



| ICAO

# INTERNATIONAL CIVIL AVIATION ORGANIZATION

A UN SPECIALIZED AGENCY



# ICAO Provisions related to the CFIT prevention

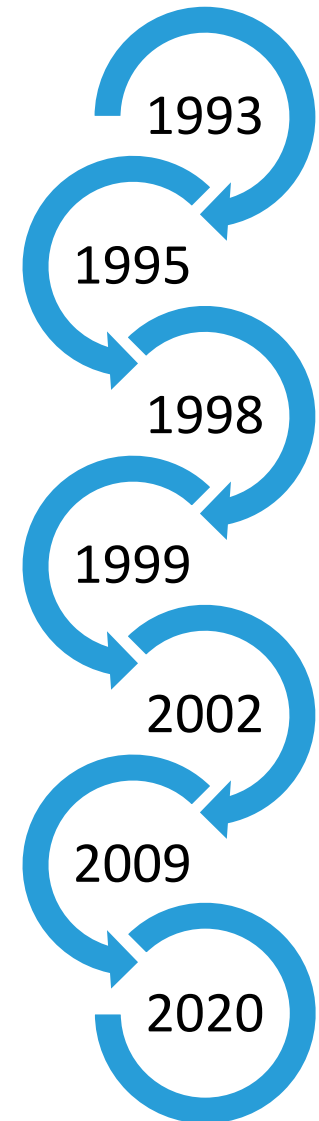
---

Arkadii Merkulov

Regional officer, Safety, EUR/NAT

# Evolution

- The Flight Safety Foundation organized an international controlled flight into terrain (CFIT) Task Force in 1993 that was dedicated to reducing CFIT accidents -> CFIT Education and Training Aid
- Amendment 21, effective 9 November 1995 - instructions and training requirements for the avoidance CFIT and policy for the use of ground proximity warning systems (GPWS)
- Amendment 23, CFIT Task Force, effective November 1998 - new and revised provisions concerning the content of an operations manual relocated in an appendix and a new Recommended Practice for the carriage of the GPWS in piston-engined aeroplanes
- Amendment 24, effective 04 November 1999 - the addition of a predictive terrain hazard warning function to GPWS
- Amendment 27, effective 28 November 2002 - Revised requirements for GPWS and forward looking terrain avoidance function
- Amendment 33-A, effective 19 November 2009 - the need to implement instructions on the use of autopilots and auto-throttles in IMC as an essential part of the CFIT and ALAR programmes



# GROUND PROXIMITY WARNING SYSTEMS (GPWS)

6.15.1 All turbine-engined aeroplanes of a maximum certificated take-off mass in excess of 5 700 kg or authorized to carry more than nine passengers

- shall be equipped with a ground proximity warning system (GPWS)
- which has a forward-looking terrain avoidance function.



ICAO

International Standards  
and Recommended Practices

Annex 6 to the Convention on International Civil Aviation

Operation of Aircraft

Part I — International Commercial Air Transport — Aeroplanes  
Twelfth Edition, July 2022This edition supersedes, on 3 November 2022, all previous editions of Part I of Annex 6.For information regarding the applicability of the Standards and Recommended Practices, see the Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

# Amendment 44

Effective: 05 November 2020

6.15.2 The operator shall implement database management procedures that

- ensure the timely distribution and update of
- current terrain and obstacle data to the ground proximity warning system (GPWS).





# Amendment 47 (12 edition)

Effective: 3 November 2022

6.15.4 All turbine-engined aeroplanes

$\leq 5\,700$  kg

authorized to carry 5-9 passengers

individual certificate of airworthiness is first issued  $\geq 1$  January 2026

equipped with a GPWS which provides the warnings of excessive descent rate,

excessive altitude loss after take-off or go-around,

unsafe terrain clearance and

a forward looking terrain avoidance function.



ICAO

International Standards  
and Recommended Practices

Annex 6 to the Convention on International Civil Aviation

Operation of Aircraft

Part I — International Commercial Air Transport — Aeroplanes  
Twelfth Edition, July 2022



This edition supersedes, on 3 November 2022, all previous editions of Part I of Annex 6.

For information regarding the applicability of the Standards and Recommended Practices, see the Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

# Appendix 2, ORGANIZATION AND CONTENTS OF AN OPERATIONS MANUAL

**2. CONTENTS** The operations manual referred to in 1 shall contain at the least the following:

2.1.30 Instructions and training requirements for the avoidance of controlled flight into terrain and policy for the use of the ground proximity warning system (GPWS).



ICAO

International Standards  
and Recommended Practices

Annex 6 to the Convention on International Civil Aviation

Operation of Aircraft

Part I — International Commercial Air Transport — Aeroplanes  
Twelfth Edition, July 2022This edition supersedes, on 3 November 2022, all previous editions of Part I of Annex 6.For information regarding the applicability of the Standards and Recommended Practices, see the Foreword.

INTERNATIONAL CIVIL AVIATION ORGANIZATION

# Doc 10153 Guidance on the Preparation of an Operations Manual

## Chapter 8 OPERATIONS SUPERVISION — FLIGHT

### 8.12 EMERGENCY PROCEDURES

..., some general guidance on the subject must be provided in the OM. ... The following topics, as a minimum, should be addressed:

#### k) GPWS:

- 1) procedures to avoid warnings generated by GPWS systems, such as reduced rates of descent when close to terrain;
- 2) policy on the use of GPWS systems





# GLOBAL AVIATION SAFETY PLAN 2023-2025



ICAO

---

# G-HRCs for 2023-2025 GASP



# DOC10161: Global Aviation Safety Roadmap 2023-2025

## Appendix B, OPS roadmap, Chapter 1

1. Implement the following CFIT safety actions:
  - a) Ensure aircraft are equipped with terrain awareness and warning system (TAWS) in accordance with Annex 6 — Operation of Aircraft
  - b) Promote the wider use of TAWS beyond the requirements of Annex 6
  - c) Issue a Safety Advisory to increase adherence to TAWS warning procedures
  - d) Promote greater awareness of approach risks
  - e) Consider the implementation of continuous descent final approaches (CDFA)
  - f) Consider the implementation of minimum safe altitude warning (MSAW) systems
  - g) Ensure the timeliness of updates and accuracy of Electronic Terrain and Obstacle Data (eTOD)
  - h) Promote the use of GPS-derived position data to feed TAWS



**RECOMMENDED**



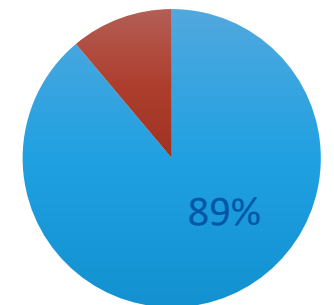
# ICAO audits (USOAP): 2020 version

## PQ 4.153 (OPS)

Does the flight operations inspection organization ensure that the air operator includes, in its operations manual:

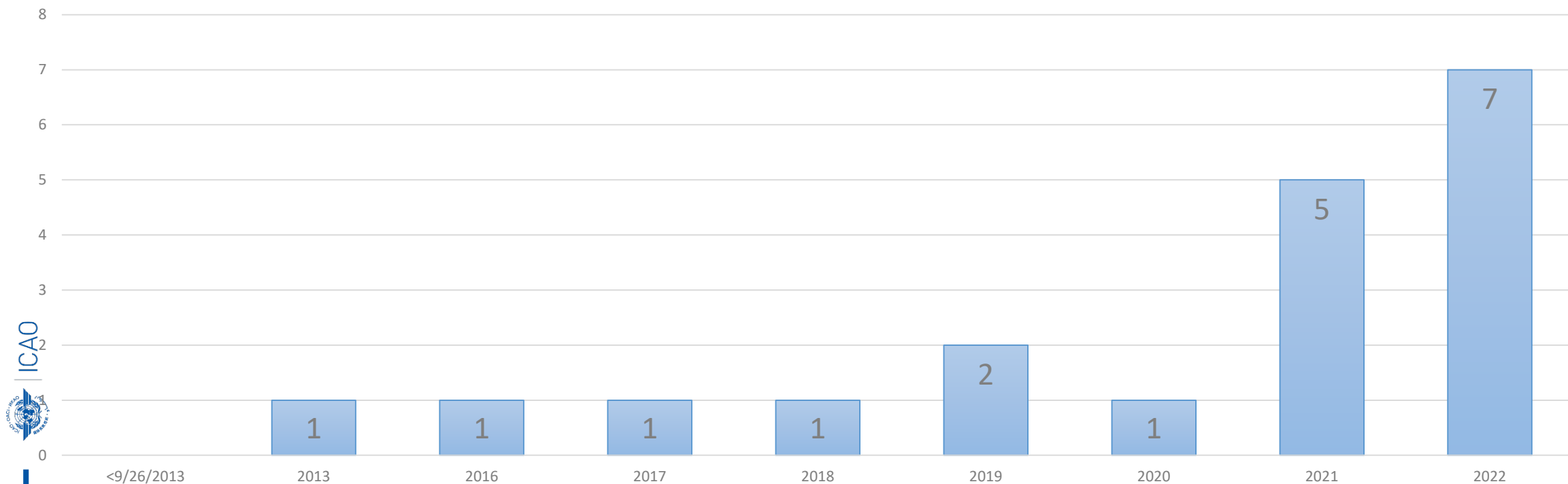
- a) Instructions and training requirements on the avoidance of CFIT, and
- b) Policy on the use of GPWS?

EI EUR/NAT



# CFIT keep happening

CFIT accidents in EUR Region





# December 1, 2022: Beechcraft 95-B55



# Regional safety discussion

- EASPG/04
  - Was presented with information and recommendations related to the mitigation of risk related to CFIT.
  - Noted that CFIT prevention remained a priority for the EUR.
  - Agreed to update the EUR Safety Advisory 06 with the additional guidance developed by IATA

EASPG/04 - REPORT



REPORT OF

THE FOURTH MEETING OF  
THE EUROPEAN AVIATION SYSTEM PLANNING GROUP

*(Paris, 29 November – 1 December 2022)*

# Regional safety discussion

- **EASPG Decision 4/2 – EASPG Safety Advisory 06**

- That the ICAO Regional Director, Europe and North Atlantic, take the necessary action to publish and circulate the modified EASPG Safety Advisory 06 (ESA-06) as detailed in

[https://www.icao.int/EURNAT/EUR%20and%20NAT%20Documents/EUR%20Documents/EASPG\\_RASGEUR%20Safety%20Advisories/EASPG%20Safety%20Advisory%2006%20\(ESA-06\).pdf](https://www.icao.int/EURNAT/EUR%20and%20NAT%20Documents/EUR%20Documents/EASPG_RASGEUR%20Safety%20Advisories/EASPG%20Safety%20Advisory%2006%20(ESA-06).pdf)

**EASPG SAFETY ADVISORY-06**

**(ESA-06)**

**December 2022**



**GUIDANCE MATERIAL ON  
MEASURES TO IMPROVE THE  
EFFECTIVENESS OF  
ENHANCED GROUND  
PROXIMITY WARNING  
SYSTEM (EGPWS)/TERRAIN  
AWARENESS AND WARNING  
SYSTEM (TAWS)**

Date of Issue:	December 2022
Revision No:	Second Edition
Document Ref. No.:	EASPG/RESG/06

Owner:	EASPG
--------	-------

# EASPG Safety Advisory 06

- encourages States to advise air operators of factors that could reduce the effectiveness of EGPWS/TAWS warnings and enhance their safety oversight capacity by verifying during safety inspections that the necessary risk mitigation measures for CFIT precursors are in place.
- recommends that States ensure aircraft operators have procedures in place to ensure that EGPWS/TAWS software and data bases (including obstacle, runway and terrain databases) are updated to the latest available standard. When aircraft operators choose not to update the software and data bases to the latest standard, they should conduct a risk assessment. The risk assessment is to confirm that CFIT safety risk for their operation would not be reduced through incorporation of the latest update.
- recommends that States ensure the navigation references are updated in accordance with WGS-84.
- recommends that States ensure aircraft operators implement standard operating procedures (SOP) to ensure that at least one pilot selects terrain display during critical phases of flight (such as climb and descent below MSA) for additional situational awareness. If weather is not a threat, then both pilots could decide to select terrain display. Furthermore, to verify that TAD updates are implemented by manufacturers and database/software providers.
- recommends that States ensure that air operators' EGPWS training is performed in compliance with pertinent regulations.
- recommends that States should ensure that aircraft operators maintain and monitor the provision of most accurate positioning information to the EGPWS/TAWS system (e.g. encourage the broader use of GNSS/GPS input linked to EGPWS, etc.).
- recommends that States adopt and implement measures to manage and reduce causes and impact of the GPS/GNSS interference and encourage pilots and operators to report instantly to the relevant ATC Units and authorities all incidents related to such interference.



---

Thank You!