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**MIRATIMIN E "GUIDANCE MATERIAL FOR APPROACH AND LANDING ACCIDENTS REDUCTION (ALAR) AND CONTROLLED FLIGHT INTO TERRAIN (CFIT) PREVENTION"**

Në mbështetje të pikës ë, të nenit 14, të Ligjit Nr. 53/2022 "Për organizimin dhe funksionimin e Autoritetit të Aviacionit Civil":

**V E N D O S A**

1. Miratimin e ACAA-DFS-GM1-CFIT, "Guidance material for approach and landing accidents reduction (ALAR) and controlled flight into terrain (CFIT) prevention", Lëshimi 01, Rishikimi 00.

2. Ngarkohet Drejtoria e Standardeve të Fluturimit për zbatimin dhe përdorimin e këtij materiali udhëzues.

3. Ky vendim hyn në fuqi menjëherë.

**DREJTOR EKZEKUTIV**

**Maksim Et'hemaj**

REPUBLIKA E SHQIPERISE - MINISTRIA E INFRASTRUKTURËS DHE ENERGJISË - AUTORITETI I AVIACIONIT CIVIL TIRANË

REPUBLIC OF ALBANIA

ALBANIAN CIVIL AVIATION AUTHORITY

# GUIDANCE MATERIAL FOR APPROACH AND LANDING ACCIDENTS REDUCTION (ALAR) AND CONTROLLED FLIGHT INTO TERRAIN (CFIT) PREVENTION

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ACAA– DFS– GM1– CFIT
Issue: 01, Revision 00
Date: 30.01.2024

Approved by:

Maksim Et'hemaj

Executive Director of Albanian Civil Aviation Authority

# 0. ADMINISTRATION

## Table of Contents

### 0.1 Record of Amendments

The table below describes the dates and reasons for the different amendments of the current Guidance material.
A vertical black line on the left-hand side of the page identify the changes with the previous version.

| Issue No. | Revision No. | Date | Amended by | Reason |
|---|---|---|---|---|
| 01 | 00 | | | Initial Issue |
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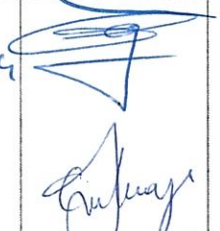
In case of major amendment, a new issue will be released to replace the existing guidance material. In that case, all the page will identify with a new issue and the revision will set back to zero. For a minor amendment to some provisions, when only a few pages are modified a vertical black line on the left-hand margin of the page identifying the change of the existing version. Users can focus their attention to the changes identified.

### 0.2 Approval List

| Action | Name and position | Date | Signature |
|---|---|---|---|
| Prepared by: | Mrs.Xhenifer Muco, Head of SFO | 29.01.24 |  |
| Accepted by: | Mr. Alket Zani, Director of DFS | 29.01.24 |  |
| Reviewed by: | Mr. Elton Kacagjeli, Specialist SQSC<br>Mrs.Krista Garo, Head of SQSC<br>Mrs.Edlira Kraja, Director of DLS | 29.01.2024 |  |
| Approved by: | Mr. Maksim Et'hemaj, Executive Director | 30.01.2024 |  |

### 0.3 Revision table

| Page # | Issue No. | Revision No. | Date | Edited by |
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### 0.4 Distribution List

| Control # | Responsible Person | Type of Document |
|---|---|---|
| Original | SFO/DFS<br>SSS/DAM | Hard Copy |
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### 0.5 Definitions & Acronyms

| Term | Definition |
|---|---|
| Controlled Flight into Terrain (CFIT): | occurs when an airworthy aircraft under the complete control of the pilot is inadvertently flown into terrain, water, or an obstacle. The pilots are generally unaware of the danger until it is too late. |

### 0.6 Abbreviations and Acronyms

| Abbreviation or Acronym | Meaning |
|---|---|
| ALA | Approach and landing accidents |
| ALAR | Approach and landing accident reduction |
| AOC | Air Operator Certificate |
| ATC | Air Traffic Control |
| CANPA | Constant Angle Non-Precision Approach |
| CFIT | Controlled Flight into Terrain |
| CRM | Crew Resource Management |
| EGPWS | Enhanced Ground Proximity Warning System |
| FMA | Flight Mode Annunciator |
| FMS | Flight Management Systems |
| FSF | Flight Safety Foundation |
| IATA | International Air Transport Association |
| ICAO | International Civil Aviation Organization |
| LOFT | Line Oriented Flight Training |
| MORA | Minimum Off Route Altitudes |
| MSA | Minimum Sector Altitude |
| NDB | Non-Directional Beacon |
| SOP | Standard Operating Procedure |
| TAWS | Terrain Avoidance and Warning System |
| VOR | VHF Omnidirectional range |

# 1 INTRODUCTION

## 1.1 Background

Controlled Flight into Terrain (CFIT) refers to an accident in which the aircraft collided with terrain, water, or obstacle, without indication of loss of control in-flight. Although CFIT is not the most frequent type of accident category, CFIT accidents account for a substantial number of fatalities.

Historic accident data shows that CFIT are almost always catastrophic with fatalities to passengers or flight crews. At present, statistics record shows that CFIT accidents dramatically reduced over the past decade, and the number of aircrafts that have landed safely after EGPWS alert is noticeably increasing every year. Nevertheless, CFIT accident continues to occur.

## 1.2 Purpose

This guidance material provides guidance for all operators in order to establish training programs to effectively improve situational awareness by flight crews to prevent an actual Approach and Landing Accident (ALA) or CFIT from occurring. It includes the CFIT training program and ALAR training program to provide practical guidance or certainty in respect of the statutory requirements for aviation safety for prevention of collision with terrain, water or obstacle without indication of loss of control in-flight.

## 1.3 Applicability (is subjected to)

This GM is applicable for the Albanian Operators conducting operations.

## 1.4 Reference

Minister Order No 80, 30.06.2023, laying down technical requirements and administrative procedures related to air operations.

## 1.5 Other Guidance

From time to time, GPWS has played a role in the reduction of CFIT accidents. Those alone do not prevent CFIT accidents from occurring, but with effective flight crew performance, effective Crew Resource Management (CRM), correct situational awareness, effective training, responding to EGPWS/TAWS warnings in time, updating EGPWS/TAWS Software and Terrain/Obstacle/Runway database in a timely manner, good decision-making as well as execution can greatly attribute to the reduction of this accident category.

# 2 CFIT

## 2.1 Requirement

Every AOC holder is required to have Instructions, training or awareness programs, as appropriate for Avoidance of Controlled Flight into Terrain and policy for the use of the Ground Proximity Warning Systems (GPWS), to enhance the flight crew's situational awareness and recognition of their responsibility for terrain clearance despite conflicting ATC instructions must be emphasized during both the departure and arrival phases of the flight. The additional threats imposed by non-precision approaches must be covered. Some of these items will need to be covered by 'touch drills' and if the check is conducted in an aircraft (rather than in a simulator) they are normally best attended to on the ground.

## 2.2 CFIT Training Program

A CFIT training program should be integrated into initial, transition and recurrent training and check programs. Its importance is reinforced and its effectiveness is improved when the subject is a core element in all training and checking programs. It can also be structured as a stand- alone program. The ground training program is designed to improve awareness by increasing the flight crew's ability to recognize and avoid getting into CFIT situations. The simulator training program is designed to apply this knowledge, have a close-to real-world appreciation of situation where an aircraft may be in CFIT situation and, develop proficiency in an escape maneuver that must be applied to prevent a CFIT accident. An AOC holder should provide this training during initial and transition training and, at least once every two years as part of recurrent training.

## 2.3 Objectives

The CFIT training program are to provide pilots with the ability to:

(a) recognize the importance of effective situational awareness and its importance in identifying potential CFIT situations;
(b) know prevention strategies and operating practices that mitigates CFIT threats and hazards; and
(c) learn and apply the escape manoeuvre(s) and its associated techniques that will avoid CFIT and enhance the possibility of survival.

## 2.4 Training Material

ICAO, State regulators, manufacturers and other industry groups have been actively promoting CFIT awareness and training programs in a continued effort to reduce CFIT accidents and incidents. The Flight Safety Foundations (FSF) has produced the ALAR Tool Kit, which in addition to information concerning ALAR, includes an updated version of the Controlled Flight into Terrain Education and Training Aid.
The CFIT training material contained in the FSF ALAR Tool Kit includes detailed information concerning CFIT, information for the avoidance of CFIT, and CFIT training program material and a safety alert containing the ground proximity escape maneuver recommended for many of the specific airplane makes and models flown by most air operators. A generic ground proximity escape maneuver is provided for use in respect to airplanes that do not have a specific maneuver. It is recommended that the AOC holder utilizes the FSF ALAR Tool Kit as a basis for developing its training program.

# 3 ALAR

## 3.1 ALAR Training Program

This ALAR training program should be a core component of flight operations and integrated into existing initial, transition, and recurrent training and check programs. The ground training program is designed to improve awareness by increasing the flight crew's ability to recognize and avoid situations to help prevent ALARs. The AOC holder should provide this training during initial and transition training and at least once every two years as part of recurrent training.

## 3.2 Objectives

The objectives of the training program are to provide the pilot with the ability to:

(a) be aware of the high risk involved in the approach and landing phase of flight;
(b) know the available interventions to address this risk (e.g. SOPs, stabilized approach criteria, no fault go-around policy, Constant Angle Non-Precision Approach (CANPA) descent profiles, Runway aligned approaches, etc.);
(c) increase awareness of ALA pre-cursors; and
(d) learn and apply risk reduction interventions to reduce the risk of approach and landing accidents.

## 3.3 The FSF ALAR Tool Kit

The FSF ALAR Tool Kit includes information to help prevent approach and Landing accidents. In addition to providing training material, there are many other tools and educational materials contained in the FSF Tool Kit that an AOC holder may utilize to reduce the risk of approach and landing accidents.

# 4 EXAMPLES OF LIMITATIONS OF CURRENT GPWS EQUIPMENT

Strategies that address terrain awareness and the causes of CFIT events should be discussed at initial training. Continuous reinforcement and the practice of sound SOPs combined with a focus on good crew communications and situational awareness should be emphasized at all times.
Items to be discussed should include:

(a) awareness of the aircraft energy state at all times – avoidance of excessive rates of descent and too low or too fast airspeeds at low levels;
(b) understanding the autopilot operating modes;
(c) intervention (including manual interventions) if the aircraft is not responding as intended;
(d) SOPs that include standard callouts that alert crew to Flight Mode Annunciator (FMA) and/or Flight Management Systems (FMS) changes;
(e) SOP usage to highlight any undesirable aircraft energy states;
(f) barometric and radio altimetry issues and procedures;
(g) observance of stabilized approach criteria;
(h) criteria for descent below MSA – this should only occur when established on a published instrument procedure, under radar control or when visual with terrain;
(i) review the primary elements of the missed approach especially when a missed approach appears

likely;
(j) go-around and discontinued approach awareness; and
(k) effective CRM and crew communications highlighting terrain issues and situational awareness.

Additionally, a program dedicated to CFIT recovery techniques should be included in simulator training detail(s). This training should include:

(a) the type specific GPWS escape maneuvers;
(b) non-precision approaches using the CANPA descent profile;
(c) the appropriate use of automation and manual flying during an approach;
(d) the practice of discontinuing an approach any time that the aircraft becomes unstable below stabilization height; and
(e) landings that are practiced with different crosswind conditions on dry, wet and contaminated (if these operations are envisaged) runways.

## 5 INTRODUCING ALAR/CFIT TRAINING INTO A RECURRENT TRAINING PROGRAM

After initial ALAR/CFIT training is introduced, it is imperative to keep the flight crew updated and current with procedures concerning ALAR/CFIT.
It is important to reinforce, refresh and practice the concepts and maneuvers that were covered in the initial type training program. This can be done by the use of instructor-led discussion as well as training in an appropriate flight training device.

Items to be discussed should include:
(a) usage and understanding of EGPWS warnings;
(b) understanding the autopilot operating modes and its use;
(c) crew briefings that include threat and error management;
(d) understanding approach charts;
(e) effective crew resource management techniques; and
(f) review knowledge of en-route charts making sure that the crew have a clear understanding of the charts features and their meanings (e.g. grid MORA).

A simulator training detail should include:

(a) Line orientated flight training (LOFT) flights departing and/or landing into airports with high terrain in the vicinity, reviewing what crew can anticipate in these situations;
(b) non-precision approach procedures (NDB/VOR using CANPA if applicable, and/or circling approaches);
(c) practice of aircraft type specific terrain avoidance maneuvers;
(d) practicing visual and circling approaches, emphasizing the differences between the two approaches;
(e) practice of go-arounds, especially during circling approaches; and
(f) practice of depressurization induced emergency descents over mountainous areas, highlighting escape routes.