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GUIDELINES FOR THE MONITORING OF SSR TRANSPONDER PERFORMANCE

1. Secondary Surveillance Radar (SSR) is widely used routinely, as an integral part of the air traffic system, to obtain real time data on aircraft (identity, position and altitude). While ground installations are being constantly improved to support the highest level of efficiency in the provision of air traffic services, numerous deficiencies in the performance of airborne SSR installations continue to be observed. These faults can affect the overall SSR system and may lead to refusal of an air traffic control clearance to enter airspace where the correct functioning of the airborne SSR equipment is mandatory, and where the transponder provides data vital for the flight safety of aircraft in that airspace.
2. The EUROCONTROL data collection campaigns, with the Mobile Transponders Performance Analyser (MTPA) calibrated to confirm to ICAO specifications, have continued. The main transponder malfunctions detected by the MTPA, are in pulse width and spacing, signal frequency, side lobe suppression, receiver sensitivity and transmitter power. Additionally Mode C anomalies continue to be observed by ATC. Incorrect, or degraded, SSR information significantly reduces the safety of all the aircraft in the ATC system, and will increasingly result in economic penalties, to the operators, when aircraft are refused permission to proceed. A recent campaign carried out at Frankfurt Airport has shown that the situation has not improved. This evaluation was conducted using the Data Link and Transponder Analysis System (DATAS), the successor to the MTPA equipment.
3. At present, EUROCONTROL is carrying out a feasibility study into the development of a Ground - based Transponder Verification System (GTVS) for location at the principal traffic handling airports of Individual States. It is intended that GTVS will automatically notify the ATS unit issuing clearances, of aircraft transponder faults that will significantly affect the flight safety of the individual aircraft, or degrade the ATC System. Clearances for such aircraft may not be given.
4. It remains essential that operators take all necessary measures to ensure that the technical performance of transponders strictly adheres to ICAO specifications Annex 10 Volume I. Preventive action should be actively pursued by the regular monitoring of the performance of the on - board equipment, comprising transponders, aeriels and cabling. Routine transponder functional verification to ICAO specifications is required when aircraft renew their Certificates of Airworthiness.
5. The progressive implementation of monopulse SSR and the associated ground systems, which will not tolerate transponder performance even marginally outside ICAO specifications, will preclude, or significantly delay, the entry of non - complying aircraft into SSR mandatory airspace.

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