



IBAC Bulletin 02-03

Subject: ACAS (TCAS) Alert Bulletin

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Attachment

TCAS Transition Program (TTP) Industry Alert Bulletin

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Background

Over the past several months, there have been several TCAS events in which the improper response to a TCAS RA resulted in the vertical miss distance between two aircraft being less than that which TCAS is designed to provide. In addition, the final report of a near mid-air collision between two TCAS-equipped aircraft in Japan in January 2001 indicates that one of the contributing factors to this event was the improper response of one pilot to the RA received during the encounter.

With this in mind, the TTP believes it is essential for all operators to review the previously published guidance related to responding to RAs. The following material is taken from the Federal Aviation Administration Advisory Circular (AC) 120-55B, entitled *AIR CARRIER OPERATIONAL APPROVAL AND USE OF TCAS II*. Although the title refers to air carriers, the guidance contained in the AC is applicable to all TCAS operators.

1. Pilot Responsibilities. TCAS is intended to serve as a backup to visual collision avoidance, application of right-of-way rules, and air traffic separation service. *For TCAS to work as designed, immediate and correct crew response to TCAS advisories is essential.* Delayed crew response or reluctance of a flightcrew to adjust the aircraft's flight path as advised by TCAS due to Air Traffic Control (ATC) clearance provisions, fear of later FAA scrutiny, or other factors could

significantly decrease or negate the protection afforded by TCAS. Flightcrews are expected to respond to TCAS RAs in accordance with the following guidelines:

(a) When an RA occurs, the pilot flying (PF) should respond immediately by direct attention to RA displays and maneuver as indicated, unless doing so would jeopardize the safe operation of the flight or the flightcrew can assure separation with the help of definitive visual acquisition of the aircraft causing the RA. By not responding to an RA, the flightcrew effectively takes responsibility for achieving safe separation. In so choosing, the following cautions should be considered:

(i) The traffic may also be equipped with TCAS and it may maneuver in response to an RA that has been coordinated with your own TCAS. *Note: If the traffic is TCAS-equipped, its RA will be in the opposite direction to that which you receive.*

(ii) The traffic acquired visually may not be the same traffic causing the RA.

(iii) Visual perception of the encounter may be misleading. Unless it is unequivocally clear that the target acquired visually is the one generating the RA and there are no complicating circumstances, *the pilot's instinctive reaction should always be to respond to RAs in the direction and to the degree displayed.*

(b) Satisfy RAs by disconnecting the autopilot, if necessary, using prompt, positive control inputs in the direction and with the magnitude TCAS advises. To achieve the required vertical rate (normally 1,500 feet per minute (fpm) climb or descent), first adjust the aircraft's pitch using the suggested guidelines shown in the table below. Then refer to the vertical speed indicator (VSI) and make all necessary pitch adjustments to place the VSI in the green arc. On aircraft with pitch guidance for TCAS RA displays, follow the RA pitch command for initial, increase, and weakening RAs.

SPEED	PITCH ADJUSTMENT
.80 MACH	2°
250 KIAS below 10,000 feet	4°
APPROACH below 200 KIAS	5° to 7°