



**WORKING PAPER**

**MULTIDISCIPLINARY MEETING REGARDING GLOBAL TRACKING**

**Montréal, 12 May to 13 May 2014**

**Agenda Item 3: Explore the potential for strengthening ICAO provisions on global tracking**

**GENERAL AVIATION EXPERIENCE WITH AIRCRAFT TRACKING**

(Presented by the International Council of Aircraft Owner  
and Pilot Associations (IAOPA))

**SUMMARY**

This working paper explores the complexities of existing search and rescue technology and sites examples of changes already voluntarily in use by general aviation.

Action by the meeting is contained paragraph 5.

**1. INTRODUCTION**

1.1 Recent aviation accidents have confirmed the longstanding proclamation by the private aircraft operators constituting the 400 000 members of the International Council of Aircraft Owners and Operators that the ICAO Standards and Recommended Practices (SARPs) requiring the use of emergency locator transmitters (ELTs) as the approved equipage for search and rescue were not suitable.

1.2 The August 2005 ELT Task Force offered statistics for false alarms that appeared to be almost totally maritime-related and resulted in a decision to mandate the 406 MHz ELT. The low reliability of ELTs and the inability to re-certify many units after periodic inspections has diminished the confidence of many aircraft owners in that technology's effectiveness as a viable alert system. Private aviation has switched to tracking devices from the time they have come to market. They have proven more reliable, useful and desirable.

**2. DISCUSSION**

2.1 Experience over the years of the ELT mandate have demonstrated failure rates of the installation of over 50 per cent. That experience was based on the use of the 121.5 MHz installations.

2.2 Although the newer generation of 406 MHz ELTs may have reduced the number of false alerts from unidentified ELTs, their failure rates have yet to be established. The reasons for failure of these newer units are ascribed to poor installation, not being switched on, not being registered, not being

maintained and antenna connection failures. The paradigm on which the ELT is based, that of requiring a device to function after a crash, is inappropriate.

2.3 Of the recent airline accidents involving airliners – the Air France overrun in Toronto, the Air France accident off Brazil, and the missing Malaysian – no ELTs or alerting devices activated. Each of these aircraft was equipped several ELTs or other alerting devices counting the ones attached to life rafts. Clearly, the ELT should be considered a failed technology and to have been based on an improper paradigm. The high false search and rescue costs associated with the ELT concept are the result, partially, of requiring all aircraft to be equipped with ELTs, regardless of the aircraft operating environment or system efficiency.

2.4 In contrast, other technology has demonstrated to be more useful for locating aircraft in the types of emergencies that actually occur – such as cell phones or personal locator beacons. This fact is demonstrated in the review of the 13 accidents that occurred in the United States and are listed by the SARSAT community as “saves” in 2012. In reading the textual reports provided, eight of the thirteen “saves” are actually directly attributable to personal locator beacons carried voluntarily by pilots. And given the superior and superseding technologies already used by pilots and others to soon to appear on the market, such as ADS-B, the debate over which frequencies ELTs should transmit was not formulated on the proper questions.

2.5 Many general aviation pilots have preferred to rely on tracking devices, designed to report the aircraft’s position and track to friends, family and authorities via the internet.

2.6 Portable tracking devices in popular use by pilots offer a limited communication ability in addition to providing global positioning system (GPS) location capability and they are light, small and portable for instances where pilots have moved away from their aircraft. One manufacturer reports that 12 000 of his units have been sold to general aviation users in the USA and 4 500 to Canadian owners.

2.7 General aviation operators have recognized the need for and adapted to tracking technology particularly since its functioning can be verified on a cell phone prior to flight and because the aircraft’s path is sent and recorded to responsible persons via the internet.

2.8 Mandating specific equipment sets up the trap of forcing aircraft owners to purchase new equipment each time the technology is updated or new technology is developed. It also precludes and disincentives pilots and owners from using new technologies – even though the new technology may be better suited to their flight operations – simply because it “does not meet the regulatory requirement”. As well, technology manufacturers are likely not to invest in research and development of new and more efficient technology when ICAO standards mandate the use of a specific and older technology.

2.9 In the interests of safety, the search and rescue community should use all available signals, not just one, and it should encourage pilots’ use of alternative affordable technology. That is best accomplished by allowing the use of any alternate technology so long as it meets certain performance-based standards – not by mandating the use of one already ageing product. Safety is not advanced by promoting reliance on one system to the exclusion of all possible helpful technologies.

### 3. CONCLUSIONS

3.1 Experience over the years of the ELT mandate have demonstrated failure rates of the installations of over 50 per cent. That experience was based on the use of the 121.5 MHz installations.

3.2 Although the newer generation of 406 MHz ELTs may have reduced the number of false alerts from unidentified ELTs, their failure rates have yet to be established. The reasons for failure of these newer units are ascribed to poor installation, not being switched on, not registered, not maintained and antenna connection failures.

3.3 Private aviation operators have the incentive and the knowledge to choose the most reliable and useful search and rescue system suited to their particular operation.

3.4 Mandating a specific technology for private aviation as well as commercial aviation (such as 406 Mhz ELTs) will stunt the development and use of future emergency technology

#### 4. **RECOMMENDATIONS**

4.1 Any eventual search and rescue SARPs should permit alternative and affordable technologies, such as tracking, in place of the ELT for private aircraft under 5 700 kg.

4.2 Any new wording proposed for global search and rescue requirements should be commensurate to the type of operation.

4.3 In lieu of mandating specific equipment, ICAO Standards should take a performance-based approach to aircraft emergency alerting. The approach should permit and promote multiple options or combinations of options such as the use of personal locator beacons or other portable devices. Encouraging and using commercial services for alerting is better than requiring one specific technology that may grow outdated as technology progresses.

4.4 Any new SARPs should leave it to users to decide how best they may meet a performance-based search and rescue requirement in response to a SARP for global tracking.

#### 5. **ACTION BY THE MEETING**

5.1 The meeting is invited to:

- a) note the information in this paper;
- b) consider a multi-disciplinary and performance-based approach toward the development and formulation of any international standards requiring global flight tracking; and
- c) agree to the recommendations in paragraph 4 above, as may be amended by the meeting.