



# Advisory Circular

**Subject: Emergency Egress From a Transport Category Rotorcraft After Experiencing a Rollover**

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## 1.0 INTRODUCTION

This Advisory Circular (AC) is provided for information and guidance purposes. It may describe 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

The purpose of this AC provide guidance material for acceptable means, but not the only means of showing compliance with the requirements of Chapter 529 of the Airworthiness Manual (AWM) dealing with transport category rotorcraft emergency egress with the rotorcraft resting on its side.

### 1.2 Applicability

This document applies to all Transport Canada Civil Aviation (TCCA) 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.

### 1.3 Description of Changes

This document, formerly AC 529-001, Issue No. 01, has been reissued as AC 529-001, Issue No. 02. With the exception of minor editorial changes and updated references, the content is unaltered.

## 2.0 REFERENCES AND REQUIREMENTS

### 2.1 Reference Documents

It is intended that the following reference materials be used in conjunction with this document:

- (a) Chapter 529 of the Airworthiness Manual (AWM)—*Transport Category Rotorcraft*;
- (b) Federal Aviation Administration Advisory Circular (FAA AC) 29-2C — *Certification of Transport Category Rotorcraft*; and
- (c) *Humanscale 1/2/3* by Niels Diffrient, Joan C Bardagjy, Alvin R Tilley and Henry Dreyfuss Associates, MIT Press—A Portfolio of Information: 1. Sizes of people; 2. Seating considerations; 3. Requirements for the handicapped and elderly.

### 2.2 Cancelled Documents

As of the effective date of this document, the following document is cancelled:

- (a) AC 529-001, Issue No. 01, 2004-12-01—*Emergency Egress From a Transport Category Rotorcraft After Experiencing a Rollover*.

## 3.0 BACKGROUND

- (1) Although mandatory terms such as “must” and “shall” are used in this AC, because the AC method of compliance is not in itself mandatory, these terms apply only to applicants who seek to demonstrate compliance by using the specific methods described in this AC.
- (2) An analysis conducted by Transport Canada shows that a significant number of rotorcraft roll onto their side during a crash landing. The survivors of crashed Transport Category rotorcraft can experience serious difficulty getting out of the rotorcraft resting on its side because of the ground blocking the exits on the downside, the upside exits being difficult to reach and open, and the need to climb through the exit due to the width of the rotorcraft. Due to the potential of a post crash fire, the design has to provide for the rapid egress from the rotorcraft while resting on its side. The occupants must be able to utilise the features provided to gain access, open the exit and leave the rotorcraft without hesitation or delay.

#### **4.0 ACCEPTABLE MEANS OF COMPLIANCE**

##### **4.1 General**

Proof of compliance with Subscription 529.807(c)(1) and Paragraph 529.813(d) of the AWM must be shown by test, demonstration, analysis, compliance inspection, or combinations thereof. In the event an analysis is insufficient or a given design is questionable, a demonstration may be required. Such demonstration could consist of a representative mock-up to the degree of completeness necessary to simulate the design features and ergonomics being evaluated. Egress capability is to be based upon the ability of a 5th percentile adult female (standing height of 5 feet – ref. Humanscale, Volume 1).

##### **4.2 Egress Aids**

Hand or footholds, which might not be apparent, that are intended to assist an inexperienced passenger to egress must be marked and/or placarded. Egress aids should not require specific preparation for use.

##### **4.3 Egress Routes**

An opening located at the end of the fuselage may be accepted as an emergency exit only if ready access and other emergency exit requirements are met for that opening. Egress routes are to account for cargo and all other approved interior configurations.

##### **4.4 Operation of Emergency Exit Means**

- (1) Subsection 529.807(f) of the AWM requires that the proper functioning of each emergency exit must be shown. This is applicable to the operation of door mechanisms, hatches, pop out windows, jettisoning systems, ...etc., considering the rotorcraft coming to rest on its side in its probable attitude. Subsection 529.809(c), which addresses exit operation and effort, is applicable to the means of opening of each usable emergency exit with the rotorcraft rolled on its side. Guidance material on acceptable operating loads is specified in FAA AC 29-2C, section AC 29.809.
- (2) The effects of fuselage distortion as a result of the rotorcraft coming to rest either fully or partially on its side as a result of a rollover must be considered. Analytical tools may be used to determine the effects of fuselage deformation on exit clearances.

## 5.0 CONTACT OFFICE

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Suggestions for amendment to this document are invited, and should be submitted via the Transport Canada Civil Aviation Issues Reporting System (CAIRS) at the following Internet address:

<http://www.tc.gc.ca/CivilAviation/ManagementServices/QA/cairs.htm>

or by e-mail at: CAIRS\_NCR@tc.gc.ca

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