



Aviation Human Factors Industry News

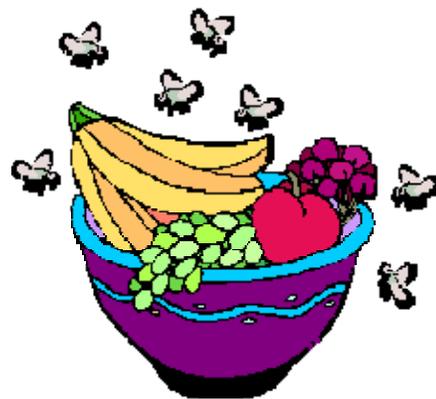
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[Need a Nap? Spit Here](#)

ScienceNOW Daily News
11 December 2006

Those living in fear of being operated on by a drowsy doctor or run over by an exhausted truck driver may be in for some good news: Researchers have found a [protein in flies and human saliva](#) that seems to signal how [sleepy](#) an individual is. If scientists can develop an accurate test for this beddy-bye biomarker, managers may be better able to keep worn-out workers off the job.



Scientists have identified a number of genes that control sleep cycles--and even how deeply we sleep ([ScienceNOW](#), 12 October 2005)--[yet there is still no simple biological way to quantify how sleepy someone is](#). The first tantalizing clue came last year when neurobiologist Paul Shaw and his team at Washington University in St. Louis, Missouri, [found that when fruit flies get sleepy, they make more amylase--an enzyme found in human saliva that breaks down starches. The protein did not appear to control sleep](#), says Shaw, but he wondered if it could serve as "a readout of being sleepy."

The next step was to measure **amylase levels** in flies kept awake through chemical stimulants, such as caffeine. Flies take short naps during the day, and researchers can judge how tired the insects are by observing how much extra naptime they need. After a several hours spent wired with caffeine, flies deprived of sleep for 9 to 12 hours increased their nap length 2 to 7 fold. In addition, their amylase levels were five times those seen in flies not given caffeine. In another experiment, the team marked the amylase with a bioluminescent protein. Flies kept awake using caffeine glowed brighter than those allowed to sleep on their own schedule, the team reports online this week in *Proceedings of the National Academy of Sciences*.

The findings appear to hold true in people as well. When the team deprived nine volunteers of sleep for 28 hours, all showed either higher levels of amylase protein or amylase messenger RNA (an indicator of gene activity) in their saliva than they did after a normal night's sleep.

Although more study in humans is needed, "such a finding could eventually lead to a practical assay for sleepiness **to identify people at risk for sleepiness-related mishaps,**" says James Walsh, a psychologist at Saint Louis University in Missouri and a past president of the National Sleep Foundation in Washington, D.C. David Dinges, a psychologist at the University of Pennsylvania in Philadelphia, agrees. "This is a fundamentally **important first step** towards developing biomarkers for sleepiness," he says. "I'm very encouraged by this work."

Fatigue Fingered in Jet Crash

Fatigue can leave workers in a fog – which isn't a good atmosphere for clear, safe decision-making. The crash of a 747 cargo jet at Halifax International Airport in mid-October 2004 **is being blamed in part on flight crew fatigue.**

Seven MK Airlines Ltd. crew members died when the big jet failed to gain sufficient altitude on takeoff, struck a berm at the end of the runway and crashed into an adjacent forest.

A Transportation Safety Board of Canada (TSB) investigation found that the speed and thrust settings selected by the crew in preparation for a flight to Spain were incorrect for the weight of the aircraft. **The TSB says the crew did not receive adequate training on a computer program used to calculate takeoff velocity and necessary power for flight.**



As a result the airplane was traveling about 30 knots (35 miles an hour or 56 kilometers an hour) slower than the 160 knots that would have been required for a safe takeoff with the load it was carrying.

Crew fatigue and a dark takeoff environment contributed to the crash, according to the board. It is calling for implementation of an on-board takeoff performance monitoring system "to ensure that crews of large aircraft will be alerted in time when there is not enough power to take off safely."

Such a device does not currently exist. Since the airplane's flight voice recorder was destroyed in the crash, investigators do not know what the crew was saying in the seconds leading to the crash.

The TSB found evidence that 12 similar accidents involving insufficient power on takeoff had resulted in 300 deaths around the world. Fatigue can put your workers at risk.

Boeing 767 Smashes Into Tug

A ground crew at London Luton Airport started towing a Boeing 767 forward after the aircraft had been pushed back from the gate. The aircraft's engine were running at idle power. **Whole doing this, the tug's towbar shear pins failed, the tug driver applied brakes to stop, and the aircraft's inertia caused the towbar to jack-knife than smash into the aircraft.**



The contact punctured the underside of the aircraft fuselage aft of the nose landing gear, bent two fuselage frames and damaged the left nose landing gear tire, according to a U.K. Air Accidents Investigation Branch report published on Nov. 9. The incident, which happened on Feb. 16, 2005, resulted in **the AAIB issuing a safety bulletin (2006-060) recommending that airport operators ensure their safety management systems include safe standards of maintenance for all vehicles and ground equipment that operate close to aircraft.**

The AAIB's investigation revealed that the two towbar shear pins had suffered overload failures at tow locations on their shanks, as intended by design. **However, corrosion was evident on some parts, including old shear failure.**

Neither the airline, airport operator or ground handling company thought it owned the vehicle, so as a consequence, no one hand maintained it for quite a while. In addition, the two ground handling company staff operating the tug had received training for push-back maneuvers but not pull-forward tasks. The push-back training taught the tug driver to apply brakes in the event of shear-pin failure, which is appropriate for that procedure but not for forward operations,

[Human error blamed for 2004 plane crash](#)

Human error.

That's what the National Transportation Safety Board said is responsible for the crash of a corporate jet in Southeast Houston two years ago.



The two pilots and flight attendant onboard were killed.

The NTSB's final report was released Monday.

The Safety Board's findings showed that the flight crew's failure to adequately monitor and cross check the flight instruments during the approach caused the accident.

Contributing to the accident was the flight, the report said, was the crew's failure to select the instrument landing system frequency in a timely manner and to adhere to approved company approach procedures, including the stabilized approach criteria.

"It is imperative that flight crews maintain their vigilance constantly during all phases of flight," NTSB Chairman Mark V. Rosenker said. "The circumstances of this accident support the Board's effort to have the Federal Aviation Administration include mandatory crew resource management training in Part 135 operations. This issue was added to the Board's Most Wanted List of Transportation Safety Improvements last week."

The plane was en route to pick up former President George Bush when it hit a light pole and crashed three miles southwest of William P. Hobby Airport in 2004.

The Gulfstream G-11592A (N85VT) was operated by Business Jet Services Ltd.

It was to take Mr. Bush to Ecuador.

The family of a flight attendant killed in the crash has filed a wrongful death lawsuit.

The flight attendant's family claims the two pilots who also died in the crash were inexperienced in flying that type of jet.

The National Transportation Safety Board added **crew resource management (CRM)** for Part 135 operators to its list of "Most Wanted" safety recommendations. NTSB annually reviews the list - first released in 1990 - to highlight recommendations the safety board believes would significantly improve safety in the various modes of transportation. "Our Most Wanted List puts extra pressure on our nation's transportation safety regulators to act more quickly on our recommendations," said NTSB Chairman Mark Rosenker. "We've made progress, but this year's list again shows that there are numerous areas that need improvement and they need improvement now."

The safety board included **Part 135 CRM after investigating several accidents involving on-demand air taxi operators that did not have a CRM program in place or had only a minimal program.** One of those accidents included the crash that killed Sen. Paul Wellstone (D-Minn.) in 2002. NTSB noted CRM is required for Part 121 and scheduled Part 135 operators. "Although the FAA has agreed in principle with the recommendation, no discernable progress has been made," the safety board said. **NTSB is recommending that FAA require Part 135 operators that conduct dual-pilot operations to implement an FAA-approved CRM training program that meets Part 121 standards.**

The safety board also renewed its call for FAA to implement a safety system that would warn flight crews of potential ground incursions. **The issue of runway incursions has been on NTSB's list since the list was first drawn up in 1990.** The safety board credited FAA with taking a number of actions to help reduce runway incursions, including introduction of a system that warns air traffic controllers. "However, these incidents continue to occur with alarming frequency," the safety board said, noting that there were 327 incursions in fiscal 2005 and 330 in fiscal 2006.

Co-pilot In Comair Crash Hires Lawyer

The only survivor of a jet crash that killed 49 people in Lexington, Ky. - the plane's co-pilot - has hired a lawyer who specializes in aviation accidents.

James Polehinke, 44, of Margate, Fla., **faces a wrongful-death lawsuit** in the fiery Aug. 27 crash that seeks damages in excess of \$75,000 and names Delta Air Lines Inc. and Delta subsidiary Comair Inc. as defendants, The South Florida Sun-Sentinel reports.



At least 16 other lawsuits have also been filed against Delta, Comair or both companies in connection with the crash. It is unclear if Polehinke is a defendant in any of them.

The pilot returned home this weekend after spending two months at a rehabilitation hospital.

Polehinke was pulled from the wreckage and **underwent surgery for his injuries, including an amputation of his left leg. Doctors later said he had suffered brain damage and had no memory of the crash or the events leading up to it.**

The Flight 5191 crash occurred before dawn after the plane took off from the wrong runway at Blue Grass Airport in Lexington. The National Transportation Safety Board is investigating the accident.

[University of Idaho students study B-52 human factors](#)

12/11/2006 - EDWARDS AIR FORCE BASE, Calif. (AFPN) -- Seven students and a professor from the University of Idaho visited several organizations here Dec. 5 for a subsystem evaluation on the B-52 Stratofortress.

The University of Idaho students are attending a graduate-level course, called advanced human factors, and were assigned to a class project here.

The assignment was for the students to gain familiarization with a specific subsystem on the B-52 using the MIL-STD-1472F, **also known as the human factors bible**, for all controls on an aircraft or vehicle. Students will evaluate a particular subsystem on the B-52 and then write a report -- a requirement for all students prior to their completion of the course.

Dr. Curt Braun, a University of Idaho associate psychology professor, **said a major component of the class is the application of existing design standards or human factors guidelines.**



Capt. Miles Middleton shows equipment in the weapons bay of a B-52 to students from the University of Idaho who were visiting Edwards Air Force Base, Calif., Dec. 8. The students are studying advanced human factors and familiarization with the bomber is part of a class project. Captain Middleton, a B-52 pilot, is the 419th Flight Test Squadron B-52H test project officer. (U.S. Air Force photo/Airman Stacy Sanchez)

"Since these were **human factors** students who are working on their masters degrees, I thought it would be nice for them to meet actual **human factors** engineers who work at Edwards," said Patricia Dunavold, a human factors engineering psychologist. "The students are working on cutting-edge projects that our engineers would like to hear about as well."

While on the B-52, the professor and students looked over the subsystem of the aircraft to assess how it could be improved. The professor uses several standards to evaluate systems on an aircraft or a vehicle, and students are learning those same techniques. They evaluated the cockpit and navigation system as well.

"My students and I have done multiple studies on nuclear power facilities but saw Edwards as an opportunity to evaluate a military aircraft," Dr. Braun said. "This is something we have never done before."

Dr. Braun said he has learned the value of giving his students the opportunity to show them where their education can be applied, and because the B-52 was built in the 1950s he wanted students to see its design progressions.

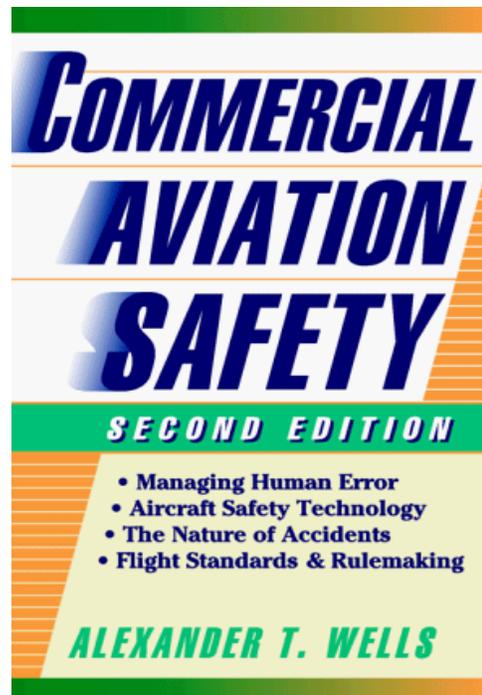
"The B-52 is a unique aircraft since it has been in service for so long," Dr. Braun said. "It is designed with the technical understanding that it is older than most people who fly it, and this aircraft was perfect in the human factors aspect."

After the evaluation of the B-52, students will write independent reports on what they saw and how they think they can improve a particular subsystem.

[NTSB Issues Safety Recommendation In Wake Of Comair Accident](#)

Cites No Crew Coordination Of Runway After Takeoff Clearance Based on last summer's accident involving Comair flight 5191, and five other previous accidents and/or incidents of **crews using the wrong runway for take off**, the NTSB has issued specific recommendations to amend FAR Part 121 rules.

The NTSB's recommendation amounts to a formal request for the FAA to mandate all Part 121 operators "...**establish procedures requiring crewmembers on the flight deck to positively confirm and cross-check the airplane's location at the assigned departure runway before crossing the hold-short line for takeoff.**"



The FAA's (non-mandatory) Advisory Circular (AC) 120-74A from September 2003 already suggests, "Before entering a runway for takeoff, the flightcrew should verbally coordinate to ensure correct identification of the runway and receipt of the proper ATC clearance to use it." The NTSB's recommendation asks the FAA to make the suggestions in AC 120-74A mandatory.

Runway 26 at Lexington Blue Grass Airport **was not lighted** the morning Comair's flight 5191 crashed. The plane's CVR recorded the pilots' comments on the lack of edge lighting even as they initiated the take off from the too-short runway. As a result, the NTSB has further requested the FAA to "...require all [Part 121] operators provide specific guidance to pilots on the runway lighting requirements for takeoff operations at night."

The NTSB cited several similar past occurrences of crews using the wrong runway. Among them, two incidents at Houston's William P. Hobby Airport where crews used Runway 17 instead of 12R as cleared. In both instances the aircraft struck barriers on the closed runway, but were able to continue on to their destinations. As a result of those incidents, the majority of US-based carriers adopted NTSB recommendations for pilots to cross-check heading indicators after lining up for take off on the runway. In fact, the pilots of Comair's flight 5191 both had heading bugs set for a departure on Runway 22.

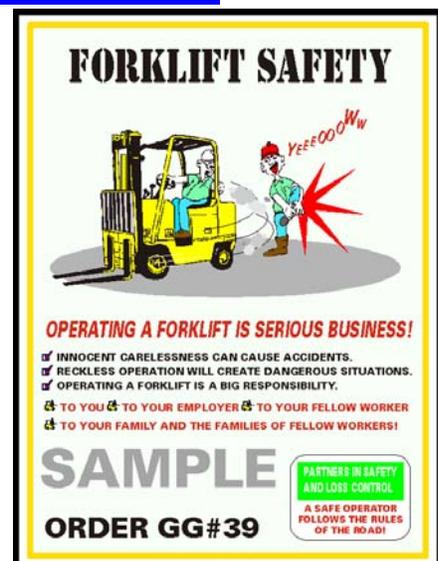
The NTSB isn't the first safety agency to suggest verbal confirmation of runway selection between pilots prior to take off. In October 2000 a Singapore Airlines 747 attempted to take off from a runway under construction at Taiwan's Chiang Kai-Shek International. That crash killed 83 people and prompted a recommendation from Taiwan's Aviation Safety Council that Singapore Airlines "include in all company pre-takeoff checklists an item formally requiring positive visual identification and confirmation of the correct takeoff runway."

The NTSB says it queried NASA's Aviation Safety Reporting System and found 114 incidents of pilots using the wrong runway for take off between March 1988 and September 2005.

INEXPERIENCED TEEN CRUSHED BY FORKLIFT

A 17-year-old teenager who was operating a defective forklift in a construction yard in Portsmouth, UK, died suddenly when the machine overturned and crushed him.

A jury learned that Joey Knowles worked as a laborer for his uncle's company, but the young man was not properly trained to drive the forklift around the yard.



An investigation also revealed that the machine was defective.

For example, there were problems with the steering mechanism, and the brakes were ineffective. It was also discovered that the driver's seat was unsecured and there was no seatbelt.

According to Knowles' older brother, the teenager had been spinning the vehicle before it overturned.

Accidental death was the verdict delivered by the jury. However, Britain's Health and Safety Executive is continuing to investigate.

The Laws of Lifetime Growth

I *never* start my sentences with "always." Well, *almost never*. Here are 10 exceptions - the laws of lifetime growth. They come from The Strategic Coach, Inc. (strategiccoach.com).

1. Always make your future bigger than your past.
2. Always make your learning greater than your experience.
3. Always make your contribution bigger than your reward.
4. Always make your performance greater than your applause.
5. Always make your gratitude greater than your success.
6. Always make your enjoyment greater than your effort.
7. Always make your cooperation greater than your status.
8. Always make your confidence greater than your comfort.
9. Always make your purpose greater than your money.
10. Always make your questions bigger than your answers.



GO FIGURE

Holiday Toy Safety

152,400

Question: What does this figure represent?

Answer: The estimated number of children under 15 who were treated for toy-related in US hospital emergency rooms in 2005.

Here are some more statistics on toy-related injuries:

20 – The number of children under 15 who died in 2005 from a toy-related incident

45 – The percentage of those deaths that occurred when a child choked or aspirated on a small ball or small toy part.

(Source: US Consumer Product Safety Commission)

Toy Safety Tips

To keep kids safe this holiday season (and all year-round), ask yourself these 5 questions before buying a toy:

1. Is the toy age-appropriate? Respect age specifications recommended by the manufacturer. Toys that are designed for older children might contain safety hazards for younger children.

2. Has the toy passed the test? Buy safety-tested products. Products that contain the mark of independent, third-party product safety and certification organizations, such as Underwriters Laboratories (UL), have been tested for safety.

3. Is the toy a choking hazard? If you're buying a toy for a child under 3 years of age, check that all parts of the toy are larger than the child's mouth. Use a paper towel roll as a guide. If a toy or a part of a toy fits inside the center of the roll, then it poses a choking hazard. Other choking hazards include parts that could break off, such as buttons or beads.



These wooden rings can break and pose a choking hazard. (This toy's been voluntarily recalled.)

4 Is the toy a strangulation hazard? Pull toys with strings longer than 12 inches are particularly dangerous for babies.

5. Is the toy toxic? When buying paint sets, crayons or markers, make sure that they are labeled nontoxic.

The benefits of good connections

Strong relationships with others can improve our health and help us live longer.

For many of us, the holidays mean family gatherings, parties with friends, religious services, and community activities. Such occasions provide an opportunity to check in with relatives, friends, and acquaintances; exchange ideas; offer warm greetings and hugs; and perhaps lend a supportive ear or shoulder.

Social connections like these not only give us immediate pleasure, **they also influence our long-term health in ways every bit as powerful as adequate sleep, a good diet, and not smoking.** Dozens of studies have shown that people who have social support — that is, **satisfying relationships with family, friends, and their community** — are happier, have fewer health problems, and live longer. On the other hand, a relative lack of social ties is associated with an increased risk for premature death from all causes as well as depression and later-life cognitive decline.

Scientists are investigating the **biological and behavioral factors** that account for the benefits of social support. For example, **they've found that connecting with others can help relieve harmful levels of stress, which can adversely affect coronary arteries, gastrointestinal function, insulin regulation, and the immune system.** One intriguing line of research suggests that caring behaviors can activate certain hormones that counter stress.

Research has also identified a range of activities that qualify as social support, from offers of help or advice to expressions of affection. Evidence also suggests that the life-enhancing effects of social support extend to giver as well as receiver.





All of this is encouraging news because caring involvement with others — the lifeblood of social support — may be one of the most accessible health strategies we have. It's inexpensive, requires no special equipment or regimen, and we can engage in it in many ways.

How to stay connected at holiday time

Keep in mind that the holiday season is short and you can only do so much. Choose activities that are most likely to bring joy to you and the people you care about. Use the time at any “obligatory gatherings” to deepen or newly explore a few relationships that matter most to you, rather than touch superficially on everyone in the room.

Try to delegate or discard tasks that eat into your time, or do them together with friends or family members. Instead of trying to squeeze all your socializing into the holidays, make dates to see friends in the following weeks. Be flexible; this may be the year for a family vacation instead of the usual round of events and gatherings.

The quality of relationships matters. For example, the University of Pittsburgh's Healthy Women Study found that among women at mid-life, those who were in highly satisfying marriages and marital-type relationships had a reduced risk for cardiovascular disease compared to those in less satisfying marriages. Other studies have linked disappointing or negative interactions with family and friends with poorer health.

Having a network of important relationships can also make a difference. A large Swedish study of people age 75 or over concluded that the risk of developing dementia was lowest in those with a variety of satisfying contacts with friends and relatives. One idea is that we stay sharp by negotiating the complexities of many and varied relationships.

Around the holidays, it's easy to get caught up in all the planning and preparations and perhaps lose track of their deeper purpose — providing an opportunity for people to come together.

Of course, not all forms of holiday conviviality are health-promoting (for example, eating or drinking to excess). Likewise, social contacts don't uniformly enhance our well-being. So, in the whirl of the season's activities, **take time to foster your most meaningful relationships.**

Incident Roundup complements of NATA Safety 1st Management System (SMS) for ground.

INCIDENT ROUNDUP

- ❑ **Caravan/Citation:** A taxiing Citation's wing tip struck a parked Caravan's prop and engine nacelle. Caution should be exercised to ensure ramp taxi areas (AOA) provide adequate separation.
- ❑ **Cirrus SR 22** landed with tow bar still attached to nose wheel.
- ❑ **G-IV:** Aircraft separated from tug/towbar and rolled on top of tug. Significant damage. While this event is under investigation, it is important to remember training, correct equipment and the area of intended operation. Towing accidents will be the feature article for January 2007.
- ❑ **B737/Tug:** The tug was preparing to push back the Boeing 737 from a gate when it became wedged under the plane's nose. No one was on board the jet and the tug driver was not injured. A spokesperson said he did not know why the tug was pushing the plane back as the jet was not preparing to fly at the time. Fortunately the tug was not near the jet's fuel tanks.
- ❑ **DC-9/Tow Vehicle:** While under tow for maintenance, the tow bar twisted on a Boeing DC-9 aircraft.
- ❑ **A-340/Tow Vehicle:** An Airbus 340, while being relocated by tug to gate, struck a parked baggage cart, no passengers were on board and no injuries reported. Damage to the number four engine was reported.
- ❑ **B737/A340:** A Boeing 737 tail was struck by the wing of a passing Airbus 320. No injuries were reported but substantial damage reported by both aircraft.
- ❑ **Airbus 319** pulled into gate and nose gear rolled onto the leg of ramp worker.
- ❑ **MD-88/Loader:** A Boeing McDonald Douglas MD88 aircraft, while parking at the gate was struck by a loader, no injuries reported, damage reported was minor.

END