Aviation Human Factors Industry News

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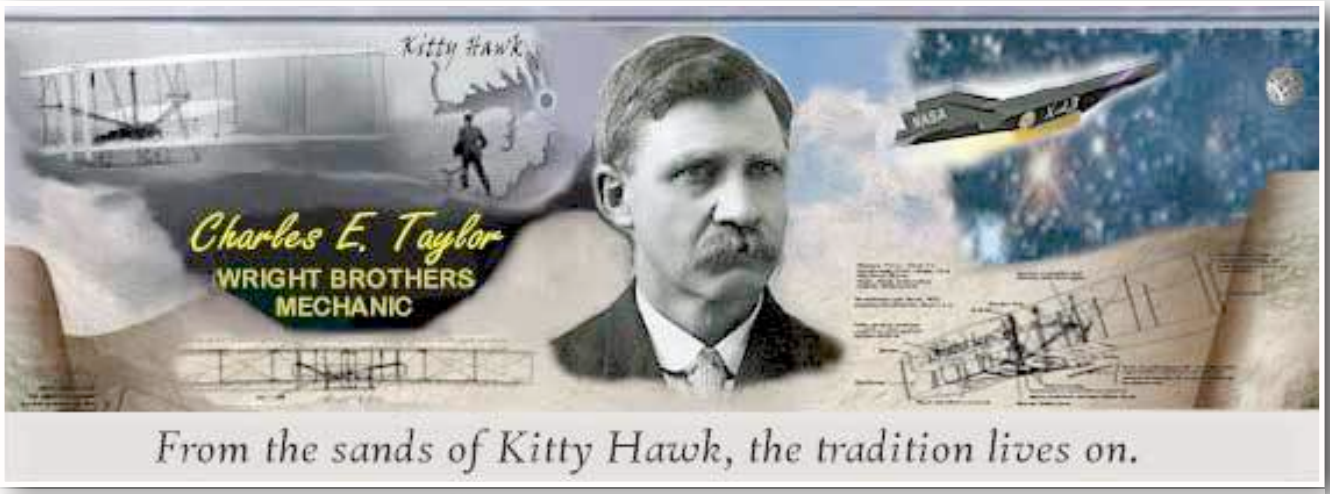


Hello all,

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 Releases Video Highlighting Importance of Procedural Compliance for Commercial Pilots

The National Transportation Safety Board released a nine-minute video that highlights the crucial role that procedural compliance plays in commercial aviation safety.

"Aviation flight operating procedures are developed and refined to provide repeatable steps for safely flying a plane in order to minimize the risk of an accident," said NTSB Chairman Christopher A. Hart. "So it's disheartening when we learn from our investigations that the very procedures that are designed to ensure safety were deviated from, leading to a preventable accident."

The video, which is primarily targeted at pilots, uses findings from seven commercial airplane accidents to show how deviations from standard operating procedures can initiate a chain of events that may lead to devastating consequences.

The accidents referenced include the 2013 crashes of Asiana flight 214 in San Francisco and UPS flight 1354 in Birmingham, Alabama.

"We hope that this short video will be used by airlines, regulators, pilots and aviation safety professionals to reinforce just how critical procedural compliance is to flight safety," Hart said. "All play a role in ensuring aviation safety-not just pilots."

https://www.youtube.com/watch?v=M4NL4m5cnhs&feature=youtu.be

Strengthening procedural compliance is on the NTSB's Most Wanted List: http://go.usa.gov/cZuwe

The video can be viewed here: https://youtu.be/M4NL4m5cnhs

RELATED MATERIAL

Safety Compass blog on this video by NTSB Member Earl F. Weener: https://safetycompass.wordpress.com/2015/12/03/procedural-compliance-taking-the-problem-to-industry/

The executive summaries with links to the full reports for the accidents referenced in the video are available below:

UPS 1354 in Birmingham, Ala., on August 14, 2013: http://go.usa.gov/cB3be
Video summary of report: https://youtu.be/Dsr8C9fsYjo

Asiana 214 in San Francisco on July 6, 2013: http://go.usa.gov/cB3jx

Fresh Air Convair 440 in San Juan, Puerto Rico on March 15, 2012: http://go.usa.gov/cB3YY

Colgan Air 3207 in Clarence Center, N.Y., on Feb 12, 2009: http://go.usa.gov/cB3Dz

PSA Airlines 2495 in Charleston, W.Va., on Jan. 19, 2010: http://go.usa.gov/cB3BY

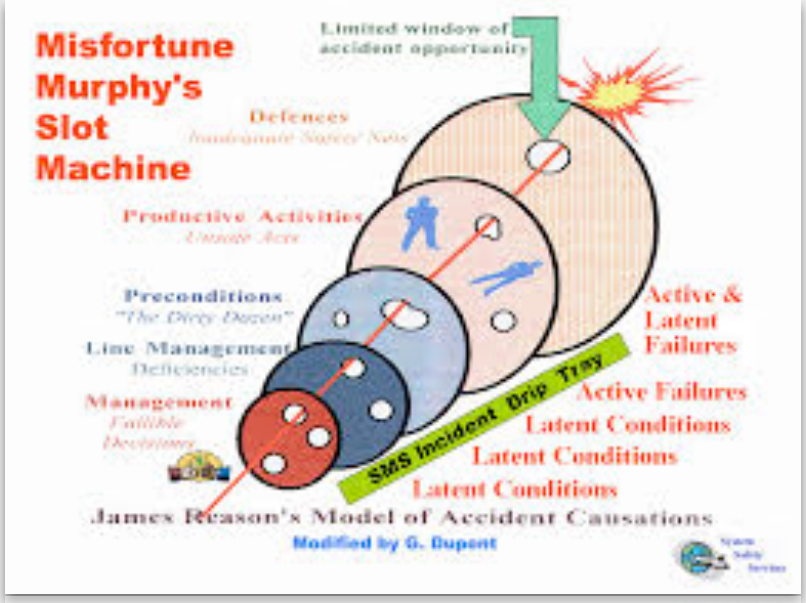
Empire Airlines 8284 in Lubbock, Tex., on Jan. 27, 2009: http://go.usa.gov/cB3Wd

East Coast Jets 81 in Owatonna, Minn., on July 31, 2008: http://go.usa.gov/cB3jV

Video Safety Alerts on general aviation and helicopter operations that were previously released are available at http://go.usa.gov/cB3Bw

www.ntsb.gov

Air Asia Report: Distraction, Crew Miscommunication Led To Stall



The string of incidents that led to the crash of Air Asia Flight QZ8501 on Dec. 28 last year began with a mechanical malfunction that had gone unresolved despite having failed 23 times, investigators said in their final report issued by Indonesia's National Transportation Safety Committee.

But in trying to cope with the malfunction, the captain issued "ambiguous commands" to the first officer, and failed to take over the controls, the report concludes. The Airbus A320 climbed to 38,500 feet, rolled 104 degrees to the left, then stalled and lost altitude at a rate of up to 20,000 feet per minute. The airplane crashed into the Java Sea, killing all 162 on board.The committee found the captain was dealing with a repeated technical problem with the Rudder Travel Limiter (RTL), leaving the first officer at the flight controls. An electrical interruption to the RTL happened three times in the space of 13 minutes, eventually causing the autopilot to disengage. With the loss of the autopilot function, the first officer was flying the plane manually, and it was at that point there was a miscommunication between the two pilots, investigators said. According to the cockpit voice recorder, the captain told the first officer to "pull down," and the first officer apparently understood that to mean he should pull back on the sidestick controller, which sent the aircraft climbing. Whenever the captain repeated the command "pull down," the backward input on the right sidestick increased, according to the report. The pitch angle increased up to a maximum of 48 degrees.

The investigators also found that near the end of the flight data recording, both left and right sidestick input were continuously active. The right sidestick was pulled for most of this segment, and the nose-down pitching commands of the left sidestick became ineffective because of the summing function of the system, resulting in ineffective control of the aircraft.

The investigators recommended that operators' pilot training should re-emphasize the taking-over-control procedure in critical situations. Also, the report recommended that upset recovery training should be mandatory for A320 flight crews

http://www.avweb.com/avwebflash/news/Final_Report_PK-AXC.php

White Paper Published Prior To Indonesian Aviation Authority Report On Air Asia Accident Detailing History Of Rudder Problems

An aviation law firm in October published a white paper focused what it says is a history of rudder problems with Airbus Airplanes, perhaps particularly relevant because Indonesian aviation officials just published their final report concerning the loss of Air Asia Flight QZ8501, an Airbus A320 which went down in the Java Sea in December of last year..In that report, authorities said that a solder joint in a circuit board could have led to rudder problems that caused the crew to try to fix the autopilot by re-setting a circuit breaker. The crew eventually lost complete control of the airplane.

The white paper published by Nolan Law notes an American Airlines accident in 2001, in which the NTSB said that the rudder rapidly deflected from one side to the other, eventually resulting in the vertical stabilizer separating from the A300-600. The firm says that the NTSB eventually concluded that the rudder control system was "an inherently unfriendly design", and the board recommended in 2004 that rudder travel be limited on the A300-600 in an effort to prevent rudder reversals.

The according to the paper, the FAA continued to receive reports of "uncommanded rudder movements" on Airbus airplanes.

The white paper suggests that there continue to be design flaws in the A320 family rudder control system. It says there have been at least 13 previous Airbus rudder malfunctions prior to the Air Asia accident, and questions the NTSB's reputation for "rigorous investigation and diligent follow-through", saying that the board "may well have left the poor design door open for more lives to be lost."

FMI: **White Paper: http://nolan-law.com/air-asia-flight-qz850-a-tale-of-two-rudders/**

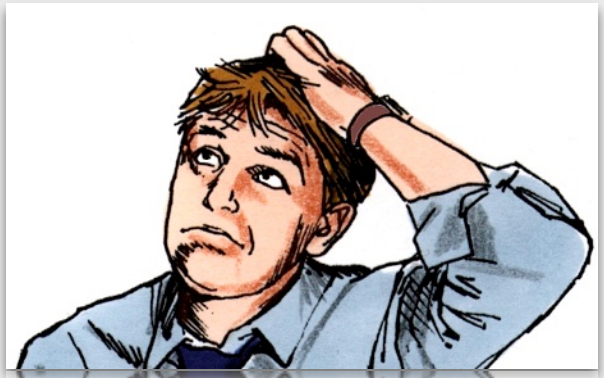
Loss of Control Prevention Update

Our December 1 issue of Vectors for Safety addressed prevention of the upset which can lead to a loss of control. I am working on the January 1 issue which addresses recovery from the upset of LOC, but I would like to add one more item to our discussion of prevention.

Four very experienced aviators have put together some very insightful and useful information on angle of attack and AOA indicators. I would suggest that everyone take a look at their work by clicking here. My thanks to fellow NBAAer Fred Scott for his work and for the link.

If you have not seen the December 1 issue of Vectors for Safety, it is still available by clicking here.

Part installed upside down leads to fatal crash



The Dragonfly gyroplane was in the traffic pattern at the airport in Anahuac, Texas, when witnesses saw the main rotor head separate in flight and the gyroplane subsequently hit terrain, killing the pilot.

The pilot's friends and the mechanic who performed the last conditional inspection reported that the pilot/owner performed most of the maintenance on the gyroplane and that he had recently installed the main rotor head bearing block.

Examination of the wreckage revealed that the bearing block had been installed upside down and was being held in place solely by friction.

The NTSB determined the probable cause as the incorrect installation by the pilot, who was not a certificated mechanic or repairman, of the main rotor head bearing block, which resulted in the in-flight separation of the rotor head.

NTSB Identification: CEN14LA056

This November 2013 accident report is provided by the National Transportation Safety Board. Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.

Fatal US Army Crashes Prompt Safety Stand-Down

Army aviators at 11 posts across the continental U.S. are in the midst of a safety stand-down following three helicopter training accidents that killed eight fliers in 10 days. The U.S. Army Forces Command ordered the stand-down effective Dec. 3 through through Dec. 7.

It will affect about 1,000 helicopters and unmanned aircraft operated by several dozen units. During the stand-down, Army aviation leaders are to review operational factors, including the flight-mission briefing,

Army aircraft coordination training and adherence to flight-operations standards and discipline. On Nov. 23, two aviators from the 2nd Combat Aviation Brigade were killed in a Boeing AH-64 crash near Camp Humphreys, South Korea. The same day, four soldiers with the 2nd Battalion, 291st Aviation Regiment, First Army Division West were killed in a Sikorsky UH-60 crash in Fort Hood, Texas. On Dec. 2, two aviators were killed when their AH-64 crashed near Fort Campbell, Kentucky.

NTSB: Icing, Malfunctions Led To Citation Crash

Severe icing and malfunctioning instruments led to the crash of a Cessna Citation in Kansas two years ago, the NTSB said in its probable cause report this week. The 1975 Cessna 500 Citation I was at 15,000 feet when it began a high-speed descent and crashed in a field, killing the pilot and single passenger on board, a traveling minister from California.

The board also found that the 49-year-old pilot reported from the previous flight malfunctions including the artificial horizon gyros, the HSI and autopilot.

Maintenance personnel replaced the right-side gyro but nothing else.

The pilot was approved under an FAA exemption to fly the Citation single-pilot, but only if all instruments and the autopilot were working.

The jet took off from Mid-Continent Airport in Kansas on Oct. 18, 2013. After leveling off at altitude, the jet flew into an area of supercooled large water droplets with severe icing, according to the board's narrative. Meanwhile, ATC gave the pilot changes in radio frequency, altitude and route, which likely increased his workload and contributed to disorientation. Pilot reports in the area, including one from a Boeing KC-135, indicated light to moderate icing conditions, and weather reports showed ice pellets, snow and a high likelihood of icing between 13,000 and 15,000 feet.

Witnesses told investigators they saw the jet in a vertical dive before it crashed, followed by a fire and debris falling to the ground about a half mile from the crash site.

http://www.ntsb.gov/_layouts/ntsb.aviation/brief2.aspx?ev_id=20131018X34254&ntsbno=CEN14FA009&akey=1

ATC Pitfalls: Communication

When words are the only means of expression, pilots and controllers need to listen more carefully to each other and to what they are saying.

The Avianca Airlines Flight 52 crash due to fuel exhaustion was a classic example of poor communication.

Only a small percentage of the controller work force in the system today—or for that matter, in the past—are or have been pilots. Controllers are taught to perform the duties and provide the services that are outlined in the controller's bible, the FAA Order 7110.65, Air Traffic Control Manual. While they have been made aware of litigation in which the courts have cited controllers for not doing enough for a pilot (Avianca Flight 52), they are also aware that some people in the aviation community feel that controllers sometimes try to do too much in the way of providing assistance and thereby impinge on the pilot's responsibilities. Somewhere in between, perhaps we can find a happy medium.

The Pilot/Controller responsibilities as outlined in the AIM provide for a degree of redundancy by virtue of the manner in which they overlap—and this is a good thing. This overlapping of responsibilities (such as readback/hearback errors) in many cases can reduce the possibility for potential safety related failures within the National Airspace System.

Although both the accidents I will refer to in this article involve air carriers, there are points to be made that have the potential to improve the lot of all of us who fly.

What I am about to say in no way is a condemnation of any particular pilot or controller. This is my opinion combined with the facts of each accident and is based on twenty-five years in the ATC system, which includes a stint in the Air Traffic Evaluations branch, as well as fifty-one years as a licensed pilot—seven of which were spent as an airline pilot with a regional carrier. I'll start with the ATC end of the equation.

A Failure To Communicate

The controllers working Avianca Airlines flight 52—which crashed near Kennedy Airport in January 1990, as a result of fuel exhaustion—did everything in accordance with the procedures that govern the services and separation standards they were taught to provide.

Avianca had been holding for 73 minutes when ATC asked how much longer they could hold; the first officer replied "about five minutes." The NTSB opined that the controllers should have informed the pilots of the weather related delays but by the same token, proper planning and situational awareness on the part of the pilots should have led to an assessment of the situation and a divert to their alternate while they had sufficient fuel to do so.

The Avianca Airlines Flight 52 crash due to fuel exhaustion was a classic example of poor communication.

Consider what might have happened had the controllers been pilots. Under these circumstances would the controller who handed off the Avianca flight made the receiving controller responsible for putting the Avianca flight on the localizer aware of the situation? Would that controller then have done everything he could to expedite the vector to the final approach course?

Almost without exception, every major accident involving ATC has led to a change in the procedures by controllers. Even the FAA came into being as a result of a mid-air collision between two air carrier aircraft over the Grand Canyon.

Often It's What You Don't Say

Because controllers are unable to read the body language of the pilots for whom they are providing ATC services, it is imperative that some training should be given to the ATC specialist in how to recognize that a pilot is in, or getting close to, an untenable situation.

Having a basic understanding of what a pilot must know and, to some extent, what a pilot must do in order to conduct a safe flight should cause some warning flags when a controller hears or sees something that seems out of place.

Quite often it is not what pilots say, but what they don't say that should cause a controller to ask questions. It could be that nothing is amiss. On the other hand, one question (for example, "what is your remaining fuel on board?") might make a difference in the manner in which the controller interacts with said pilot. A question of that nature asked by ATC might cause the pilot to more clearly reflect on the severity of the situation. That one question might cause the controller to treat that flight in an entirely different manner.

Lack of ATC Knowledge

Now let's look at the other side of the coin. What training does a pilot receive that offers insight into how a controller goes about separating aircraft? Over and above a possible review of separation standards little if any training of this nature is given to pilots.

The controller's manual prescribes the separation minima and services controllers use in the performance of their duties. Those standards are designed to give the system and the controller sufficient time to correct a possible "loss of separation" situation before it becomes an accident.

Controllers are required to report any known loss of separation. In most cases, those who use the voluntary reporting system, called ATSAP, can expect no punitive action (except in cases of negligence). If controllers do not use ATSAP then the FAA decides the consequences (possible suspension, training, and decertification).

The third skill of the pilot triptych is communication (everyone remembers the first two right; aviate, and navigate). An important part of communication is listening as well as speaking and herein lies the conundrum; the weakest part of the controller/pilot interface is the only one we have... the radio.

A pilot who miss-reads an ATC instruction has committed a "read-back" error and controllers are taught to be on the lookout for such errors. A miss-spoken word or phrase on the part of a controller not corrected by that controller is a "hear-back" error and controllers are also taught to listen carefully to what they say. The third problem is this; a statement, request or instruction issued by either a pilot or a controller that has not been acknowledged is an incomplete communication, therefore, no communication at all.

ATC Traps

What follows is a thumbnail recap of the collision between a Fairchild Metroliner (SkyWest Flight 5569) and a Boeing 737 (USAir Flight 1493) on runway 25 left at LAX. In this instance it was well after sunset in February 1991, when the Metroliner was taxied into position on the runway and instructed to hold while awaiting traffic that had landed on the outboard runway to cross down field.

At this point a flight crew well versed in the pit falls of the ATC system would have been listening carefully for additional instructions from the controller who was in charge of that runway complex. In a perfect pilot world the flying pilot would have been resting his hand on the power levers awaiting a takeoff clearance and the non-flying pilot—or for that matter, both of them—would have been hanging on every word uttered by ATC.

Proactive Is The Word

In this instance the next transmission made was by another air carrier who reported a five mile final but was not acknowledged by the tower controller. That alone should have raised a number of red flags on the part of the Metroliner crew. They should have been asking themselves has the traffic crossed down field and why has the tower not cleared us for takeoff? Has the tower forgotten us? (In fact the tower had forgotten them). After all, there is an aircraft on final for the runway on which we are sitting that is traveling at about two and one half miles per minute and has not... repeat, not been acknowledged by the tower controller.

The Boeing again calls the tower and is ignored for the second time. The Metroliner crew should have called the tower and asked for a departure clearance. Had they not received one, they should have taxied clear of the runway all the while informing the tower that they were exiting the runway.

The landing traffic then calls the tower a third time and is acknowledged by the tower with a landing clearance.

In that perfect pilot world I speak of, the Metroliner crew would have quickly taxied off the runway, but we all know that didn't happen. The Metroliner crew trusted ATC to ensure separation would exist between itself and any arriving traffic. That didn't happen either.

An accident like this should not have happened if the pilots of the Metroliner been trained to understand what ATC scenarios have the potential to put them in a compromising situation.

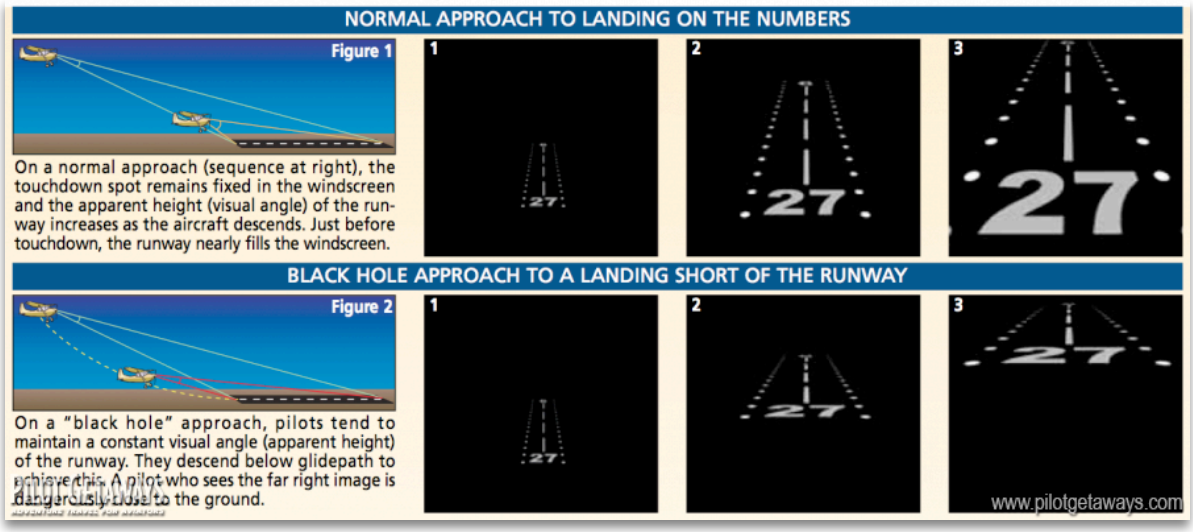
Active Listening

For the most part, we as pilots should be taught to listen carefully to what is going on around us in order to maintain the highest degree of situational awareness possible. Encased in that cocoon we call a cockpit, flight deck or just the pointed end of the flying machine, we sometimes forget to maintain an awareness of how other traffic is being handled by ATC and how we fit into the overall picture.

Today, air carrier as well as corporate flight departments devote a great deal of flight crew training that includes communication and decision making that are designed to improve situational awareness. An important part of that situational awareness is the interaction, or in the above mentioned case, a lack thereof between a pilot and an air traffic control specialist.

Piloting in the IFR environment is a challenging and rewarding activity—most of the time. But on occasion, when things go wrong, it can be a stressful, and perhaps traumatic situation for the controller—but it is always a life or death proposition for the aviator.

Good N.I.G.H.T. (I = Illusions)



Technological advances can provide all kinds of enhancements to situational awareness, but our sensory perceptions — including the famous "Mark II Eyeballs" — haven't evolved nearly as much. Accidents and incidents still occur because human beings fall prey to one or more sensory illusions.

With fewer orienting cues in the night flying environment, visual illusions can be amazingly (and sometimes tragically) powerful. Since forewarned is forearmed, now is a good time to review some of the potential sensory illusions.

Learn more about illusions at night in the current “FAA Safety Briefing” magazine issue at http://1.usa.gov/FAA_ASB.

Flying high

Earlier last month, flight NL-142 carrying 121 passengers and crew, made an emergency landing emergency landing at Lahore airport. While there were no casualties, at least 10 passengers suffered minor injuries. Soon after, the Civil Aviation Authority (CAA) said the captain of the flight, was drunk and fatigued as he flew the plane.The CAA put forward a preliminary report which revealed that the pilot in command had an unacceptable level of blood alcohol and lactate that indicated the pilot was fatigued.

The International Civil Aviation Organization (ICAO) reports that there is a fatal accident ratio of one per million flights, and that the main cause is Pilot In Command error.

Years of simulator studies by US Federal Aviation Authority (FAA) and research conducted by Stanford University’s Aviation safety Laboratory on effects of alcohol consumption have established that impairment occurs at surprisingly lower levels.

In our country, the primary role of CAA is its regulatory function of acting on behalf of ICAO to ensure that aircraft owned or leased by airlines under its regulatory control or foreign airlines operating into Pakistan have structural integrity with all essential avionics, engines, landing gear, flight controls, weather radar, onboard emergency equipment and essential navigation equipment necessary for safe conduct of flights.

Issuance of licenses such as ALTP (Airline Transport Pilots) License and Aircraft Engineers License, Flight Operations Officers License, Trim Sheet License and others are issued to individuals who meet minimum essential professional competence standards and required medical fitness with history of no addiction to alcohol or drug abuse and have no criminal record.

Our aviation regulator is unable to establish a system to catch those pilots who are indulging in drug or alcohol abuse, leaving this to other countries to monitor instead. For example, PIA pilot Capt Irfan Faiz was caught at Bradford Airport in September 2013, after he had reported for duty to operate PK 776 to Islamabad with alcohol level well above the prescribed limit.

He was charged with a criminal offense under British Law for reporting under influence of alcohol thereby endangering lives of 180 passengers, other aircraft, the airport and the airspace which he would have flown out to on takeoff.

CAA which had issued him the license should have proceeded with disciplinary action by revoking or cancelling it after having received results of the alcohol concentration report. Also, PIA should have proceeded in accordance with its own rules and laws of Pakistan. But this did not happen.

One of the regulatory functions of CAA is also to carry out random checks for drug and alcohol abuse on airline pilots, technicians and other licensed operational staff so that flight safety is not compromised or jeopardized. This does not happen as frequently as it should.

Moreover, it is conflict of interest of professional inspectors and senior executives who, while being on payroll of airlines under its regulatory control, are assigned important sensitive assignments which involve regulatory checks on airlines under the jurisdiction of the CAA.

As a result, lack of credible accident investigations have not been carried in recent fatal accidents and incidents, with net result that next of kin still await proper compensation, despite having lost their dear ones several years ago.

Since CAA has an abundance of funds it must have on its payroll Flight Safety Inspectors who neither receive any remuneration or benefits from airlines whose pilots, engineers and air worthiness of aircraft they are required to inspect.

It must also have certified doctors and medical staff to carry out random check of all pilots and staff employed by airlines.

All Ground Handling Agencies, Cargo Agencies involved in handling of aircraft and booking of air cargo must be regulated by the CAA. The enforcement of strict corporate ethics like Conflict of Interest, with zero tolerance for any criminal history, is a basic necessity for any individual assigned regulatory duty.

For example, CAA should check why private airlines are hiring pilots who have retired from PIA or sacked for submitting fake degrees, criminal activity or accused of sexual harassment or money laundering etc – is it only because it saves them money on training. Much needs to be done.

http://tribune.com.pk/story/991150/shaheen-air-crash-landing-pilot-was-tired-drunk-caa/

FAA urges pilots to test headsets

The FAA is warning pilots that they may be missing important sounds, including cockpit warnings that aren't transmitted over the intercom system, when wearing noise-canceling headsets. In a special airworthiness information bulletin issued Nov. 20, the FAA urges pilots to evaluate their headsets during normal ground and in-flight operations to determine whether alarms and environmental sounds are audible when using noise attenuation."Noise-canceling headsets are valuable tools that help reduce pilot fatigue, increase comfort, and deliver clearer communications," said Justin Barkowski, AOPA director of regulatory affairs. "But it's important to know what you may be missing when you're using them. That's why we're encouraging our members to review the advisory information provided by the FAA."

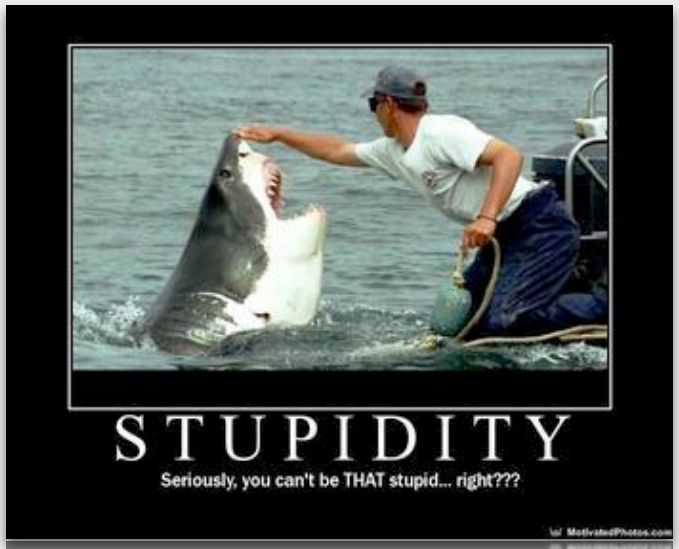
The bulletin, SAIB CE-16-08, advises pilots who cannot hear cockpit alarms or such environmental sounds as wind, vibration, or unusual mechanical or engine noises to find other solutions.

Similar information was provided in Information for Operators 07001 issued in January 2007. Although the information was directed primarily at commercial operators, general aviation pilots are now being encouraged to review that information as well.

http://download.aopa.org/advocacy/151120_FAA_SAIB_CE_16_08.pdf

http://download.aopa.org/advocacy/FAA_InFO_07001.pdf

Study Reveals Why We Do Stupid Things



How's this for a stupid study: Researchers at Eotvos Lorand University in Budapest, Hungary, set out to discover the criteria people use when determining that a particular behavior is, well, stupid, Live Science reports. It turns out it doesn't exactly take a rocket scientist: Judging whether something is stupid "comes instantaneously," researcher Aczél Balázs says. "If one person calls something stupid, there's a high likelihood others will do the same thing." In fact, the rate of agreement was 90%, the Huffington Post notes. Researchers found that behaviors deemed stupid stem from three primary conditions: Overconfidence: You thought you could, but you couldn't.

- Lack of control: You knew you shouldn't, but you did.
- Absent-mindedness: You weren't paying attention.

In the study, researchers gathered online anecdotes describing behaviors that had been called stupid. They asked 154 students to read them and determine if they were, indeed, stupid. Then, the students chose reasons why a behavior was stupid from a list. Some interesting takeaways:

- People with high intelligence aren't necessarily immune to doing stupid things.
- A determination of stupidity is based on the observer's expectations for a person's behavior; the person engaged in stupid behavior may have different expectations.
- Understanding the causes of stupid behavior may help people warn others from engaging in it—rather than saying, "You're being stupid," one can say "You're being overconfident."

No matter what, Balázs tells Live Science, we not only recognize stupidity when we see it, we love to "watch other people doing something stupid as a source of amusement."

UV LED Leak Detection Flashlight Easily Spots All Aviation Fluid Leaks

Spectronics Corporation manufactures a line of ultraviolet flashlights that help aviation maintenance technicians find leaks, drips and seeps in fluid systems in mere minutes. They really appreciate the time it saves in diagnostic analysis, reduction of labor costs, and decrease in equipment down time.

Spectroline® OPTI-LUX™ 365 (part no. OLX-365) LED leak detection flashlight provides UV light for optimal fluorescent dye response. It's ideal for all aviation fluid system applications.The unit is more than twice as powerful as most corded, high-intensity UV lamps. It works with Spectroline® Aero-Brite™ universal fluorescent dye, producing a brilliant glow that makes all leaks easier to locate. It pinpoints even the most elusive leaks the first time and every time.

The OPTI-LUX 365 is extremely compact and lightweight. With its powerful UV LED, the leak detection flashlight has an inspection range of 25 feet (7.6 m) or more. Powered by one rechargeable lithium-ion battery (extra battery included in kit), it provides 4 hours of continuous inspection between charges. The rugged, anodized aluminum lamp body reduces corrosion and stands up to years of heavy use.

The flashlight comes complete with a lanyard, belt holster, two rechargeable batteries, smart charging cradle with AC power cord and UV-absorbing spectacles, all conveniently packaged in a padded carrying case.

Headquartered in Westbury, New York, Spectronics Corporation invented fluorescent leak detection in 1955, and remains the world's leading manufacturer of ultraviolet equipment and fluorescent dyes. *Spectroline*® cutting-edge, top-quality, industry-awarded lamps, dyes, radiometers and diagnostic tools are built to exacting standards, and are used for literally dozens of markets, some of which include Industrial, Air Conditioning & Refrigeration, Laboratory, Semiconductor, Nondestructive Testing and Forensics. Spectronics Corporation is dedicated to upholding high standards in design manufacturing, ensuring customer satisfaction and developing innovative technologies that make the world a better place.

For more information, call toll-free 1-800-274-8888. Outside the U.S. and Canada, call 516-333-4840. Website at **www.spectroline.com**.

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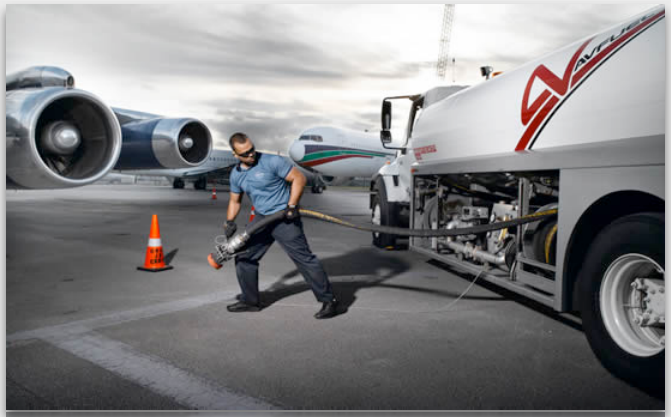
Avfuel enhances online training, promoting best practices for safe fuel-handling



Avfuel Corporation will release six new modules for its Online Rampside Training Course by year-end to help FBOs train staff on best fuel-handling practices, promoting higher safety standards at Avfuel-branded locations.

The new modules include tips for trainers, de-ice and anti-ice procedures, aircraft marshaling, towing, radio etiquette, and record keeping.“We are very excited to add these new tools to our existing Online Rampside Training Course,” said Buffey Muth, marketing manager for Avfuel. “Our highest mission is safety; these supplementary lessons will offer our FBOs more convenient tools to train their employees on safe handling procedures. This helps ensure our branded customers not only meet industry standards, but exceed them.”

Avfuel’s training system came in response to an industry-wide push for standardized practices. Knowing not all FBOs could afford the steep price of training programs - an issue exasperated by employee turnover and recurrent training needs - Avfuel developed its online learning management system to offer its network cost-effective training solutions.

With only one subscription needed at each FBO to cover every employee, the course is beneficial for both large and small operations.

Currently, Avfuel's Online Rampside Training Course educates employees on fuel handling and fire safety, aviation fuels and additives, fuel system icing inhibitor (FSII), contaminants and fuel-testing methods, procedures for receiving a load of aviation fuel, aviation fueling components, fuel storage systems, mobile refueling equipment, aircraft fueling and general operations, and paperwork. Designed with the FBO in mind to complement hands-on training, the rampside course offers a learn-at-your-own-pace format ideal for new employees and recurrent training programs with the use of video tutorials, proficiency tests and supplemental training guides.

The new modules will be available by the end of the year for current subscribers and will be included in all future Rampside Training subscriptions.

https://www.avfuel.com/

You're waking up wrong

With apologies to Ben Franklin, the very act that's supposed to make you healthy, wealthy, and wise can also be a royal pain.

As the literal first thing you do in the morning, waking up can easily set the tone for how productive and happy you'll be for the day. Yet getting out of bed early and rested is a challenge for millions of people. A study last year by the American Sleep Foundation found that 39 percent of people reported being at least a little bit tired during the previous week, and most of those people wished they got more shut-eye on workdays.Fortunately, science is on the case: Hundreds of researcher hours have been devoted to understanding why so many of us struggle to sleep soundly and wake up refreshed. Through interviews with researchers and a review of the studies, I've been able to create an evidence-backed guide for hacking your morning routine.

- Harness the light.

Blackout blinds come with a conundrum: While the pitch dark may let you sleep like a baby, it can make rolling out of bed come daybreak much harder. The reason: Light suppresses the production of the sleep-inducing hormone melatonin. Without those morning rays, it's simply harder to get up.

One solution is to invest in programmable shades, like the Lutron Serena shades, which can be scheduled to open automatically at the waking hour of your choosing.

If your appointed in-time requires you to wake up before the sun does, plenty of companies make artificial lights that you can program to turn on when you need to be up, some of which mimic the natural creep of daylight into your morning. For the best morning jolt, select a light with a bright blue glow. Bluish-white light such as that produced by fluorescent bulbs is more effective than a warm orange or red-tinged bulb when it comes to suppressing melatonin and giving you energy, according to Randy Nelson, the chair of neuroscience at Ohio State University's Wexner Medical Center.

I like the Philips Hue system (about $200 for a three-bulb starter pack). Its bulbs come in a variety of shapes and sizes, and can be set for an energy-boosting morning blue or a sleep-inducing red at night. Philips also makes a variety of "wake-up" lights that are designed to simulate a sunrise. For a less expensive option, Shalini Paruthi, a fellow at the American Academy of Sleep Medicine, suggests outfitting existing lamps with holiday light timers. "They cost just a couple of bucks, making it easy to install if you have a large house with several bedrooms," the doctor said.

- Drink caffeine early (and potentially often).

You probably know that your morning coffee can boost attention, vigilance, and focus-ideal traits for powering up your productivity-but recent research also suggests it can bolster memory.

"We found that caffeine seems to let people memorize things better and for longer periods," said Michael Yassa, assistant professor of neurobiology and behavior at the University of California at Irvine, whose lab has researched the topic.

Lest you search for a one-size-fits-all solution to caffeine consumption, Yassa stresses that individuals handle the drug in different ways, and that the ideal dose varies. While a few recent reports have touted the wisdom of a single best time to drink your coffee in the morning (typically about an hour after waking up), Yassa is skeptical. Just make sure you grab your joe before hitting the road: A 2000 study published in the journal Psychophysiology suggests caffeine can significantly reduce the risk of getting into an accident during a morning commute.

- Maximize your natural awakening response.

While our conscious minds are at war with the snooze button, our bodies fight mightily to get us out of bed. One tactic: an early-morning spike in the energy-boosting hormone cortisol, which tends to rise roughly 50 percent soon after we open our eyes. And despite cortisol's reputation as a "stress hormone," this so-called cortisol awakening response is actually a good thing for an up-and-at-'em day.

It's also a fragile thing, with research suggesting that numerous factors-including many that are completely within our control-can reduce the response and our a.m. energy with it. Things that can dull the cortisol awakening response include consuming aspirin; sleeping through constant low-frequency noises, like the sound of street traffic; and waking up in complete darkness(yet another reason to let the sun in in the morning).

- Skip the intense workout.

You can probably guess that exercising in the morning, or really any time you can squeeze it in, is a good idea. But according to Costas Karageorghis, a sports psychologist at Brunel University London who studies performance, a wake-up routine is not the place for vigorous workouts such as heavy weightlifting or sprinting, or activities that require more attention than your drowsy brain can deliver, like cycling on high-traffic roads.

"Injury risks are heightened in the early morning because the muscles, joints, and supporting structure are less supple following a night of being almost motionless," Karageorghis said. "My advice is that people engage in low- to moderate- intensity activities early in the morning and leave any high- intensity activities for later in the day."

- Take a cold shower.

If it feels like a cold shower knocks some sense into your sleepy head, that's because it does: Research has long shown that exposure to cold water-either through taking a shower or by drinking a glass of ice water-can activate the sympathetic nervous system(that's the one responsible for your fight-or- flight response) and give you an eye-opening spike in adrenaline.

Cold showers may have other health benefits as well. Some researchers even hypothesize that their ability to kick an "overwhelming amount of electrical impulses from peripheral nerve endings to the brain" could serve as a viable treatment for depression.