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## LASER ILLUMINATIONS OF AIRCRAFT IN AMSTERDAM FIR

### 1 INTRODUCTION

This AIC provides information, especially to air crew operating in the Amsterdam flight information region (FIR), on how Civil Aviation Authority – The Netherlands (CAA) addresses laser events. This circular also provides guidance to air crew on the reporting of laser illumination incidents and recommended mitigations to be taken in order to continue safe flight operations. This AIC is issued in response to the increasing incidents of illumination of aircraft by lasers, as well as the increasing number of laser devices available to the general public.

Laser illuminations are one of the major aviation incidents that occur in the Netherlands. In 2012 at least 484 laser strikes have been reported within the Amsterdam FIR. Even in the years before 2012 a lot of laser illuminations have been registered. Most laser incidents are reported in the airport surroundings, during the (final) approach phase by darkness.

Most of the lasers used for these illuminations are ordinary handheld laser pointers. In the cockpit the illumination will normally appear as a series of flashes, since it is very hard for the perpetrator to acquire and maintain steady illumination of a moving target. During these illumination incidents the risk of permanent damage to the eye is very small, however when the event occurs at low altitude it can be extremely dangerous because of glare, flash blindness and afterimages. Crews should therefore be aware of the threat and consider how they will react in the event that they are targeted.

### 2 ENFORCEMENT

In the Netherlands it is an offence to point a laser at an aircraft which causes or could cause danger for an aircraft in flight since this can have a serious effect on aviation safety. Exposure of air crew to laser illuminations may cause hazardous effects (distraction, glare, after image, flash blindness, and rarely persistent or permanent visual impairment) which could adversely influence the ability of air crews to carry out their responsibilities (flight operation). This can influence flight safety seriously and might lead to loss of control of the aircraft in an extraordinary situation. The effect of a laser illumination will vary, depending on the flight phase, background luminance, the visual contact that is made with the laser beam, pilot sensitivity, properties of the laser used, etc. Factors that influence the laser illumination are weather conditions, time of day, power and color of the laser, the distance and relative angle of the laser to the aircraft, the speed of the aircraft and the exposure time.

In case somebody is pointing a laser at an aircraft within the Netherlands the suspect has to be apprehended and can be arrested and prosecuted. The offender could face high penalties and prison sentence, depending on the kind of laser illumination and the encountered effects.

In order for the Dutch public prosecutor to be able to start prosecution of a laser illumination offender, pressing charges is required. Within pressing charges it is very important that it is described what the danger of the laser illumination has been with regard to the operation of the flight. This may be done digitally on website [www.politie.nl/laser](http://www.politie.nl/laser), but has to be signed in person by the person pressing charges.

### 3 ACTION BY AIR CREW - MITIGATION PROCEDURES

Beside the actions mentioned above, air crew are advised to consider the following mitigations:

1. Air crews unexpectedly exposed to laser illumination should avoid direct eye contact (look away from laser beam) and shield their eyes to the maximum extent possible with aircraft control and safety.
2. Crews manually flying aircraft fitted with modern autopilots might need to consider autopilot re-engagement.
3. In case of multi pilot operations, if one of the crew members suffers medical effects due to the laser illumination, determine whether other crew members are also exposed. If not consider handing over the control of the aircraft to the non-exposed (or less-exposed) crew member.
4. Crews in contact with ATC should obtain authorization before deviating from their cleared flight path, having first dealt with any immediate safety concerns. If absolutely necessary an emergency should be declared.
5. Consider the feasibility of turning up the aircraft interior lights to minimize any further illumination effects.
6. As soon as possible following a laser illumination, pilots should report it to the appropriate ATC facility. Expedient reporting will assist law enforcement in locating the source of the laser transmission.
7. Avoid rubbing the eyes to reduce the potential for corneal abrasion.
8. After landing press charges in order for the Dutch public prosecutor to be able to start investigation and possible prosecution of a laser illumination offender.
9. After landing complete an air safety report (ASR).
10. If you continue to suffer loss of vision or other visual effects after the flight, immediately contact a doctor after landing.
11. The medical statement of the doctor is also needed for a criminal file. The medical statement shall indicate that the injury is due to the laser illumination. The medical statement of the doctor has to be filed together with the report.

In the event that a cautionary broadcast (by ATC or another pilot) regarding a laser illumination is made within the previous twenty minutes for a particular area, pilots may try to avoid the area, if practicable, or try to take mitigation measures beforehand.

#### 4 ACTION BY AIR CREW - REPORTING PROCEDURE

All air crews are urgently requested to report incidents of laser illuminations immediately by radio to the appropriate ATC controlling facility. Reports should include at least:

- aircraft position during the illumination;
- laser position as accurate as possible;
- color of laser beam(s);
- any other relevant information deemed necessary.

The reports should be kept as short as possible. Air crews flying in uncontrolled airspace are requested to report incidents of laser illuminations immediately by radio to the appropriate ATC information unit according to the procedure as indicated above.

After landing the crew shall press charges in order for the Dutch public prosecutor to be able to start investigation and possible prosecution of a laser illumination offender. This may be done digitally, but has to be signed in person by the person pressing charges. Without pressing charges it is not possible to start an investigation to prosecute a laser illumination offender.

After landing the crew shall also complete an ASR. Therefore the ASR form and procedures as provided by the operator shall be used. If the operator<sup>1)</sup> has not defined procedures, or in case the flight is not operated by an operator, the ASR as provided on the CAA website ([http://www.ilent.nl/onderwerpen/transport/luchtvaart/ilt\\_en\\_luchtvaart/vooral\\_melden/meldingsformulieren.aspx](http://www.ilent.nl/onderwerpen/transport/luchtvaart/ilt_en_luchtvaart/vooral_melden/meldingsformulieren.aspx)) shall be completed and sent to the CAA ([abl@ilent.nl](mailto:abl@ilent.nl)). Operators shall ensure that the ASR is finally issued to the CAA The Netherlands. The completed ASR shall contain as much relevant information as possible to assist in analysis, such as time of the event, aircraft position, color of laser, altitude, origination of laser, weather conditions, flight phase, etc. Be aware that an ASR cannot be used for pressing charges.

If you suspect medical effects due to the laser illumination that last longer than the remainder of the flight (e.g. damage to the eye, remaining after images) or injuries, you shall contact a doctor immediately after the flight. It is important to contact a doctor immediately after the flight because in case the perpetrator is detected, arrested and prosecuted these data are needed. If you will land abroad you are strongly advised to see a doctor as soon as possible and not to wait until you have returned in the Netherlands. The same applies when you have landed in the Netherlands and are about to fly back or further. When you will report in a later stage, the chance that the process is revoked is likely since it cannot be proven that the medical effects are caused by the laser illumination that happened some time ago. Be aware that immediate response is essential in this case.

The medical statement of the doctor is also needed for a criminal file. The medical statement shall indicate that the injury is due to the laser illumination. The medical statement has to be filed together with the report.

<sup>1)</sup> In this AIC the term operator also applies to approved training organisations providing flight instruction.

#### 5 ATC MITIGATIONS

ATC facilities may broadcast a general caution regarding reported incidents of laser illumination of aircraft. These cautionary broadcasts normally will include all relevant elements as determined by ATC according to the situation.

#### 6 ACTION BY AOC HOLDERS AND ATO'S

AOC holders and approved training organisations providing flight instruction should ensure that their operations manuals contains guidance to crews on the immediate actions to be taken by crews targeted by bright lights or laser illumination. This guidance should include follow-up actions, including those that will need to be taken in the event of a crew member reporting visual impairment of more than transient duration.

#### 7 ADDITIONAL INFORMATION

This AIC-A is a publication of CAA-NL (Inspectie Leefomgeving en Transport). For additional information or questions about this AIC-A, please contact:

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