



# LASER ILLUMINATION THREAT MITIGATION



## **EACH WEEK, THERE ARE LASER ILLUMINATIONS OF AIRCRAFT AROUND THE WORLD.**

The potential negative effects of laser beams striking the human eye and interfering with flight operations are well documented. While there has yet to be an aviation accident attributable to a laser illumination, several significant cases of pilot injury have been reported. In view of the worldwide proliferation of hand-held lasers, the threat and the risk intensify.

The Air Line Pilots Association, Int'l (ALPA), in conjunction with the Federal Aviation Administration (FAA), Transportation Security Administration (TSA), Federal Air Marshal Service (FAMS), Federal Bureau of Investigation (FBI), and other federal, state, and local law enforcement organizations, works to educate the public on the dangers presented to aviation by unauthorized laser illuminations and to support and encourage law enforcement officials in the investigation and prosecution of such occurrences. As part of that effort, ALPA leaders have developed recommended crew practices to be used when confronted with a laser illumination during critical phases of flight. The intent of these protocols is to ensure that pilots are properly prepared to respond to a laser illumination event.





# General Information Regarding Hand- Held Laser Illuminations

**M**ost aircraft laser illuminations have occurred during critical phases of flight (i.e., approach, landing, and takeoff) in the hours of darkness. The impact of a laser illumination is more pronounced when the dark-adapted human eye is significantly more sensitive to exposure to light sources. Laser illuminations can interfere with pilot vision, potentially impacting the safety of flight.

Hand-held lasers display a variety of colors, most commonly red and green. Green lasers pose the greatest risk to the human eye. Because it is difficult to aim and maintain a hand-held laser beam directly on a moving aircraft, pilot exposure will likely be sporadic as opposed to continuous and direct. Most laser illuminations will be brief and appear as flashes. Consequently, the chances of permanent injury to the eye resulting from an aircraft illumination are very slim.

Laser illumination of the flight deck frequently produces a “startle response” in pilots that can lead to distraction and disruption of attention to aircraft control. In worst-case scenarios, laser illumination can lead to temporary disorientation or temporary incapacitation, e.g., flash-blindness. The United Kingdom’s Civil Aviation Authority has produced an **Aviation Laser Exposure Self-**

**Assessment (ALESAs)** tool, which can help pilots determine whether an eye examination is necessary. **Pilots can download, print, and use the two-page ALESA following a laser attack, or print it in advance and carry a copy with them in their flight bags. ALPA’s Aeromedical Office recommends the use of the ALESA by any pilot who suffers from a laser strike.**

It is recommended that all pilots review FAA Advisory Circular (AC) 70-2 or Transport Canada Aeromedical Information Circular (AIC) 14/09, as appropriate. Both circulars provide guidance on aircrew laser mitigation procedures and reporting of unauthorized laser illumination events. **These documents, plus the ALESA form, are available on the members-only site at [www.alpa.org](http://www.alpa.org). On the top menu bar, select Committees then click on Air Safety Organization/Aviation Security/Security Initiatives and Experts, and scroll down to Laser Illumination of Aircraft.**

If you are prepared mentally and procedurally to respond to a laser illumination, you will successfully protect yourself and your fellow crewmembers, and safely and efficiently manage the response to the event. ALPA is committed to eliminating the threat that laser attacks pose to aviation.



# Recommended Crew Actions

- 1** When struck by a laser on approach, do not continue to look into the beam. Shield your eyes and *go heads-down immediately*. This action will protect your eyes while the laser light is illuminating the cockpit.
- 2** Consider executing a missed approach. As with any event that is the catalyst for a go-around (e.g., low weather, birds, aircraft on the runway), a go-around may be your most prudent course of action in responding to a laser illumination.
- 3** Do *not* rub your eyes.
- 4** Consistent with flight manual restrictions, use cockpit automation to the fullest extent.
- 5** Maintain control of aircraft, monitoring configuration, altitude, and airspeed to maintain or reestablish desired flight profile.
- 6** Turn instrumentation and panel background lighting *up*.
- 7** Communicate with other flightdeck crewmembers and assess condition. In the event of an injury, declare an emergency and request priority handling, if necessary.
- 8** Transfer control of aircraft to other pilot, if necessary.
- 9** Expeditiously advise ATC of the laser event. Provide the most accurate description possible of the location of the laser source, beam direction, color and length of exposure (flash or intentional tracking).
- 10** While in the arrival area, if you are notified that a laser event has been reported and remains unresolved, request a different runway or ask for holding until the area has been secured and the threat has ceased.
- 11** Consider need for diverting if laser threat continues.
- 12** Follow all company protocols relating to reporting laser illuminations in a safe and timely fashion, to include notification of local company officials.
- 13** Cooperate with law enforcement officials conducting follow-up investigation of the event.
- 14** Download, print, and use the ALESA form as noted above, and see an eye specialist if your responses to the ALESA form suggest doing so. All eye injuries should be

reported to the ALPA Aeromedical Office (303-341-4435) as soon as possible. Additional information and treatment referrals, as appropriate, are available from that office. In addition, please contact the ALPA Safety Hotline at 1-800-424-2470.

**15** When practicable, write a report on the event via directions contained in either AC 70-2 or AIC 14/09, as appropriate, and forward it to the FAA or TC.



**For further information on this important subject, please contact ALPA's Engineering and Air Safety Department at 1-800-424-2470.**



Capt. Robert Hamilton, ALPA's security council chair, speaks at a Trenton, New Jersey, news conference on the safety threat posed by laser attacks on aircraft.



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