SESAR solution to enhance safety of mixed air traffic in Europe

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Rotorcraft and general aviation fly at different speeds and altitude to commercial traffic, making the management of the traffic more complex. Flight trials conducted by SESAR members are showing how advanced approach and departure procedures can enable more efficient mixed air traffic operations, especially in adverse weather.

Conducted between October and December 2018 within the framework of the 2020 project “Enhanced Arrival and Departures” (PJ.01 EAD) project, the flight trials demonstrated a candidate solution (PJ.01-06) to allow rotorcraft to fly advanced point-in-space procedures, such as radius curves legs. These pave the way for simultaneous non-interfering operations by rotorcraft at busy airports and important emergency operations in mountainous areas. The procedures also help to reduce the noise of approaches in populated areas, and for rotorcraft to operate close to airports without coming into conflict with fixed-wing traffic or requiring runway slots.

Bringing together SESAR partners, DLR, Thales and Airbus Helicopters, the flight trial at Braunschweig ran for over 10 hours with pilots flying a helicopter equipped with synthetic vision systems, a head mounted display (HMD - helmet), coupled to the current helicopter flight mission system (FMS), and further hardware equipment necessary for generating the symbology for both HMD- and head-down displays. Separately at Airbus Helicopters facilities in Donauwoerth, flight trials with curved and steep approaches were performed with a 4-axis autopilot coupling to achieve a high degree of automation and thereby significant crew workload reduction in approach and departure phases.

During these trials, the pilots assessed and validated the benefit of integrating such vision systems and advanced autopilot modes to support the pilots and by this, increase the safety and reliability of rotorcraft operations. The pilots also evaluated the benefit of having satellite-based (SBAS) navigation for advanced point-in-space RNP 0.3/LPV approaches and departures to and from the final approach and take-off area.

As part of the flight trials, the partners organised open days in June and October allowing a broader range of ATM stakeholders from Europe and further afield to see first-hand the technology and procedures in real-time simulations.

**About SESAR 2020 project PJ01 EAD**

Air traffic is increasing in Europe especially around airports. One way to address growth efficiently and environmental friendly is by developing solutions to optimise the capacity of airspace in the terminal maneuvering areas (TMAs) near airports. Given these challenges and ambitions, the SESAR Enhanced Arrival and Departures project (PJ01 EAD) addresses the development of concepts, tools and procedures to increase the capacity of extended TMAs (E-TMAs) to meet forecast traffic growth in a safe, cost-effective and environmentally sustainable manner.

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Photos: Trials inside DLRs Generic Cockpit Simulator (GECO) and flight trials with DLR’s research helicopter ACT/FHS (H135) using Thales’ Scorpion head mounted display system.