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## Subject: TCAS Resolution Advisory (RA) Policy Update

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### Introduction

The Traffic Alert and Collision Avoidance System (TCAS) is valuable for identifying and avoiding potential threat aircraft.

TCAS software continues to be refined to more accurately identify threat aircraft while reducing nuisance alerts. Even with software enhancements, the rate of TCAS Resolution Advisories (RA) has increased dramatically industry-wide since 2013. Most, but not all, of the increase is due to close parallel runway operations at high density airports.

This fleet bulletin specifically addresses the high density, parallel approach TCAS RA policy. Pilots are reminded that compliance with an RA at all other times is mandatory unless doing so imposes a greater risk.

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### TCAS RA Parallel Approach Guidance

Historically, Delta mitigated distracting TCAS RAs during close parallel approaches by directing crews to select “TA Only” at designated airports; currently SFO, DEN, PDX, and SEA. As airport airspace is being redesigned and the use of curved path RNAV arrivals continues to expand, Flight Ops and Flight Safety considered expanding the list of “TA Only” airports. After much discussion, this mitigation was not adopted because industry data indicated that pilots are prone to selecting “TA Only” prematurely, and in the event of a go-around and/or diversion crews forget to reselect the “TA/RA” mode. Effective immediately, SFO will be the single Delta “TA Only” airport.

Flight Ops has defined limited parameters when “see and avoid” may be less hazardous than immediately responding to a TCAS RA.

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## TCAS RA Parallel Approach Guidance

A pilot may deem it safe to continue an approach and disregard TCAS RA guidance when **ALL** of the following conditions exist:

- Daytime
- VMC
- Radar contact
- Parallel approach operations
- Cleared for the approach
- The traffic can be immediately and positively identified and separation can be maintained.

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## Summary

Since its introduction, TCAS was intended to support visual collision avoidance, application of right-of-way rules, and ATC separation.

Crews are often in the best position to understand when an intruding aircraft is a threat. For example, a crew conducting a visual parallel approach would likely see conflicting traffic, be notified by ATC or via a TA, prior to receiving an RA.

Under current guidance, a crew who neglected to switch to “TA Only” at a designated airport, or identified a conflicting target well in advance, would be required to honor an RA and abandon the approach. With this change, crews are authorized to assess the threat and continue should conditions warrant.

**Note:** An ASR is required per FOM, chapter 10, for all TCAS RAs.

Safety is paramount; the revised guidance is narrow and applies only to the circumstances listed in the conditions.

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## TCAS Guidance in FCTM

For user reference, the revised text to be incorporated into the next FCTM revision is included as an addendum to this bulletin, text below.

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### Traffic Alert and Collision Avoidance System

The Traffic Alert and Collision Avoidance System (TCAS) is designed to enhance crew awareness of nearby traffic and issue advisories for timely visual acquisition or appropriate vertical flight path maneuvers to avoid potential collisions. It is intended to support visual collision avoidance, application of right-of-way rules, and ATC separation.

#### Traffic Advisory

A Traffic Advisory (TA) occurs when nearby traffic meets system minimum separation criteria, and is indicated aurally and visually on the TCAS traffic display. A goal of the TA is to alert the pilot of the possibility of an RA. If a TA is received, immediately look for traffic using the traffic display as a guide, call out any conflicting traffic and if traffic is sighted, maneuver if needed. Maneuvers based solely on a TA may result in reduced separation and are not normally recommended.

#### Resolution Advisory

When TCAS determines that there is a risk for collision, a Resolution Advisory (RA) aural warning and a pitch command is generated. With the exception noted below, compliance with an RA is required even if the subject aircraft appears to be in sight and is deemed to be of no threat. There could be multiple threats and the aircraft observed may not actually be the offending traffic. Compliance with a Resolution Advisory (RA) is mandatory unless doing so imposes a greater risk.

**WARNING: A DESCEND (fly down) RA issued below 1,000 feet AGL should not be followed.**

#### The RA Maneuver

Maneuvering is required if any portion of the aircraft symbol is within the red region on the attitude indicator (as installed) or if the existing vertical speed is in the red band (RA VSI) (as installed).

The RA maneuver is a pitch-only maneuver. Continue to follow the planned lateral flight path unless visual contact with the conflicting traffic requires other action. Properly executed, the RA maneuver is mild and should not require large or abrupt control movements.

**Note:** The flight director is not designed to provide RA guidance.

Complying with RAs may result in brief exceedance of altitude and/or placard limits. However, even at the limits of the operating envelope, in most cases sufficient performance is available to safely maneuver the aircraft.

**Note:** The RA command “ADJUST VERTICAL SPEED ADJUST” always requires a reduction in vertical speed. Do not inappropriately increase vertical speed in response to this command. On later versions of TCAS, the verbal annunciation “ADJUST VERTICAL SPEED ADJUST” RA has been changed to “LEVEL OFF”.

| Pilot Flying                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Pilot Monitoring                                                                                                                                                                                                                                                                                                                                                                                                               |
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| Both pilots visually clear the airspace in the direction of the maneuver.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p>If maneuvering is required:</p> <p>Disconnect the autopilot and autothrottle.</p> <p>Smoothly adjust pitch (and thrust, if necessary) to satisfy the RA command.</p> <p><b>Note:</b> For a TCAS climb RA in the landing configuration:</p> <ul style="list-style-type: none"> <li>- Advance thrust</li> <li>- Call for flaps 13</li> <li>- After verifying a positive rate of climb, call for gear up.</li> </ul> <p>Follow the planned lateral flight path unless visual contact with the conflicting traffic requires other action.</p> <p>When TCAS advises “CLEAR OF CONFLICT”, smoothly maneuver back to the ATC cleared altitude.</p> <p>Re-establish the autopilot and auto-thrust, as desired.</p> | <p>Notify ATC (“TCAS RA”).</p> <p>If necessary, coordinate with ATC for further clearance.</p> <p><b>Note:</b> For a TCAS climb RA in the landing configuration:</p> <ul style="list-style-type: none"> <li>- Verify appropriate thrust</li> <li>- Position flaps 13</li> <li>- Verify positive rate and call “POSITIVE RATE”</li> <li>- Select the landing gear lever to UP.</li> </ul> <p>Notify ATC “CLEAR OF CONFLICT”</p> |
| Attempt visual contact. Call out any conflicting traffic. Visual acquisition of traffic may be misleading and does not guarantee separation. Comply with RA guidance until clear of conflict unless doing so imposes a greater risk.                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                |

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## Parallel Approach Exception to Resolution Advisory Compliance

Many airports operate simultaneous visual approaches to closely-spaced parallel runways. Occasionally, an RA is generated due to the close proximity of aircraft even though the aircraft are tracking to separate runways. A pilot may disregard RA guidance during an approach when all of the following conditions exist:

- Daytime
- VMC conditions
- Radar contact
- Parallel approach operations
- Cleared for the approach
- The traffic can be immediately and positively identified and separation can be maintained.

**Note:** After receiving an RA, selection of “TA Only” is not recommended. Maintaining TCAS RA guidance is desirable in the event of a go-around and/or secondary “intruder” aircraft.

## Interaction with ATC

Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with a TCAS RA. Except as specifically noted above, pilots are required to immediately comply with an RA, even if the RA is contrary to an ATC clearance or instruction issued prior to or during an active RA.

When an RA occurs, inform ATC “TCAS RA” as soon as practicable after responding to the RA.

When the RA is clear and “Clear of Conflict” is heard, inform ATC “Clear of conflict, returning to (assigned clearance)” or “Clear of conflict, reestablished (assigned clearance).”

## Mode of Operation

The combined Resolution Advisory (RA) and Traffic Advisory (TA) switch position (RA/TA or TA/RA, depending on installation) should be initiated just before takeoff and continued until just after landing.

The Traffic Advisory (TA) Only mode inhibits the RA function and should be selected only when directed by:

- A Company Page, or
- An Non-Normal Checklist, or
- A flight plan remark.

## **Other Considerations**

During the RA maneuver, the aircrew should attempt to establish visual contact with the target. However, visual perception of the encounter can be misleading, particularly at night. The traffic acquired visually may not be the same traffic causing the RA.

Pilots should maintain situational awareness since TCAS may issue RAs in conflict with terrain considerations, such as during approaches into rising terrain or during an obstacle limited climb. Continue to follow the planned lateral flight path unless visual contact with the conflicting traffic requires other action. Windshear, EGPWS, and stall warnings take precedence over TCAS advisories. If stick shaker or initial buffet occurs during the maneuver, immediately accomplish the Approach to Stall Recovery procedure, this chapter. If high speed buffet occurs during the maneuver, relax pitch force as necessary to reduce buffet, but continue the maneuver.