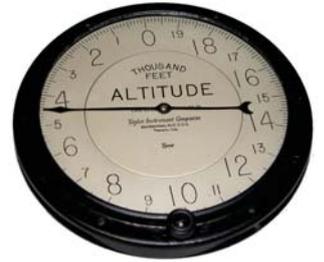


THE HAZARD OF TOYS IN THE OFFICE

High up in the sky, pilots often claim to work in the best offices in the world. However, it is still a working space and professional behaviour is required to avoid mistakes.

Featured by Michael R. Grüninger and Capt. Carl C. Norgren



The flight was proceeding calmly at 33,000 ft over the Mediterranean Sea on a February afternoon in 2014. Having just departed the UK and destined for Afghanistan, the Voyager ZZ333 military variant of the A330-243 and its 189 passengers and nine crew members were part of a fleet of 14 aircraft operated by the UK Royal Air Force.

As daylight faded, the first officer left the flight deck to take a break while the captain remained alone at his workstation. As the co-pilot was engaged in a lengthy conversation in the galley, the aircraft suddenly started falling from the sky – causing all the unsecured occupants inside to be violently thrown against the ceiling. As the plane continued to fall, the first officer made his way back to the flight deck, struggling against the negative g forces that were pinning him to the ceiling. Once back, he found the autopilot disconnected, causing the aircraft to dive at a rate exceeding 15'000 ft/min. Unable to pitch the aircraft up, the co-pilot used his side-stick to pull the aircraft out of the dive and to regain control.

All-in-all, the aircraft had lost 4'400 ft during the dive and subsequent recovery. More so, 25 passengers and seven crew were injured, and the cabin interior had sustained damage in numerous places. As a result, the crew was forced to issue a Mayday and divert to Incirlik, a military base in Turkey.

The subsequent investigation revealed that the cause of the incident was a nose-down input on the captain's side-stick. While the first officer stood in the cabin, the captain took a number of pictures of the flight deck with his digital camera. During the 18 minutes that the first officer was away from the flight deck, the captain had taken approximately 80 pictures. After his



photoshoot, he placed the camera behind the side-stick. As he moved his electrically-powered seat forward, the camera became lodged between the armrest of the seat and the side-stick. Initially, the captain did not move the seat fully forward, but when he did, he could not immediately counteract the pitch-down command given by the armrest pushing the camera against the side-stick.

According to the investigating panel, the factors that lead to the pitch-down command were influenced principally by the prevailing safety culture with respect to loose articles on the flight deck...as a result, the carriage, use and ad hoc storage of a small number of personal items had become normal practice.

Pilots often claim that they work in the best offices in the world – high up in the sky, always in the sun or under the stars, with far reaching and ever changing views. However, it is still a working space and professional behavior is required. Just like in a ground-based office, sometimes a short break is necessary. In this situation, the co-pilot was taking a break, during which the captain was supposed to work alone and to perform both his and his co-pilot's duties.

Redundancy for a Reason

Commercial air transport requires two pilot – for good reason. For starters, the presence of a second pair of eyes and ears reduces the probability of misunderstanding and enhances safety, not to mention that adherence to standard operating procedures is enhanced when a two-pilot crew monitors each other. Furthermore although pilot incapacitation due to in-flight medical problems might be rare, when they do occur, the benefits of the redundancy of two pilots on the flight deck is inarguable. Dual flight controls are another basic safeguard against the potentially catastrophic results of failures in such vital systems. However, this redundancy is ineffective when only one pilot is present on the flight deck.

For all these reasons, the presence of two pilots in the flight deck is a vital part of the flight safety net. When one pilot leaves the flight deck, the remaining pilot must be extra vigilant. Not only is the workload increased, as the remaining pilot performs the duties of both the pilot flying and the pilot monitoring, but also the redundancy of a two-man crew is no longer provided.

ERROR

No matter how advanced the technology, the human element is impossible to control.



When Habits Become the Rule

Had the captain of flight ZZ333 not moved his seat back to take private pictures while alone on duty, had he not placed his camera in such an inappropriate location and had the first officer not left the flight deck for such an extended time, the resulting injuries and diversion would not have occurred. With this in mind, it is worth noting that the manuals did provide only a small amount of guidance on the transport of loose objects.

In real life, crew regularly carry a large number of equipment and documentation onto the flight deck without guidance on where and how to store it. The additional camera in this scenario was certainly not seen as a potential hazard. In other words, it has become routine to stuff the cockpit with non-flight related things and, as a result of seeing so many loose objects in the cockpit, our guard has been lowered.



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Therefore, a single pilot in the flight deck increases the risk profile.

Operators can mitigate such operational risks by prohibiting any activities not related to the safe operation of the flight when one pilot leaves the flight deck. This includes no eating or any other activities that might distract the remaining crew member from any safety relevant functions.

Toys on the Flight Deck

Personal electronic devices, including smartphones, tablets, cameras and GSM WiFi routers, whether procured by the operator or belonging to the crew member, are increasingly prevalent on today's flight decks. Equipped with lithium batteries, they present a fire hazard, and without dedicated storage facilities they can

interfere with aircraft equipment and systems – including flight controls. During turbulence, they can also cause injury and damage. As a result, loose equipment should not be present on the flight deck unless the operational risks have been evaluated and appropriately mitigated via operating procedures and dedicated safe storage locations.

Inappropriate storage locations can also pose hazards. For example, a spare lithium battery without a protective casing around its terminals can be short-circuited if placed in contact with a metal surface. Furthermore, the windshield heating has reportedly caused electrical fires when inadvertently contacted by the antenna cable of a mobile GPS unit placed on the glareshield.

SECURE
Safety is always enhanced by the presence of a second pilot.