EASA
European Union Aviation Safety Agency

Location of an Aircraft in Distress

CAT.GEN.MPA.210 and the EASA approach

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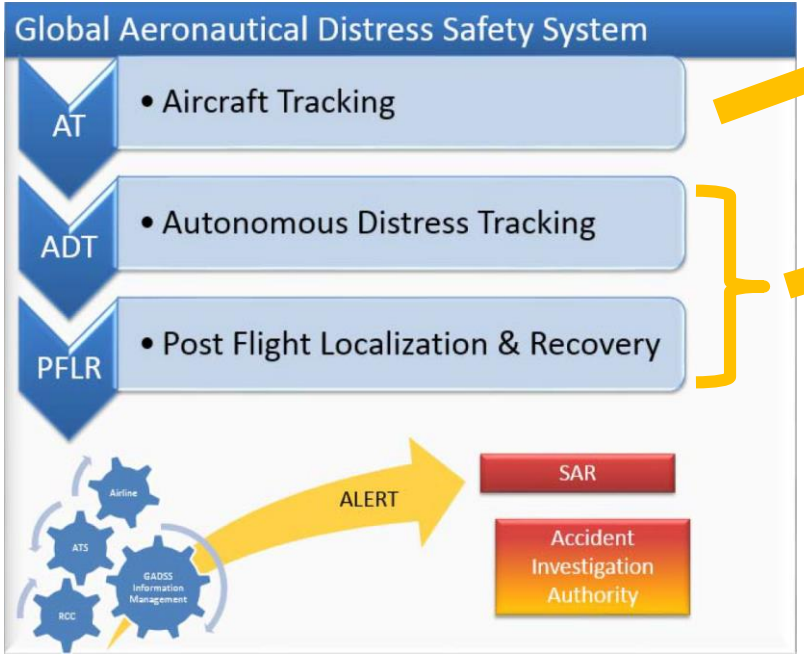
Overview of ICAO & EU provisions on « Global Tracking »

ICAO Annex 6 Part I



Part CAT of the EU Air OPS rules

CAT.GEN.MPA.205 (since 12/2018)

→ Location of an aircraft in distress: CAT.GEN.MPA.210 (a/c manufactured as of 01/2023)

→ ELTs: CAT.IDE.A.280

→ ULDs: CAT.IDE.A.185/190/195 (flight recorders ULD, 90 days since 06/2018)

+ CAT.IDE.A.285 (low frequency ULD, since 01/2019)

Location of an aircraft in distress in the EU air operation rules

ICAO Annex 6 Part I, 6.18 & Appendix 9	Part-CAT, CAT.GEN.MPA.210
→ "(…) autonomously transmit information from which a position can be determined by the **operator** at least **once every minute, when in distress** (…)" 'Aims at establishing (…) the location of an accident site within a 6NM radius'	→ "The following aeroplanes shall be equipped **with robust and automatic means** to **accurately** determine, following **an accident where the aeroplane is severely damaged,** the location of **the point of end of flight**"
→ Aeroplanes → MCTOM>27 000 kg	→ Aeroplanes → MCTOM>27 000 kg and PAX>19 → MCTOM>45 500 kg
May replace an automatic ELT (Anx 6 Part I, 6.17)	→ May replace: → an automatic ELT (CAT.IDE.A.280), and → a low-frequency ULD (CAT.IDE.A.285)

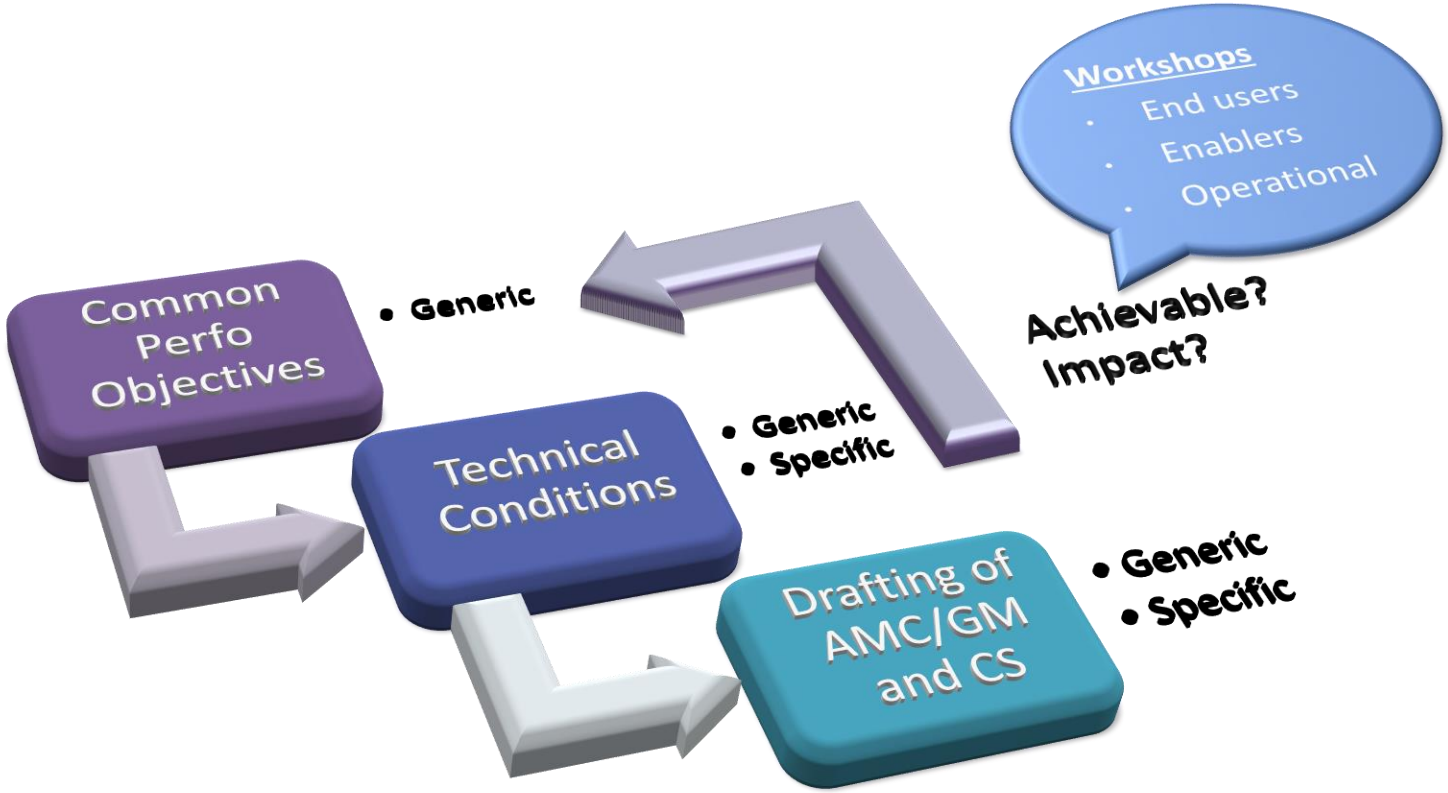
EASA Notice of Proposed Amendment (NPA) 2020-03

- Part of EASA rulemaking task RMT.0400
- Scope: **means of compliance and guidance for CAT.GEN.MPA.210**
  - *NOT amending CAT.GEN.MPA.210*

The approach in EASA NPA 2020-03

- → A **performance-based** approach…
  1. (Concept and applicability in CAT.GEN.MPA.210)
  2. Same performance objectives applicable to all solutions
  3. Conditions
     - → based on performance objectives
     - → in acceptable means of compliance and certification specifications
- → … that **addresses SAR needs** (and investigation needs)
  - → Performance comparable to that of new ELT standards and COSPAS/SARSAT (including MEOSAR)
  - → No negative impact on SAR
    - → workload or efficiency

NPA 2020-03: the process for defining objectives and conditions



EASA NPA 2020-03 – solutions covered by specific conditions

Automatic Deployable Flight Recorder (ADFR)

- Deploys during crash
- Includes an Emergency Locator Transmitter (ELT)
- ETSO-2C517 + ETSO-C126c + CS-25.1457

Emergency Locator Transmitter – Distress Tracking (ELT(DT))

- ELT(DT)
- Transmits before impact
- Activated by monitoring of flight parameters
- ETSO-C126c

High Rate Tracking (HRT)

- Transmits before impact
- Activated by monitoring of flight parameters
- Commercial constellations (e.g. Iridium)

GADSS « ADT »

Performance objectives additional to ICAO Annex 6 SARPs – ROBUSTNESS (1/3)

- **The performance of the airborne system should not be affected by the environmental conditions encountered during most accidents within the scope.**

  - *Scope is an accident "during which the aeroplane is severely damaged", meaning:*
    - *environmental test conditions for equipment that must operate until the crash;*
    - *crash test conditions for equipment that must operate after the crash.*

Performance objectives additional to ICAO Annex 6 SARPs – ROBUSTNESS (2/3)

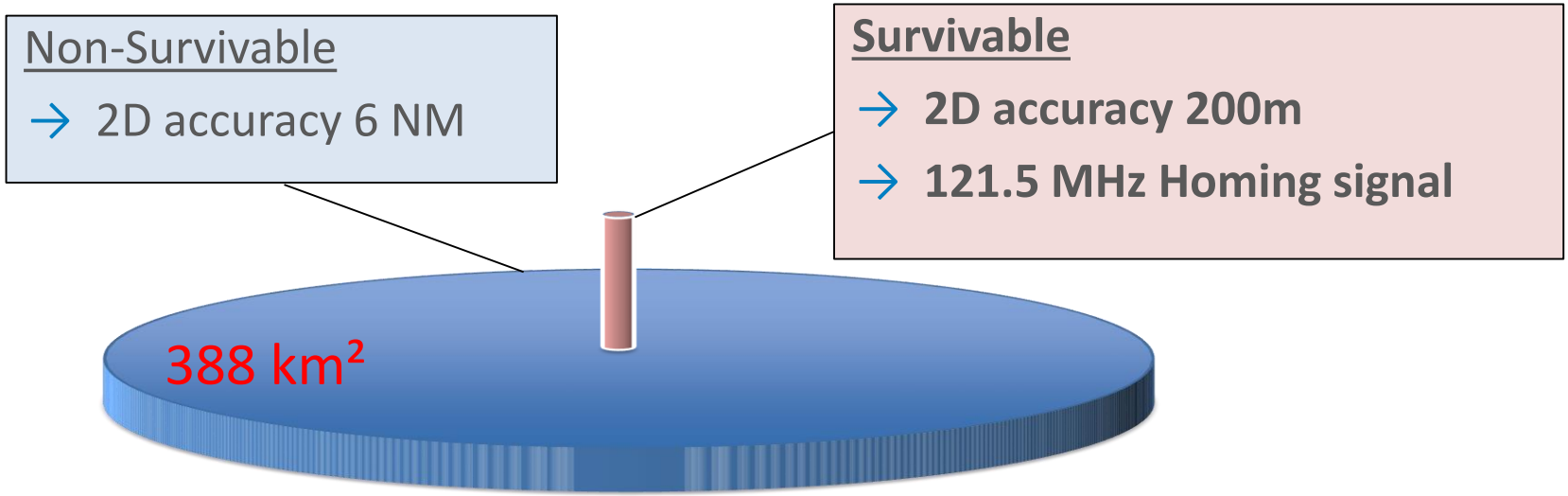
- The airborne system should perform its intended function and signals should be detected by the communication infrastructure:
  - in the whole flight envelope of the aircraft;
  - when the aircraft is experiencing
    - high attitude values,
    - high attitude rate values,
    - overspeed or high vertical speed,

    which are typically encountered during loss of control in flight.

Performance objectives additional to ICAO Annex 6 SARPs – ROBUSTNESS (3/3)

- The communication infrastructure used by the airborne system should have sufficient performance to ensure successful transmission:
  - availability,
  - integrity,
  - capacity, and
  - coverage.

Performance objectives additional to ICAO Annex 6 SARPs – ACCURACY



- → *121.5-MHz homing signal is essential for operations with mobile SAR facilities*
- → *If no 121.5 MHz signal, a 200-m 2D location accuracy:*
  - → *addresses accuracy needed by mobile SAR facilities, and*
  - → *is achievable with current ELT technology.*

Performance objectives additional to ICAO Annex 6 SARPs – IMPACT ON SAR (1/3)

- **Data should be automatically transmitted to the competent SAR authority, and**
- **within 20 minutes of reaching the point of end of flight.**

- *quick and reliable data transmission is essential for SAR;*
  - *Today, COSPAS-SARSAT automatically processes 406-MHz ELT signals and transmits ELT messages to the designated SAR POC;*
- *making data available to the operator not (yet) required;*
- *time objective compatible with the time for deploying SAR mobile facilities.*

Performance objectives additional to ICAO Annex 6 SARPs – IMPACT ON SAR (2/3)

- **The airborne system is designed commensurate with a major failure condition that results from erroneous automatic activation.**

  - *Worldwide, ~50 000 000 FH/year for aircraft in the scope;*
  - *Worlwide, ~ 36 000 alerts/year received by RCCs from activated beacons (20 000 from ELTs)*
    - *Major failure condition = up to 500 additional false alerts caused by erroneous activation per year, worldwide.*

Performance objectives additional to ICAO Annex 6 SARPs – IMPACT ON SAR (3/3)

→ **Within 1 min of the deactivation time, the airborne system automatically transmits deactivation signals.**

→ *To help determine why the transmission of signals stopped.*

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Thank you for your attention!

Questions?

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