CIVIL AVIATION SAFETY AUTHORITY OF PAPUA NEW GUINEA

SAFETY ALERT BULLETIN (SAB)

SAB NO: 03/2022

DATE: 16 December 2022

A SAB contains important safety information and may include recommended action. SAB content should be especially valuable to air operators in meeting their statutory duty to provide service with the highest degree of safety in the public interest. Besides specific action(s) recommended in a SAB, an alternative action may be as effective in addressing the safety issue in the SAB.

TITLE: RISKS ASSOCIATED WITH ILLEGAL POINTING OF LASERS AT AIRCRAFT

OBJECTIVE: This SAB provides safety guidance information for:

- pilots when encountering laser incidents, where lasers are projected into navigable airspace and into the cockpit, from ground-based sources.
- the General Public, particularly, individuals who are engaged in this illegal practice of intentionally aiming lasers at aircraft.

APPLICABILITY: This SAB is applicable to personnel who are engaged in air services, airlines and airports when undertaking an aviation activity and service including:

A. Air Operators
B. Pilots
C. General Public of Papua New Guinea.

BACKGROUND: Recently, CASA has noted an increasing number of pilot reports (PIREPS) of people *intentionally* aiming lasers at aircraft in the vicinity of our airports.

FAA's data shows that the number of reported laser incidents in the US is also increasing. A total of 9723 laser incidents were reported in 2021 and was the highest on record representing an increase of 42% from 2020 and 31% from the previous record posted in 2016.

The FAA's Modernization and Reform Act of 2012 defines a laser pointer as: *"Any device designed or used to amplify electromagnetic radiation by stimulated emission that emits a beam designed to be used by the operator as a pointer or highlighter to indicate, mark or identify a specific position, place, item or object.*

In the context of this SAB, the term laser refers to all laser devices capable of projection into navigable airspace, including laser pointers and laser light show projectors. Laser is an acronym for: **L**ight **A**mplification by the **S**timulated **E**mission of **R**adiation.

FAA suggests that several factors contributed to the increasing trend of this illegal activity including, the availability of cheap lasers, the abundance of lasers for sale in stores and online, and

the increase in laser pointers that are now more powerful and can strike aircrafts at higher altitudes.

The use of lasers has grown rapidly in recent years, where they are often used to attract and entertain the public with productions at special events. Handheld laser pointers can be used to highlight areas of interest when making presentations or lectures and in the sighting of handguns and rifles, amongst other things.

When used properly, lasers can be beneficial and can improve the quality, precision, accuracy, security and reliability of many types of products, materials, communications and data handling. However, when intentionally aimed at aircraft cockpits, are a risk to aviation safety and security and is a prosecutable offence under the Civil Aviation Act.

RISKS TO PNG AVIATION SAFETY & SECURITY: The misuse of handheld lasers, such as laser pointers poses significant risks to aviation safety and security. When aimed at aircraft, the laser beam can travel more than a mile to illuminate a cockpit. Some high-powered lasers can incapacitate pilots flying aircraft carrying hundreds of passengers. The US Federal Aviation Administration (FAA) considers each "illumination" of aircraft by lasers (laser incident) an in-flight emergency.

Adverse health effects of lasers on pilots, include pain and visual effects which can be especially debilitating when the eyes of pilots are normally adapted to the low-light level of the cockpit at night or in the early hours of the morning.

Laser incidents can be especially dangerous during critical phases of flight such as approach to landing or departure, when sudden exposure to lasers can distract or disorient a pilot and cause temporary visual impairment.

Helicopters that routinely operate at low altitudes are particularly vulnerable to hazardous laser strikes due to their proximity to laser sources.

According to a report[1] from the FAA's Civil Aerospace Medical Institute, aircraft conducting low-level flight operations at night can be particularly, vulnerable to accidental or malicious laser incidents that can compromise aviation safety. The report notes that pilots receive up to 90% of the information required to safely fly the aircraft through their sense of vision. Pilots need good vision at far distances to "see-and-avoid" other aircraft while in-flight and objects on the runway or taxi lanes, at immediate-distances to see the instrument panel and at near-distances to see maps, charts and flight manifests. The report further notes that during critical phases of flight, if a pilot does not have adequate time to recover after a laser incident, the consequences could be tragic. Another report[2] from the FAA's Civil Aerospace Medical Institute found that even momentary exposure to a laser pointer may cause discomfort and temporary visual impairment including glare, flash-blindness and afterimages, without causing permanent physical damages.

MITIGATION ACTION STRATEGIES: These risks and threats to aviation may be effectively addressed and mitigated by employing strategies such as:

(1) General Public Awareness and Confidential Reporting.

We appeal to the general public to report illegal laser activity observed in your area, through the CASA confidential reporting line by calling: **(+675) 3027 528**, so that we can work together to investigate, apprehend, charge and prosecute offenders under PNG aviation laws.

CASA PNG will regularly post Media Press Releases on its social media and website platforms to proactively inform and educate the Public on the hazards, effects and consequences of aiming lasers at aircraft.

(2) **Pilots Increased Awareness and Reporting under Rule Part 12.**

Air operators, aerodrome operators, pilots and other aviation document holders should proactively conduct regular weekly reviews of operational Safety Risk Assessments (SFRA) and Security Threat Assessments (SETA) arising from laser-strikes on aircraft and promptly share pertinent information with CASA PNG to mitigate against any identified safety risks and/or aviation security threats, following these laser-strikes on aircraft.

Furthermore, incidents reports should be promptly submitted to CASA PNG on form CA 005 in accordance with the requirements of Part 12.

To support CASA PNG with enforcement efforts to identify and apprehend the suspects, we request pilots and crew members involved in laser incidents to provide the following specific information on your CA 005 incident reports:

- Estimated geographic location of the laser source
- Phase of flight when the laser incident occurred
- Physical effects of the lasing on you: whether the laser shone directly into one or both eyes, vision effects and post-lasing eye exam results (as applicable).
- Type of operation (helicopter, aircraft, private or commercial).
- Effect on the flight: what extent did the lasing interfere with the performance of your PIC duties, eg. caused a deviation in flight path, or for military or law enforcement flights – disrupted the mission?
- Whether the laser appeared to deliberately track the aircraft.

(3) **Director Enforcement Action**

Increased awareness and prompt reporting in item (1) above will enable the Director to take necessary enforcement action on breaches, violations or disregard of aviation legislation.

The Director's Office will take immediate enforcement action against individuals, for breaches, violations and/or blatant disregard of aviation legislation involving the illegal act of intentionally aiming lasers at aircraft cockpits.

In some cases, criminal proceedings may be initiated by the Director for the purposes of prosecution.

(4) **CASA PNG Operational Risk and Threat Assessment (ORTA) Group.**
CASA PNG has established the Operational Risk and Threat Assessment (ORTA) Group to meet weekly on Mondays to discuss and monitor operational safety risks and aviation security threat assessments related to laser-strikes on aircraft and make appropriate recommendations to the Director accordingly. Increased awareness and prompt reporting of Mitigation Strategies item (1) above will help the ORTA Group discuss and take appropriate action as required.

RECOMMENDED ACTIONS: Air operators, aerodrome operators, aviation services providers, pilots and other aviation document holders are strongly encouraged to:

(I) note and implement the Mitigation Strategies listed above in a manner and form appropriate to the organisation size, type and scope of operation; and

(II) provide the ORTA Group with weekly SFRA and SETA reports in paragraph (1) above covering the days Mondays to Sundays, no later than 08:30L each Monday morning, to the:

(i) for combined SETA/SFRA reports, Deputy Director on email twaqa@casapng.gov.pg;

(ii) for SETA reports only, Executive Manager Aviation Facilities (gsalayau@casapng.gov.pg);

(iii) for SFRA reports only, Executive Manager Safety Regulation (roconnor@casapng.gov.pg); and

(III) **Suggested Pilot Actions:** take the following actions when your aircraft is lased:

- Turn up instrumentation and panel background lighting.
- Transfer control to the other pilot as necessary.
- Notify ATC, providing the most accurate description of the laser-event, including possible location of the laser source, the colour of the laser (eg. green, red or other colour) and the length of exposure.
- Do an eye examination as soon as possible after landing to determine if any eye damage has occurred.
- Provide as much information as possible when reporting to CASA PNG on form CA 005 and assisting with CASA PNG investigations to apprehend the suspects.

RELATED REFERENCE MATERIALS:

1.FAA Civil Aerospace Medical Institute – *The effects of Laser Illumination on Operational and Visual Performance of Pilots conducting Terminal Operations (Washington, DC. August 2003)*.

2. FAA Civil Aerospace Medical Institute – *Laser Pointers: Their potential effects (sic) on Vision and Aviation Safety (Washington, DC. August 2003)*. 3. ICAO

ENQUIRIES:

For any further enquiries regarding the contents of this Safety Alert Bulletin (SAB), you may contact the CASA PNG Manager Flying Operations Branch:

Capt. Malakai Nawai
Manager Flying Operations Branch
Safety Regulation Division
Civil Aviation Safety Authority of Papua New Guinea
P.O.BOX 1941 Boroko, NCD, PNG
Email: mnawai@casapng.gov.pg