

# 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:

★North Sea helicopter crash report says gearbox failed after maintenance error

★Cougar chopper damaged after unintentional flight

★Safety change call for gliders following death

★Pull the String

★Fatigue risk scheme considered for controllers

★Pilot Attitude A Safety Key

★Incidents of lasers vs. aircraft hit a record

★Survivors Remember Eastern Airlines Flight 401 Crash

## North Sea helicopter crash report says gearbox failed after maintenance error

A Bond Super Puma helicopter of the same type that crashed into the North Sea when its rotor gearbox failed, killing all 16 men on board.

Operators of a North Sea helicopter had [cancelled the replacement](#) of its main rotor gearbox a week before the unit's "catastrophic failure" caused a crash that killed all 16 on board, an air accident investigation has found



A magnetic particle had been discovered on the chip detector in the gearbox of the Eurocopter Super Puma, a final report by the Air Accidents Investigation Branch (AAIB) released on Thursday says. The operator decided to remove and replace the main rotor gearbox [but cancelled the work when the particle was deemed insignificant](#), rather than an indication that the part of the gearbox known as the second stage planet gear was on the way to failing.

"The gearbox was declared serviceable by the operator and its planned replacement cancelled," said the report.

It was this gear that failed as a result of a [fatigue crack](#), causing the failure of the main rotor gearbox.

As the helicopter was flying to Aberdeen from the Miller platform in the North Sea on the afternoon of 1 April 2009 the [main rotor came off](#) and the aircraft crashed into the sea. All 14 offshore workers and the two crewmen died.

The report told how six seconds after expressing alarm, the captain had transmitted "Mayday Mayday Mayday" followed one second later by the co-pilot transmitting "Mayday Mayday Mayday, this is Bond 85 November, emergency, currently on the 055."

The report went on: "One second later, one of the flight crew uttered an expletive; this was the final radio transmission."

The AAIB said the particle had been discovered on 25 March 2009. The operator's engineers had sought the assistance of the manufacturer, Eurocopter, to deal with what they considered to be a complex main rotor gearbox problem.

The AAIB added: "The use of [verbal and email communication](#) between the operator and manufacturer on March 25 led to a [misunderstanding or miscommunication of the issue.](#)"

The discovered particle was initially identified as a piece of scale. But further visual examination led the engineers to [misidentify it](#) as silver or cadmium plating which, according to the maintenance task card guiding maintenance staff, was "unimportant" and did not require the gearbox to be removed from service or to be put on "close monitoring".

The AAIB said that after 25 March the existing detection methods did not provide any further indication of the degradation of the second stage planet gear.

It added that the possibility of a material defect in the planet gear or damage due to the presence of foreign object debris "could not be discounted".

The report said that after 25 March the maintenance task to examine the ring of magnets on the helicopter's oil separator plates [was not carried out](#). It added that the ring of magnets reduced the probability of detecting released debris.

The AAIB said this helicopter [did not provide an alert](#) to the flight crew when the magnetic chip detector caught a particle.

The aircraft was at 2,000ft when the accident happened. The first indication to the crew of a problem was loss of main rotor gearbox (MGB) oil pressure and the triggering of a master warning.

Two and a half seconds before this indication the co-pilot had made a radio transmission stating that the helicopter was serviceable.

Immediately after the loss of MGB oil pressure the helicopter began to descend and failed to respond to controls. The main rotor system separated from the helicopter about 20 seconds after the loss of MGB oil pressure.

During separation the main rotor blades struck the helicopter's tail boom in several places, severing it from the fuselage.

"The fuselage fell into the sea at high vertical speed and the impact was [non-survivable for all occupants](#)," the AAIB said.

In Thursday's final report, which followed three interim reports, the AAIB [listed 17 recommendations](#) that it had made during its investigation.

They included recommendations to Eurocopter, the European Aviation Safety Agency, the UK's Civil Aviation Authority and America's Federal Aviation Administration.

[Scotland](#)'s Crown Office and Procurator Fiscal Service (COPFS) welcomed the publication of the report on this "tragic incident, following a technically complex and challenging investigation".

It went on: "The findings contained therein will now be fully considered by the health and safety division of COPFS.

"The division and Grampian police have been engaged in this investigation since the tragedy occurred and will continue to progress lines of inquiry and carry out such investigation as is necessary in order that a decision may be taken in relation to the form of any proceedings.

"The liaison with the nearest relatives of the 16 men who lost their lives will also continue and the division will keep them advised of significant developments."

## **Cougar chopper damaged after unintentional flight**

Incident happened at Halifax airport in mid-October.

Cougar uses Sikorsky S-92A helicopters to serve offshore oil and gas industries in Atlantic Canada. One of Cougar's Sikorsky S-92A helicopters was damaged when it landed "hard" [after taking off by mistake](#).



The Cougar helicopter was [undergoing maintenance](#) at Halifax's Robert L. Stanfield International Airport when the incident happened.

"[The S-92A] was being operated for [post maintenance engine runs](#) following routine engine washes," according to a Civil Aviation Daily Occurrence Reporting System (CADORS) report. CADORS reports on aviation industry incidents across the country.

"The collective control [was not lowered during the start sequence](#) and subsequently the [helicopter] unintentionally became airborne a few feet and drifted to the right as the rotor speed increased."

The report goes on to say that the S-92A required repairs after it abruptly stopped flying.

"The rotorcraft sustained damage to the right main landing gear when it landed hard following the brief airborne event," it said.

Cougar Helicopters uses Sikorsky S-92As to do offshore work in Nova Scotia.

It also operates S-92As in Newfoundland and Labrador, where the company is contracted to ferry offshore workers to oil production platforms.

Seventeen people died when one of Cougar's S-92As crashed into the ocean southeast of St. John's on March 12, 2009.

## Safety change call for gliders following death

The parents of a pilot who died when her glider crashed to the ground when the [wings detached](#) have called for immediate safety changes.

Amy Barsby, 25, was taking part in the second flight of the day at a university competition, when the wings became detached and she crashed to the ground, which caused 'non-survivable' injuries. An inquest jury at Oxford Coroner's Court on Thursday found Miss Barsby, of Dilworth Lane, Longridge, died of accidental death on August 8 last year.

The mechanical failure happened after Miss Barsby and a group of friends assembled the Foka 4 glider [incorrectly](#) at Bicester airfield in Oxfordshire, earlier on the day of the accident.

There was [no way for them to check a bolt](#) holding the wings in place was in the right position, the hearing was told and they [unwittingly used the wrong tool to tighten the bolt](#).

Miss Barsby's dad, Steve, 57, who is a social worker, claimed regulations to alter similar glider models have still not been introduced.

He said: "It is dreadful that actions have not been taken before now.



“It seems to have a **simple remedy** and we are not talking huge expenses for people to put this right. It takes a bit of understanding as to why something’s not been done already.”

A safety bulletin was issued in 2007 after a similar accident in America involving a Cobra glider.

Mr Barsby said: “We have been devastated by the loss of our wonderful daughter and it is tragic to reflect that this is not the first death attributed to the **mechanical failure** that caused Amy’s glider to fall out of the sky.”

He added: “Amy was passionate about gliding. It was a sport that brought great joy and exhilaration to her short life, and also it brought with it a wealth of good friends.

“It is a consolation to us to know that her death came instantly and she bore no suffering.”

A spokesman for the European Aviation Safety Agency, which regulates aviation safety, was unavailable for comment.

## **Pull the String**

General Dwight Eisenhower was the 34th President of the United States (1953-1961) but during World War II, he was Supreme Commander of the Allied forces in Europe, with responsibility for planning and supervising the movements of the various armed units under his command. It is reported that he held a **leadership briefing** with his officers. When he got to the front, he pulled a piece of string from his pocket and placed it on the table.

He said, “Gentlemen, pull this string and it will follow wherever you wish. Push it and it will go nowhere at all.”

### **What Does This Have to Do with Safety?**

To me it means that you, the Safety Professional, and the other supervisors and manager **need to pull the string—the workers—along**. You must set the example. Always have your safety glasses and hearing protection on and being used properly. Don’t take shortcuts. Does your plant manager always use the correct PPE? Does he or she talk to the workers as they make their rounds about safe work positions and their safety? Do you know?



## Be Observant!

As you walk through the facility, did you see Jerry quickly put his safety glasses down on his face? Did you see Alice turn away and put her gloves on? Why was Johnny using a screw driver to try and open that paint can? Since you didn't say anything to the contrary, Sam's using a cheater bar over his spanner wrench trying to break those bolts loose.

## What to Do?

**Make safety your daily message.** When you are on the floor, observe the work of others. Are they doing it correctly? If not, say something, because if you don't they will **accept your silence as approval** for their method of working. Talk to your fellow managers to ensure that they understand that they too have to "pull the string" and set the example.

## Fatigue risk scheme considered for controllers

A new data-driven methodology that allows airlines to tailor **fatigue-related risks** to their specific type of operations could in future be applied to air traffic controllers.

Although the new ICAO Fatigue Risk Management Systems (FRMS) requirements relate to flight and cabin crew, the methodology has been designed to be **'broadly applicable' to all safety-critical personnel including air traffic controllers and maintenance engineers.**

Curtis Graeber, an aviation safety and human performance consultant, chaired the ICAO Task Force whose work led this summer to the release of guideline for airlines and regulators to implement FRMS as an alternative to the current practice of flight and duty time limitations for pilots and cabin crews.



“We’re not there yet and discussions to date have centered on examining if we could apply it. The point about the FRMS methodology being broadly applicable is that there is now a recognition that by applying different data and the latest knowledge, you could determine better how controllers are scheduled and how they work,” said Graeber.

“There has been talk at director level that we should look at this. When and how they are going to do that remains to be seen although there have been some preliminary discussions. It has significant attention at ICAO level although there are lots of [competing areas such as an FRMS for maintenance engineering](#). “ Pilot fatigue has increasingly been cited as a contributing factor in aircraft accidents and this year’s series of alarming cases of US controllers falling asleep prompted the Federal Aviation Administration (FAA) to change scheduling practices to minimize controller fatigue.

A National Transportation Safety Board report published in October details how a tower controller fell asleep on the overnight shift in March due to fatigue that resulted partly from FAA [scheduling practices](#). The NTSB report details the actions of the various FAA personnel who were on duty that night, and lists the activities of the sleeping controller in the days leading up to the incident that led to two flights landing at Reagan National Airport without controller assistance. “You have to look at the [ecology of alertness](#): what is the situation that they are in, when did they last sleep, when did they last eat, are they used to operating at this time of the day, etc.? When you focus only on the number of hours worked, that is a very thin slice of the pie,” Graeber told Air Traffic Management.

Graeber pointed out that by initiating FRMS with flight crew members ICAO was starting with a requirement for [prescriptive limits](#). “When it comes to ATCOs they have nothing in place. It’s a blank slate. The question that naturally arises is whether ICAO should go directly to a performance-based system (i.e. FRMS) or should they first develop prescriptive limits?” said Graeber.

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## Pilot Attitude A Safety Key

The article “Boeing Safety Tool Provides [Insight Into Human Factors Errors](#)” (AW&ST June 21, [1999] p. 51) points to an element of the human factors equation that has proven to be thorny for airlines

.Capt. (ret.) Roger H. Waldman’s knowledge of the described “Procedural Event Analysis Tool” is limited, there is an abundance of material that focuses on dealing with [human factors in aviation](#). There is little doubt that flight crews’ [compliance with established procedures](#) is a key to flight safety. To address this issue, airlines spend millions of dollars and thousands of man-hours annually on initial simulator training, crew resource management training and recurrent training. And yet far too many fatal accidents are [attributed to pilot error](#).



Capt. Roger H. Waldman’s involvement in flight-crew training for more than 40 years has led him to some conclusions. Pilot attitudes constitute a major issue . . . a component over which trainers have little control until it is often too late.

Lawrence I. Schuman, an advanced airmanship instructor at SimuFlight Training International, wrote a paper for the Flight Safety Foundation’s Accident Prevention newsletter in August 1991 entitled “The Three Critical Success Factors.” He stated: “Flight crewmembers who possess specific attributes that strengthen their ability to excel [are less likely to become involved in pilot-preventable accidents](#).” Those attitudes were defined as: an intimate knowledge of the industry; the embracing of institutional awareness and a conservative response to challenge; and the development—and use of—standard operating procedures.

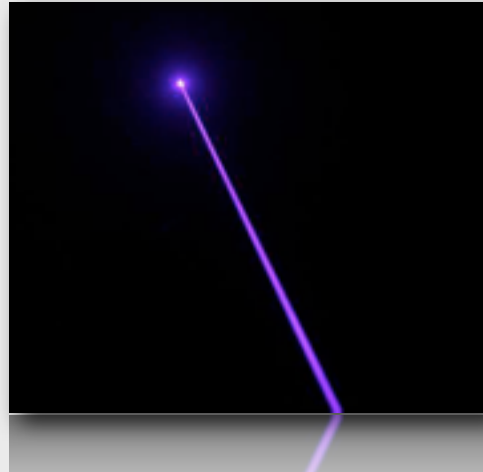
Schuman’s thesis is that pilots who demonstrate excellence in training and line operations are likely to repeat it during abnormal/emergency situations. Moreover, the easiest pilots to train are those [whose egos are not in the way](#) and who can take constructive advice.

In human factors, [pilot attitude is the wild card](#). Arrogant, complacent and overconfident pilots can create potentially life-threatening situations.

## Incidents of lasers vs. aircraft hit a record

'They have the potential for doing a lot of damage,' FAA administrator says.

There have been [more than 3,000 reported instances](#) of lasers being pointed into aircraft so far this year - eclipsing the previous one-year record logged in 2010, according to federal aviation officials. "We don't want anybody laboring under the assumption that these are toys," said Randy Babbitt, administrator of the Federal Aviation Administration. "They're not. They have the potential for doing a lot of damage."



Babbitt said recently in a telephone interview that as of Nov. 11, there have been 3,048 reported laser incidents across the country. The previous high was 2,836 incidents recorded last year.

FAA's formal reporting system began in 2005.

In St. Louis, there have been 20 laser incidents so far this year, FAA officials said Thursday. Last year, there were 17 recorded in the airspace near Lambert-St. Louis International Airport.

When a high-powered laser shines into the cockpit of an airplane or helicopter, it can [temporarily blind a pilot](#) and make it difficult to safely fly or land the aircraft, Babbitt said.

Federal authorities have pursued civil cases against people for violating FAA prohibitions against interfering with a flight crew. Violators could be subject to a civil fine of up to \$11,000.

Babbitt, a former commercial airline pilot, said the FAA and pilots groups support pending legislation that would make such misuse of lasers [a stand-alone crime](#).

Earlier this year, an O'Fallon, Mo., man issued a public apology for shining a green laser into the cockpit of Metro Air Support helicopter.

A week later, in an unrelated incident, another helicopter was hit with a green laser above the Webster Groves area.

Babbitt said the FAA recently [launched a website](#) to provide information on the danger of laser incidents and to make it easier for pilots and witnesses to report the incidents.

## **Survivors Remember Eastern Airlines Flight 401 Crash**

Aviation consultant Bennie Benitez said there were [many positive safety elements](#) that came out of 401, like flash lights on all planes.

Almost 40 years ago, Eastern Airlines flight 401 crashed. The plane descended out of the sky as pilots [were distracted](#) over a landing gear warning light. "You couldn't even say goodbye to each other, that's how fast it happened," said crash survivor Ron Infantino, whose wife Lily died in the crash. "Well it's difficult, we were only married 20 days, and we were both 26 years old, and she was my first love to be honest with you."



Infantino served in Vietnam, but it was this flight, not war that brought him closest to death.

Infantino and three of the flight attendants who survived the crash spoke to NBC Miami as the 39th anniversary of the flight approached.

Patricia McQuigg, Beverly Raposa, and Mercy Ruiz joined Infantino this week at a program to teach airline experts and passengers the [lessons learned](#) from a dark night in the Everglades.

"And then it was like being in a tornado, I was in the tail and we were rotating," said Beverly Raposa, a flight attendant.

Her message on life: [Never take anything for granted.](#)

"Tell people you love them. And never go out of the house angry. Tomorrow is not a given," she said.

"I love my profession so I overcame that part of my life. I'm just blessed. I have a beautiful family, and I got my wings back, and I just keep moving forward," said McQuigg.