

ADVISORY CIRCULAR

No. : AC-28-01-015
Date : 1 March 2016

A. SUBJECT.

Supplementary Training Program

B. PURPOSE.

This Advisory Circular provides guidance for Air Operator Certificate (AOC) holder/applicant to establish the supplementary training program to include TCAS/ACAS, terrain awareness / CFIT avoidance, cold weather operations and adverse flight condition training.

C. STATUS.

This is the second edition of AC - 28 - 01 - 015, dated 1 March 2016, and it will remain current until withdrawn or superseded.

D. CONTENTS.

- 1.0 TCAS/ACAS training program.
- 2.0 Terrain awareness / CFIT avoidance training program.
- 3.0 Cold weather operations training program.
- 4.0 Adverse flight condition training program.

Supplementary Training Program

1. Airborne Collision Avoidance Systems (ACAS) Training Program.

- 1.1 The operator shall establish ACAS training program as detailed in JAA Administrative & Guidance Material, Section Four: Operations, Part Three: Temporary Guidance: [Leaflets \(JAR-OPS\) Leaflet No. 11](#) guidance for operators on training programs for the use of Airborne Collision Avoidance Systems (ACAS).
- 1.2 The ACAS training shall be incorporated in conversion, command upgrade and recurrent training programs.
- 1.3 The ACAS recurrent training program - ground and flight simulator training shall be under taken every 12 months.

2. Terrain Awareness / CFIT Avoidance Training Program.

- 2.1 The operator shall establish terrain awareness / controlled flight into terrain avoidance training program to provide the flight crew with knowledge and operations of the GPWS / EGPWS system to include:
 - a. **Ground Training.** The ground training of the GPWS / EGPWS shall be incorporated in conversion and recurrent training programs. The training consist of:
 - (1) Terrain awareness procedures, including GPWS / EGPWS alerts and the avoidance of controlled flight into terrain (CFIT).
 - (2) Factors that may cause CFIT.
 - (3) The importance of maintaining horizontal and vertical situation awareness all the time.
 - (4) Knowledge of the capabilities and limitations of the GPWS / EGPWS on the aircraft.
 - (5) How to be proficient in performing the terrain avoidance maneuver required in response to a GPWS / EGPWS warning.
 - b. **Simulator Training.** The flight simulator training of the GPWS / EGPWS shall be incorporated in conversion, command upgrade and recurrent training programs. The training consist of practical training and evaluation on the use of the system and terrain avoidance procedures to include:

- (1) GPWS & EGPWS activation after takeoff.
 - (2) GPWS & EGPWS activation during descent/approach phase
- c. Recurrent Training.** The terrain awareness / CFIT avoidance recurrent training program - ground and flight simulator training shall be under taken every 12 months.

3. Cold Weather Operations Training Program.

3.1 The operator shall establish cold weather operations training program to provide the flight crew with knowledge and operations procedures on the cold weather to include:

- a. Ground Training.** The ground training of the cold weather operations shall be incorporated in conversion and recurrent training programs. The training consist of:
- (1) Essential knowledge concerning the effects of frost, ice, snow and slush on aircraft performance and handling.
 - (2) Basic characteristics of aircraft de- /anti-icing fluids.
 - (3) General techniques for removing deposits of frost, ice, snow from the aircraft surfaces and for anti-icing.
 - (4) De-/anti-icing procedures in general and specific measures to be performed on different aircraft types.
 - (5) Fluid application and limitations of hold-over time tables.
 - (6) The vital importance that all critical surfaces be inspected and confirmed free of contamination prior to take-off in actual icing conditions (clean aircraft concept).
 - (7) The properties and limitations of different types of de-icing and anti-icing fluid, and the correct application of hold-over times appropriate to each type in a variety of environmental conditions.
 - (8) Operational procedures applicable in actual or suspected icing conditions (on ground and in-flight).

- (9) Instruction on how to recognize, from weather reports or forecasts which are available before flight commences or during flight, the risk of encountering icing conditions along the planned route and how to modify, as necessary, the departure and in-flight routes or profiles.
 - (10) Instruction in the operational and performance limitations or margins.
 - (11) Use of in-flight ice detection, anti-icing and de-icing systems in both normal and abnormal operation; and instruction in the differing intensities and forms of ice accretion and the consequent action that should be taken.
- b. Simulator Training.** The flight simulator training of the cold weather operations shall be incorporated in conversion, command upgrade and recurrent training programs. The training consist of practical training and evaluation on the cold weather operations to include:
- (1) Pre-flight Procedures.
 - (2) Procedures for Deicing /Ant –icing.
 - (3) Takeoff from a contaminated runway.
 - (4) In-flight icing conditions and cockpit procedures.
 - (5) Post Flight procedures.
- c. Recurrent Training.** The cold weather operations recurrent training program - ground and flight simulator training shall be under taken every 12 months.
- 4. Adverse Flight Condition Training Program.**
- 4.1 The operator shall establish adverse flight condition training program to provide the flight crew with knowledge and operations procedures on the adverse flight condition to include:
- a. Wind Shear Avoidance and Recovery.**
- (1) **Ground Training.** The ground training of the wind shear avoidance and recovery shall be incorporated in conversion and recurrent training programs. The training consist of:

- (a) The characteristics and causes of wind shear with emphasis on the dynamics of a microburst.
 - (b) The methods of predicting and detecting wind shear, which special emphasis on pilot decision making skills with respect to avoidance and reaction.
 - (c) The predictive wind shear function and its philosophy of operation, including any specific type procedures.
- (2) **Simulator Training.** The flight simulator training of the wind shear avoidance and recovery shall be incorporated in conversion, command upgrade and recurrent training programs. The training consist of practical training and evaluation on the wind shear avoidance and recovery to include:
- (a) Avoidance and recovery from wind shear during or shortly after takeoff.
 - (b) Avoidance and recovery from wind shear on approach.
 - (c) Responses to predictive wind shear warning during or after takeoff, and on approach to land.
- (3) **Recurrent Training.** The wind shear avoidance and recovery recurrent training program - ground and flight simulator training shall be under taken every 12 months.
- b. Contaminated Runway Operations.**
- (1) **Ground Training - Part of performance course.** The ground training of the contaminated runway operations shall be incorporated in conversion and recurrent training programs. The training consist of:
- (a) Definitions and classification of wet and contaminated runways.
 - (b) Policies and definition pertaining to takeoff and landing on contaminated runways including precautions, braking action coefficient, and limitations.
 - (c) Regulations pertaining to operations on contaminated runways including actual and required takeoff and landing distances, and minimum required aircraft performance.
 - (d) Takeoff speed calculations and aircraft configuration.
 - (e) The effects of runway contamination on aircraft stopping distances.

(2) **Simulator Training.** The flight simulator training of the contaminated runway operations shall be incorporated in conversion, command upgrade and recurrent training programs. The training consist of practical training and evaluation on the contaminated runway operations to include:

- (a) Takeoff from a contaminated runway.
- (b) Landing on contaminated runway.

(3) **Recurrent Training.** The contaminated runway operations recurrent training program - ground and flight simulator training shall be under taken every 3 years.

c. Hot Weather Operations.

(1) **Ground Training- Part of performance course.** The ground training of the hot weather operations shall be incorporated in conversion and recurrent training programs. The training consist of:

- (a) The effect of high temperature of engine thrust.
- (b) The effect of high temperature on the calculation of MTOW.
- (c) The effect of high temperature on go-around performance.
- (d) The effect of high temperature on brake energy.

(2) **Simulator Training.** The flight simulator training of the hot weather operations shall be incorporated in conversion, command upgrade and recurrent training programs. The training consist of practical training and evaluation on the hot weather operations to include:

- (a) Rejected Takeoff.
- (b) Engine Failure after V1.
- (c) Single Engine Go-around.

(3) **Recurrent Training.** The hot weather operations recurrent training program - ground and flight simulator training shall be under taken every 3 years.

d. Operations Near Volcanic Ash.

(1) **Ground Training.** The ground training of the operations near volcanic ash shall be incorporated in conversion and recurrent training programs. The training consist of:

- (a) The characteristics of volcanic ash material.
 - (b) The effect of volcanic ash on the aircraft structure, instruments, and engines.
 - (c) The method of detection of volcanic ash cloud encounter in flight.
 - (d) The on ground general precautions that must be applied when ash cloud passes over an airport.
 - (e) The flight crew procedures for actions to be taken in case of inadvertent flight into a volcanic ash cloud, with reference to specific AOM/FCOM procedures.
- (2) **Simulator Training.** The flight simulator training of the operations near volcanic ash shall be incorporated in conversion, command upgrade and recurrent training programs. The training consists of practical training and evaluation on operations near or in volcanic with all engines flame out.
- (3) **Recurrent Training.** The operations near volcanic ash recurrent training program - ground and flight simulator training shall be under taken every 3 years.
- e. **Upset Recovery.**
- (1) **Ground Training.** The ground training of the upset recovery shall be incorporated in conversion, command upgrade and recurrent training programs. The training consist of:
- (a) Factors leading to an upset situation.
 - (b) Upset situation identification.
 - (c) Recovery techniques.
 - (d) Emphasis on aerodynamic factors present during the upset and the recovery.
- (2) **Simulator Training.** As applicable, the flight simulator training of the upset recovery shall be incorporated in conversion, command upgrade and recurrent training programs. The training consists of practical training and evaluation on the upset recovery techniques.
- (3) **Recurrent Training.** The upset recovery recurrent training program - ground and flight simulator training shall be under taken every 3 years.

f. Thunderstorm Avoidance.

- (1) **Ground Training.** The ground training of the thunderstorm avoidance shall be incorporated in conversion and recurrent training programs. The training consists of:
- (a) The effect of lighting on aircraft systems.
 - (b) The effect of water ingestion on engines.
 - (c) The effect of pressure changes altimeters.
 - (d) The effect of hail on the aircraft structure.
 - (e) Discussion of the technical background of airborne radar equipment, its operational philosophy, and techniques of use for weather detection, avoidance and mapping.
 - (f) Discussion of the methods of thunderstorm avoidance and recommendations with reference to the OMA and specific AOM/FCOM procedures.
 - (g) Discussion of specific procedures in case of inadvertent storm penetration with reference to the OMA and specific AOM/FCOM procedures.
- (2) **Recurrent Training.** The thunderstorm avoidance recurrent training program - ground and flight simulator training shall be under taken every 3 years.

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