



Advisory Circular

Subject: Airborne Collision Avoidance System Advisory Material

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1.0 INTRODUCTION

- (1) This Advisory Circular (AC) is provided for information and guidance purposes. It describes an example of an acceptable means, but not the only means, of demonstrating compliance with regulations and standards. This AC on its own does not change, create, amend or permit deviations from regulatory requirements, nor does it establish minimum standards.

1.1 Purpose

- (1) The purpose of this AC is to provide Air Operators, Private Operators, Foreign Operators, Flight Crews and Transport Canada Civil Aviation (TCCA) personnel with information on Traffic Alert and Collision Avoidance Systems (TCAS) and Airborne Collision Avoidance Systems (ACAS).

1.2 Applicability

- (1) This document is applicable to all Transport Canada Civil Aviation employees, to individuals and organizations when they are exercising privileges granted to them under an External Ministerial Delegation of Authority. This information is also available to the aviation industry for information purposes.
- (2) TCCA has developed regulations for the installation and operation of TCAS/ACAS for commercial Aerial Work, Air Taxi, Commuter and Airline Operations (Subparts 702, 703, 704 and 705 of the *Canadian Aviation Regulations* [CARs]).

1.3 Description of Changes

- (1) Issue 02 of this document contains: General TCAS information; Transport Canada TCAS/ACAS regulations; Information on the use of TCAS outside of Canada; Operational and Aircraft Certification Approval guidelines; Operational Considerations; Enforcement Considerations and Air Traffic Control (ATC) phraseology.

2.0 REFERENCES AND REQUIREMENTS

2.1 Reference Documents

- (1) It is intended that the following reference materials be used in conjunction with this document:
 - (a) *Aeronautics Act* (R.S., 1985, c. A-2);
 - (b) Part VII, Subpart II of the *Canadian Aviation Regulations* (CARs) – *Aerial Work*;
 - (c) Part VII, Subpart III of the CARs – *Air Taxi Operations*;
 - (d) Part VII, Subpart IV of the CARs – *Commuter Operations*;
 - (e) Part VII, Subpart V of the CARs – *Airline Operations*;
 - (f) Chapter 537 of the *Airworthiness Manual* (AWM) – *Airworthiness Standards, Appliances*, Subpart B - Technical Standard Orders (TSOs) 537.103 contains a list of adopted United States Standards in Canada. This may be referenced by internet at:
http://www.tc.gc.ca/eng/civilaviation/regserv/cars/part5-standards-537-sub-b-1782.htm#537_103;
 - (g) Federal Aviation Administration Advisory Circular (FAA AC) 120-55C – *Air Carrier Operational Approval and Use of TCAS*;
 - (h) FAA AC 20-131A – *Airworthiness Approval of Traffic Alert and Collision Avoidance Systems (TCAS II) and Mode S Transponders*;

- (i) FAA AC 20-151A – *Airworthiness Approval of Traffic Alert and Collision Avoidance Systems (TCAS II) Versions 7.0 & 7.1 and Associated Mode S Transponders*;
- (j) Technical Standard Orders (TSO) C112 – *Air Traffic Control Radar Beacon System/Mode Select (ATCRBS/MODE S) Airborne Equipment*;
- (k) TSO-C118 – *Traffic Alert and Collision Avoidance System (TCAS) Airborne Equipment, TCAS I*;
- (l) TSO-C119 – *Traffic Alert and Collision Avoidance System (TCAS) Airborne Equipment*;
- (m) TSOs referenced in this AC may be purchased from:
Superintendent of Documents
U.S. Government Printing Office
Washington D.C. 20402
- (n) TSOs referenced above are available for download at the following website:
http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgTSO.nsf/MainFrame?OpenFrameSet.

2.2 Cancelled Documents

- (1) As of the effective date of this document, the following documents are cancelled:
 - (a) Air Carrier Advisory Circular (ACAC) 0098, 1996-03-23 – *Use of Traffic Alert and Collision Avoidance System (TCAS)*;
 - (b) Commercial and Business Aviation Advisory Circular (CBAAC) 0210, 2003-01-13 – *The need for accurate and prompt response to Airborne Collision Avoidance System / Traffic Alert and Collision Avoidance System Resolution Advisories*;
 - (c) CBAAC 0233, 2004-10-15 – *Eurocontrol's Airborne Collision Avoidance System II Implementation*; and
 - (d) CBAAC 0261, 2007-07-01 – *Transponders and Airborne Collision Avoidance*.
- (2) By default, it is understood that the publication of a new issue of a document automatically renders any earlier issues of the same document null and void.

2.3 Definitions and Abbreviations

- (1) The following **definitions** are used in this document:
 - (a) **Resolution Advisory:** aural and visual alerts and information to avoid a potential airborne collision; and
 - (b) **Traffic Advisory:** aural and visual alerts and information on position of other aircraft in immediate vicinity.
- (2) The following **abbreviations** are used in this document:
 - (a) **ACAS:** Airborne Collision Avoidance System;
 - (b) **RA:** Resolution Advisory;
 - (c) **TA:** Traffic Advisory;
 - (d) **TCAS:** Traffic Alert and Collision Avoidance System;
 - (e) **TCAS I:** TCAS providing TA only;
 - (f) **TCAS II:** TCAS providing TA and RA; and
 - (g) **XPDR:** Transponder.

3.0 BACKGROUND

- (1) Airborne Collision Avoidance System (ACAS) is International Civil Aviation Organization (ICAO) terminology. TCAS is the acronym for the Traffic Alert and Collision Avoidance System developed in the United States by the Federal Aviation Administration (FAA). The acronyms TCAS and ACAS are generally interchangeable. Care needs to be taken when comparing ICAO definitions of ACAS II with North American definition of TCAS II. Specifically the ICAO definition of a fully compliant ACAS II (ICAO Annex 10, Volume 4, Chapter 4) is equivalent to TCAS II software version 7.1.
- (2) For the purposes of this AC, TCAS terminology will be used and where necessary for clarity a specific software version will be identified.
- (3) TCAS equipment alerts flight crews when the path of the aircraft is predicted to potentially collide with that of another aircraft. TCAS is designed to operate independently of Air Traffic Control (ATC) and, depending on the type of TCAS, will display proximate traffic and provides Traffic Alerts (TAs) and Resolution Advisories (RAs).
- (4) TAs provide information on proximate traffic and are intended to assist the flight crew in visual acquisition of conflicting traffic and to alert pilots to the possibility of an RA.
- (5) RAs are divided into two categories: preventative advisories, which instruct the pilot to maintain or avoid certain vertical speeds; and corrective advisories, which instruct the pilot to deviate from the current flight path (e.g., "CLIMB", when the aircraft is in level flight).
- (6) There are two types of TCAS:
 - (a) *TCAS I* is a system including a computer and pilot display(s), which provides a warning of proximate traffic (TA) to assist the pilot in the visual acquisition of intruder aircraft and assist in avoiding potential collisions (i.e: do not provide RAs); and
 - (b) *TCAS II* is a system including a computer, pilot display(s), and Mode S transponder, which provide both TAs and vertical plane RAs. RAs include recommended escape manoeuvres, only in the vertical dimension to either increase or maintain existing vertical separation between aircraft. (Note: There currently is no TCAS equipment capable of providing RA's in the lateral direction.)
- (7) The following paragraphs and table describes the TCAS levels of protection versus aircraft equipage:
 - (a) Intruder aircraft without transponders are invisible to TCAS equipped aircraft, thus TAs or RAs are not provided.
 - (b) Intruder aircraft equipped with only a Mode A transponder are not tracked or detected by TCAS II, because TCAS II does not use Mode A interrogations. Mode A only transponder aircraft are invisible to TCAS equipped aircraft.
 - (c) Intruder aircraft equipped with a Mode C transponder **without** altitude input will be tracked as a non-altitude replying target. Neither a data tag nor a trend arrow will be shown with the traffic symbol. These aircraft are deemed to be at the same altitude as own aircraft.
 - (d) Intruder aircraft equipped with a Mode C transponder **with** altitude input support TAs and RAs as appropriate in the TCAS II equipped aircraft.
 - (e) In an encounter between two TCAS II equipped aircraft, their computers will communicate using the Mode S transponder data link, which has the capability to provide complementary RAs (e.g., one climbing and one descending).

Table 1 – TCAS Levels of protection versus aircraft equipage

Intruder Aircraft Equipment	Own Aircraft Equipment	
	TCAS I	TCAS II
Non transponder (XPDR) equipped or Mode A XPDR ONLY	Not tracked & not displayed	Not Tracked & not displayed
Mode C or Mode S XPDR	TA	TA and Vertical RA
TCAS I	TA	TA and Vertical RA
TCAS II	TA	TA and Co-ordinated Vertical RA

4.0 TRANSPORT CANADA TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM / AIRBORNE COLLISION AVOIDANCE SYSTEM REGULATIONS

- (1) The Technical Standard Order (TSO) for TCAS I is TSO-C118 or CAN-TSO-118.
- (2) The Technical Standard Order for TCAS II/ACAS II is TSO-C119 or CAN-TSO-C119. The original release of TSO-C119 was associated with software version 6.0. Since then the following updates to TSO-C119 have been released:
 - (a) TSO-C119a: associated with software version 6.04a. Version 6.04a was released to address nuisance alerts, which were occurring at low altitudes and during low level manoeuvres, and to address a problem with the altitude crossing logic. This version is the minimum requirement for operations in Canada when outside of Reduced Vertical Separation Minima (RVSM) airspace;
 - (b) TSO-C119b: associated with software version 7.0. Version 7.0 was released to address numerous enhancements to the collision avoidance algorithms, aural annunciation, and RA displays, changes to reduce repetitive nuisance TAs on RVSM routes in slow closure situations. Software version 7.0 is the minimum required for all Subparts 702, 703, 704 and 705 of the *Canadian Aviation Regulations* (CARs) aeroplanes when operating inside of RVSM airspace. In ICAO terminology this is also referred to as ACAS II;
 - (c) TSO-C119c: associated with software version 7.1. Version 7.1 was released to address reversal logic issues and address flight crew misinterpretation of Adjust Vertical Speed Adjust aural annunciation. In ICAO terminology this is also referred to as ACAS II.
- (3) In Amendment 85 to ICAO Annex 10, volume IV, Chapter 4, published in October 2010, ICAO has mandated that, all new ACAS installations after 1 January 2014 be compliant with Version 7.1 and all ACAS units shall be compliant with version 7.1 after January 2017. Transport Canada Civil Aviation (TCCA) has not initiated any rulemaking based on these ICAO requirements. Be advised that if you operate in ICAO member countries after the above-mentioned dates you will have to equip with software version 7.1.
- (4) In some member states such as the European Community and within European Civil Aviation Conference (ECAC) airspace, equipage with TCAS II software version 7.1 will be required earlier than the ICAO mandated dates.
- (5) The TSO for Mode S Transponders is TSO-C112 or CAN-TSO-112.
- (6) The following table and associated notes summarizes the TCAS/ACAS requirements for air operators of Part VII of the CARs.

Table 2 – Air Operator TCAS/ACAS requirements

Canadian Aviation Regulations	TCAS I Equivalent to CAN-TSO-C118	TCAS II CAN-TSO-C119a (SW 6.04a) outside RVSM airspace or CAN-TSO-C119b (SW 7.0) in RVSM airspace and Mode S transponder CAN-TSO-C112
Subpart 702.46	Not required	Required for turbine-powered aeroplanes of Maximum Certificated Take-Off Weight (MCTOW) exceeding 15,000 kg (33,069 lb.). (Note 1 and 2)
Subpart 703.70	Minimum Required for aeroplanes of MCTOW exceeding 5700 kg (12,566 lb.) outside of Reduced Vertical Separation Minima (RVSM) airspace. (Note 1)	Not Required but acceptable outside of RVSM airspace. Required when operating in RVSM airspace (Note 1).
Subpart 704.70	Minimum Required for aeroplanes of MCTOW exceeding 5700 kg (12,500 lb.) outside of RVSM airspace. (Note 1)	Required for turbine-powered aeroplanes of MCTOW exceeding 15,000 kg (33,069 lb.) (Note 1)
Subpart 705.83	Minimum Required for non-turbine powered outside of RVSM airspace. (Note 1)	Required for Turbine powered aeroplanes (Note 1)
<p>Notes:</p> <ol style="list-style-type: none"> TCAS II, CAN-TSO C119b (software version 7.0) or more recent and Mode S transponder CAN-TSO-C112 or more recent, are required for operations in RVSM airspace. Not required when engaged in or configured for fire fighting, aerial spray services, or aerial survey and operates only in low level airspace. 		

- (7) It is strongly recommended that foreign operators comply with TCAS equipage requirements as outlined above when operating within Canadian airspace.
- (8) There are currently no CAR general aviation rules requiring Private Operators (Subpart 604 of the CARs) to equip with TCAS equipment. However, Private Operators are advised that ICAO Annex 6, Part II Chapter 3.6.10.2 requires:

“All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 15,000 kg or authorized to carry more than 30 passengers, for which the individual airworthiness certificate is first issued after 1 January 2007, shall be equipped with an airborne collision avoidance system (ACAS II)”.

This means that affected Private Operators, flying into ICAO member countries must be equipped with ACAS II.

5.0 USE OF TRAFFIC ALERT AND COLLISION AVOIDANCE SYSTEM OUTSIDE OF CANADA

- (1) Numerous countries worldwide have operational regulations which require certain aircraft to be equipped with TCAS. If you are planning on operating your aircraft in a foreign country consult that country's regulations to determine TCAS equipage requirements.
- (2) The following TCAS requirements must be complied with for Canadian air operators to operate in United States (U.S.) airspace (see Section 129.18 of the *Federal Aviation Regulations* [FARs]):
 - (a) *TCAS I*: Turbine-powered airplane with a passenger-seat configuration, excluding any pilot seat, of 10–30 seats.
 - (b) *TCAS II*: Turbine-powered airplane of more than 33,000 pounds MCTOW.
- (3) Canadian air operators planning operations into U.S. airspace are advised to be compliant with Section 129.18 of the FARs and review FAA Advisory Circular (AC) 120-55C – *Air Carrier Operational Approval and Use of TCAS* (as amended).
- (4) For Canadian air operators planning operations in Europe, details of European requirements are available at: www.eurocontrol.int/acas/.

6.0 OPERATIONAL APPROVAL

- (1) For Canadian air operators, TCAS operational approval is accomplished through TCCA approval of: pertinent training; checking and currency programs; checklists; Standard Operating Procedures (SOPs), operations or training manuals; maintenance programs; minimum equipment lists or other pertinent documents.
- (2) When planning to equip with TCAS, Canadian air operators should consult their TCCA Principle Operations Inspector (POI) early in their program to permit a timely response.
- (3) Canadian air operators may address the training, checking and currency individually or as part of an integrated program. For example, TCAS/ACAS qualification may be keyed to qualification of specific aircraft (e.g., during A320 transition), may be addressed in conjunction with general flight crew qualification (e.g., during initial new hire indoctrination), or may be completed as dedicated TCAS/ACAS training and checking (e.g., by completion of a standardized TCAS/ACAS curriculum in conjunction with a recurrent Instrument Flight Test / Pilot Proficiency Check event).
- (4) FAA AC 120-55C – *Air Carrier Operational Approval and Use of TCAS* (as amended) provides information with respect to training, checking and currency in the use of TCAS. The material therein can be used by operators to assist in defining their implementation of TCAS.
- (5) EUROCONTROL has produced and published TCAS training material and information available at: www.eurocontrol.int/acas/.

7.0 AIRCRAFT CERTIFICATION APPROVAL

- (1) An acceptable means of demonstrating compliance with the appropriate requirements of Chapter 525 of the *Airworthiness Manual*, to obtain airworthiness approval, is to follow the method specified in FAA AC 20-131A—*Airworthiness Approval of Traffic Alert and Collision Avoidance Systems (TCAS II) and Mode S Transponders* (as amended) for installation of TSO-C119a TCAS/ACAS. FAA AC 20-151A – *Airworthiness Approval of Traffic Alert and Collision Avoidance Systems (TCAS II), Versions 7.0 & 7.1 and Associated Mode S Transponders*, should be followed for installations using TSO-C119b or TSO-C119c equipment.

- (2) Canadian operators who require TCAS/ACAS installation to fly into U.S. airspace should apply for approval, in accordance with FAA AC 20-131A (as amended) or FAA AC 20-151A (as amended) as appropriate, from their TCCA regional office. Once a TCCA supplemental type certificate is granted, TCCA will apply on behalf of the applicant to the FAA for a supplemental type certificate under the bilateral aviation safety agreement.

8.0 OPERATIONAL CONSIDERATIONS

- (1) Where required by regulations to be equipped with TCAS, flight crews must operate with their TCAS equipment on at all times, in so far as is consistent with the AFM (Aircraft Flight Manual) and SOPs. This is true even when operating away from major, high traffic density airports. Although TCAS will never be a complete substitute for a good lookout, good situational awareness and proper radio procedures, it has been proven to be a valuable tool in providing information on potential collision hazards. Hence flight crews should not deprive themselves of this important asset, especially in areas of mixed Instrument Flight Rules (IFR) and Visual Flight Rules (VFR) traffic.
- (2) For a TCAS equipped aircraft to provide a flight crew with collision avoidance information, the TCAS unit and the transponder must be turned on, the transponder cannot be selected to the STANDBY mode (that is, powered but not transmitting data). If the transponder is not turned on and responding to interrogations, the aircraft's TCAS cannot display information about potentially conflicting aircraft nearby nor can it provide instructions to the crew to resolve impending collision threats. Failures of the TCAS computer unit itself can also occur; however, these failures only affect the TCAS equipped aircraft's ability to detect nearby aircraft. The aircraft containing the inoperative TCAS unit remains visible to other aircraft as long as its transponder remains operative. The consequences of a TCAS unit failure are magnified, however, when the transponder is inoperative because not only is TCAS information lost on the affected aircraft, but also that aircraft will not be visible to other ACAS. Regardless of whether the transponder has failed or the TCAS has become inoperative, a flight crew's ability to mitigate the risk of collision is significantly degraded if the collision avoidance system becomes inoperative and the failure is not quickly and reliably brought to the crew's attention. Air operators are encouraged to inform their pilots who use transponders or transponder/traffic alert and collision avoidance system units about the potential lack of a conspicuous warning to indicate the loss of collision protection resulting from a compromise in functionality of either the transponder or TCAS unit. Air operators should require all pilots who use transponders or transponder/TCAS units to become familiar with the annunciations currently used to indicate failure or lack of active functionality of these components.
- (3) Flight crews are reminded to follow the RAs promptly and accurately, even though the RAs may change in strength and/or reverse. RA commands do not require large manoeuvring load factors when being followed. Any delay in responding to an RA could swiftly erode the ability to maintain or achieve adequate separation without resorting to strengthening RAs. For TCAS to provide safe vertical separation, initial Vertical Speed response is required within 5 seconds of the RA. Deviation from commands or second-guessing the commands should not occur. An RA prevails over any ATC instruction or clearance.
- (4) Flight crews may have to inhibit the RA function under certain circumstances per the AFM (e.g.: During an Engine Failure).
- (5) The TCAS system may inhibit RAs during certain flight phases, such as at low altitudes. Flight crews need to be aware of when TCAS will not provide a full range of RA commands.
- (6) Flight crews should not attempt to manoeuvre solely on the basis of TA information. The TA should trigger a visual search for traffic, supplemented with a request for ATC assistance to help in determining whether a flight path change is required. In the case of a TCAS II TA, the flight crew should prepare for a possible RA, following the TA.

- (7) TAs and RAs should be treated as genuine unless the intruder has been positively identified and assessed as constituting neither a threat nor a hazard.
- (8) Flight crews should be aware that in accordance with the Canadian Transportation Accident Investigation and Safety Board Act an incident where a risk of collision or a loss of separation occurs are considered reportable aviation incidents. Responding to an RA is considered a reportable aviation incident.
- (9) If a TCAS RA manoeuvre is contrary to other critical cockpit warnings, then those other critical warnings are respected as defined by TCAS certification and training (that is, responses to stall warning, windshear and Terrain Awareness Warning System (TAWS) take precedence over a TCAS RA, especially when the aircraft is less than 2500 feet AGL.)
- (10) Due to interference limiting algorithms, ACAS II may not display all proximate transponder-equipped aircraft in areas of high-density traffic. Flight crew vigilance must be maintained and flight crews should not become complacent in their efforts to search the sky for other aircraft.

9.0 PILOT ACTIONS WHEN DEVIATING FROM CLEARANCES

- (1) Safety studies have confirmed that the significant safety benefit afforded by TCAS could be seriously degraded by a deficient response to RA's. It has also been shown that the safety benefit of TCAS has been eroded when the pilots' have not followed the flight path guidance provided during a RA.
- (2) In view of this safety hazard and to optimize the safety benefits of TCAS, the following regulatory provisions have been established:
 - (a) Subsection 602.31 (3) of the CARs, which states:
 - (i) *"The pilot-in-command of an aircraft may deviate from an air traffic control clearance or an air traffic control instruction to the extent necessary to carry out a collision avoidance manoeuvre, if the manoeuvre is carried out*
 - (A) *in accordance with a resolution advisory generated by an Airborne Collision Avoidance System (ACAS); or*
 - (B) *in response to an alert from a TAWS or a Ground Proximity Warning System (GPWS)."*
 - (b) Subsection 602.31(4) of the CARs, which states:
 - (i) *"The pilot-in-command of an aircraft shall*
 - (A) *As soon as possible after initiating the collision avoidance manoeuvre referred to in subsection (3), inform the appropriate air traffic control unit of the deviation; and*
 - (B) *Immediately after completing the collision avoidance manoeuvre referred to in subsection (3), comply with the last air traffic control clearance received and accepted by, or the last air traffic control instruction received and acknowledged by, the pilot-in-command."*
- (3) By following the RA guidance precisely, the magnitude of the altitude deviation can be minimized. Pilots must ensure that the manoeuvre necessary to comply with the RA (climb or descent) is not maintained after the RA has terminated.
- (4) There is information available, which highlights the importance of following RA's. EUROCONTROL has issued numerous ACAS II bulletins (www.eurocontrol.int/acas/). ACAS II Bulletin Number 2 "Follow the RA", dated July 2002 describes several RA events and the consequences of the flight crew actions taken. The bulletin is informative in describing the advantages of TCAS/ACAS for collision avoidance, when followed correctly. The bulletin also describes the limitations associated with the visual acquisition of traffic and those of ATC radar

displays.

- (5) TCCA recommends that operators disseminate this information to pilots for awareness, and where appropriate, establish suitable pilot training programs to ensure that flight crews follow RAs promptly and accurately, even when presented with conflicting avoidance instructions from ATC.

10.0 MODE S TRANSPONDER APPROVAL AND UNIQUE CODES

- (1) Along with performing all the functions of Mode A and C transponders, Mode S transponders also have a data link capability. Mode S transponders are an integral component of all TCAS II / ACAS II installations.
- (2) For aircraft that are not required to be equipped with TCAS/ACAS, there is no requirement to replace existing Mode A or C transponders with Mode S transponders until it becomes impossible to maintain presently installed Mode A and C transponders.
- (3) Airworthiness approval must be obtained by Canadian aircraft operators who install Mode S transponders. FAA AC 20-131A (as amended) should be used for guidance to obtain airworthiness approval. Canadian operators should contact their Regional TCCA office for approval details.
- (4) At the time of registration, each Canadian aircraft with a Mode S transponder will receive a unique 24-bit mode S code assignment, which must be uploaded in the transponder, usually by the installer.

11.0 PILOT CONTROLLER ACTIONS

- (1) In order to use TCAS in the most effective and safest manner, the following pilot and controller actions are necessary:
 - (a) Pilots should not manoeuvre their aircraft in response to TAs only;
 - (b) In the event of an RA to alter the flight path, the alteration of the flight path should be limited to the minimum extent necessary to comply with the RA (Aggressive manoeuvring should not be required since TCAS RAs are predicted on $\frac{1}{4}$ G manoeuvre load factors);
 - (c) Pilots should notify the appropriate ATC unit, as soon as possible, of the deviation, and when the deviation has ended;
 - (d) When a pilot reports a manoeuvre induced by an RA, the controller should not attempt to modify the aircraft flight path until the pilot reports returning to the terms of the existing ATC instruction or clearance, but should provide traffic information as appropriate.
- (2) Pilots who deviate from an ATC instruction or clearance in response to an RA shall promptly return to the terms of that instruction or clearance when the conflict is resolved and advise ATC.

12.0 PILOT CONTROLLER PHRASEOLOGY

- (1) The current ICAO pilot/controller phraseologies is detailed below (ICAO Doc 4444 PANS-ATM, Chapter 12, Para 12.3.1.2). It should be noted that, for the purpose of phonetic clarity, the term TCAS is used.

Table 3 – Pilot/Controller Phraseologies

Circumstances	Pilot Response	Controller Response
After a flight starts to deviate from the ATC clearance or instructions to comply with a TCAS RA	TCAS RA	ROGER
After the response to a TCAS RA is completed and a return to the ATC Clearance or instruction is initiated.	CLEAR OF CONFLICT. RETURNING TO (assigned clearance)	ROGER (or alternative instruction)
After the response to a TCAS RA is completed and the assigned ATC clearance or instruction has been resumed.	CLEAR OF CONFLICT (assigned clearance) RESUMED	ROGER (or alternative instruction)
After an ATC clearance or instruction contradictory to the TCAS RA is received, the flight crew will follow the RA and inform ATC directly.	UNABLE, TCAS RA	ROGER

13.0 INFORMATION MANAGEMENT

- (1) Not applicable.

14.0 DOCUMENT HISTORY

- (1) Advisory Circular (AC) 700-004 Issue 01, RDIMS 2487968 (E), 2505176 (F), dated 2007-09-01 — *Regulations for Airborne Collision Avoidance System.*

15.0 CONTACT OFFICE

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Suggestions for amendment to this document are invited, and should be submitted via:
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Original signed by Aaron McCrorie on June 4, 2013

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Transport Canada documents or intranet pages mentioned in this document are available upon request through the Contact Office.