



ASSEMBLY — 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 38: Other issues to be considered by the Technical Commission

ADDRESSING THE AVIATION SAFETY CONCERNS AFFECTING FLIGHT SAFETY INVOLVING LASER EMITTERS

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

Laser Emitters pose a significant threat to civil aviation safety and security. The recent alarming growth of laser occurrences requires a global response to mitigate the risk associated with the unregulated use of laser emitters, especially in the vicinity of aerodromes. The United Arab Emirates (UAE) urges the Assembly to consider the threats posed by laser Emitters as this may force pilots to abort landing/take offs, degrade pilot's performance, crew coordination and air traffic control service provision. Laser technology has developed rapidly over the past few years and it is now possible to purchase high power lasers that could cause serious impact on civil aviation safety.

Action: The Assembly is invited to:

- a) urge ICAO to consider reviewing SARPS related to Laser emitters and Flight Safety (Annex 11 — *Air Traffic Services*, Annex 14 — *Aerodromes* and Doc 9815, *Manual on Laser Emitters and Flight Safety*);
- b) request ICAO to consider the establishment of a Global Database on Civil Aviation Safety related occurrences associated with Laser Emitters;
- c) request ICAO to encourage member States to:
 - i. develop laws regulating the sale and the use of Laser Emitters;
 - ii. consider taking appropriate legal action against offenders under their criminal law; and
 - iii. undertake safety promotion activities to increase awareness and reporting.
- d) urge ICAO to consider a Global Harmonized implementation of ICAO Doc 9815, *Manual on Laser Emitters and Flight Safety*“;
- e) request ICAO to consider amending the definition of Acts of unlawful interference' in Annex 17 — *Security — Safeguarding International Civil Aviation against Acts of Unlawful Interference*, Chapter 1 to include specific threat posed by Laser Emitters, and
- f) note the initiatives taken by the UAE to mitigate the risks posed by Laser Emitters.

Strategic Objectives:

This working paper relates to the Safety Strategic Objective.

Financial implications:

Not applicable.

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| <i>References:</i> | Annex 11 — <i>Air Traffic Services</i> , Chapter 2 ; Annex 14 — <i>Aerodromes</i> , Volume I — <i>Aerodrome Design and Operations</i> , Chapter 5 (Visual aids for navigation); Annex 17 — <i>Security — Safeguarding International Civil Aviation against Acts of Unlawful Interference – Security</i> , (Chapter 1. i.e. Definition of Acts of unlawful interference), and Doc 9815, <i>Manual on Laser Emitters and Flight Safety</i> . |
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1. INTRODUCTION

1.1 Lasers used in the vicinity of aerodromes increase the known aviation-related hazards associated with high intensity lights and may have a physiological impact upon pilots which could threaten aircraft safety, particularly at critical stages of flight. Such physiological effects include: glare, temporary flash blindness, after-image and possible eye injury. In addition, it may also dazzle and distract Flight Crew and Air Traffic Controllers.

1.2 The proliferation of unregulated sale and use of laser emitters has increased the risk of intentional or accidental illumination of aircraft and therefore it is increasingly important to manage and mitigate these risks. In recognition of the widespread use of laser emitters around airports, and the risk posed to International Civil Aviation safety, the International Civil Aviation Organisation (ICAO) formed a study group in 1999 to evaluate the laser risk and consider whether new SARPs were necessary. During 1999 and 2000, the Aviation Medicine Section of the ICAO Secretariat developed the laser-related Standards and Recommended Practices (SARPs) which are now included in Annexes 11 and 14 to the Convention on International Civil Aviation.

1.3 From an Aviation Security perspective, there is a possibility that terrorists may also use this technology to carry out an act of unlawful interference with international civil aviation if not looked into and regulated by the international community. Taking into consideration the magnitude of the problem caused by Laser Emitters it is proposed that ICAO Member States may consider incorporating this as a serious threat to civil aviation security too.

2. DISCUSSION

2.1 During the last decade, SARPs and guidance material relating to the hazardous effects of laser emitters on flight operations have been developed in:

- a) Annex 11 — *Air Traffic Services* - Air Traffic Services Chapter 2;
- b) Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations*, Chapter 5 (Visual aids for navigation), and
- c) Doc 9815, *Manual on Laser Emitters and Flight Safety*.

2.2 One standard contained in Annex 11 — *Air Traffic Services*, Chapter 2 (General), paragraph 2.18 (Coordination of activities potentially hazardous to civil aircraft) subparagraph 2.18.5 states: “Adequate steps **shall** be taken to prevent emission of laser beams from adversely affecting flight operations.”

2.3 Guidance material regarding the hazardous effects of laser emitters on fixed wing and helicopter flight operations is contained in the *Manual on Laser Emitters and Flight Safety* (Doc 9815).

2.4 One Recommended Practice contained in Annex 14 — *Aerodromes*, Volume I — *Aerodrome Design and Operations*, Chapter 5 (Visual aids for navigation), paragraph. 5.3 Lights, subparagraph. 5.3.1.2 (Laser emissions which may endanger the safety of aircraft):sub-sub paragraph states: “to protect the safety of aircraft against the hazardous effects of laser emitters, the following protected zones **should** be established around aerodromes:

- a) a laser-beam free flight zone (LFFZ);
- b) a laser-beam critical flight zone (LCFZ), and
- c) a laser-beam sensitive flight zone (LSFZ).”

2.5 Due to the latest developments in laser technology and its proliferation in markets around the world, there has been a significant increase in the risks to Aviation Safety and Security from the unregulated sale and use of laser emitters. Considering the increased risk, it is imperative that Annex 14 be reviewed to amend the recommendation to a standard stating: “To protect the safety of aircraft against the hazardous effects of laser emitters, the following protected zones **shall** be established around aerodromes”.

2.6 From an Aviation Security perspective it is proposed that the definition of ‘Acts of unlawful interference’ in Annex 17, Chapter 1 may be amended to include specific threat posed by Laser Emitters as an act of unlawful interference with civil aviation.

2.7 Reported Laser occurrences within the UAE Flight Information Region (FIR) 2010 - 2013:

| 2010 | 2011 | 2012 | 2013 Q1,Q2 |
|------|------|------|------------|
| 02 | 09 | 29 | 44 |

2.8 The UAE has taken the initiative and established a Working Group and finalized a detailed report on the UAE action plan to mitigate the risks to civil aviation safety posed by Laser Emitters. A proposed Regulation for Laser Products is in the final stages and is in the process of being implemented. This regulation, inter alia, includes the following:

- a) Classification of Laser Emitters based on range and use;
- b) Standardization of Safety requirements including mandatory labelling;
- c) Define the roles and responsibilities of different authorities which includes manufacturing, importing and the trade of Laser Emitters Responsibilities of different authorities within the UAE;
- d) Introduction of additional Civil Aviation requirements to protect the traveling public, and
- e) Public Awareness campaigns.

2.9 The UAE has also published Civil Aviation Advisory Publications (CAAP 49 – Laser Illumination of Aircraft and ATC Tower and CAAP 16 – Special Airspace User Requirements) to serve as guidance material to stakeholders within the UAE.

3. **CONCLUSION**

3.1 The Assembly is invited to:

- a) Note the additional measures needed to be considered by member States to mitigate the risks associated with the inappropriate use of Laser Emitters; and
- b) Request ICAO to consider amending relevant SARPs related to aviation safety and security of civil aviation operations.

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