



ASSEMBLY — 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 31: Aviation Safety — Emerging Issues

HIGH ALTITUDE AERODYNAMICS AND STALL TRAINING

(Presented jointly by the Caribbean Aviation Safety and Security Oversight System Member States¹)

EXECUTIVE SUMMARY

This working paper provides a brief rationale for the inclusion of high altitude aerodynamics knowledge training and high altitude aircraft handling skill training in the ICAO Annex 1 and Annex 6, Part I and II sections dealing with aeroplane flight crew member training programmes, and the inclusion of training related to aircraft handling in the event of loss of airspeed indications in flight in ICAO Annex 1 and Annex 6, Parts I, II, and III.

Action: The Assembly is invited to:

- a) consider the need for amendment of Annex 1 commercial pilot training standards for aeroplane pilots to include high altitude aerodynamics and the handling of aerodynamic stalls at high altitude;
- b) consider the need for amendment of Annex 1 private and commercial pilot training standards to include aircraft handling in the event of loss of airspeed indications;
- c) consider the need for amendment of Annex 6, Part I, Part II and Part III training standards for international air transport and general aviation pilots to include handling of their specific aircraft type in the event of loss of airspeed indications in flight; and
- d) consider the need for amendment of Annex 6, Parts I and II training standards for international air transport and general aviation pilots to include high altitude aerodynamics and handling of their aircraft type during high altitude aerodynamic stalls.

<i>Strategic Objectives:</i>	This working paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	Nil.

¹ Barbados, Guyana, Haiti, Jamaica, the Organization of Eastern Caribbean States (Antigua and Barbuda, Dominica, Grenada, St. Lucia, St. Kitts and Nevis, St. Vincent and the Grenadines), Surinam, and Trinidad and Tobago

1. INTRODUCTION

1.1 Several recent incidents, fatal accidents, and the recent tragic loss of Air France 447 have highlighted the need to train pilots in high altitude aerodynamics and in the handling of high altitude stalls and loss of airspeed indications in flight.

2. DISCUSSION

2.1 Stalls at high altitude may display very different characteristics than low altitude stalls and require somewhat different aircraft handling techniques during recovery. Loss of airspeed indications in flight can result from blocked pitot-static probe systems due to: inadvertently leaving them covered before takeoff, ice accretion while on the ground and/or in flight, volcanic ash encounter, insect activity blocking the probe intakes, or ancillary equipment failures that can lead to this situation. Pilot misunderstanding of the problem and/or mishandling of the aircraft has been implicated in some of the accidents, and this indicates a need to improve pilots' awareness of the nature and handling of loss of airspeed indications, and handling of high altitude stalls. This will require increasing pilots' knowledge and skills in these areas, and it is appropriate that this should be achieved through training. Currently ICAO Annex 1 — *Personnel Licensing* and Annex 6 — *Operation of Aircraft* do not specifically require such training and it is envisaged that if the requirement was set forth in the Annex Standards the training would be ensured.

3. CONCLUSION

3.1 The Assembly is invited to:

- a) consider the need for amendment of Annex 1 commercial pilot training standards for aeroplane pilots to include high altitude aerodynamics and the handling of aerodynamic stalls at high altitude;
- b) consider the need for amendment of Annex 1 private and commercial pilot training standards to include aircraft handling in the event of loss of airspeed indications;
- c) consider the need for amendment of Annex 6, Part I — *International Commercial Air Transport — Aeroplanes*, Part II — *International General Aviation — Aeroplanes*, and Part III — *International Operations — Helicopters* training standards for international air transport and general aviation pilots to include handling of their specific aircraft type in the event of loss of airspeed indications in flight; and
- d) consider the need for amendment of Annex 6, Parts I and II training standards for international air transport and general aviation pilots to include high altitude aerodynamics and handling of their aircraft type during high altitude aerodynamic stalls.