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A. GENERAL / CHAPTER 32.- POLICY, INSTRUCTIONS, PROCEDURES AND TRAINING REQUIREMENTS FOR THE AVOIDANCE OF COLLISIONS AND THE USE OF THE AIRBORNE COLLISION AVOIDANCE SYSTEM (ACAS)

32 Policy, Instructions, Procedures and Training Requirements for the Avoidance of Collisions and the use of the Airborne Collision Avoidance System (ACAS).

32.1 ACAS Training Requirements

All ACA Flight Crew Members are required to satisfactorily complete ACAS training. ACAS training is covered in the following ACA training courses:

* Initial Training;
* Conversion Training;
* Upgrade Training;
* Recurrent Training.

Note: See OM, Section 5, Part D, for specific training modules and training times.

32.2 Policy and Procedures for the use of ACAS or TCAS (as applicable).

32.2.1 General

In the interest of safety, ACA Pilots shall use of the ACAS system at all times. The airborne collision avoidance system (ACAS) is similar to the Traffic Collision Avoidance System (TCAS) and provides pilots with collision avoidance warnings. ACAS operates independently of ground-based equipment and air traffic control in warning pilots of the presence of other aircraft that may present a threat of collision. If the risk of collision is imminent, the system initiates a maneuver that will reduce the risk of collision. ACAS relies upon information received from transponders equipped aircraft by aircraft which are similarly filled.

32.3 ACAS Warnings

ACAS provides collision avoidance maneuver advice in the vertical plane, in either of the following two forms: Traffic Advisories (TA’s), which indicate the approximate position relative to the subject airplane, either in azimuth only, or azimuth and altitude, of nearby transponding airplane which may become a threat; Resolution Advisories (RA’s) which recommend maneuvers or maneuver restrictions in the vertical plane to resolve conflicts with airplanes transponding SSR Mode C altitude.

If a TA or an RA is received, the following action should be taken:

* A TA is intended to alert the crew that an RA, requiring a change in flight path, may follow. A visual search should immediately be concentrated on that part of the sky where the TA indicates the conflicting traffic to be. If the potential threat cannot be seen and gives cause for concern, ATC assistance should be requested in deciding whether a change of flight path is required. If the potential threat is seen and considered to pose a definite risk of collision, the pilot should maneuver the airplane as necessary to avoid it, making sure that the area into which he is maneuvering is clear. Once clear of the potential threat, and any other subsequent conflicts, the pilot should resume the previously cleared flight path and advise ATC of any deviation from the clearance.

* An RA is intended to advise pilots on the maneuver they should carry out in order to achieve or maintain adequate separation from an established threat. The required maneuver should be initiated immediately, and crew members not involved in its execution should ensure that the sky ahead is clear of other traffic and continue the visual search for the established threat. Once the ACAS II indicates that adequate separation has been achieved the airplane should be promptly returned to its intended flight path, and ATC informed.
**Note 1:** If an instruction to maneuver is received simultaneously from an RA and from ATC, and the instructions conflict, the advice given by the RA should be followed.

**Note 2:** Initial pilot reaction to RA must be within 5 seconds and +0.25G. Changes in RA must be reacted to within 2.5 seconds and +0.35G.

**Note 3:** ATC Phraseology: Only those RAs that require a deviation from ATC clearance or instruction need to be reported.

Whenever, as a result of an ACAS warning, an aircraft has been maneuvered such that it has departed from its air traffic control clearance, ATC is to be informed as soon as possible of the departure, and the aircraft returned to the previously cleared flight conditions. Whenever an aircraft has departed from an air traffic control clearance. In compliance with a RA, the pilot is to report the circumstances to the Flight Operations Manager within 48 hours.

### 32.4 Upon Execution of an RA Announce

- "Call sign, ACAS RA" (pronounced “TEE-CAS-AR-AY”) When the pilot is unable to comply with an ATC clearance or instruction because there is an RA, the appropriate message is:
  - “Call sign, UNABLE, ACAS RA"

Also, the pilots are required to explicitly announce the ACAS “Clear of conflict” message when the conflict is over:

- “Call sign, CLEAR OF CONFLICT, RETURNING TO (assigned clearance)"

Or

- “Call sign, CLEAR OF CONFLICT, (assigned clearance) RESUMED”

ACAS II relies upon information received from transponder equipped airplanes. RA’s will only be generated if both the receiving airplane and the potential intruder have the transponder in altitude Mode 'C'. The equipment is not capable of resolving with complete accuracy the bearing, heading or vertical rates of intruding airplanes; pilots should not, therefore, attempt to maneuver solely on the basis of TA information. The full range of TA’s and RA’s may not be produced beyond the minimum and maximum altitudes specified for its operation.

Even if TA’s and RA’s are suspected of being a nuisance or false advisories, they should be treated as genuine. Whenever, as a result of an ACAS II warning, an airplane has been maneuvered such that it has departed from its ATC clearance, the appropriate ATC unit is to be informed as soon as possible of the departure, and of the return to the previously cleared flight conditions. Whenever an airplane has departed from an ATC clearance in compliance with an RA, the pilot is to report the circumstances to the Company.

### 32.4.1 Recommendations

During the visual approach to closely spaced parallel runways or to converging or intersecting runways, use of TA Only mode is recommended once on final approach. Continued operation in TA/RA mode may result in RA’s for airplanes on approach for the adjacent runway and may cause an unnecessary go- around.

When approaching aerodromes with low terrain along the final approach use of TA Only mode is recommended once the airplane is established on final approach course. Continued operation in TA/RA mode may result in RA’s for airplanes that may be on the aerodrome surface, with their transponders operating, and may cause an unnecessary go-around.

### 32.5 Transponder Operations on Ground

Some aerodromes may require that transponders are operative during ground movement. Select the following for ACAS ground transponder operations:

- Select “ON” or “XPNDER” neither ‘TA only’ nor ‘TA/RA’ when receiving the clearance to start/push back. Maintain this selection during ground operations (taxi).

- After landing, select “ON” or “XPNDER”. After arrival at the gate, select “STBY”
32.6 Voice Messages

The ACAS resolution advisories are enunciated by the following voice messages, as appropriate, along with the expected pilot response:

- "CLIMB, CLIMB, CLIMB" (Climb at the rate depicted by the green (fly to) arc on the IVSI.)
- "DESCEND, DESCEND, DESCEND" (Descend at the rate depicted by the green (fly to) arc.)
- "MONITOR VERTICAL SPEED - MONITOR VERTICAL SPEED" (Spoken only once if softening from a previous corrective advisory.) Assure that vertical speed is out of the illuminated IVSI red arc.
- "REDUCE CLIMB - REDUCE CLIMB" (Reduce vertical speed to a value within the illuminated green arc.)
- "CLEAR OF CONFLICT" (Range is increasing, and separation is adequate; expeditiously return to the applicable ATC clearance, unless otherwise directed by ATC.)
- "CLIMB, CROSSING CLIMB, CLIMB, CROSSING CLIMB" (Climb at the rate depicted by the green (fly to) arc on the IVSI.) The safe separation will best be achieved by climbing through the threat's flight path.
- "REDUCE DESCENT - REDUCE DESCENT" (Reduce vertical speed to a value within the illuminated green arc.)
- "DESCEND, CROSSING DESCEND, DESCEND, CROSSING DESCEND" (Descend at the rate depicted by the green (fly to) arc on the IVSI.) The safe separation will best be achieved by descending through the intruder's flight path.

The following voice messages enunciate enhanced ACAS maneuvers when the initial RA does not provide sufficient vertical separation. The tone and inflection connote increased urgency:

- "INCREASE CLIMB, INCREASE CLIMB" (Climb at the rate depicted by the green (fly to) arc on the IVSI.) Received after "CLIMB" advisory, and indicates additional climb rate required to achieve safe vertical separation from a maneuvering threat aircraft.
- "INCREASE DESCENT, INCREASE DESCENT" (Descend at the rate depicted by the green (fly to) arc on the IVSI.) Received after "DESCEND" advisory, and indicates additional descent rate required to achieve safe vertical separation from a maneuvering threat aircraft.
- "CLIMB - CLIMB NOW, CLIMB - CLIMB NOW" (Climb at the rate depicted by the green (fly to) arc on the IVSI.) Received after a "DESCEND" resolution advisory and indicates a reversal in sense is required to achieve safe vertical separation from a maneuvering threat aircraft.
- "DESCEND - DESCEND NOW, DESCEND - DESCEND NOW" (Descend at the rate depicted by the green (fly to) arc on the IVSI.) Received after a "CLIMB" resolution advisory and indicates a reversal in sense is required to achieve safe vertical separation from a maneuvering threat aircraft.
32.7 Standard Radio Phraseology

RA reporting phraseology – Notification of a maneuver initiated in response to an RA (pronounced “TEE-CAS-AR-AY”):

<table>
<thead>
<tr>
<th>Situation</th>
<th>Pilot</th>
<th>Controller</th>
</tr>
</thead>
<tbody>
<tr>
<td>…after a Flight Crew starts to deviate from any ATC clearance or instruction to comply with an ACAS RA</td>
<td>ACAS RA*</td>
<td>ROGER*</td>
</tr>
<tr>
<td>…after the response to an ACAS RA is completed and a return to the ATC clearance or instruction has been resumed</td>
<td>CLEAR OF CONFLICT, RETURNING to xxxx ft / FL xxx *details of assigned clearance),</td>
<td>ROGER* or alternative instructions</td>
</tr>
<tr>
<td>…after the response to an ACAS RA is completed and the assigned ATC clearance or instruction has been resumed</td>
<td>CLEAR OF CONFLICT xxxx ft/FL xxx <em>details of assigned clearance) RESUMED</em></td>
<td>ROGER* or alternative instructions</td>
</tr>
<tr>
<td>…after an ATC clearance or instruction contradictory to the ACAS RA is received, the Flight Crew will follow the RA and inform ATC directly</td>
<td>UNABLE, ACAS RA*</td>
<td>ROGER*</td>
</tr>
</tbody>
</table>

32.8 Phase of Flight Guidelines

An aircraft executing high rates of climb or descent after having received regular ATC clearances, especially in the phase in which the aircraft approaches its cleared flight level, may trigger Resolution Advisories even though they require vertical separation is ensured by the controller. Therefore a set of guidelines has been established in order to avoid misinterpretations in air traffic control.

<table>
<thead>
<tr>
<th>Phase of flight</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level change en-route <em>(this incorporates clearances to immediate flight levels with more than 2000 ft difference)</em></td>
<td>Aircraft climbing to the cleared flight level, the rate of climb within the last 1000ft should not exceed 1000 ft/min.</td>
</tr>
<tr>
<td></td>
<td>A descent rate between 1000-2500 ft/min is expected and should be complied with. However the rate within the last 1000 ft to the cleared flight level should not exceed 1000 ft/min.</td>
</tr>
<tr>
<td>Level changes in holding patterns</td>
<td>Level change within a holding pattern should be flown with a rate of descent of 1000ft/min.</td>
</tr>
<tr>
<td>Descent on STARs</td>
<td>A rate of between 1500-2500 ft/min is expected and should be complied with.</td>
</tr>
<tr>
<td>Leaving IAF under radar vectors</td>
<td>Unless otherwise specified by ATC, the rate of descent is at pilot’s discretion.</td>
</tr>
</tbody>
</table>

Note 1: Any deviation from the above mentioned rates, if deemed necessary by the pilot, shall be communicated to ATC immediately.

Note 2: ATC may request different rates at any time for the purpose of separation of aircraft. These rates shall strictly be complied with.