

ADVISORY BULLETIN

FOR STATES

Subject: INFORMATION TO STATES ON APPROACH AND LANDING ACCIDENT REDUCTION (ALAR) AND CONTROLLED FLIGHT INTO TERRAIN (CFIT) PREVENTION TRAINING

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Initiated by: COSCAP-SEA

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1. PURPOSE

- a. The purpose of this Advisory Bulletin is to assist States' in developing appropriate legislation, regulations and/or standards to require air operators to ensure flight crew receive initial and recurrent Approach and Landing Accidents (ALA) and CFIT prevention training.
- b. This Bulletin is developed to comply with the decisions the APRAST XXXX and endorsed by the RASG on XXXX.

2. BACKGROUND

- a. Aviation industry data between 2002 and 2011 recorded 18 fatal Controlled Flight into Terrain (CFIT) accidents, resulting in 1078 fatalities. The initial approach, final approach and landing phase accounted for 37% of all fatal accidents and 29% of all fatalities.

ICAO/IATA accident statistics record that there were 188 runway excursion events between 2004 and 2010. Of these, 22 events were accidents with fatalities with the loss of over 640 lives.

The establishment of standards and rules covering the installation and utilization of GPWS and TAWS has contributed to a reduction in these events. However, the fact that not all aircraft are mandated to be TAWS equipped means that CFIT/ALA related accidents continue to occur.

- b. ALA/CFIT training is a vital component in the overall safety footprint for the industry. This would naturally encompass a range of operations, aircraft types, personnel and support structures. Contemporary ALA/CFIT training continues to hinge on two key aspects: avoidance and escape. The establishment (and continued maintenance) of correct

and accurate Situational Awareness in both the horizontal and vertical planes is critical. Effective crew communication, backed up by operational policies and guidance are vital. If this is not the case, the potential for contact (impact) with terrain, water and/or obstacles (in the CFIT case) or a landing accident (hard landing, excursion or overrun) increases. In situations like this an Escape Maneuver (or a missed approach/rejected landing in the ALA case) must be performed without delay to prevent an actual ALA/CFIT from occurring. Invoking this maneuver will increase the chances of escaping an ALA or CFIT

3. SCOPE

- a. The scope of this Bulletin is designed to identify the requirement for States to require air operators to conduct ALAR and CFIT training and to advise of sources of information that are available for the provisions of this training.
- b. This Bulletin, also contains, as Appendices, examples of more detailed content that can be considered for ALAR and CFIT training.

4. CFIT Training Programme

- a. The CFIT training programme should be integrated into existing initial, transition and recurrent training/check programmes. Its importance is reinforced and its effectiveness improved when the subject is a core element in all training and checking programmes. It can also be structured as a stand alone programme. The ground training programme is designed to improve awareness by increasing the flight crew's ability to recognize and avoid impending CFIT situations. This may be done using traditional classroom methods and/or web/computer based delivery platforms. The simulator training program is designed to apply this knowledge, as well as develop proficiency in an escape maneuver that must be used as a last resort. Air operators should provide this training during initial/transition training and at least once every two years as part of recurrent training.
- b. The objectives of the Training Programme are to provide pilots with the ability to:
 - Recognize the importance of effective Situational Awareness and its importance in identifying potential CFIT situations,
 - Know prevention strategies and operating practices that will mitigate CFIT threats and hazards,
 - Learn an escape maneuver and associated techniques that will avoid CFIT and enhance the possibility of survival.
- c. ICAO, State Regulators, Manufacturers and other industry groups have been actively promoting CFIT awareness and training programmes in a continued effort to reduce CFIT accidents and incidents. The Flight Safety Foundations (FSF) has produced the Approach and Landing Accident Reduction (ALAR) Tool Kit, which in addition to information concerning ALAR, includes an updated and more user friendly 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, CFIT training program material and flight simulator and airplane specific examples of the CFIT escape maneuver. It is recommended that air operators utilize the FSF ALAR Tool Kit as a basis for developing their training programme.

5. ALAR Training Programme

- a. This ALAR training programme should be a core component of flight operations and integrated into existing initial, transition, and recurrent training and check programs. The ground training programme is designed to improve awareness by increasing the flight crew's ability to recognize and avoid situations to help prevent approach and landing accidents (ALAs). Air operators should provide this training during initial/transition training and at least once every two years as part of recurrent training.
- b. The objectives of the training programme are to provide the pilot with the ability to;
 - Be aware of the high risk involved in the approach and landing phase of flight,
 - Know the available interventions to address this risk (e.g. SOP's, stabilized approach criteria, no fault go around policy, Constant Angle Non Precision Approach (CANPA) descent profiles, Runway aligned approaches, etc.),
 - Increase awareness of ALA pre-cursors,
 - Learn and apply risk reduction interventions to reduce the risk of approach and landing accidents.
- c. The Flight Safety Foundation (FSF) Approach and Landing Accident Reduction (ALAR) Tool Kit includes information to help prevent approach and Landing accidents. In addition to providing training material to help prevent ALA's, there are many other tools and educational material contained in the FSF Tool Kit that air operators may wish to utilize to reduce their risk of approach and landing accidents.

6. ACTION BY STATES

- a. It should be considered a priority that States require operators in their State to incorporate ALAR/CFIT training into their flight operations and training programmes. States that have yet to do so are requested to initiate action to mandate the requirement for ALAR/CFIT prevention training.

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APPENDIX A

INTRODUCING ALAR/CFIT TRAINING INTO AN INITIAL (TYPE) ENDORSEMENT TRAINING PROGRAMME.

Strategies that address terrain/approach/landing awareness and the causes of ALA/CFIT events should be discussed at initial training. Continuous reinforcement and the practice of sound Standard Operating Procedures (SOPs) combined with a focus on good crew communications and situational awareness should be emphasized at all times.

ALAR/CFIT items to be discussed should include;

- 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,
- Understanding the autopilots operating modes,
- Intervention (Including manual Interventions) if the aircraft is not responding as intended,
- SOP's that should include standard callouts that alert crew to Flight Mode Annunciator (FMA) and/or Flight Management Systems (FMS) changes,
- SOP usage to highlight any undesirable aircraft energy states,
- Barometric and Radio Altimetry issues and procedures,
- Observance of stabilized approach criteria,
- Criteria for descent below MSA. This should only occur only when established on a published instrument procedure, under radar control or when visual with terrain,
- Review of the primary elements of the missed approach especially when a missed approach appears likely;
- Go Around and Discontinued Approach awareness,
- Effective CRM and crew communications highlighting terrain issues and situational awareness,
- Type specific or generic (as appropriate) escapes maneuvers.

Additionally, a programme dedicated to ALAR/CFIT recovery techniques should be included in simulator training detail(s). This training should include;

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

APPENDIX B

INTRODUCING ALAR/CFIT TRAINING INTO A RECURRENT TRAINING PROGRAMME

After introduction of initial ALAR/CFIT training, it is imperative to keep crews well 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 programme. This can be done by use of instructor led discussion and/or computer based training as well as training in an appropriate flight training device.

Items to be discussed should include;

- Usage and understanding of EGPWS warnings,
- Understanding the autopilot operating modes and its use,
- Crew briefings that include threat and error management,
- Understanding approach charts
- Effective crew resource management techniques, especially communications,
- Review knowledge of enroute charts making sure that crew have a clear understanding of the charts features and their meanings (e.g. grid MORA).

A simulator training detail should include;

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