



## Safety Warning Message

- **Safety Subject:** Lasers Illumination of Aircraft and ATC Towers
  - **Origin:** EUROCONTROL Safety Improvement Sub Group
  - **Date:** 18/06/2009
  - **Distribution:** Air Navigation Service Providers
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### BACKGROUND INFORMATION

- Concerns about the hazards to aviation caused by the use and misuse of lasers in navigable airspace (in particular for pilots during critical flight phases) date back to the 1990s.
- More recently, however, some Air Navigation Service Providers (ANSP) have also reported that ATC Towers (TWR)) have been illuminated by lasers.
- Lasers can easily be obtained via the Internet, even those that are recommended for professional use only. The devices are not inherently dangerous; however, when misused they may cause optical discomfort/injury and thus could compromise aviation safety.

### IMPACT ON ATS OPERATIONS

- The physiological (visual) effects/hazards to pilots/ATC staff associated with laser illumination are: distraction; glare; temporary flash blindness; afterimage; and, possibly, eye injuries.
- Laser illumination of ATC TWRs could compromise the provision of safe ATS on or in the vicinity of aerodromes.
- Airport operations could be disrupted/suspended if a laser illumination of an ATC TWR was prolonged and the source could not be eliminated.

### SUGGESTED SOLUTIONS

- There is no universal solution for preventing the misuse of lasers against either aircraft or ATC. Nevertheless, coordinated State interventions (CAA, ANSP, Airlines, Police and Justice departments etc) may be able to reduce the threat by:
  - Amending criminal statutes associated with interfering with flight operations.
  - Restricting the sale or use of certain types of laser. The UK, Australia and, more recently, Sweden, have introduced legislation to restrict/prevent the purchase and carriage of Class IIIB/IV lasers (i.e. those with an output power exceeding 5 mill watts) in public.
  - Expanding and enforcing 'critical flight zones' and 'laser free zones' around airports - see EUROCONTROL SRC Doc 7 (listed under Additional Information below) for applicability by the UK CAA and FAA.
  - Improving labelling on laser equipment on sale to the general public.
  - Educating the public regarding the risks of lasers to aviation safety.

### PILOT and CONTROLLER GOOD PRACTICES/IMMEDIATE ACTIONS

- It is suggested that airlines and ANSPs have processes and procedures (good practices/immediate actions) in place for staff to follow in the event of laser illumination. Measures could include:
  - Look away from the laser beam if possible. DO NOT try to find the light source by staring at the laser.
  - Shield eyes and consider feasibility of lowering/raising 'sun blinds' to reduce the effects of the laser.
  - Avoid rubbing the eyes to reduce the potential for corneal abrasion.

- Consider feasibility of turning up the cockpit/TWR lights to minimise any further illumination effects.
- Consider handing over the flying/control position to a non-exposed colleague.
- Pilots: Advise ATC that an aircraft is being illuminated. Controllers: Warn aircraft in the vicinity that ATC is being illuminated.
- Controllers: Inform a Supervisor who in turn can: decide on restricting traffic in/out of the aerodrome; inform the airport authorities; and inform the local police.
- Ensure the event is recorded and then correctly reported for further investigation.

#### **ADDITIONAL INFORMATION**

- Attention is also drawn to the extensive research that has been conducted into the effects of laser illuminations on pilots much of which has a direct read across for ATC staff.
  - EUROCONTROL SRC Doc 7 - "*Outdoor Laser Operations in Navigable Airspace*" February 2001. <http://www.eurocontrol.int/src/gallery/content/public/documents/deliverables/srcdoc7ri.pdf>
  - UK CAP 736 - "*Guide for the Operation of Lasers, Searchlights and Fireworks in United Kingdom Airspace*" November 2008. <http://www.caa.co.uk/docs/33/cap736.pdf>
  - The International Laser Display Association (ILDA) website (<http://www.laserpointersafety.com/index.html>) provides a wealth of information and associated links about lasers and aviation.
  - ILFAPA Medical Briefing Note February 2009, "*The effects of Laser Illumination of Aircraft*". <http://www.ifalpa.org/publications/briefing-leaflets/medical.html>
  - International standards SAE Standard AS4970 and IEC 60825-1 are both purchasable via the internet and provide technical guidance on lasers.
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