Aviation Human Factors Industry News

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Hello all,

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

FAA Human Factors Chief Wins IFA Award

Human factors specialist and contributor to AMT and Ground Support Worldwide, Dr. Bill Johnson, has been awarded a prestigious safety award for legacy of leadership and scholarship in maintenance and engineering.The International Federation of Airworthiness (IFA) announced that the 2011 honoree of the Whittle Safety Award is Dr. William B. Johnson, Chief Scientific and Technical Advisor for Human Factors in Aviation Maintenance for the Federal Aviation Administration, and frequent contributor to Ground Support Worldwide.

The award, which honors the co-inventor of the jet engine, Sir Frank Whittle, is the highest and most prestigious award the federation can confer to recognize an advance in aviation safety.

The citation reads:

'In recognition of his dedication, research, leadership, and promotion of Human Factors in aviation maintenance and engineering and his many publications exemplified by the "Maintenance Human Factors Presentation System" and the video production "Grounded".'

The IFA is a non-governmental organization and registered UK charity whose mission is to contribute to improved continuing airworthiness within the global aviation industry.

Balloon safety check failures found

The Civil Aviation Authority (CAA) is considering taking further action against an experienced aviation engineer after an investigation revealed he had failed to properly conduct safety tests on hot air balloons.

The engineer works for Hawkes Bay Aviation, the same company which carried out checks on a balloon which crashed, killing 11 people near Carterton on January 7.

A spokesman for the company said the engineer was on planned leave and had not been stood down.

At a press conference this afternoon CAA director Steve Douglas said 16 balloons from around New Zealand, which were maintained by the company, had been grounded pending further maintenance checks.

CAA investigators had contacted all five active hot-air balloon maintainers as part of their investigation into the Carterton balloon crash. While they were satisfied in most cases that practices were at or above the required minimum safety standards, one maintainer would be investigated further.

"For example, tests of the strength and porosity of the balloon envelope have not been conducted using the equipment and techniques specified in the maintenance manual and the engineer has relied upon individual experience and judgement instead.

"I'm disappointed that that has occurred.

"The engineer will be the subject to further investigation and I'm considering further action."

Concerns about balloon maintenance were raised during the Transport Accident Investigation Commission's (TAIC) examination of the Carterton crash.

It said a strength test on the balloon's envelope and a fuel system inspection were not done correctly and documentation was incomplete.

"TAIC has not determined whether or not maintenance issues were a factor in the accident.

"However, the CAA must be assured that all participants carrying out activities in the civil aviation system do so safely and in accordance with prescribed safety requirements," Douglas said.

"The CAA will complete its investigations of balloon maintenance activity and take action as necessary to ensure the safety of the public."

Robinson R-44 catches fire at Glendale Municipal Airport (KGEU), Arizona

No one was injured after a helicopter caught fire in Glendale last Monday morning, fire officials said.
The incident happened around 9 a.m. when the helicopter was receiving maintenance at Glendale Municipal Airport, near Loop 101 and Glendale Avenue.

A mechanic was testing the engine of the Robinson R-44 helicopter when he lost control and it came down on its side and caught fire, FAA spokesman Ian Gregor said.

Glendale firefighters contained the blaze, and a hazardous materials crew is cleaning up fuel that was spilled. The mechanic was uninjured, Glendale Fire spokesman Michael Young said.

Riyadh MD-11F crash pilots failed to recognize bounce

Pilots of a Lufthansa Cargo Boeing MD-11F failed to recognize the landing bounce which preceded a sequence of hard touchdowns and the destruction of the trijet at Riyadh, Saudi Arabian investigators have concluded.As it conducted an instrument landing system approach to Runway 33L the aircraft flared at a low height for its 207t landing weight, and the MD-11 touched down with a sink rate of 780ft/min - far higher than the typical 120ft/min.

The resulting 2.1g impact caused the aircraft to bounce but the Saudi General Authority of Civil Aviation said the landing was still recoverable at this point.

But the crew did not appear to recognize the bounce, it said, and did not apply the recovery technique, which requires pilots to hold a normal landing attitude and apply thrust to control the rate of descent.

The technique specifically warns against making large forward or aft movement with the control column, because rapidly changing the pitch rate can result in nose-wheel damage or a tail strike.

After the initial touchdown the MD-11F bounced to a height of 4ft. Crucially the captain pushed the control column significantly forward, reducing the pitch. Because of main-gear spin-up, the aircraft's spoilers had also started deploying and this effectively reduced the angle of attack further.

These combined dynamics sapped the MD-11F's lift. Both pilots pulled on their control columns but the aircraft hit the runway a second time, in a flat attitude, with a sink rate of 660ft/min.

Its nose-gear rebounded from the 3g impact and this, combined with the pilots' control inputs, caused a 14° pitch-up as the MD-11F bounced a second time, to 12ft.

The captain responded by pushing the control column forward again, and then both pilots pulled back, but could not avert a third hard impact - some 4.4g, far above the design load - which ruptured the fuselage aft of the wing and severed fuel lines, sparking an intense fire.

"While the first touchdown resulted in a bounce, the landing was recoverable," said the GACA. "The severity of the subsequent touchdowns was not a consequence of the first touchdown, but primarily a result of the pitch angle during the bounces, which resulted from the actions of both flight crews on the control column."

Lufthansa had a long-established bounced-landing procedure, practiced in simulators, which required the pilot to maintain 7.5° pitch and apply go-around thrust.

The GACA inquiry said the reason for the captain's contrary response to the initial touchdown - pushing the control column hard forward - was "unclear".

"One possibility is that the captain did not realize the aircraft had bounced and was attempting to de-rotate the aircraft while assuming the main gear were still on the ground," it said.

It points out that crews on certain aircraft types "may have difficulty" in perceiving a bounce, particularly because the cockpit height above the runway might remain constant, or even decrease.

Neither pilot mentioned handover of control, leading both to make inputs to their control columns and "aggravating" a serious situation, said the GACA, although it acknowledged that the alarm and confusion made the crew's reactions "somewhat easier to understand".

Both pilots survived the 27 July 2010 accident, despite the severe structural damage to the MD-11F (D-ALCQ), which veered off the left side of runway 33L and was consumed by the blaze.

Crash: Buddha B190 near Kathmandu on Sep 25th 2011, impacted terrain

The Accident Investigation Commission assigned by Nepal's Ministry of Tourism and Civil Aviation have submitted their report to the Ministry. The investigators said in a media briefing, that human factors, mainly fatigue by the captain of the flight, led to the crash. The aircraft was flown by the first officer and was on approach to Kathmandu at 5000 feet MSL instead of 6000 feet MSL as required, when it entered a cloud. While inside the cloud in low visibility the aircraft descended, hit tree tops and broke up.

The captain had flown another aircraft the previous day and had been assigned to the accident flight on short notice in the morning of the accident day, but did not have sufficient rest. The commission analyzed that due to the resulting fatigue the captain assigned pilot flying duties to the first officer although she wasn't yet ready to cope with the task in demanding conditions. The newly assigned first officer had only 18 hours experience on the aircraft type.

The mountain view round trip had to turn back about midway due to weather conditions. While on a visual approach to Kathmandu at 5000 instead of 6000 feet MSL the aircraft entered a cloud and started to descend until impact with tree tops.

The crew did not follow standard operating procedures, that amongst other details required the aircraft to fly at or above 6000 feet MSL in the accident area, the interaction between the crew members did not follow standard operating procedures, for example the captain distracted the first officer with frequent advice instead of explaining the/adhering to procedures.

The commission said as result of the investigation they released a safety recommendation requiring all operators to install Terrain Awareness and Warning Systems (TAWS) in addition to eight other safety recommendations regarding pilot training, installation of visual aids, safety audit and fleet policies.

A Fatal Mistake: The 1977 Crash of Southern Airways 242

As part of AccuWeather.com's severe weather week, they take a look at three noteworthy airplane accidents where weather played a significant role in the disaster.

While not an exhaustive look at the impacts of weather on aviation, these three plane crashes arguably had some of the biggest impacts on aviation safety in adverse weather conditions.The first installment in this three-part series is below.

The data for the following story was gathered from the official accident report issued by the National Transportation Safety Board.

Southern Airways Flight 242

The air was muggy and the temperature nearing the 80-degree mark on the afternoon of April 4, 1977, as Captain Bill McKenzie and First Officer Lyman Keele piloted Southern Airways Flight 242 into the sky over Huntsville, Ala., headed east toward Atlanta, Ga.

Over the next hour, weather conditions would rapidly deteriorate and put the lives of 81 passengers and four crew members in danger as the pilots struggled to keep their plane in the air.

A Muggy Spring Day

That early spring day dawned fairly mild across the southeastern United States. A morning temperature of near 60 degrees in Atlanta, Ga., made for a pleasant early morning. The mercury climbed into the 70s by midday; however, the ideal outdoor activity weather would have dire consequences in the afternoon.

A cold front slicing through the Southeast began to trigger thunderstorms across Tennessee and Alabama by early afternoon. Rapid upward motion and cold air aloft combined with ample surface warmth and moisture created an environment ripe for severe thunderstorms.

Before leaving Huntsville, McKenzie and Keele had been informed of tornado watches issued for northern Alabama and northern Georgia that afternoon. There was no other specific information passed along to the pilots regarding bad weather between Huntsville and Atlanta.

What they did not know was that a line of severe thunderstorms, with a history of producing hail and tornadoes, was directly in their flight path.

Minutes after takeoff, Flight 242 entered a heavy thunderstorm. Both pilots attempted to use their in-flight weather radar to find a region of clear air.

Despite seeing an area on their radar that looked calmer, it was actually the strongest area of the storm. The pilots didn't realize that the heavy rain caused the radar to inaccurately portray an area of hail as an area of light precipitation. This can be a common problem but flight crews are not necessarily properly trained to recognize it.

By inadvertently entering the most intense part of the thunderstorm, the pilots had sealed their fate.

A Fatal Mistake

Immediately, large hail began to pummel the DC-9 aircraft. Large amounts of rain and ice ingested into the engines caused them to surge. Soon after, they both quit working due to extreme damage.

As the plane descended, it broke out of the storm but now had no engine power. This type of emergency (permanent loss of thrust to both engines) had never occurred in the history of commercial, turbo-jet aircraft. The pilots were faced with an nearly impossible situation.

Despite a valiant effort by the crew to land the plane on a portion of road near New Hope, Ga., the plane's wing clipped a gas station during landing, bursting into flames. Of the 85 people onboard, 63 perished in addition to 9 on the ground; 23 survived.

Immediately, the investigation's focus turned toward the weather. Why had the pilots flown into a severe thunderstorm? Could the accident have been prevented? Did the flight crew have the information they needed to make proper decisions?

A Lack of Communication

In the end, the National Transportation Safety Board (NTSB) concluded that important weather information had never been disseminated to the pilots of flight 242. They never knew that the storm in their flight path was severe due to no ground-to-air communication. Instead, they trusted their in-flight radar and made a grave mistake.

The NTSB recommended several improvements to the integration of weather information in the aviation industry. The development of weather systems that allowed real-time display of important meteorological information was expedited. In 1977, Doppler radar was still relatively unreliable and untimely.

In addition, the NTSB suggested that significant meteorological events be transmitted more frequently so that pilots were more aware about the hazards of severe weather. Proper dissemination of thunderstorms watches and warnings was also analyzed and improved.

While many of these changes may seem trivial today, they were ground-breaking over 30 years ago. The knowledge of weather and its impact on aviation has drastically improved since flight 242 crashed in 1977. However, less than 10 years later, a sultry summer day in Dallas, Texas, would turn deadly and an invisible killer would be revealed.

http://www.airdisaster.com/reports/ntsb/AAR78-03.pdf

Report: No Safety Advantage To Glass Panels

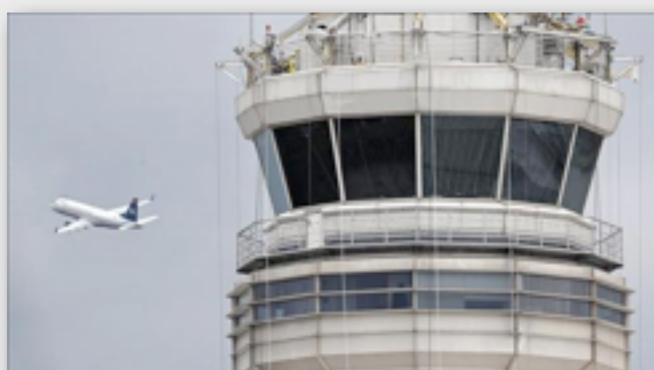
The safety records of airplanes with glass panels are about the same as airplanes of the same model with analog cockpits, according to a new study by the Air Safety Institute, a division of the AOPA Foundation. However, "glass-panel aircraft may be more susceptible to accidents during takeoffs, landings, and go-arounds," the study found. The available data were insufficient to conclude what caused that difference. Some factors, according to the study, might include transition training, a tendency to fixate on the glass panels instead of external cues, or difficulty in interpreting airspeed and altitude from the glass-panel readouts compared to interpreting analog displays.

"The vast majority of accidents [analyzed in the study] occurred in day VMC conditions, where the advantages of full glass instrumentation over analog may not be so great," said Bruce Landsberg, president of the AOPA Foundation. "The new technology aircraft pilots (Cirrus and Cessna Corvalis) apparently are having difficulty with basic airmanship relative to takeoffs, landings, and go-arounds." One reason might be the design of these airplanes, Landsberg said, which are relatively short, coupled with high wing loading and high power. This design requires "gentle application of power and solid application of rudder," he said. The study said that besides better transition training, another solution might be to provide better instrumentation for angle of attack.

The NTSB also looked at glass-cockpit safety data in 2010; click here for their analysis.

http://www.aopa.org/asf/publications/topics/TAA-Report-022412.pdf

Controller Errors May Not Affect Safety?



Errors attributed to air traffic controllers have dramatically risen in recent years and a report due soon is expected to show they've remained relatively unchanged from 2010 to 2011, but what that means could be complicated. to the FAA and the controllers union (NATCA), much of the increase could be the result of changes made in how errors are reported. A spike in reported controller errors is expected to be recorded in 2012 for similar reasons. Increases in training may have also contributed to the rise in reported errors. Meanwhile, there is evidence to suggest that in spite of the figures airline safety hasn't been affected.

Reported controller errors jumped 50 percent from 2009 to 2010, when the FAA says changes in reporting resulted in more voluntary reports from controllers. In 2012, the FAA plans to install new computerized reporting systems that will document controller errors that previously went undetected or unreported. Meanwhile, the FAA's efforts to train large groups of controllers to counter a forecast controller shortage could also result in more errors reported as less experienced trainees work under supervision. Whatever causes are behind the increase, airline safety statistics reported last year by the International Air Transport Association have moved in the opposite direction. According to IATA in 2011, "Global safety performance is at the best-ever level recorded." The NTSB's figures for 2010 show a decrease in major accidents per million hours flown in each year from 2008 to 2010.

http://www.avweb.com/avwebflash/news/airline_safety_improve_best_worldwide_iata_iosa_russia_205888-1.html

http://www.ntsb.gov/data/table2.html