

## Aviation Human Factors Industry News November 3, 2008

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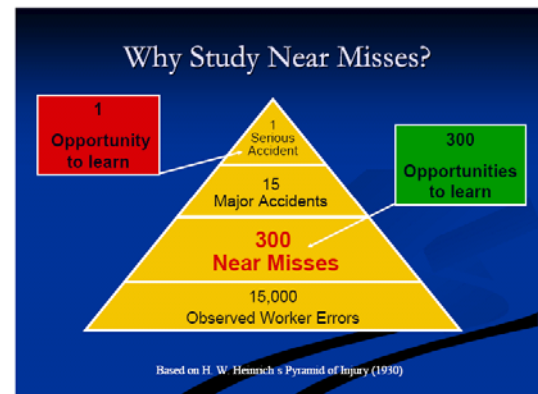
### *Your Personal Contribution To Safety*

Have you ever made a significant mistake; do you remember the feeling as you had to account for a personal error? While it's difficult admitting to these events, particularly when no one else appears to be aware, it is perhaps worth considering that these types of incidents are **not** unique happenings.

Errors of judgment may lead to honest mistakes being made; not surprisingly, in a complex environment such as **aircraft maintenance**, these can and often do occur on a regular basis. Many are considered as a **"near miss,"** because the systems of checks and balances that are in place, along with safeguards associated with modern equipment design, usually prevent the error from developing into an unsafe condition or a significant threat to safety. From our Human Factors training we know that the majority of these events sit at the bottom of the **'error iceberg,'** but unless minor incidents and their causes are considered they can materialize into something altogether more serious.

Errors have occurred in much the same way year-after-year, yet as an AMT community generally we appear unable to prevent them or perhaps learn from them. As a group **we need to raise the profile** of such occurrences through company reporting schemes (**JEMS**) and/or rising general awareness through ASAP, ASRS and CHIRP.

In endeavoring to change attitudes to human error, clearly doing nothing is not an option. It is self evident that to "Keep on doing what we are doing," we will "Keep on getting what we've got!"



Having the **confidence to raise issues** is one of the principal keys to developing a positive reporting culture in our industry. Taking advantage of a confidential reporting program, making an effective contribution to reducing error is certainly not easy, but it must remain a worthy goal.

The benefits of learning from other AMT's across the industry in a non-threatening environment can only be achieved if individuals are willing to provide the relevant information. In return, it is acknowledged that it is of paramount importance to reporters that the process for discussing incidents has a guarantee of being confidential in order to build the necessary trust that enables the process to succeed.

**Do you have an experience to share, from which others might benefit?**

### **Required Reading!**

#### ***Acting In The Company's Best Interests – A Salutory Tale***

**"I heard little alarm bells several times that evening....."**

"Have you every made a significant mistake," the following might be of interest and thought provoking! This true story was taken from the pages of **CHIRP** the **C**onfidential **H**uman **F**actors **I**ncident **R**eporting **P**rogramme of the U.K.

The aftermath of this incident, in which a nose gear axle snapped on landing, was an experience I would not recommend to anyone; however, it is one that I would personally like to pass on as a reminder as to **what can happen** given the right set of circumstance.

Looking back on it now, it has perhaps made me a better engineer. In fact, having not recommended the experience, maybe it would be a good idea to put every aircraft engineer through it just to put things into perspective! Character building, I think it is called.



It all started off on a Sunday, it was my day-off. At the time I was a Maintenance Control engineer for a major airline. It was a great flying day. I called Maintenance Control just to confirm that I was still on overtime the next day. While I was on the phone, I was asked if I fancied a trip to Southern Europe. Sooner rather than later!

So 50 minutes later I'm in the flight deck of a company aircraft in route to Southern Europe. I've left behind on very (very) irate wife, one delicious roast dinner and two disappointed children. I've driven in and leapt on board the held flight with **minimum tools** and a **hastily produced maintenance manual reference** for a wheel change, with **very little knowledge** of what I might find there.

On arrival I hadn't even reached the bottom of the steps when that agent asked **how long the job would be!!** I had heard on the HF radio on the way that it was a bearing failure of the right hand nose wheel; the wheel had been removed and stowed in the fwd cargo hold.

Some difficulty had been experienced removing the inner race from the axle, apparently. The damage to the axle was noted and verbal details passed to Maintenance Control, which was manned that night by an avionics engineer. He was **struggling to find any information** whatsoever as to damaged wheel axles and the limitations. I suggested that he should keep delving and I would call back.



It was at that point I was contacted by the pilot who had brought me out from the UK. He said **he was having difficulty refueling his aircraft**. I advised him on what to do and went over to assist for a few minutes. It seemed to be going OK so I left it to him and went back to the axle. By this time a gathering of crew, dispatchers and loaders had gathered around the axle! I was trying to buy some time for Maintenance Control at the time but it was **becoming increasing difficult**.

Now, it was as this point, with 20/20 hindsight, I should have **told the whole crowd to clear off**, leave me to my inspections and come back later when I've come to some sane and safe conclusion! However; for reasons I still cannot answer to this day I gave the graze on the axle a quick dressing, peered into the axle chamber with a torch and decided there and then it would be ok! Unbelievable, I know. But there you are.

Also at this point, the other captain wanted help again with refueling. So **I went over again**. This time a tank needed to be dipped due to incorrect calculations. So this I did teetering on the tip of a pair of inadequate steps, did the calculations and left him to it. That I didn't need either!

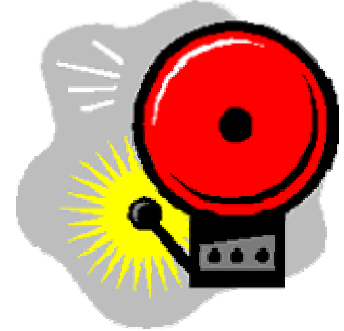
Upon return to the axle I do remember thinking "Right, let's get these nose wheels changed and get the hell out of here **'cos I've had enough of this.'**"

So I did just that! Started to change the wheels and told the dispatcher and pilot 30 minutes. Whilst pumping up the wheels I thought I'd try to look at the U/S removed wheel...no good; **it was buried** under baggage in the cargo hold; it had been that way ever since my arrival. When I eventually got to see the wheel much later in the U.K., it was a right mess! But to say it might have changed my mind if I seen it that night is pure speculation.....

So, there is the end of the **sorry tale**. I jumped on board and was praised by a number of passengers who had found out that it was I who had got them home from their holidays! Take off was smooth and retraction OK. But looking back, wouldn't it have been a mess had the axle failed on retraction braking? **My blood runs cold** to this day thinking of that scenario!

The rest is history. It was the side load at only 10-15 kts as we turned off the runway on landing that broke the camel's back. The aircraft was scheduled for one more ferry flight to our maintenance base but of course never made it.

In conclusion, **I heard little alarm bells several time that evening**. Firstly, the lack of technical data available; there is always (ALWAYS) information available about any piece of equipment on our aircraft and if you can't find it, find someone who can – but at 2300 hours on a Sunday night that can be a hard task especially when the **terminal is full with 200 pax waiting on your technical dithering!**



Secondly, I do remember thinking that the other pilot was being an unnecessary (no offence to him that had a legitimate problem) **distraction** to my already frazzled concentration. Finally, when I did commit pen to paper I called Maintenance Control for a last time to pronounce it serviceable. He still had no info for me. By that time it was half boarded and I had written it up in the log. I put the phone down....”Hmmmm maybe I should have waited.”

I expect that between reading this and the official report many other engineers will find other glaring errors and omissions. “Why did he do that?”; “what on earth was he doing?” etc. Don't you think I have not asked myself all those questions and more? **The main point is to put yourself in the situation.** Yes, I messed up. I was tired, I was hungry, I was distracted, I was under immense pressure, I had inadequate tooling and information. **All excuses I know but:** Does it sound familiar?.....Should you ever end up in a similar spot, please feel free to think of me. Put your hands up and say, **“STOP.”**

## NTSB ISSUES UPDATE ON BUSINESS JET ACCIDENT IN SOUTH CAROLINA

The following is an update on the National Transportation Safety Board's investigation of a business jet accident on September 19, 2008, at the Columbia Metropolitan Airport in South Carolina.



### ACCIDENT SUMMARY

On September 19, 2008, at about 11:53 p.m. EDT, a Learjet Model 60 (N999LJ) overran runway 11 while departing Columbia Metropolitan Airport (CAE), Columbia, South Carolina and destined for Van Nuys, California. **Tire debris** and portions of airplane components were found along the 8,600 foot runway.



According to witnesses and initial information, the beginning of the takeoff roll appeared normal, then sparks were observed as the airplane traveled along the runway. Just after the V1 speed callout, at about 136 knots, the crew reacted to a **sound consistent with a tire failure**, however they were unable to stop the airplane before exiting the runway. The airplane continued beyond the runway blast pad and through the approximately 1,000 foot runway safety area while striking airport lighting, navigation facilities, a perimeter fence and concrete marker posts. The airplane then crossed a roadway and came to rest where it struck an embankment on the far side of the road. Evidence of a fuel fire began on the airport side of the roadway.

The two crewmembers and two of the four passengers were fatally injured; the other two passengers suffered serious injuries. The aircraft was destroyed by extensive post-crash fire.

### SUMMARY OF NEW FACTUAL INFORMATION

The first piece of **tire debris was observed about 2,300 feet** from the departure end of runway 11. Numerous other pieces of **tire debris** were located along the runway. Scarring of the runway surface by the **left and right main gear tire rims** was evident starting at about the 5,200 foot mark and continuing down to the end of the 8,600-foot runway.

The marks led past the runway and through four rows of gravel at the bases of the instrument landing system antenna components. Approximately 150 feet past the end of the pavement, near the first set of lights, the main landing gear pistons and wheel sets with the brake assemblies were found. Both main landing gear (squat) micro-switches were found on the grass near the main landing gear.

The wheel sets were found with very little rubber other than tire beads. The general bottom features of the brake assembly were ground flat and the bottom of the ground area of the assembly exhibits heat-bluening. The hydraulic lines had extensive damage.



Preliminary examination of the right PW305A engine revealed that the accident exposed inlet guide vanes (IGV) and reference to a manufacturer's chart showed the orientations were consistent with high power at the time of impact. The thrust reversers were in the retracted/stowed orientations.

Parties to the investigation include the FAA, Learjet, Global Exec Aviation, Pratt and Whitney Canada, TSB-Canada, and Goodyear.

The full text of the update is available on the NTSB website at [http://www.nts.gov/ntsb/brief.asp?ev\\_id=20081003X16308&key=1](http://www.nts.gov/ntsb/brief.asp?ev_id=20081003X16308&key=1)



## Active Listening During Shift Turnover/Handovers

Listening is a skill, and to be good at it you need to practice. Learning how to be an active listener can help you retain information and can improve your communication with others. Improving your listening skills can also help avoid misunderstandings, which can be a source of stress.

There are three steps for active listening:

1. **Hearing** - Listening sufficiently to hear what the speaker is saying and being able to repeat it.
2. **Understanding** - What you think the person speaking might mean.
3. **Judging** - Does what the other person said make sense?



You can **improve your active listening** by **paraphrasing** and clarifying what the other person has said, and also by providing **feedback**. Using words such as "Do you mean..." and "Can you explain a bit more about..." can help both you and the speaker be clear about what has been said and agreed upon.

This may sound straight forward, and it is, but many people have **blockers** that stop them being good listeners.

Look at the **traits** below. Do you do any of these? If so, you may not be as effective a listener as you think you are!

**Mind reading.** You read the speaker's mind instead of hearing what they are saying. For example, "He said he liked it, but I can tell he didn't".

**Selective hearing.** You only pay attention to things that concern you, or that you want to hear.

**Daydreaming.** You are unable to listen as your mind is wandering to other things.

**Self-comparison.** Thinking about how you compare to the speaker e.g., "I am smarter than this person", rather than listening to what they are saying.

**Jumping to conclusions.** You have ready-made ideas about an issue before the speaker has finished talking, which may cause you to draw incorrect conclusions. Have to be right. You'll go to any lengths to prove you are right, or look for ways you can twist the facts to your point of view.

**Opinion giver.** You give opinions, particularly negative ones, before the speaker is finished and tend to "put down" the speaker.

**Pre-empter.** You assume you know what the speaker is going to say before you let them finish talking.

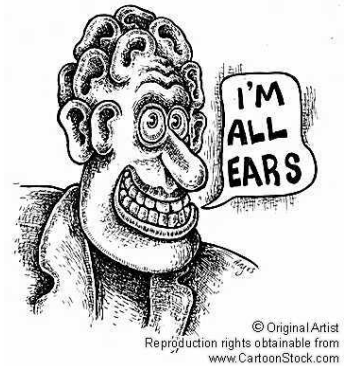
**Topic shifter.** You have a habit of changing the subject before the speaker is finished.

**Planning ahead.** You think of questions and solutions while the speaker is still talking. Thinking is good, but you may not have finished listening.

**Pleasing.** You agree with everything before understanding the whole situation completely.

**Top tips for being a good listener.**

1. **Give your full attention** to the speaker. Don't think about what someone else is wearing or look out the window! And, focus on content not delivery.
2. **Let the speaker finish** before you begin to talk. Don't pre-empt what they are going to say.
3. **Finish listening** before you start talking. You can't listen if you are thinking about what you are going to say next.
4. **Avoid emotional involvement.** Listen to what the speaker is saying, not what you want them to say.
5. **Ask questions.** If you don't understand, make sure you get the information clarified.
6. **Give visual feedback.** Engage with the speaker and nod to show you have understood; smile, laugh or frown to show your feelings.



Improving your listening skills can **improve your overall communication skills**. Practice active listening and see how much more you can gain from shift task/handovers and understanding other people's agendas.




Federal Aviation  
Administration

# FAASTips

## The Safety Tipping Point


A human factors tip for your Personal  
Minimums Checklist!



**Before you finish your shift,  
have you done a proper handover?**

- H**ALT ⇒ Stop work at a logical point in the work package
- A**RTICULATE ⇒ Clearly communicate to your shift the stopping point
- N**OTE ⇒ Use a written handover log to avoid confusion later
- D**OCUMENTATION ⇒ Ensure the work records are up to date
- O**VERSIGHT ⇒ Ensure that your team has completed their work
- V**ERBAL BRIEF ⇒ Ensure the next shift understands their requirements
- E**MPTY ⇒ Pockets, drip pans, FOD cans, & trash cans
- R**EVUE ⇒ Have you done everything you can to ensure a good handover?

**Now you can go home**



Aircraft  
Maintenance  
Improvement  
Project

*faasafety.gov, the Aviation Safety Source  
Register and join the AMT & Wings Program  
Your safety and the safety of your passengers depends on it*



## US Pilots Admit To Same Oversight That Led To Spanair Accident

NAOMS Data Indicates Improper Takeoff Flap Settings Reported 55 Times Since 2000.

The August 20 downing of a Spanair MD-82 on takeoff has cast the spotlight on a relatively **mundane task** for most pilots: setting proper flap positions.

And based on figures cited by USA Today... that may be a good thing. The national news journal says US pilots reported **55 incidents** of improper flap and slat settings on takeoff to NASA's National Aviation Operations Monitoring System since 2000.

"This represents a **disturbing trend**," says Flight Safety Foundation president Bill Voss. "There are obvious **human errors** that are being made that take away ... layers of safety."

According to NAOMS responses, most reported cases of improper takeoff settings **were caught by visual and aural cockpit warning systems**, and corrected before the aircraft took off.

Investigators into the Spanair crash -- which killed 154 people -- say those **warning systems were inoperative** onboard the accident aircraft.

Proper takeoff settings for flaps (and on larger aircraft, leading edge slats) are vital for all aircraft, especially for larger business jets and airliners. Both devices expand the available lifting surface of an airplane's wing, providing additional lift during the critical moments when the aircraft must climb out of ground effect, and establish a safe climb attitude at relatively slow airspeeds.

The NAOMS study lists a 2005 incident at Washington Reagan National Airport, in which the **airliner took off without the devices deployed**. According to the pilots' account of the incident, the airliner nearly plunged to the ground.



Another flight crew reported to NAOMS **they erred** in failing to set flaps and slats during their October 2006 takeoff from Orlando.

"Event could have been catastrophic," the pilot said, "had it not been for (the) **takeoff warning horn.**"

USA Today notes the reported incidents are nearly statistically irrelevant, compared with over 10 million airline operations per year... but as pilots know, it also only takes one time for a **minor oversight** to become tragic.

### Pilots thrown off track

Safety has improved dramatically in the airline industry in recent decades. But the **human mind remains a stubborn** impediment to wiping out crashes altogether.

"You'll do the same thing correctly 1 million times and then not do it correctly one time," says Ben Berman, a former National Transportation Safety Board (NTSB) investigator who has studied human behavior for NASA. "Things like a moment of stress, a spike in workload, a change in routine — **all these things can throw humans off track.**"

**Distractions played a role in fatal accidents** in Detroit and Dallas blamed on flaps and slats, the NTSB ruled. They were often cited in the NASA reports.

"It's a good reminder for crews to understand that you've **got to be following your procedures,**" says Terry McVenes, an accident investigator, safety expert and airline pilot. "And if there are **interruptions** while you are doing your checklists, you've got to stop and be vigilant to make sure you don't miss anything."

### European agency demands checks on DC-9s, MD-80s

Europe's aviation safety authority has ordered airplane crews to make **mandatory pre-flight checks** on warning systems for flaps and slats on all DC-9 and MD-80 airplanes.

The Cologne, Germany-based European Aviation Safety Agency says the directive is based on information from Spanish officials into what caused a SpanAir passenger jet to crash upon takeoff on Aug. 20. That crash in Madrid killed 154 people.



In its directive Wednesday, the agency calls the check a "precautionary measure."

Spanish authorities have not determined a cause for the SpanAir crash, but are focusing on the plane's wing flaps and the failure of a cockpit alarm to sound.

## The Safety Record of the MD-80

The MD-80 and its variants are among the last extant reminders that there once was another American manufacturer, McDonnell Douglas, to compete with Boeing and Airbus for jet orders from the airlines.

Measured by accident data alone, the MD-80 is considered **to be one of the safest planes in the sky.**

According to Boeing Commercial Airplanes, the plane has a fatal hull loss rate — meaning a crash involving fatalities — of 0.34 per one million departures, and an overall hull-loss, or crash, rate of 0.52 per million departures.

By comparison, the average record for all commercial jets is 0.89 fatal hull losses per million departures, and an overall rate of 1.64 hull losses per million departures, Boeing said.

The figures include the crash in Madrid of an MD-82, Spanair Flight JK5022, which appears to have killed more than 150 people, according to Spanish authorities.

The crash comes only a few months after American Airlines' battle with the Federal Aviation Administration over the inspection of its fleet of MD80s, which put the plane in a spotlight with American travelers last spring.

The MD-80 has its roots in the 1960s, when it was developed as a descendant of the DC-9, which in turn was a companion to the DC-8 jet, one of the first airliners of the jet era. The DC-9, still in use by Northwest Airlines, was designed to be used on shorter flights; the Douglas Aircraft half of McDonnell-Douglas developed the MD-80 as a second generation of the DC-9. It was originally called the Super 80, and you still see that name used by American in its timetables.

It has been a workhorse for a wide variety of airlines, from SwissAir and Austrian Airlines the first to fly it, to American, Delta, Alitalia and Scandinavian Air Systems, the owner of Spanair.



Nearly 1,200 were built in various configurations between 1980 and 1999, the year when Boeing, which had merged with McDonnell-Douglas two years earlier, decided to discontinue production and focus instead on its own short-range jet, the Boeing 737.

During its lifetime, the MD-80 family has had some high-profile problems:

- In 1987, an MD-82 crashed just outside the airport in Detroit, killing 156 people including two on the ground. The only survivor was a four-year-old girl, who was found strapped into her seat in the crash debris. The National Transportation Stabilization Board concluded that the pilots of the plane had incorrectly deployed the plane's wing flaps, meaning the jet was not in the proper position to fly. A faulty warning system failed to alert the pilots to the problem.
- The left engine on a Delta Air Lines MD-88 failed on takeoff in Pensacola, Fla, in 1996, causing pieces of the engine to pierce the fuselage and penetrate the cabin, killing two of the plane's 137 passengers.
- In January 2000, an Alaska Airlines MD-83 crashed into the Pacific Ocean off Point Magu, Calif., killing 88 people. The pilot had declared an emergency and was trying to get to Los Angeles International Airport when the accident took place. The safety board said improper maintenance was to blame for the crash.
- The most recent attention paid to the plane was not crash related: Last spring, American canceled thousands of flights and grounded its 300 MD-80s to check that wiring bundles were properly secured inside the planes' wheel wells.

The groundings prompted a sparring match between the airline and the F.A.A., which American contended had unfairly changed the rules for how carriers should respond to safety directives.

Qantas mechanical problems 'bad luck'

Qantas Airways Ltd's series of mechanical problems is due to bad luck not scrimping on maintenance, the head of Malaysia Airlines' engineering and maintenance (E&M) arm says.

Malaysia Airlines' E&M division, which has done maintenance work for Qantas, said the recent spate of safety incidents to plague the Australian carrier could happen to any airline.

BEHIND  
BAD!  
LUCK!





They were not related to Qantas increasing its offshore maintenance work, Malaysia Airlines E&M senior general manager Mohd Roslan Ismaili said.

"It can happen to anybody," Mr Ismaili said.

"It is just pure bad luck, nothing more."

Qantas uses its own facilities in Australia as well as a variety of maintenance, repair and overhaul (MRO) organizations in Asia to maintain its planes.

It has come under fire recently from Australian union leaders who believe **"corners are getting cut" to reduce costs at the nation's flagship airline.**

A recent survey of Australian Manufacturing Workers Union (AMWU) members found **80 per cent of Qantas maintenance workers** did not believe contracting work out had improved productivity or efficiency.

Only 29 per cent said they had faith in Qantas management to understand issues relating to safety and staffing.

However, Mr. Ismaili said Malaysia Airlines' E&M offered maintenance work that was among the best quality in the world, at the most competitive rates.

"Number one is the competitive rate, very competitive ... and quality," he said.

"Quality is the key, it is the constant in the equation that never changes."

He said "manpower" was 50 per cent cheaper in Malaysia compared to a "Western workshop".

Malaysia Airlines' E&M division has sought to defend its quality of work since the only aircraft it has performed heavy maintenance on for Qantas, a B737-400, was involved in an incident in Melbourne in May.

That plane was grounded because of noise from an air-conditioning fault.

But unsubstantiated media reports claimed the grounded jet also had 95 defects after it had been maintained in Malaysia.

Malaysia Airlines said the **claims were baseless** and that the repairs on the aircraft had **been overseen by 12 Qantas engineers** and all problems had been rectified to the Qantas team's satisfaction before it was delivered to Australia.

## NATA Hopes Online TEB Safety Guide First Of Many

The popularity of the FAA-funded, National Air Transportation Association (NATA) produced proactive **Safety 1st** program **launched** as a free online training tool for pilots and flight crew flying into Teterboro could lead to more, similar programs.



Tracking statistics show that the free online safety training records an average of more than 60 visitors per day and has won **more than 80,000 hits** since first launched. Providing key insights into the nuances of traffic flows, common pilot mistakes, specific trouble spots on the airport and more, the free training tool is available to anyone at no charge by visiting [AirportFlightCrewBriefing.com/teterboro](http://AirportFlightCrewBriefing.com/teterboro).



NATA says that both the FAA and other airport operators have expressed interest in production of similar programs for other airports and that the association is currently selecting those airports it feels would benefit most. **NATA's Safety 1st** hopes to begin development of those programs as soon as possible.

At Teterboro, local FBOs are promoting the training in their pilot lounges and the program has become required reading for employees of several local aircraft operators whose pilots must complete the online course as part of their training, according to NATA.

## Airlines hurt more by crashes

A major crash usually weighs heavily on an **airline's stock**, but the impact is felt less heavily in the share price of the plane's manufacturer, according to a recent study.

Airlines typically suffer for as **long as three months after a major catastrophe**, compared with only a week and a half for manufacturing companies, say San Diego State University researchers.



They also found disasters have little or no effect on the long-term pricing of any stock, said Kuntara Pukthuanthong-Le, the SDSU finance professor who led the study.

"We were surprised that stock was impacted as much as it was in the short term, especially in instances where the market should have recognized that it was an accident," she said.

The declines are a result of investors' anticipation of **legal liability claims**, which the airlines are more likely to see than the manufacturers -- even if the accident was due to equipment failure, she said.

The study looked at a sample of 174 aviation accidents around the world between 1950 and 2004

## Ten Worst Aviation Disasters in History

1. **March 27, 1977.** Two **Boeing 747s**, operated by **KLM** and Pan Am, collided on a foggy runway at **Tenerife**, in **Spain's** Canary Islands killing 583.

2. **August 12, 1985.** A **Japan Air Lines** 747 crashes near Mt. Fuji after takeoff from Tokyo on a domestic flight killing 520. The rupture of an aft bulkhead, which had undergone faulty repairs following a mishap seven years earlier, caused destruction of part of the airplane's tail and rendered the jet uncontrollable.

3. **November 12, 1996.** An Ilyushin IL-76 cargo plane from Kazakhstan collides in midair with a Saudia 747 near Delhi; all 349 aboard both planes are killed. The Kazakh crew had disobeyed instructions, and neither airplane was equipped with collision-avoidance technology.

4. **March 3, 1974.** In one of the most notorious and gruesome crashes ever, a THY (Turkish Airlines) DC-10 crashes near Orly airport killing all 346 passengers and crew. A poorly designed cargo door had burst from its latches, and the subsequent depressurization caused failure of the cabin floor and impairment of cables to the rudders and elevators. Out of control, the plane slammed into the woods northeast of Paris.

5. **June 23, 1985.** A bomb planted by a Sikh extremist blows up an Air India 747 enroute between Toronto and Bombay (with stops in Montreal and London). The airplane fell into the sea east of Ireland killing 329. Investigators in Canada cited shortcomings in baggage screening procedures, screening equipment, and employee training.

6. **August 19, 1980.** A Saudia L-1011 bound for Karachi returns to Riyadh, Saudi Arabia, following an in-flight fire that broke out just after departure. For reasons never understood, the crew takes its time after a safe touchdown and rolls to the far end of the runway before finally stopping. All 301 people on the plane die.

7. **July 3, 1988.** An Airbus A300 operated by Iran Air is shot down over the Straits of Hormuz by the US Navy destroyer Vincennes. The crew of the Vincennes, distracted by an ongoing gun battle, mistakes the A300 for a hostile military aircraft and destroys it with two surface-to-air missiles. None of the 290 occupants survived.



8. **May 25, 1979.** As an American Airlines DC-10 lifts from the runway at Chicago's O'Hare airport, an engine detaches and seriously damages a wing. Before its crew can make sense of the situation, the airplane rolls 90 degrees and disintegrates in a huge fireball about a mile beyond the runway. With 273 fatalities, this remains the worst-ever crash on US soil.

9. **December 21, 1988.** Two Libyan agents are later held responsible (one is convicted) for planting a bomb aboard Pan American flight 103, which blows up in the night sky over Lockerbie, Scotland killing 270 people, including 11 on the ground.

10. **September 1, 1983.** Korean Air Lines flight KL007, a 747 carrying 269 passengers and crew from New York to Seoul (with a technical stop in Anchorage) is shot down by a Soviet fighter after drifting off course -- and into Soviet airspace -- near Sakhalin Island in the North Pacific.

## Jet Lag Reduction a Goal of Lag: A Look at Circadian Desynchronization

Lag: A Look at Circadian Desynchronization was written to help raise awareness of the disturbing effects that jet lag has on performance.

Lag: A Look at Circadian Desynchronization, by Bill Ragan, M.S., was written in response to research that focused on a recent **increase in complaints of jet lag**. This increase, Ragan found, came from higher aircraft speeds as a result of new technologies. He said that as airplanes fly faster than they once did, they are able to fly across **more time zones** faster than in years gone by.



This, Ragan said, can result in jet lag that **may reduce performance**, or ruin your vacation. Plenty of research supported this, Ragan said, and he pointed to sports tournaments held over recent years as an example of acute jet lag. One recent case, Ragan said, was the recent Hawaii at University of Florida game on 8/30/08. While it was an anecdotal example, Ragan said that Florida's victory over Hawaii (56-10) could have been linked to the travel that Hawaii had to make before the game.

Ragan said that research uncovered while he wrote Lag: A Look at Circadian Desynchronization led him to believe that it would **take about five days or six days** for the Hawaii football team to return to their **normal body rhythms** after flying the long distance to get to Florida's Ben Hill Griffin Stadium at the University of Florida. Ragan indicated that many other factors may have had an influence on the outcome of the game, including Hawaii having a new coach, and Florida having Heisman Trophy Winner Tim Tebow. Ragan said that it was hard to ignore the travel that Hawaii made when considering the outcome of the game.



The following is a quote from Lag: A Look at Circadian Desynchronization:

" Courtney (1994) said that a **75% decline in the ability to perform complex cognitive tasks** occurred in those who did not have experience dealing with jet lag syndrome..."

Researchers, Ragan said, indicated that even when specialized training in how to cope with jet lag was made available to those who traveled across time zones, **performance deficits** were still noted. These findings helped to make clear that the success of a European vacation could be in jeopardy because of jet lag.

Is there a remedy? Ragan identified several interventions in Lag: A Look at Circadian Desynchronization, and also discussed how to avoid the long term effects of jet lag that have been found in **flight attendants** that travel across time zones more frequently than others do.



Lag: A Look at Circadian Desynchronization was published in 2007 by Lulu Enterprises, and is available from in the United States from Lulu.com, Target.com, Amazon.com, Aircraft Technical Books, Barnes and Noble, Books a Million, and other popular booksellers online. Lag: A Look at Circadian Desynchronization makes a great Christmas gift for anyone interested in science, travel, **aviation**, medicine, or sports!

## Midnight Shift Nugget

### Find a Sleep Professional Welcome!

NSF Community Sleep Awareness Partners® (CSAP) are healthcare providers committed to promoting public understanding of sleep and sleep disorders and supporting sleep-related education, research and advocacy to **improve public health and safety** in their communities. Sleep experts and others affiliated with CSAPs join the National Sleep Foundation's efforts to promote **healthy sleep** and to reduce the effects of sleep disorders. For more information about these sleep professionals and their services, please contact them directly.



## DROWSY DRIVING PREVENTION



### Why don't they ever tell us these things!!!

I have been driving for nearly 40 years... I would think I should have noticed the **little secret** on my dashboard that was staring me in the face the whole time...I didn't...and I bet you didn't either...

Have you ever rented or borrowed a car and when arriving at the gas station wondered...mmm, which side is the gas filler cap?

My normal solution was to stick my head out the window, strain my neck and look, try to see in the side mirrors or even get out of the car!

Well ladies and gentlemen, I'm going to share with you my little secret so you will no longer look like Ace Ventura on your way to the gas station or put your neck at risk of discomfort or injury.

If you look at your gas gauge, you will **see a small icon of a gas pump**.

The handle of the gas pump will extend out on either the left or right side of the gas pump. If your tank is on the left, the handle will be on the left. If your tank is on the right, the handle will be on the right (see photo). **It is that simple!**



## Check Your Alarms

Many of us will be putting our clocks back an hour last Sunday, November 2. This is a good time to check your home's alarms and **change the batteries**. Smoke alarms should be inspected, cleaned of accumulated dust and equipped with a new battery. Carbon monoxide alarms should get the same treatment as instructed by the manufacturer. And remember: alarms don't last forever. They should be replaced every **10 years or so**, or on a schedule recommended by the manufacturer. This is also a good time to see if your **home fire extinguishers** need replacement and to review the family fire escape drill.



## Room B310

When Rick Robell helped his son, Mike, move into room B310 in Emmons Hall at Michigan State University, he was filled with a sense of déjà vu. The floor and wall color, the phone number, even the broken window latch **all seemed oddly familiar**.

It turned out Rick had lived in the very same room, one of 8,000 at Michigan State, **30 years earlier** when he was an undergraduate. Housing manager Tim Knight said it was the **first time** in his 37-year tenure that a parent and child ended up in the same room by chance. "I guess it was meant to be," he said.



## Is Your Pet Keeping You Awake?

Anyone who has slept with another person in their bed knows that sharing a sleeping space can be disruptive, but when a four-legged friend gets added to the mix, it becomes even more complicated. Toronto's *Globe and Mail* in a recent article interviewed various pet owners about their experiences sharing their bed with a pet. A retired teacher who shares her bed with two male cats and a young German-shepherd border-collie mix told the *Globe and Mail*, "They're relentless," adding, "It's like kids: You're sort of up with them." In a recent National Sleep Foundation online poll asking readers if they sleep with a pet, **47 percent of readers responded "never," while 26 percent said "always," 17 percent said "sometimes" and 10 percent said "often."** While a pet can make your sleep environment more comfortable, the pet is not mindful of whether it is interfering with your sleep. Think about **providing** your dog or cat with a bed in your bedroom, instead of sharing your bed. Well-rested pet owners will have more energy and love to give to their pets!



## BY THE NUMBERS

### Workplace Fatalities in 2007

The U.S. Bureau of Labor Statistics released its Census on workplace fatalities for 2007.

**The good news:** The preliminary total of 5,488 fatal work injuries is the lowest annual total recorded since the Census began in 1992 and down 6% from 2006.

**The bad news:** The statistical downward trend in fatalities won't bring back to life a single one of those **5,488 victims** or render much solace to their families.



But, while statistics don't do justice to human losses, they do **give us a better understanding of what's happening** on the occupational health and safety frontlines and help us recognize what we need to do to prevent fatalities at our workplaces.

**Construction is still the industry with the largest number of fatalities**

Some of the **key findings** of the new Census:

- The rate of fatal injury fell from 4.0 per 100,000 workers in 2006 to 3.7 per 100,000 in 2007
- Fatal falls increased to 835, the highest recorded since the Census began
- Transportation incidents decreased to 2,234, another Census low
- Workplace homicides rose an alarming 13% to 610
- Even though total fatalities were down, fatalities to non-Hispanic Black or African American workers increased by 5% (591)
- Fatalities among Hispanic or Latino workers remained disproportionately high but did fall 8%, as compared to the 6% decline in fatalities experienced by the entire population.

### Industry Profile

- Construction suffered the greatest number of fatalities even though the industry's fatality rate dropped 5%
- Fatalities among building construction workers was actually up 11%
- **Transportation**, warehousing and trucking remained high on the list of most fatal industries but had a 3% drop in fatality rates
- Fatalities involving agriculture, forestry, fishing and hunting workers fell 13%



- The 392 deaths in manufacturing was the lowest annual total in five years
- Fatalities among government workers rose 2%.

### Picture This!

**Ouch**—Glad I Wasn't Wearing Shorts. **Dress for the crash**, not for the ride.

