

Aviation Human Factors Industry News

Volume VIII. Issue 36, September 14, 2012



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

Hello all,

To subscribe send an email to: rhughes@humanfactorsedu.com

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

★NTSB: Undocumented Modifications Led to Reno Air Show Crash

★Overhaul blunder behind in-flight 747-200 freighter fire

★Singapore Airlines Flight 006: Human Factors Analysis

★Aircraft engineer seeks new inquiry into colleague's death

★Cessna 401 fuel tank explosion: Air New Zealand company fined

★DOT IG Bird Strike Report Welcomed By Anti-Garbage Plant Group

★Falsified Logbook Leads To Probation For Iowa Pilot

★[FAA Announces New SMS Requirement](#)

NTSB: Undocumented Modifications Led to Reno Air Show Crash

The National Transportation Safety Board (NTSB) concluded that **undocumented and untested major modifications** lead to the P-51D airplane crash that killed the pilot and 10 spectators at the 2011 National Championship Air Races in Reno, Nev. According to an NTSB report released Monday, the experimental single seat P-51D —dubbed “The Galloping Ghost”— had **deteriorating locknut inserts** that lead to “reduced stiffness in the elevator trim system, ultimately led to aerodynamic flutter at racing speed” and resulted in the crash.



NTSB voted unanimously to adopt a conclusion reached by an investigation conducted by a panel of experts aided by photographs and videos from spectators at the Reno air show last year.

Jimmy Leeward, a 74-year old Hollywood stunt pilot, reportedly implemented a number of modifications to the aircraft to increase its speed. According to NTSB, the modifications included shortening of the wings, installation of a boil-off cooling system for the engine and **changes to the incidence of the horizontal and vertical stabilizers**.

FAA requires pilots to report such changes to a regional flight standards office, but investigators **could find no records of the changes being reported** with the exception of the boil-off cooling system.

“In Reno, the fine line between observing risk and being impacted by the consequences when something goes wrong was crossed,” said NTSB Chairman Deborah Hersman. “The pilots understood the risks they assumed; the spectators assumed their safety had been assessed and addressed.”

In April, NTSB issued 10 safety recommendations to the Reno Air Racing Association based on the ongoing investigation at the time, [including requiring engineering evaluations for aircraft with major modifications](#); raising the level of safety for spectators and personnel near the racecourse; and improving FAA guidance for air race and course design.

Overhaul blunder behind in-flight 747-200 freighter fire

After more than nine years, German investigators have revealed that a [maintenance error](#) caused an in-flight fire to break out on a Lufthansa Cargo Boeing 747-200 freighter's forward deck. Several electrical circuit-breakers tripped as the aircraft reached its 31,000ft (9,450m) cruise altitude, after departing Sharjah. But while the crew sensed an electrical burning smell, and repeatedly checked the main deck, they could not detect anything untoward.



The 747, however, had sustained serious fire damage, for which evidence was discovered after the aircraft landed at Frankfurt. During the descent the crew had been unable to extend two of the slats and the approach was conducted at a speed 25kt (46km/h) higher than normal.

Examination of the lower cargo compartment revealed partially scorched insulation across the whole area of the oxygen bottles up to the main deck. There was a palm-sized hole in the dado vent box, with severe fire damage to nearby insulation, and there were smoke and heat traces on parts of the fuselage structure.

"The discovered smoke and heat traces and the damage indicate a [cable fire with open flames](#) - the flames themselves had gone out," says German investigation authority BFU.

It identifies the aircraft involved as a 747-200SF operated by Lufthansa after it was converted by Israel's Bedek Aviation Group. The dado boxes - which aid air circulation - were installed during conversion.

However, these were larger than the originals and the BFU believes that, during a 2002 maintenance D-check in Singapore, [necessary spacing from wiring bundles was not implemented when the dado box was reassembled](#).

[Chafing of the wire bundle](#), which included a galley power line, led to a short-circuit and cable fire. The BFU adds that, probably during the D-check, the galley power line had been tied to the wire bundle for the flap control - [against the manufacturer's design practices](#) - resulting in the partial flap failure. BFU has just released the report into the 6 March 2003 event. The aircraft has subsequently been transferred to freight operator Evergreen.

Singapore Airlines Flight 006: Human Factors Analysis

Introduction

As airplanes are piloted by human beings, [human factors](#) play an important part in aviation safety. Until advanced developments like UAV can be incorporated into civil aviation, the best thing that we could do now is to [eliminate human errors during flights by understanding human factors](#) and how to prevent them from disrupting the safety of a flight. The following SQ006 crash disaster highlights how the safety of a flight is affected by human factors. Synopsis

Singapore Airlines Flight 006 (SIA006) was a scheduled passenger flight from Singapore to Los Angeles via Taoyuan International Airport (formerly Chiang Kai-shek Airport) in Taiwan. On 31 October 2000, SIA006, a Boeing 747-400 took off from the wrong runway in Taipei during a typhoon. The flight crew entered runway 05R, which had been closed for repairs, instead of the assigned runway 05L. [They were not able to see](#) the construction equipments and concrete barriers due to the heavy rain. The aircraft took off and collided with the machinery, breaking into pieces and burst into flames. 83 of the 179 passengers onboard died while 39 suffered from serious injuries, 32 had minor injuries and 25 were unhurt.



List of human errors

1. (**Lack of attention**) – Although the air crew have all the relevant charts, investigation findings state that the flight crew did not review the taxi route which resulted in the aircraft entering the wrong runway ("Runway Mistake Suspected", 3 November 2000). Upon entering the wrong runway, the flight crew had neglected to check the paravisual display (PVD) and the primary flight display (PFD), which would have indicated that the aircraft was on the wrong runway. The approaching typhoon and poor weather conditions caused the pilots to lose situational awareness as they were in a hurry to depart. All these errors led to the aircraft taking off from the wrong runway.
2. (**Poor taxiway lighting maintenance**) - The Singapore investigation team reported that the taxiway lightings and signage at the airport were not maintained up to acceptable international standards ("Airport criticized", 23 February 2001). Some critical lights were missing or unserviceable. No mandatory construction warnings were put up at the entrance of the closed runway which could have prevented the pilots from taxiing into the wrong runway. However, the ASC stated that there were no barriers on Runway 05R because aircrafts use part of the runway to get into other taxiways.
3. (**Failure to follow procedures**) - The Singapore investigators stated that the Taiwanese air traffic control (ATC) did not follow their own procedure when they gave clearance for SQ006 to take off even though they were unable to see the aircraft. Singapore Airlines clarified that the purpose of the paravisual display (PVD) is to help pilot maintain visual with the runway centerline in poor visibility and not for identifying the runway in use.

Analysis

- The pilot checked with the control tower twice to confirm that he was on the correct runway but the air traffic controllers did not know that the plane had actually gone on to the wrong runway.
- The airport did not have ground radar and the plane was not visible to the tower at the time of its takeoff.
- The air traffic controllers presumed that the aircraft was on the correct runway and gave the takeoff clearance to the pilot without realizing their error.
- Air traffic controllers should never have given the takeoff clearance unless they were certain of the position of the aircraft.
- To prevent such occurrence, the controllers should ask the pilot to report their position on the taxiway if they are unsure or wait for the aerodrome visibility to improve.

Crash simulation

http://www.youtube.com/watch?v=bW3f0ZE4je8&feature=player_embedded

Live footage

http://www.youtube.com/watch?v=3vTbQ3MdT9k&feature=player_embedded

Aircraft engineer seeks new inquiry into colleague's death

An aircraft maintenance engineer is to seek High Court orders directing new inquiries into the death of a colleague who was killed in a [fall from a de-icing rig](#) at [Dublin](#) Airport in March 2008. Kevin Carroll, of Keatingstown, Co Wicklow, told Mr Justice Gerard Hogan that he wanted the court to direct the Air Accident Investigation Unit and the Irish Aviation Authority to carry out the inquiries.

Mr Carroll said his colleague, 58-year-old David Ralph, of Brackenstown, Swords, Co Dublin, had [plummeted seven metres](#) to his death when the basket of a de-icing rig broke free and crashed onto the apron of the airport.

He claimed the Investigation Unit and the Aviation Authority were obliged by law to fulfill statutory duties by inquiring into the endangerment of aircraft operations on the basis there had been a “serious incident.”

Mr Carroll said he wished to issue proceedings involving the Investigation Unit, the Irish Aviation Authority and the Garda Siochana as well as the Minister for Transport, the Minister for Enterprise and Trade, the Health and Safety Authority and the Dublin City Coroner, Dr Brian Farrell.

He agreed with Judge Hogan that he was taking the proceedings [only out of concern for others](#) and had no direct association with what had happened at the airport or since.



Mr Carroll, who was not legally represented and appeared in the absence of all of the other parties, was granted leave to bring a new application on September 18 on the basis the other parties would be put on notice given an opportunity of putting their side of the story to the court.

He told the court that more than four years had passed before any information had been made public at the Dublin City Coroners Court in May last.

He said the Health and Safety Authority had apparently completed their investigation yet from his attendance at the inquest on July 26 last [a number of substantial issues appeared to be unresolved](#).

The inquest had been adjourned until October 18 and failing completion would be put back to some time in 2013.

Mr Carroll said the Health and Safety Authority had forwarded a file to the DPP who had taken a decision not to prosecute anyone regarding the incident.

Cessna 401 fuel tank explosion: Air New Zealand company fined

A company owned by Air New Zealand has been fined more than \$57,000 over a fuel tank explosion at Adelaide Airport that injured a worker.

Mark Meehan was repairing the wing on a twin-engined Cessna 401 in March at the premises operated by TAE Aviation Ltd, a wholly-owned subsidiary of Air New Zealand.



He had begun using a [cutting tool](#) to remove a corroded panel when a spark ignited [residual fuel vapors](#) in the plane's fuel tank.

The blast smashed Mr Meehan's left arm, burned both hands and burnt and lacerated his face.

TAE pleaded guilty to [breaching workplace safety laws](#) by not ensuring the fuel tank was free of fuel or fuel vapors and by not warning Mr Meehan of the risk of an explosion.

Industrial magistrate Stephen Lieschke said the skilled aircraft engineer could have suffered much more serious injuries.

“He was exposed to an explosive force of sufficient intensity to deform metal and break an arm bone and with the potential to cause shards of metal to fly off,” the magistrate said.

“He was relatively fortunate to sustain only minor lacerations and minor burns to his face.”

TAE Aviation was fined \$56,000 and ordered to pay other court costs after receiving a discounted penalty because of its early guilty plea and contrition.

[The company had also instigated new safety measures.](#)

DOT IG Bird Strike Report Welcomed By Anti-Garbage Plant Group

'Friends Of LaGuardia Airport' Working To Stop Construction Of Trash Processing Facility A group working to stop the construction of a trash processing plant less than half a mile from the end of one of LaGuardia Airport's runways in New York says a recent report from the Department of Transportation's Inspector General on the FAA's wildlife mitigation efforts [reinforces their argument](#) that the plant not be built.



Last week, the DOT IG released a report saying the FAA's wildlife mitigation efforts are falling short of their stated goals, and that bird strikes have increased five-fold over the past 20 years.

A bird strike famously brought down US Airways Flight 1549 which became known as "The Miracle on the Hudson" when no lives were lost. That flight originated at LaGuardia.

The Boston Globe reports that Ken Paskar, president of Friends of LaGuardia Airport, said he is "relieved" to read that following its review of the FAA's wildlife mitigation practices and procedures, the DOT IG found them lacking. One of his primary objections to the trash processing plant so close to the airport is [that it will attract birds](#) which would then become a problem for airplanes operating at the airport.

Paskar has asked that the report be submitted to the US Court of Appeals for the Second Circuit, which has legal issues related to the plant's construction under review.

FMI: <http://friendsoflga.org/>

Falsified Logbook Leads To Probation For Iowa Pilot

Attempted To Get Commercial Rating Based On Inflated Hours

A pilot who attempted to get his commercial rating without having flown the requisite number of hours to enter the program was sentenced to four years probation for [falsifying his logbook](#). Fahad Nabeel Hussein Al-Daous, who holds joint U.S. and Saudi Arabian citizenship, pleaded guilty to making false statements to the FAA. The 33-year-old Iowa resident and stay-at-home father presented the falsified logbook to a pilot examiner at the Ottumwa, IA, airport in May of 2011, according to a report from the Associated Press. He had obtained his instrument rating at the airport, and was attempting to enter a program for a commercial rating. [The discrepancies were uncovered](#) when the flight school compared his log book and billing records, and found that he had not actually made many of the flights he had logged.



Falsifying a record such as a logbook can carry a prison sentence of up to five years and a fine not to exceed \$250,000. But at the sentencing, U.S. District Court Judge John Jarvey agreed with defense attorneys that Al-Daous had committed fraud, but had not intended to put the public at risk, had no criminal history, never flew beyond his qualifications, and was remorseful for his actions. He is reportedly raising his three children while his wife completes her education.

His airman privileges have been revoked, and he may not apply for a pilot certificate as a condition of his probation.

FAA Announces New SMS Requirement

Effective September 2012, the FAA is requiring all Part 121 (scheduled airline) operators to **implement a safety management system (SMS) program**. This marks the first time the FAA has made it mandatory for an aviation organization to implement a safety program. The 56-page document, designated Advisory Circular 120-92A, provides a **"framework for safety management system development by aviation service providers."** Other aviation areas, such as Part 135 (on-demand air charter), Part 141 (flight training), and Part 145 (maintenance facilities) **will fall under the same requirement in the near future.**



FAA air safety inspectors are currently undergoing training to ensure the standardization of related inspections.

For a copy of the AC 120-92A, click [here](#).