A.3.2.3 Surveillance Radar Navigation (SRN)

Background

Surveillance radar is a function for use by aircraft flying under ATC ground based radar and data link coverage in which the ground system automatically transmits, via a data link, data derived from radar stations or from radar data processing systems.

SRN messages could be exchanged between ground and air via a variety of data links: Mode S, VHF, satellite.

Following the recommendations of the FANS(II)/4-WP/20, a study on the subject according to the lines expressed in the cited document is considered.

Objectives

To establish the feasibility of this technique in terms of : operation, technology applied, transitional issues and cost-benefit.

To analyze the applicability of such a concept taking into account its potential features: "Surveillance monitoring", "integrity monitoring" (real-time cross-check with aircraft position as derived from navigation systems - VOR, DME, GNSS -), "enhanced navigation" (integration of SRN position data with data extracted from on-board navigational receivers). Such integration will be made in the FMS. Finally, analyses for determining the applicability of SRN in stand-alone mode will be undertaken.

Approach

This task will concentrate on :

- select the optimum time elapsing between the ATC radar aircraft localisation and the positional data reception on board aircraft;
- determine to what extent, the various datalinks, i.e. Mode S, VHF, satellite, are suitable to transfer SRN positional information to aircraft;
- determine, in order to transfer the SRN message in the minimum possible time, to what extent using electronically scanned antennas is necessary;
- study formats, resolution and coordinate reference to be used in the SRN messages, and also modifications to present systems (Mode S stations) on the ground and in the air (FMS).

Expected results

A comprehensive set of requirements for a SRN system will be achieved.