

Bird hazard detection with airport surveillance radar

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Abstract

The existence of birds in the vicinity of airport runways and flight paths present serious hazards to air traffic, particularly during take-off, climb and landing approach when the loss of one or more engines can jeopardize the safety of flight. The problem exists for both commercial and military aircraft. Following the crash of an AWACS aircraft in November 1995, the bird problem received greater emphasis in the United States (US) of America. Birds are also a worldwide problem to aviation, as highlighted by a couple of crashes in Europe, and also represent significant hazards in Israel. Following, a serious bird strike incident involving a C-5A aircraft in 1983, Rome Laboratory performed a study "Project Bird Watch at Dover AFB" involving radar detection of bird activity in the vicinity of Dover Air Force Base, Delaware. The study investigated the use of four types of radars, including AN/GPN-21 airport surveillance radar. The AN/GPN-21, with increased sensitivity, demonstrated the ability to detect bird activity in the vicinity of the airport, and the takeoff and landing zones. Current airport surveillance radars, such as the ASR-9, have sufficient sensitivity to detect birds in the vicinity of airports, but the detections are intentionally rejected as unwanted clutter. With additional receiver processing, and the incorporation of a digital time-lapse display, the radar can provide for detection and monitoring of bird activity without interfering with the normal operations of the surveillance radar