

# Aviation Human Factors Industry News

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*From the sands of Kitty Hawk, the tradition lives on.*

Hello all,

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In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

## ★How Disasters Happen

★Jammed elevator cited as factor  
in Ameristar MD-83 accident

★Air Vallee gear-up landing traced  
to incorrect maintenance

★Former Avantair Mx Director  
Pleads Guilty to Tampering

★Avionics Shop President Ordered  
To Pay Restitution

★NTSB: FAA Shares Blame In Fatal  
Crash

★NBAA, University of North Dakota  
Launch Business Aviation Fatigue  
Study

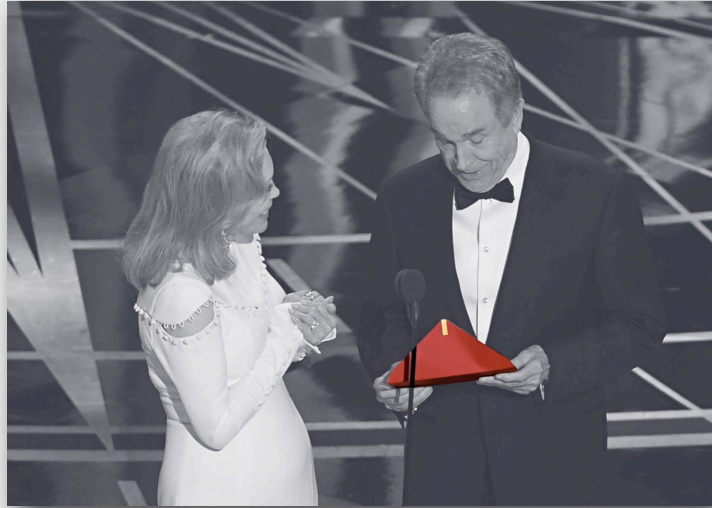
★FAA warns airlines of safety  
concerns regarding Weight and  
Balance Programs

★AND MUCH MORE

## How Disasters Happen

Major errors don't cause disasters. Banal mistakes and human nature do.

We all like to assume we would have handled the Oscars envelope mix-up correctly, but Warren Beatty's reaction was very much in keeping with human nature.



In every disaster, [there's an instant when the awful truth first presents itself to the stunned participants](#)—a lookout spots an iceberg dead ahead, or methane gas starts jetting from the top of a drilling rig. At the 89th Academy Awards, this happened on live television, so we all got to see the precise moment Warren Beatty realized something had gone terribly wrong. His famous eyebrows arched upwards. He frowned, hesitated. The meltdown that followed was epic. Beatty peered into the envelope again as if to see whether a second slip of paper were lurking inside. Then he handed the befuddling card to his co-presenter, Faye Dunaway, who, unaware of the disaster still, immediately announced "*La La Land*." That film's producers were more than two minutes into their speeches before the truth came out: Beatty had been handed the wrong envelope before he took the stage. *Moonlight* was the real winner.

This may have been an unprecedentedly public disaster, but on a historical scale this was hardly a catastrophe. No ships sank; no lives were lost. [But the chain of events](#) that led to the debacle—and the way the participants reacted to it—are familiar to anyone who has studied disasters like the sinking of the *Titanic* or the Deepwater Horizon oil spill. [Life is full of wildly unlikely outcomes](#)—a long shot wins the presidency or a Super Bowl team overcomes a 25-point deficit.

But, when disasters occur, we assume such shocking events must have appropriately massive causes. Instead, what the Oscars debacle teaches us is that the [mistakes that lead to chaos are often surprisingly minor and random](#). Or as Charles Perrow, author of a book on accidents writes, “Accident reconstruction reveals the banality and triviality behind most catastrophes.”

Perrow, one of the pioneers in the modern science of disaster, notes that, though it would be a logical assumption, most large accidents are not the result of a single, egregious error. Rather, [they are the end products of long strings of seemingly inconsequential decisions and conditions](#). We usually only become aware of these factors after they topple like a string of dominoes and cause chaos.

Banality and triviality certainly abound in the case of the big Academy Awards envelope switcheroo. Standing in the wings and handing envelopes to presenters as they take the stage doesn’t sound like a very complex job. But [a number of factors](#), some stretching back for decades, [converged in just the right way to enable the error](#). The first is a decision to allow Pricewaterhouse Coopers, the accounting firm that has famously tallied Oscars voting for the past 83 years to singlehandedly manage the envelope process. The company takes great pride in its Academy Award role, so its partners Martha Ruiz and Brian Cullinan—rather than, say, stagehands or administrative staffers—personally hand the envelopes to the presenters. Ruiz and Cullinan clearly relish the ceremony of toting their black briefcases containing the winning envelopes down the red carpet. But having senior executives taking such a front-line role can be a recipe for trouble—[they’re more likely to assume they’re going to do it right](#). Many accidents have been triggered by very experienced workers who [grew overconfident and complacent](#)—wilderness firefighters, for example, are most likely to be killed or injured in their 10th year on the job. “That’s just about the time they start to think they’ve seen it all,” says [Karl Weick](#), a University of Michigan psychologist who studies disasters.

Cullinan, the accountant who handed Beatty the wrong envelope, was in his fourth year of doing Oscars duty and had worked for the company for more than 30 years. Compared with grinding through the accounts of global corporations, shuffling award envelopes probably seemed like a lark to him, a nice perk. Clearly, Cullinan [felt relaxed in the role](#). He even found time to tweet a picture of Best Actress winner Emma Stone clutching her award backstage. Since the Best Actress award was the last one to be presented before Best Picture, that meant Cullinan [was busy tweeting](#) just seconds before handing out the final envelope.

Staying focused while doing simple, repetitive tasks is a challenge for most people, but there is evidence to suggest that [less senior workers are sometimes more attentive](#)—the anxiety that comes from being somewhat new to a job appears to help keep people alert. U.S. Navy aircraft carriers, for example, routinely include well-trained but surprisingly [inexperienced](#) sailors on the crews that perform the dicey work of launching and recovering aircraft.

So Cullinan may have been at higher risk for making a mistake. Why was he there in the first place? The academy maintains extraordinary secrecy in order to keep the results from leaking. There is no master list of winners in the broadcast booth, and even Academy of Motion Picture Arts and Sciences president Cheryl Boone Isaacs doesn't know who won. The only people who know the winners in advance are the two PwC partners carrying the black briefcases. That system dates back to the 1940 Academy Awards ceremony when the *Los Angeles Times* broke an embargo and published the winners hours before the event. "Some Oscar guests picked up the paper on their way to the show," says the *Wrap's* Steve Pond, author of *The Big Show: High Times and Dirty Dealings Backstage at the Academy Awards*.

Restricting knowledge of the winners to the two PwC representatives has kept Oscars' secrets from leaking ever since. But the practice also made it impossible for the show's director or anyone else to know immediately that a mistake had been made. That's an example of a precaution aimed to solve one problem [inadvertently causing another, something that's common in many disasters](#). Another safety procedure that went awry concerns how the envelopes are handed out: Ruiz and Cullinan each had a full set of envelopes in their respective briefcases. Ruiz stood in the wings at stage left; Cullinan handled stage right. Each time a presenter took the stage, either Ruiz or Cullinan would hand him or her the proper envelope. That meant that when the presenter entered from, say, stage left, Cullinan, at stage right, would be left with an unneeded, duplicate envelope. Why bother with all those duplicates? To be ready just in case a presenter unexpectedly entered from the wrong side. But it also creates more opportunities for the envelopes to get confused: When Leonardo DiCaprio took the appropriate envelope from Ruiz as he entered to present the Best Actress award, that left Cullinan with the unneeded Best Actress envelope. That was a planned precaution. But when Beatty swept by a few moments later, Cullinan somehow handed the actor that envelope—and not the one labeled Best Picture. A belt-and-suspenders approach, another precaution intended to solve one problem, ended up creating another.



Much of the Oscars mishap's drama came from the fact that it occurred on the biggest, and final, award of the night. [This isn't surprising: an outsize share of accidents happen near the ends of projects or missions.](#) The Deepwater Horizon explosion occurred after the drillers had completed the well and were preparing to remove their drilling equipment. In mountaineering, the majority of accidents happen on the descent. This is an understandable human tendency: After working hard to achieve a certain goal, it is only natural to relax a bit when you think you are over the hump. "It was the last envelope!" notes Anne Thompson, editor at large at *IndieWire*. "They thought they were done. They thought it was over." Exactly.

Even the design of the envelope that Beatty carried to the stage played a role in the fiasco. Until recently, the award envelopes were gold, with large white labels designating the category. This year, the design was changed to a red envelope with more subtle gold lettering. The bright red might have looked stunning on television, but the tasteful gold letters on a dark background [turned out to be much harder to read.](#) Had the letters been more legible, it seems likely that Cullinan, Beatty, or even Dunaway might have caught the mistake in time.

Overtrained individuals, needless safety precautions, and the understandable tendency to let up at the end helped create the disaster condition. Why couldn't one quick-thinking person stop it? When Beatty pulled the card from the envelope and saw the words *Emma Stone, La La Land*, he knew he'd been holding the wrong envelope. But he didn't stop the show and say so.

In the aftermath of such events, we all like to assume we would have handled the situation correctly. But Beatty's reaction was [very much in keeping with human nature.](#) All of us have [strong mental models](#) of what to expect in given situations. Disaster expert Weick calls this process "[sensemaking.](#)" Processing information that doesn't fit our sensemaking models is surprisingly difficult, he says, even for experts. Beatty, no neophyte when it comes to award shows, expected the card to include the name of a single movie, not the name of an actress and a movie. He knew there was a problem. On the other hand, he'd taken the envelope directly from the hand of a partner in PwC, a firm renowned for its bulletproof reliability. And the movie the card did mention *La La Land*, the film everyone expected to win Best Picture.

“You can see the wheels turning in Warren’s head,” Thompson says of that moment. Beatty stalled for time. Then, with a look of mute supplication on his face, he showed the card to Dunaway. He seemed [to be looking for a second opinion](#), hoping she would confirm his sense that a mistake had been made. But Dunaway, already annoyed by what she perceived as his showboating, didn’t hesitate. When she glanced at the card, her mind zeroed in on the words she expected to see, *La La Land*, and simply tuned out the words *Emma Stone*. Such [selective attention is common in high-stress situations](#). The pilots on the doomed Air France Flight 447, for example, tuned out the loud stall warning—which indicated that their plane’s nose was too high for the wings to provide lift—and instead focused on keeping their wings level even as the craft was plunging toward the ocean.

Why didn’t the PwC accountants—the only two people who knew about the mistake—immediately rush to the microphone and announce the correct winner? According to veteran Oscars stage manager Gary Natoli, the two partners simply “froze.” [Again, this is not unusual](#). Many disasters, including the Three Mile Island nuclear accident and the Deepwater Horizon spill, could have been prevented if the operators on the scene had reacted immediately to signs of trouble. The PwC partners were supposed to have memorized all the winners (and how could someone not remember who won Best Picture?), but neither one reacted. The *La La Land* producers began their thank you speeches. Meanwhile, backstage, it took more than a minute before Cullinan told a stage manager that he didn’t think they’d named the right winner. More time passed before someone asked Ruiz to open her envelope. “She was just standing there with the envelope in her hand, very low-key,” Natoli said.

Such seemingly [lackadaisical reactions](#) are surprisingly common in the midst of disasters. It took the crew of Deepwater Horizon more than a minute to sound the general alarm after explosive gas started enveloping the platform and even longer to disconnect the rig from the well. After the *Costa Concordia* cruise ship struck a rock off the Italian coast, crewmembers told passengers that the problem had been solved and to return to their cabins—even as the boat began to sink. [Denial and disbelief are hardwired into human consciousness](#). When events deviate enough from our mental models, it can be almost impossible to comprehend what’s going on. And our tendency [to freeze up in stressful situations](#) may even reflect a primitive survival instinct: Animals that freeze, rather than run, might avoid being seen by predators.

Finally it was *La La Land* producer Jordan Horowitz—ironically someone with the strongest interest in believing that the movie actually had won—who stepped decisively to the microphone: “I’m sorry, there’s a mistake. *Moonlight*, you guys won best picture.” He had seen the correct card and knew the truth.

As in the case of so many catastrophes before it, the many causes of the Great Oscars Envelope Flap were invisible to all the participants beforehand **but quite easy to see in retrospect**. No doubt, the academy will reassess many of its procedures: the extreme secrecy, relying on accounting executives to manage backstage functions, those duplicate envelopes—even the color of the paper and the type. The academy has already announced that Ruiz and Cullinan will not be welcome at any future ceremony. Other fixes will be made. But, no matter how many changes are instituted, **the potential for future mistakes will remain**. Disasters teach us a humbling lesson: No matter how careful we think we are—and often in spite of the care we take—**there’s always another string of unseen dominoes waiting to topple**.

<http://www.amazon.com/dp/0691004129/?tag=slatmaga-20>

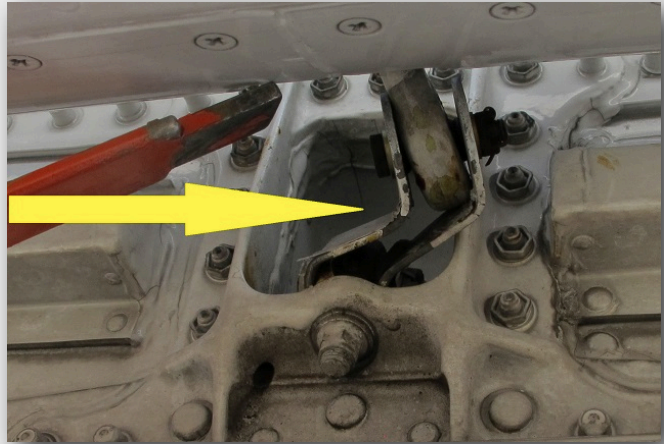
## **Jammed elevator cited as factor in Ameristar MD-83 accident**

A jammed elevator appears to have contributed to the March runway overrun of an Ameristar Air Cargo Boeing MD-83 in Michigan, according to the National Transportation Safety Board.

A linkage to the aircraft's right elevator **had been bent**, and the right elevator had jammed in the nose-down position, according to an investigation update released 22 March by the NTSB.

**NTSB photo showing the MD-83's bent "inboard elevator geared tab linkage"**

Pilots of the aircraft, registration N786TW, rejected takeoff from Willow Run airport in Ypsilanti, Michigan on 8 March. The aircraft overran runway 23L and stopped on grass 1,000ft from the end of the runway, according to the NTSB and accident photographs. All 109 passengers and seven crew evacuated via escape slides, and only one person suffered minor injuries during evacuation, says the NTSB



The MD-83 was carrying the University of Michigan's men's basketball team on charter flight 9363, heading to Washington Dulles International airport for the Big Ten college basketball tournament.

The NTSB's update focuses on the right elevator, on [which flight data indicates did not move during taxi or the takeoff roll](#). The left elevator, however, did appear to operate normally, swinging to a nose-up position – consistent with rotation – at 152kt (281km/h), the board says. The left elevator maintained in the nose-up position for 5s until the aircraft reached 166kt,

The aircraft, however, did not pitch up, says the NTSB. Airspeed increased to 173kt and the pilots rejected takeoff. The NTSB's on-sight inspectors found the right elevator jammed.

"When investigators tried to move the elevator surfaces by hand, the left elevator moved normally, but the right elevator was jammed in a trailing edge-down position (airplane nose down)," says the NTSB.



"The right elevator geared tab inboard pushrod linkage was found damaged, which restricted movement of the right elevator," it says. "After the damaged components were removed, the elevator could be moved by hand."The aircraft's cockpit control column and elevator control tabs did move as commanded, the NTSB says. [The board adds that previous flight data indicates both elevators moved normally.](#) The aircraft had arrived at Willow Run two days prior, according to the NTSB.

Ameristar's chief pilot, who was in command of the aircraft, had 2,462h in DC-9-family aircraft, the NTSB says. The captain, who was flying the aircraft from the left seat, had 8,495h in DC-9 types.

## **Air Vallee gear-up landing traced to incorrect maintenance**

Italian investigators have disclosed that [incorrect maintenance](#) was conducted on an Air Vallee Fokker 50's nose-gear the day before the aircraft was forced to land with its nose-gear retracted.

The crew of the aircraft (SE-LEZ) had noticed an "unusual sound" during nose-gear retraction after it took off from Rimini on 30 April last year, says a technical analysis by Safran Landing Systems. While the main landing-gear lowered on approach to Catania, the crew received a caution about the nose-gear, and carried out a low pass over the airport for a visual check. The tower controllers confirmed the nose-gear doors were open but the wheels were not deployed.



The pilots were unable to resolve the problem and the Fokker landed with its nose-gear retracted.

Safran has compiled the technical analysis to assist the inquiry by Italian investigation authority ANSV.

Maintenance records, it says, show that the nose-gear assembly underwent [seal-replacement work](#) on the day before the event.

During the process the shock-absorber was removed and disassembled. Seals were replaced and servicing of the shock absorber was carried out before it was reassembled.

But Safran's analysis states that the ["incorrect assembly"](#) of the valve housing meant it was improperly oriented. The inquiry also found additional evidence of work having not been carried out correctly, [including the overfilling of the shock absorber](#).

When the nose-gear retracted, the shock-absorber over-extended, causing the tire to strike a bulkhead – the noise heard on take-off – and jam in the well.

"The contact between the tire and the bulkhead meant that the gear could not be extended," says the analysis.

Safran reviewed its technical publications but believes its instructions are ["robust"](#) and ["written specifically to prevent incidences of incorrect assembly"](#) of the valve housing and a resulting over-extension of the shock absorber. It believes that no corrections are required to the published assembly directions.

## **Former Avantair Mx Director Pleads Guilty to Tampering**

A former director of maintenance for now-defunct fractional provider Avantair pleaded guilty last week in U.S. District Court in Tampa, Florida, to obstructing a federal accident investigation after the July 28, 2012 in-flight loss of an elevator from one of the company's Piaggio P. 180 Avantis near Camarillo, California. David Ernest Esteves admitted to intentionally hindering the NTSB and FAA investigations [by instructing a](#)

[contractor to](#) remove parts from the aircraft involved after the incident and then power the airplane up to erase the cockpit voice recordings. According to court documents, while en route to San Diego, the twin turboprop lost its left elevator, yet the flight landed, picked up passengers and continued to Henderson, Nevada. During that leg, the captain noticed problems and called Avantair operations, which was recorded on the Piaggio's cockpit voice recorder. After the flight landed in Henderson, and before the arrival of NTSB and FAA investigators, Esteves ordered a third-party contractor [to remove the loose nuts and bolts on the right elevator](#) on the quarantined aircraft to prevent them from being examined, and then power the turboprop up, which the contractor refused to do.

Under the plea agreement, Esteves is subject to a maximum sentence of five years in prison, a fine of \$250,000 and three years of probation.



## **Avionics Shop President Ordered To Pay Restitution**

Rolando Suarez, president of South Florida-based Avcom Avionics & Instruments (Avcom), was ordered last week to pay more than \$700,000 in restitution, along with several other co-conspirators,

stemming from charges that he conspired to bribe an FAA aviation safety inspector. He was charged in August and pleaded guilty before the U.S. District Court in Miami a month later. The investigation conducted by the FBI and the DOT revealed that from approximately 2010 to 2013, Suarez employed an active FAA inspector, [who provided Avcom with](#)

unauthorized technical publications and notices and warnings about inspections and investigations, as well as competitors' confidential information. In exchange, Suarez provided money and gifts, all with the intent to encourage acts in violation of the inspector's official duty, according to the DOT.

Last month, Suarez was sentenced to 24 months' incarceration, followed by a three-year term of supervised release, and a \$20,100 fine.



## **NTSB: FAA Shares Blame In Fatal Crash**

The FAA's decision to issue a Part 135 certificate to a charter operator in Alaska, [despite the pilot's history of accidents, incidents, re-examinations and checkride failures](#), was a factor that contributed to a 2014 accident that seriously injured all four on board, according the NTSB's final report, which was released this month. One passenger died from his injuries about five weeks after the crash.



Despite concerns voiced by numerous FAA personnel during the certification process, the NTSB said, the FAA issued the certificate to the pilot in 2012.

The pilot was flying a four-seat single-engine Ryan Navion A on a sightseeing tour on August 24, 2014, when the airplane hit rising terrain below the entrance to a high mountain pass. The pilot subsequently told several different versions of events to first responders and accident investigators, according to the NTSB. At first the pilot said he had encountered a severe downdraft while approaching the pass, which local weather reports did not support. He then told investigators the right front-seat passenger had slumped onto the flight controls and become unresponsive after taking a motion-sickness drug, and the two rear-seat passengers had also taken the drug and were also unresponsive. However, none of the three passengers recalled this, and the front-seat passenger was found with his seatbelt and shoulder harness on by first responders. In a written statement about two months after his interview, the pilot said a propeller blade had separated in flight, as one propeller blade was missing and not recovered from the accident site. The passengers did not recall that this had occurred, and post-accident examination by the NTSB indicated that the missing propeller blade had separated during the impact sequence.

The NTSB determined the probable cause of the accident was the pilot's improper inflight planning and the improper decision to deliberately operate the airplane at low altitude in close proximity to obstructions and rising terrain, and the FAA's decision to grant the certificate was a contributing factor. The FAA's Office of Chief Counsel said applicants for an air carrier certificate are not denied solely on the basis of a single violation or a previous accident. "The Agency has a legal obligation to utilize its authority for certification that is based on substantiated facts, not individual inspector opinions and innuendo," the FAA said. "The FAA strives to ensure its actions of granting and denying certificates are not arbitrary and capricious." The NTSB just completed its analysis of the accident on March 8. The final report is now published online.

[https://www.nts.gov/\\_layouts/ntsb.aviation/brief.aspx?ev\\_id=20140825X21423&key=1](https://www.nts.gov/_layouts/ntsb.aviation/brief.aspx?ev_id=20140825X21423&key=1)



## **NBAA, University of North Dakota Launch Business Aviation Fatigue Study**

NBAA is coordinating with the University of North Dakota (UND) to conduct a survey regarding fatigue and crew duty issues [in business aviation](#).

UND graduate student and business aircraft pilot Tim Wollmuth is partnering with NBAA to collect the data. It's the first comprehensive study of fatigue issues since a 2000 study was released through NASA and conducted by Dr. Mark Rosekind, former NTSB member and current administrator of the National Highway Traffic Safety Administration. [The survey is now open to NBAA members, and will conclude April 21.](#)



Rosekind's study focused primarily on pilots, but the new NBAA/UND study will not only look at aviators, but also [maintenance personnel \(including technicians who travel with the aircraft\)](#), cabin crew, schedulers and dispatchers and others in business aviation who work in safety-sensitive functions.

The survey will cover areas such as duty information for various crew positions, single-pilot operations, specific questions on sleep and fatigue, demographics and questions for management.

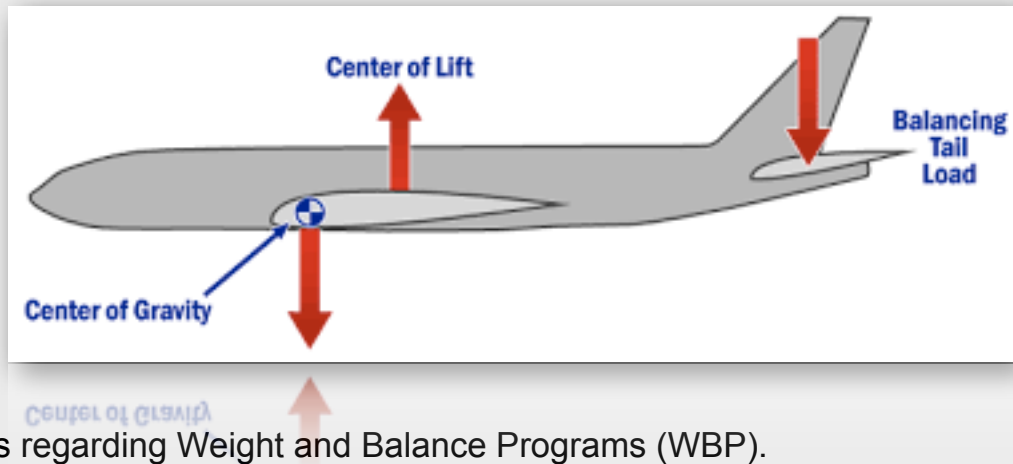
"We know from the NBAA Safety Committee's [annual risk assessment survey](#) that fatigue remains a top concern of our membership," said Mark Larsen, NBAA's senior manager of safety and flight operations. "We welcome participant feedback in this study to understand in detail the current state of business aviation fatigue, to see what things look like 17 years after the Rosekind study, including such factors as the increased number of ultra-long range aircraft in service since that time, so we can best understand how to address and mitigate this safety issue."

The survey is the result of work conducted by the NBAA Safety Committee, Flight Attendant Safety/Training Subcommittee and Business Aviation Management Committee, in conjunction with Wollmuth and UND. Once the results have been aggregated, the data will be used to update the NBAA Management Guide and other information related to fatigue in business aviation.

[View the survey.](#)

## FAA warns airlines of safety concerns regarding Weight and Balance Programs

The U.S. FAA issued a Safety Alerts for Operators (SAFO), warning Part 121 Air Carriers of safety concerns and operational compliance issues regarding Weight and Balance Programs (WBP).



A fatal Boeing 747-400F accident at Bagram, Afghanistan in 2013 brought issues to light regarding the loading of aircraft, particularly with restraining non standard cargo. The FAA's Cargo Focus Team (CFT) was created as a result of the findings in this accident investigation. The Cargo Focus Team identified safety concerns and operational compliance issues during its review of Part 121 air carrier's Weight and Balance Program (WBPs).

It appeared that some airlines had developed their own WBP, which allowed for restraint methods that are not approved. These unapproved restraint methods are contrary to the aircraft's FAA-approved flight manual limitations. Air carriers are not permitted to use any cargo restraint methods that are not specifically approved in the WBM or WBM supplement.

Other issues of concern identified by the CFT during its review included a lack of documentation of the aircraft's current cargo loading system (CLS). Due to the installation and removal of multiple Supplemental Type Certificates (STCs) over time, the cargo configuration of some aircraft could not be determined. In some isolated cases, air carriers had developed procedures for aircraft loading that exceeded the structural design capability of the aircraft. Exceeding this capability can lead to catastrophic failure of the aircraft.

The SAFO Bulletin recommends that air carriers should review their WBM and cargo loading documents to validate adherence to the manufacturer's FAA-approved WBM or STC WBM supplement for each aircraft on their Operations Specifications.

## **How safe is Europe's 'ultra-safe' aviation industry?**

*Under this – slightly provocative – question Members of the European Parliament, researchers and pilots gathered on 22 March for a breakfast debate in the Parliament. Hosted by MEPs Agnes Jongerius (S&D) and Georges Bach (EPP) – they examined the key findings of the recent 'Safety Culture in European Aviation' study by the London School of Economics (LSE) and EUROCONTROL.*

Pilots called on decision makers to **stop spreading "alternative truths"** and instead recognize that not all airlines honor the same **safety culture principles** and that some business and employment models could be detrimental to aviation safety. "The LSE Study makes it hard for anybody to question the existence of a link between safety and socio-economic factors in aviation", says ECA President Capt. Dirk Polloczek. "The decisions taken in the management boardroom on commercial priorities, on business set-ups and on employment forms, **do have an undeniable impact on the safety culture of an airline.** And because safety culture is an important precursor of safety, this study is a wake-up call for companies and EU decision-makers alike."



The LSE study reveals a number of clear trends & gaps in Europe's aviation safety culture: Atypically employed pilots in self-employment, on zero- hour contracts or in temporary agency or pay-to-fly (P2F) schemes have a significantly more **negative perception** of their airline's safety culture than their colleagues. This gap between pilots on atypical contracts and directly employed pilots is a finding that echoes previous scientific studies (e.g. 'Atypical Employment in Aviation', Ghent University,

2015) that identified atypical employment as an emerging trend which could negatively impact safety.

Further alarming gaps in safety culture perception exist between Network, Low Cost and Cargo carriers: "While traditional network carriers still score high on many safety-related items, there is a striking discrepancy [with Low Cost and Cargo carriers on all categories measured by the researchers](#)," explains Ignacio Plaza, ECA Deputy Secretary General. "The industry must dig deeper to identify – and to address – the underlying reasons why some airlines have a weaker safety culture than others."

The safety culture gap is particularly striking when it comes [to the pilot fatigue](#): 83% of pilots working in Cargo and 76% in Low Cost companies state that pilots are tired at work (compared to an average of 52% for all pilots surveyed), and the same is true for 64.5% of pilots on atypical contracts. However, [only few are comfortable to file a fatigue report](#) – meaning that fatigue is widely under-reported.

Lack of trust in safety reporting and reluctance to report is another serious problem identified by the LSE study. Only 23% of pilots consider that National Aviation Authorities manage safety reports well and less than 50% think that aviation authorities take safety seriously.

"This lack of confidence in the reporting system has important consequences on safety oversight," states Dirk Polloczek. "In a sector where there are no, or only few accidents and serious incidents, aviation authorities measure safety performance mainly with regard to the reports received. But if pilots and other safety professional do not submit reports, or they are not processed well, our [whole safety management and oversight system is at risk](#). This is yet another reason why Europe's pilots are committed to working together with authorities, researchers, decision-makers and the airlines to address the weak links identified by the LSE study and to improve the safety culture in all airlines in Europe."

*The European Cockpit Association represents the collective interests of its Member Associations at European level, striving for the highest levels of aviation safety and fostering social rights and quality employment for pilots in Europe.*

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## **EASA Aims To Tighten MX Flight Check Rules**

The European Aviation Safety Agency has issued an opinion that is the first step in creating a rule aimed at mitigating mishaps during maintenance check flights (MCFs). According to EASA, a number of accidents and incidents have occurred during MCFs, caused by incomplete or inadequate maintenance.

This opinion proposes safety requirements to adequately select pilots and apply procedures for MCFs, while distinguishing between complex aircraft and non-complex aircraft. Operators conducting the higher risk category of these MCFs in complex aircraft (including business jets) will have to develop EASA-approved procedures and ensure coordination among the new MCF regulations; the member state's continuing airworthiness management program; and the maintenance provider, whether commercial or private.

Some 362 comments were submitted to the notice of proposed amendment on MCFs published in 2012. The agency says the opinion responds to these comments. A rule is expected to be adopted in the first quarter of 2019.



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## Elephants Sleep Only 2 Hours a Day, Finds Study That Tracked Two in the Wild

African elephants in the wild sleep an average of two hours a day and [regularly go nearly two days without sleep](#). This is according to a study published March 1, 2017 in the open-access journal *PLOS ONE* by Paul Manger from University of the Witwatersrand, South Africa, and colleagues.

African elephants are the largest land animal, and evidence suggests that larger mammals tend to sleep less. However, many studies on elephant sleep have been done in a captive setting or were unable to accurately distinguish rest from sleep. To study in more detail how elephants sleep in the wild, Manger and colleagues monitored two free-roaming African elephant matriarchs in Chobe National Park, Botswana, for 35 days.

The researchers outfitted the elephants with an actiwatch (a version of the consumer fitness and wellness tracker Fitbit) implanted in the trunk to track sleep accurately. “We reasoned that measuring the activity of the trunk, the most mobile and active appendage of the elephant, would be crucial, making the reasonable assumption that if the trunk is still for five minutes or more, the elephant is likely to be asleep,” says Manger. The team also installed a GPS collar with a gyroscope around their necks to determine where and when the elephants were lying down to sleep.

The main finding of the study was that the two matriarch elephants slept only two hours per day on average, and this sleep occurred mostly in the early hours of the morning, well before dawn. “The data also indicates that environmental conditions (temperature and humidity, but not sunlight) are related to when the elephants fell asleep and when they woke up (which happens well before dawn),” says Manger.



“This finding is the first that indicates that sleep in wild animals is likely not to be related to sunrise and sunset, but that other environmental factors are more crucial to the timing of sleep.”

On several days during the study period, the elephants **went without sleep for up to 46 hours and traveled long distances of around 30 km** during these periods, possibly due to disturbances such as lions or poachers. In addition, they slept lying down only every few nights. This could limit their potential for daily REM (rapid eye movement) sleep, raising questions about when elephants experience this sleep state. “REM sleep (or dreaming) is thought to be important for consolidating memories, but our findings are not consistent with this hypothesis of the function of REM sleep, as the elephant has well-documented long-term memories, but does not need REM sleep every day to form these memories,” says Manger.

While only two elephants were tracked, this research provides new insights into the sleep behavior of the species in the wild. “Studies of sleep in captive elephants have shown that they sleep for **four to six hours per day**; however, the current study shows that in their natural habitat, wild, free-ranging elephants sleep only for two hours per day, **the least amount of sleep of any mammal studied to date**, but this appears to be related to their large body size,” says Manger. “In addition, it appears that elephants only go into REM, or dreaming, sleep every three to four days, which makes elephant sleep **unique**.”

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0171903>

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