

# CAVS-CDTI Assisted Visual Separation

## BACKGROUND

CAVS is an Airborne Surveillance Application (ASA) to assist pilots in maintaining own separation from a preceding aircraft during successive visual approach procedures by showing its position and additional data on a cockpit display. The data of the preceding aircraft is derived from ADS-B Out, received by the succeeding aircraft via ADS-B In and presented to the crew on a Cockpit Display of Traffic Information (CDTI) which can be integrated in the usual navigation displays.

This capability is referred to as Basic Airborne Situational Awareness (AIRB). The functionality to use this information to support the visual acquisition of other traffic and maintain own separation is called Visual Separation on Approach (VSA). The relative position with distance and bearing information as well as optional data such as ground speed and aircraft identification depicted on the CDTI can assist crews to spot and track an aircraft referred to by air traffic control.

According to the Manual on Airborne Surveillance Applications (ICAO Doc 9994), VSA may be used to support visual approaches to all types of runway configurations and requires visual meteorological conditions (VMC). Additionally, "pilots are required to maintain continuous visual contact with the preceding aircraft" (Doc 9994 2.1.2.1.5).

In contrast, CAVS is an application which will allow the crew to use the traffic display to continue own separation approach procedures even if out-the-window visual contact with the preceding aircraft is lost (Doc 9994 3.1.1.2), however maintaining VMC remains a requirement and ATC is not relieved from its obligation to provide traffic information according to PANS ATM. Aircraft that comply with the relevant Minimum Operational Performance Standards (MOPS) feature two alerting functions: a pilot-selectable advisory alert and a hard-programmed surveillance alert which notifies the crew if minimum distances are undercut.

CAVS is not supposed to change any existing provisions including requirements for passing traffic information, communications, separation responsibilities, or ACAS procedures. Flight crews can decide whether they want to use CAVS and will always be

responsible to monitor consistency of data provided on the CDTI and visual observations.

Crews should avoid referring to a preceding aircraft with its identification in their communication with ATC. Regulators are encouraged to require operator's approval and to harmonize their requirements.

## POSITION

CAVS is supposed to be used only in VMC and it is intended to leave the decision as to its use to the flight crew. However, it is obvious that this application was designed to increase the number of visual approaches which can improve airspace capacity and runway throughput due to closer spacing of aircraft on approach.

It is important to note that these operational benefits may lead to an increased pressure to apply this procedure. This could result in its possible acceptance even in deteriorating meteorological conditions and at closer distance behind a preceding aircraft while conducting visual approaches with own separation. IFALPA is concerned that minimum separation distances to avoid collision or wake turbulence encounters with other aircraft cannot be adequately judged by the flight crew.

Therefore, IFALPA believes that the following principles should pertain for the application of CAVS:

- CAVS should never be used in other than Visual Meteorological Conditions and out of the window tracking of preceding aircraft should always remain the primary means of ensuring separation to other aircraft.
- Training and SOPs should reflect flight crews' assumed responsibilities including but not limited to terrain clearance, prevention of collision with other aircraft, and wake turbulence avoidance. Adequate guidance should be provided to flight crews on how to maintain safe separation distances to meet all mentioned responsibilities.
- Flight crews should be adequately aware that application of CAVS binds mental resources for additional monitoring tasks. Pilots should base the decision as to whether application of CAVS is safe in a certain situation on an appropriate situation- and self-assessment.
- Clear procedures and phraseology need to be developed which leave no room for ambiguity or misunderstanding, e.g., when referring to the target aircraft on a frequency or the target runway of another aircraft.

- Flight crews should be thoroughly trained on the CAVS procedures, display interpretations, and communication requirements in a full flight simulator.
- The display of traffic information should be integrated in Primary Avionics Displays (navigation display, weather radar) in the pilots' primary field of vision as long as the amount of presented data does not interfere with the readability and interpretation. It should allow for quick and easy interpretation of the preceding aircraft's position, flight path, distance, (relative) altitude and ground speed in order to reduce the head-down time as much as possible.
- The display of relative or absolute altitude and relative (closing) speed of proximate traffic should be pilot selectable.
- The decision to conduct a visual approach using CAVS procedures and equipment should solely rest with the flight crew and should not lead to negative operational consequences when being declined.
- Regulators should require operators to apply for operational approvals and to demonstrate thorough provisions for installations, training and standard operating procedures.