



## TWELFTH AIR NAVIGATION CONFERENCE

Montréal, 19 to 30 November 2012

### Agenda Item 6: Future Direction

#### 6.1: Implementation plans and methodologies

### ADDRESSING THE AVIATION SAFETY DIMENSION OF PUBLIC EVENTS AND DISPLAYS INVOLVING THE USE OF LASER BEAMS AND/OR FIREWORKS

(Presented by the Republic of Turkey)

#### 1. INTRODUCTION

1.1 The increase in recent years in the number of public events and displays in Turkey involving the use of laser beams and/or fireworks, especially in tourist locations and sometimes in the vicinity of airports, and also in response to the beginning of flight safety reporting related to this issue, made it necessary to make a regulation to prevent such events and displays having any negative effects on flight safety.

1.2 The “Instruction on the Protection of Aircraft from the Detrimental Effects of Laser Beams/Fireworks” and “Instruction on the Protection of Aircraft from the Detrimental Effects of Fireworks”, which are based on the ICAO *Manual on Laser Emitters and Flight Safety* (Doc 9815) were published and entered into force in the years 2005 and 2009.

#### 2. FLIGHT ZONES

2.1 These instructions lay down measures in respect of the areas described below:

##### a) Laser-beam free flight zone (LBFFZ):

This zone comprises an area consisting of a length of 3 700 metres (2NM) in each direction from the runway centre line and additionally 5 600 metres (3 NM) extended after the 3 700 metres (2 NM) marked from the runway beginnings and a width of 750 metres horizontally, and extending until 600 metres (2 000 ft) from the ground vertically.

As regards any airports or aerodromes with more than one runway, the measurements are made based on the peripheries of the runways.

In the LBFFZ, the power of the laser light is limited under the Instruction on the Protection of Aircraft from the Detrimental Effects of Laser Beams in order not to cause any visual impairment, and the radiance in this zone may not exceed 50  $\mu\text{W}/\text{sq.cm}$ .

b) Fireworks free flight zone (FFFZ):

Fireworks displays are not allowed at any altitude whatsoever in an area with a length of 10 NM in both directions and a width of 2 NM (1 NM in each direction) along the runway centre line within an area with a radius of 3 NM, centred on an aerodrome's determined ground reference point.

The upper limit for fireworks displays allowed outside the FFFZ may not exceed 1 500 ft.

Within an area with a radius of 10 NM centred at an aerodrome's ground reference point, permission has to be obtained for fireworks displays proposed to take place in the zone remaining outside the areas forbidden for the performance of fireworks displays as described above.

c) Laser beam critical flight zone (LBCFZ):

This zone comprises an area extending up to 18 500 metres (10 NM) from the ground reference point horizontally, and up to 3 050 metres (10 000 ft) from the ground vertically. The radiance in the LBCFZ may not exceed 5  $\mu$ W/sq.cm.

d) Laser beam sensitive flight zone (LBSFZ):

This zone comprises an area extending up to 28 500 metres (15 NM) from the ground reference point horizontally, and up to 4 570 metres (15 000 ft) from the ground vertically. The radiance in the LBSFZ may not exceed 100  $\mu$ W/sq.cm.

e) Normal flight zone (NFZ):

The NFZ comprises the airspace where navigation is performed outside the zones defined as LBFFZ, LBCFZ and LBSFZ. This zone has to be determined to protect against laser radiation which may cause biological damage to the eye.

### 3. IMPACT OF INTRUCTIONS

3.1 Pursuant to the said instructions, an application form for planned laser/firework activities must be completed by the business establishment planning the activity and sent to the Turkish General Directorate for civil aviation. If the application is approved, information about the activity is made available to all airspace users by NOTAM.

3.2 The number of applications made every year since the coming into effect of the instructions is increasing, whereas the number of reported problems with laser and firework is decreasing. For 2012 to date, the total number of applications is 46, and the number of reporting is 12.

3.3 It is considered that the decrease in the number of reporting is the result of the spreading of safety culture thanks to the efforts of all concerned, including the all related Governorships, Police, and the Gendarmerie in the Provinces, for the purpose of ensuring flight safety and preventing any reoccurrence of this kind of event jeopardizing flight safety.

### 4. CONCLUSION

4.1 The Conference is invited to take note of these regulatory developments in Turkey to address the risks to civil aviation posed by laser and firework activities.