SAFETY ALERT 068

NTSB National Transportation Safety Board

September 2017

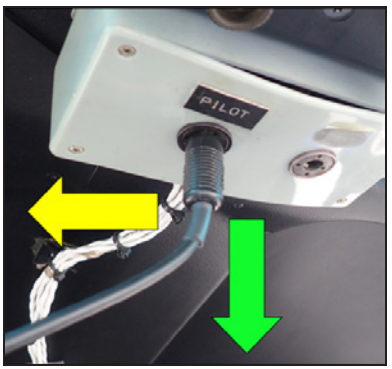
AVIATION
HIGHWAY
MARINE
RAILROAD
PIPELINE

Flight Helmet Cords Can Impede Egress

Understand the hazard of direct-to-airframe cord connections

The problem

- In the event of an accident or emergency in which an aircraft occupant wearing a flight helmet needs to egress quickly (such as a ditching, water impact, or fire), fast and unimpeded egress from the aircraft is essential for survival. **Direct-to-airframe intercommunication system (ICS) cord connections between the flight helmet and the airframe can impede egress during an accident or emergency.**[1]
- **The cord connecting the flight helmet to the aircraft's ICS might not release readily from the airframe ICS port if the direction of egress is contrary to the direction needed to easily release the cord** (see figures 1a and 1b). For instance, if a cord needs to be pulled downward for release and an aircraft occupant is attempting a sideward egress, the cord may not release readily, which could cause excess delays in egress.



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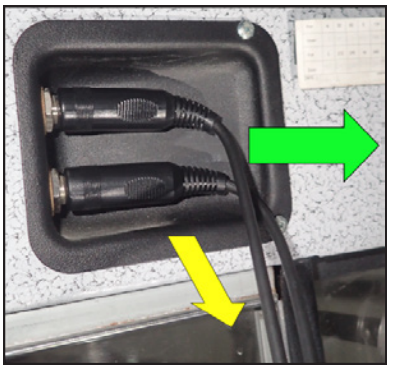
Figures 1a and 1b. Airbus (formerly Eurocopter) AS-350 B2 (left) and Piper PA-18-150 (right) pilot-seat airframe ICS ports. The green arrows show the direction needed to easily release the ICS cords, and the yellow arrows show the direction of occupant egress.



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1 For communication purposes, the flight helmet is connected to the aircraft's ICS via a cord that plugs into the airframe ICS port.

Related accidents

The National Transportation Safety Board (NTSB) and the Transportation Safety Board of Canada (TSB) have investigated two accidents in which flight helmet direct-to-airframe ICS cord connections have affected egress. Although the occupants were able to egress in both cases, the potential for adverse outcomes exists.

- **The pilot of an MD Helicopters (formerly Hughes) MD-369E lost control while filling a water bucket at night over a lake** (see figures 2 and 3). After the helicopter impacted the water, inverted, and started sinking, the pilot pulled himself out of the cockpit. **He reported that, as he came out of the cockpit underwater, he felt his flight helmet tug backwards; the ICS cord was still attached to the airframe ICS port.** The pilot removed his flight helmet, surfaced, and swam to the shore without further incident; he sustained minor injuries. (GAA15LA217)

Figure 2. Helicopter in water.
PHOTO BY TWO BEAR AIR 2 LLC (OPERATOR)

Figure 3. Recovered helicopter.
PHOTO BY FAA

- **An Airbus Helicopters (formerly Messerschmitt-Bölkow-Blohm) MBB BO105 impacted water while flying at low altitude over a bay in snow and darkening conditions in Canada** (see figure 4). The helicopter sank, and the pilot and passenger were able to egress from the helicopter. After the egress, the pilot died from hypothermia, and the passenger drowned. **A postaccident examination of the pilot's flight helmet revealed that the end fitting of the ICS cord was fractured where it attached to the port. Metal remnants showed that the cord was being pulled sideways toward the pilot's door (as opposed to downward for release) when the fracture occurred;** a postaccident test of a similar fitting required a 70-lb pull before the cord failed. (TSB Report A05A0155)

PHOTO BY TSB (CANADA)

Figure 4. Recovered helicopter.

What can YOU do?

- **Ensure that you and your passengers understand and are proficient with the egress procedures for the aircraft that you are operating before you take off.**
- **Use a compatible intermediate cord between the ICS cord and the airframe ICS port to facilitate a clean separation during egress. The intermediate cord is a cord connecting to the airframe ICS port on one end and to the ICS cord on the other end, allowing the ICS cord to be disconnected in the direction of egress.**

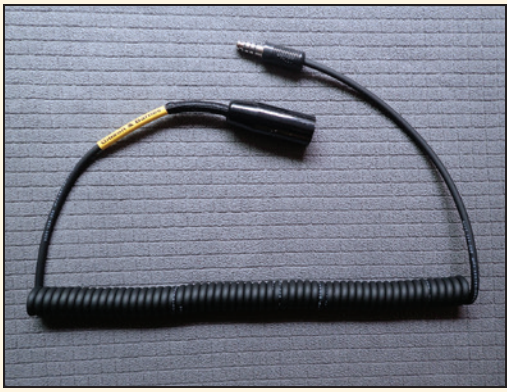

PHOTO BY NTSB

Figure 5. Exemplar intermediate cord.

- **Ensure that ICS cords are secured from potential snagging or entanglement with components such as flight controls.**

Interested in more information?

The following resources address flight helmet ICS cord connection hazards:

- MD Helicopters' Operational Safety Notice OSN2015-001 discusses the hazard of direct-to-airframe ICS cord connections with flight helmets (and references GAA15LA217).
- Transport Canada's article titled "Debrief: Post-Accident Survivability—Direct-to-Airframe Helmet Cord Connections" in Aviation Safety Letter 4/2006 addresses the hazard of direct-to-airframe ICS cord connections with flight helmets (and references A05A0155).
- The US Army's Flightfax from June 2001 discusses overwater flight operations and the hazard of flight helmet ICS cords impeding egress.

The NTSB has produced a video regarding this issue, which includes one investigator's tips on what you can do to be prepared and alleviate the hazard of direct-to-airframe ICS cord connections.

The report for the NTSB accident referenced in this Safety Alert is accessible by the NTSB accident number from the Aviation Accident Database link, and the NTSB accident's public docket is accessible from the Accident Dockets link for the Docket Management System.

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