting equipment are used in the system:

- 1090 MHz "squitter" transmitters for multilateration system internal time synchronization, calibration, and performance monitoring. Equipment is capable of transmitting Mode S squitter types DF11 or DF18 with an adjustable rate between 2 Hz and 0.2 Hz. Current plans are to configure the equipment for DF11 squitter transmission at a 1 Hz rate.
- 1030 MHz "interrogation" transmitters for requesting air/ground vehicle transponder replies and for requesting vehicle identification data. Equipment is capable of transmitting Mode 3/A All Call and UF4/5 interrogations with an adjustable rate between 1 Hz and 10 Hz. Current plans are to configure the equipment for 1 Hz interrogations.