Aviation Human Factors Industry News

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

787 Fire Sparks "Minor" Redesign

Boeing says it's redesigning the electrical panels and attendant power distribution software on the 787 after a program-halting fire on one of its planes in Laredo, Texas, a few weeks ago. It's also partly confirming reports last week that something that wasn't supposed to be in an electrical box caused the fire. Those reports said it was a tool left by a worker. Boeing says it doesn't think so. "It was small, it wasn't as big as a tool," Boeing spokeswoman Lori Gunter said. "A tool would leave evidence." The company characterized the work as minor.

The cause of the fire is, however, less important to Boeing engineers than its effect. Boeing has long maintained that the highly computerized systems have greater redundancy and give the pilots more options in an emergency. In the Laredo incident, the short circuit resulted in a cascade of failures that affected cockpit displays, the autothrottle and electronic flight controls.

The Wall Street reported an FAA certification pilot was at the controls at the time of the fire.

Cream and sugar with your jet fuel? Plane water tanks mistakenly filled

Three planes belonging to the airline Germanwings reportedly took off this weekend with jet fuel in their drinking water tanks, which nearly made it into passengers' coffee cups.

According to daily Bild, a 21-year-old service company employee on Saturday thought he was filling the planes at Berlin's Schönefeld airport with water, not realizing the 3,000-litre tank was contaminated with fuel.

The mistake was not discovered until after the planes to Zweibrücken, Cologne and Munich took off, Germanwings spokesman Joachim Schöttes said on Sunday. The crews all reported noticing a strange smell while preparing beverages for passengers, at which point they decided to serve juice and soft drinks instead, Bild reported.

It remains unclear how many litres of jet fuel contaminated the water tank, the paper said.

FAA proposes fine on Everett's Aviation Technical Services

Everett's Aviation Technical Services should pay at $530,250 fine for failing to follow approved procedures while maintaining 14 Southwest Airlines Boeing 737s, the Federal Aviation Administration said Friday. Specifically, the FAA alleged in proposing the fine that ATS failed to follow Southwest's Continuous Airworthiness Maintenance Program in carrying out five agency Airworthiness Directives to detect fuselage skin cracks between January 2007 and March 2008.

Even more specifically, the FAA said ATS improperly used shortened "cradles" to support the aircraft at two of three specified points while they were off their wheels and failed to install and monitor load-measuring cells to ensure the maximum loads did not exceed limits for the engines, wings and horizontal stabilizer locations while the aircraft were suspended in the cradle.

"We have the highest standards in place to ensure safety," FAA Administrator Randy Babbitt said in a news release. "Maintenance work has to meet those standards wherever it is performed."

ATS has 30 days respond before the FAA finalizes the fine. Responding Friday, company spokesman Jeff Salee said the fine "relate(s) to events that ATS disclosed to the FAA in March of 2008. In keeping with our commitment to safety and operational excellence, the issues were resolved shortly after we discovered them. We have been cooperating fully with the FAA and will respond in a timely way."

NTSB Reports Fuel Exhaustion In 2009 Greenville Accident

Ground Crews Had Run Engines 45 Minutes Prior To Takeoff

A flight that was supposed to have been a routine check of some avionics issues ended with the airplane running out of fuel, even though the pilot had visually checked the fuel levels prior to the flight. The NTSB has released its factual report in an accident which occurred November 9, 2009, on approach to Greenville Spartanburg International Airport (KGSP) at 1009 EST. A Hawker Beechcraft B200, N337MT, was substantially damaged following a loss of engine power and impact with terrain on final approach to Greenville Spartanburg International Airport (GSP), Greer, South Carolina. The airplane was registered to MDTR Holdings LLC, Virginia Beach, Virginia. The airline transport-rated pilot and two passengers were seriously injured. Day, visual meteorological conditions prevailed at the time, and no flight plan was filed for the personal flight conducted in accordance with 14 Code of Federal Regulations Part 91. The flight originated at GSP at 0938.

An inspector with the Federal Aviation Administration (FAA) reported that the accident pilot flew the airplane to Stevens Aviation on the afternoon of November 8 and turned the airplane in for a phase inspection. He returned to the airplane the next morning to evaluate some avionics issues and flew a local flight to do the same.

Air traffic control records provided by the Greer Air Traffic Control Tower (ATCT) revealed that the pilot requested taxi clearance at 0938, and the flight was cleared for takeoff at 0943. At 1007, while on final approach to

runway 4, the approach controller informed the pilot of N337MT that he was overtaking a Beech Baron, and the pilot responded that he needed to keep his speed up and that he was low on fuel. At 1009, ATC reported that the airplane had crashed.

After recovering from his injuries, the pilot was interviewed by the NTSB investigator-in-charge (IIC). The pilot reported that on the day of the accident, he arrived about 0800 and performed his preflight, accomplishing the preflight and before engine starting checklists. When he performed his preflight, there were 740 pounds of fuel on board, enough for 1 hour and 10 minutes flying time. He was going to fly the airplane to evaluate some avionics, however the avionics technicians who were to fly with him had not arrived, so he went inside the repair facility to wait. He reported that, in the meantime, and unbeknownst to him, a 45-minute ground engine run was performed on the accident airplane. After the avionics technicians arrived, they proceeded to the airplane and flew in the local area to evaluate the avionics. While on approach for landing, the right engine quit, and then the left engine quit. He thought he could make the runway, but there was a 15-knot headwind. He established best glide configuration with gear and flaps up. He saw the approach lights, and turned to avoid them. The airplane impacted the ground and came to a stop.

The pilot stated that he referred to the flight management system (FMS) fuel totalizer on the ground and in flight, and assumed that the mechanics that performed the ground run did not turn the FMS on during the engine ground run. He stated that if the FMS was not turned on during the engine run, the FMS fuel totalizer would not reflect any fuel burned during the engine run. He did not refer to the airplane fuel gauges after he returned to the airplane for the flight; he only utilized the FMS totalizer.

The two mechanics who performed the engine run prior to the accident flight reported that they checked the fuel on board at the conclusion of the engine run. The auxiliary fuel tanks were empty, and the main tanks each indicated approximately 200 pounds of fuel. They reported that the engines were operated for 30 to 35 minutes with the majority of the run at low power settings. High power settings were used for less than 5 minutes.

The Chief Inspector for Stevens Aviation reported that, prior to the accident flight, the technicians performed the ground run, moved the airplane to a hangar, and prepared to connect the airplane to a tow bar to pull it into the hangar. He was aware that the airplane had some avionics issues. He recalled that two avionics technicians went out to the airplane, and the next thing he heard was that there had been a crash.

He was not told that the airplane was going to fly and does not know how that decision was made. He reported that Stevens Aviation uses a procedure to install an external placard, or “red tag,” on the outside of the airplane before maintenance begins, but no repairs had been started on airplane. The red tag is generally installed after the engine run and the airplane has been moved into the hangar and placed on jacks.

NTSB: Delta Pilot Was 'Fatigued' During Taxiway Landing

Federal investigators report that fatigue may have played a key role when a Delta Boeing 767 landed on a taxiway at Hartsfield-Jackson Atlanta International Airport instead of the runway.
In October 2009, one of the pilots got sick on a flight from Rio to Atlanta. Officials with the National Transportation Safety Board said two other pilots finished the flight, but without their break.

According to the NTSB, the captain had been awake for more than 22 hours.
Officials said the pilot mistook the bright lights of the taxiway for the runway. NTSB investigators said the probable cause of the incident was "fatigue" and several other factors.

Delta officials said the pilots have since undergone retraining.

NTSB: Unprofessional behaviour behind PSA CRJ overrun

Non-pertinent discussions between a PSA Airlines captain and first officer were the root cause behind a runway overrun accident at the Yeager airport in Charleston, West Virginia on 19 January, says the US National Transportation Safety Board (NTSB) in a final report.

None of the 31 passengers or three crewmembers were injured when US Airways Express Flight 2495 exited the runway and came to rest 39m (128ft) into a 139m engineered material arresting system (EMAS) bed at the end of Runway 23 after a high-speed rejected take off (RTO).
The NTSB lists the probable cause as "the flight crewmembers' unprofessional behavior, including their non-adherence to sterile cockpit procedures by engaging in non-pertinent conversation, which distracted them from their primary flight-related duties and led to their failure to correctly set and verify the flaps".

Rather than reject the takeoff per PSA procedures, the captain, after noting the incorrect flap setting, had attempted to command the flaps to the correct setting as the aircraft accelerated through 120kt (222km/h). Configuration warnings sounded soon after.

The CRJ ultimately reached about 140kt, 13kt above takeoff speed (V1), before the captain initiated the RTO. According to Bombardier calculations, the aircraft would have been stoppable on the 1,920m (6,300ft) runway had the pilots initiated the rejected takeoff at the V1 speed.

The NTSB says the aircraft entered the ESCO-built engineered materials arresting system (EMAS) just past the runway end while traveling at 50kt. The EMAS was installed in 2007 to bring the runway overrun safety area up to US FAA standards. The terrain "drops off sharply about 350ft" past the runway end, the NTSB notes.

"If this incident had occurred before the installation of the EMAS, the airplane most likely would have travelled beyond the length of the original safety area and off the steep slope immediately beyond its end," says the NTSB.

Topic: SAFETY CULTURE

APPLYING THE "BROKEN WINDOW THEORY" TO SAFETY

I recently came across an old article that I first read about 10 years ago. The article highlighted the connection between the decline in violent crime in New York City during the early 1990s and the "Broken Window Theory." While the original intent of the article wasn't meant to be applied to the world of safety, I think it fits very well. What's the "Broken Window Theory"?

The "Broken Window Theory" is well known in the criminal justice world. Its basis is that the environment in which we live impacts our behavior.

For example, people will feel more inclined to break the law in an area that is run down and dirty, hence the term "broken window." Criminals feel less threatened and people seem to expect crime in this environment.

Applying the Theory to the NY City Subway System

In the early 90s, violent crime was rampant in the New York City subway system. The City hired a new subway director, who just happened to practice the "broken window" theory. The first item on his agenda was to solve the graffiti problem. To others, this priority seemed odd, to say the least. People are being mugged and killed and this guy wants to re-paint the subway cars? But every single car was cleaned and painted. And every time a car was vandalized, it was taken out of service until it was clean again.

As you can imagine, spending so much money on something that was seemingly meaningless didn't sit so well with everyone. Until crime started to rapidly decline.

Soon after, the city hired a new head of police for the subway system, who also just happened to practice this theory. (Can you see a pattern here?) With violent crimes still occurring on a regular basis, the first plan of attack was to hire more officers and crackdown on fare beaters.

Up until that point, anyone who jumped the turnstile was not really important. It took way too much time and effort to arrest someone for not paying their fare. But under the new system, mobile police stations were set up, equipped with everything that was needed to process these individuals

After a short while, crime began to decline again. It seems many of these fare beaters were also carrying a weapon or drugs or had outstanding warrants against them.

Applying the Theory to Safety

So why does this theory fit well with safety? Think of a violent crime much the same way as you think about an accident. Each of these has many causative factors involved. If we can eliminate some of the causative factors, we reduce the likelihood of the undesired result. I'm sure we'd all like to say that our safety practices are consistent, no matter what other people are doing, but the reality is that other people's actions do in fact affect our behavior. For example:

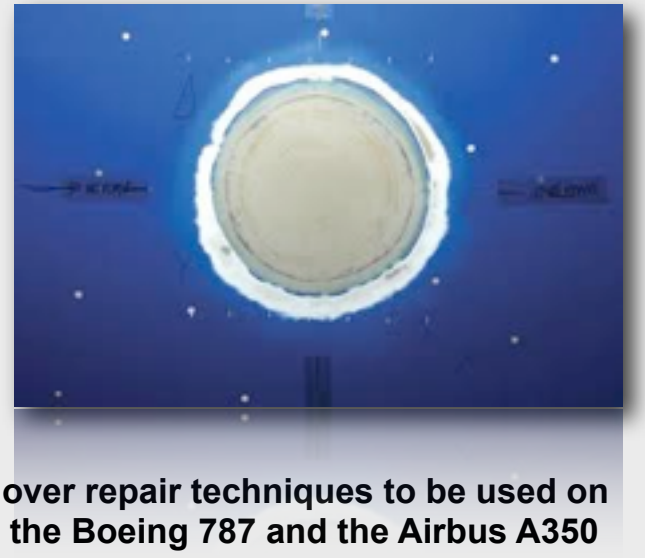
- Are you more or less likely to wear safety glasses when others around you aren't wearing them?
- How about housekeeping? Does a dirty, messy job site impact how people work?
- Do you tend to follow traffic when other cars are speeding?

Now think of a worksite where "little things" are neither addressed nor corrected. These little things add up and have a major impact on our – and our workers' – decision-making.

Conclusion

Unfortunately, when we talk about the little things, we're accused of "nitpicking." After all, there are much bigger things to worry about. That's always going to be true. But by gaining control over the little things, by proactively setting the stage – and the standard – for a safe workplace, we may actually have that much less to worry about in the long run.

U.S., Europe at odds over aerospace composite repair strategies



Aviation Week and Space Technology reports that the U.S. FAA permits bonded repairs for composite primary structures on craft like Boeing's 787 and Airbus' A350, but Europe's EASA requires a metallic bolded repair. Aviation Week and Space Technology (AWST) reported on Nov. 11 that the U.S. Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA) are in disagreement over repair techniques to be used on composite structures on aircraft like the Boeing 787 and the Airbus A350 XWB.

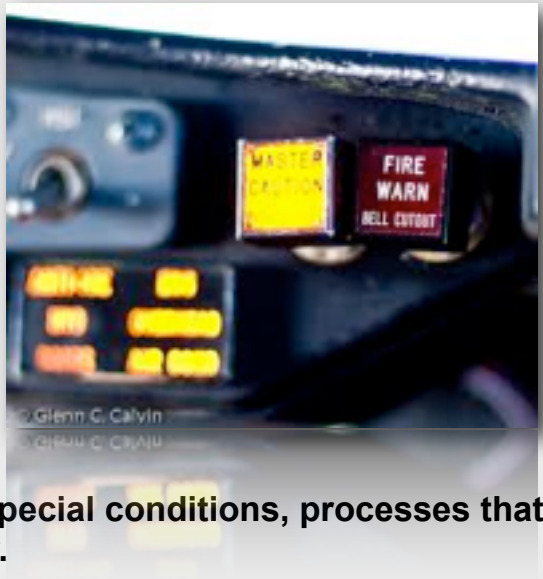
The report notes that the FAA, lead certification authority on the 787, permits a bonded repair solution for composite primary structure, but EASA will not. This means EASA-regulated operators will need a metallic bolted repair for damage to the 787's composite primary structure. Further, the reports says it's possible that composite transports with bonded repairs cannot be brought onto the registers of European Union countries.

Andreas Pakszies, director of aircraft system engineering at Lufthansa, told AWST that "bolted metal repair methods must be available because bonding in the primary [composite] structure is not allowed" [by EASA] so specific tools and technicians will be needed, noting that bonded repairs are not permitted because there is no test to verify them.

Justin Hale, Boeing's former 787 chief mechanic and now a regional director in product marketing, told AWST that bolted repairs using titanium are a "permanent Category A damage-tolerant repair," but added that using aluminum as the repair material, while also a permanent fix, will require periodic inspection because of corrosion issues.

Hale also told AWST that Boeing has patented a technique that allows it to bond 70-plus plies in one cure, and that it would be possible for Airbus to devise a similar repair for the A350 XWB.

FAA sets new rules for alert colors in flight deck displays.



The US FAA has finalized a new rule that delineates which colors can be used for warning, caution and advisory alert indications in the cockpit for new transport category aircraft to be certified after 3 January 2011.

Though de facto standards are currently in place regarding the alerts generated by advanced glass cockpit avionics systems, the FAA says each manufacturer must gain approval through FAA-written issue papers and special conditions, processes that require "additional work" for the agency.

Baseline regulations were issued in 1977 and "have never been amended", says the FAA in the final rule. The FAA issued the preliminary rule in July 2009.

Alert colors on the flight deck for future new aircraft will have red for warnings, amber or yellow for cautions and any color except red, amber, yellow or green for advisory alerts.

Weather, terrain or traffic displays may still use the four colors, but "must not adversely affect flightcrew alerting" says the FAA.

In addition, warning and caution alerts will require attention-getting cues through at least two different senses. The rule harmonizes the FAA's regulations on the topic with the European Aviation Safety Agency.

Overall, the FAA says it recommends that manufactures use six or fewer colors in a typical flight deck to display all of the information necessary to safely operate the aircraft.

Operationally, the FAA is requiring that alerts be designed so that after each occurrence, the pilot can acknowledge the problem and suppress the alarm.

The system itself must prevent "presentation of an inappropriate or unnecessary", or nuisance alert and automatically remove the alert when the conditions no longer exist.

The FAA estimates the rule will avoid about 10 serious injuries over a 20-year period, resulting in a total cost benefit of $4.4 million over two decades. Cost to manufacturers is estimated to be a about $0.7 million per new aircraft, the agency says.

An eBook dedicated to the founder of the Dirty Dozen by Charles Alday. Learning human factors from the pipeline industry

Charles Alday has 43 years of experience in pipeline construction, operations, maintenance, and management. He was the Operational Excellence Manager for Colonial Pipeline Company. In that role, he worked with people in all parts of the organization to eliminate pipeline spills, leaks, and errors. He has provided human factors consulting services to seven pipeline companies in the United States and China. He has a Master's degree in Business Management and Bachelor's degrees in Philosophy and Accounting.

This eBook is dedicated to Mr. Gordon Dupont of System Safety Services. When he worked at Transport Canada, he developed The Dirty Dozen as a part of a human performance program to help aviation maintenance technicians learn about the causes of errors and the human factors involved in their work. I met Gordon in 2000 at an aviation human factors conference. I was on a quest for human factors knowledge that could be applied to the pipeline industry. Gordon is enthusiastic about safety and allowed my colleagues and me to use The Dirty Dozen. Since then, I have been teaching people in the pipeline and nuclear industries about these causes of errors and accidents. The twelve causes of errors and accidents apply to humans in all industries.

One eBook dirty dozen article will be featured in future issues. We start off with:

STRESS

- **"Do not shut the pipeline down for any reason." OR**
- **"Every employee has the authority to shut the pipeline down if he or she suspects a problem."**

Which one of those is closer to the norm for your company? Why is it that way? What other norms exist where you work?

Make a list of the expectations and rules, written and particularly unwritten, that define the acceptable and unacceptable behaviors where you work. Think about the ways people talk with one another, what they wear, what subjects are discussed at work, what is not discussed, and how people interact with one another. Then discuss whether these are good norms or bad norms. What makes a norm good or bad?

Let me tell you a story about the power of group norms on individuals. Individuals at a facility were reluctant to use operating procedures. Even though people were making operating errors, their norm was to rely on memory instead of referring to the procedure. I was talking with an employee who had been with the company less than four months. If anyone needed to use procedures rather than memory, it is a new employee. After I explained the requirements and the benefits of using procedures, he remarked about the procedure we were using, "We don't do it that way here." I laughed and asked, "Have you been here long enough to know the way it is done?" The group had already taught him the bad norm of refusing to use procedures. This illustrates how powerful a group norm can be when someone is violating a norm. If the new employee violated a norm, he would be criticized and would not receive help from group members. It's not a laughing matter. Most people do not want to be different from others in the group. But some groups have a deviant.

Norms can be powerful in a positive way if there is a deviant who violates good norms that the group has developed for ensuring safety. When a delivery is started at a pipeline, the control valve is usually closed until the delivery block valve is opened. Then the control valve is gradually opened until the proper flow and pressure is obtained. This is the norm. One man had a practice of opening the control valve and then opening the delivery block valve. The rush of pressure could be damaging to the station equipment and cause shutdowns due to over-pressure.
After I caught him doing this one time, I admonished him and told him he would be reported to management if he ever did it again. I hope no deviants work with you!

What are ways to develop good norms that contribute to excellent performance and that ensure safe operations?

- **Identify the norms that are used, lived with, tolerated, and not tolerated at work.**
- **Distinguish good norms from harmful norms.**

☒ Use your influence in the group to change the harmful norms to good ones.
☒ When you are sure that your norms are helpful, maintain your beliefs and practices.

Just as groups need to examine their norms and make changes when necessary, individuals should do the same. Use the questions below as a self-assessment.

Do you:

☒ Know and follow the operations and safety philosophies, policies, and procedures?
☒ Set a good example for others, particularly new employees?
☒ Encourage others when they are using helpful norms and behaving in safe ways?
☒ Challenge others when they are using harmful norms and behaving in unsafe ways?
☒ Accentuate good practices, avoid bad practices?
☒ Recognize that the "way we have always done it" may not be the best way?
☒ Avoid shortcuts and workarounds that may cause errors and accidents?
☒ Know how to avoid all of The Dirty Dozen?

Airlines' lessons in safety for oil industry

The global oil industry is this year facing its biggest reputational crisis yet, following BP's catastrophic spill in the Gulf of Mexico.

As a result, international oil companies have been turning to the aviation industry for advice. Last week, when oil industry safety officers from around the world descended on Abu Dhabi's Yas Island to attend the inaugural international safety and competence conference of the Offshore Petroleum

Industry Training Organization (OPITO), the keynote speaker addressing the packed conference room was not one of their own.

It was Capt Chris Knowles, a consultant to the aviation industry throughout the Middle East.

The aviation industry in the region is the most tightly regulated in the world, said Capt Knowles, not least because of the public perception that air travel is dangerous.

A single high-profile incident that precipitates a loss of confidence in safety or security standards can bankrupt an air carrier, as happened to Pan Am after the infamous bombing of one of its passenger jets in 1988 by a Libyan terrorist group over the Scottish town of Lockerbie.

This year, some analysts predicted the Macondo oil spill would put BP out of business. That now seems unlikely, but the company will lose its status as the second-biggest international oil producer after it finishes selling US $30 billion (Dh110.19bn) of assets to help pay for costs related to the spill.

The message for both industries, said Capt Knowles, is to avoid complacency: "The assumption that safety is 'good enough' can only lead to disaster."

Global statistics on passenger mortality show why public confidence in airline safety is a constant issue.

Although airline public relations campaigns often state that air travel is statistically the safest mode of transport, that is only true relative to distances travelled. In terms of numbers of passenger journeys, only bicycles and motorcycles are more dangerous than aircraft. Worldwide, a passenger is nearly three times as likely to die on any given journey by air as on a car trip.

The airline industry and its regulators have been engaged in safety research for decades, aiming for improvements in training programs and safety standards. By comparison, the international oil industry is at an early stage.

"This industry is reactive," said Gordon Ballard, the chairman of OPITO and the UK chairman of Schlumberger, the world's biggest oil services company. "Improvements have only arisen as a result of major accidents."

Many oil industry managers agree. So does Barack Obama, the US president, who in June described the Macondo disaster as "emblematic of a failed philosophy that regards all regulation with hostility".

One senior oil industry manager, interviewed anonymously by researchers from the Aberdeen Business School of Scotland's Robert Gordon University for an independent study commissioned by OPITO, described

the problem thus: "The biggest difficulty you face in this industry is that while nothing is going wrong everybody is happy … and it is only after a major incident that suddenly things start to come out."

Said another respondent: "Unfortunately a lot of training has been developed because people have been killed."

The study also revealed a lack of internal consistency in safety standards within large international oil firms, as well as a lack of co-operation between companies.

"They don't speak to each other. They don't share standards with each other," said an interviewee. "This is how ridiculous it is. Basically in the oil and gas companies, each individual operating unit seems to stand and fall on its own. There is very little sharing of information."

The aviation industry has done better on this score, and its research has recently yielded some interesting results on the causes of aircraft accidents. It transpires that lack of sleep among air crews is a bigger factor than previously suspected. Fatigue is implicated in 30 per cent of in-flight incidents resulting in injury or death.

Because of this, some pilots are now being asked to spend nights before their flights wired up to sleep-monitoring equipment, so that researchers can investigate their sleep patterns.

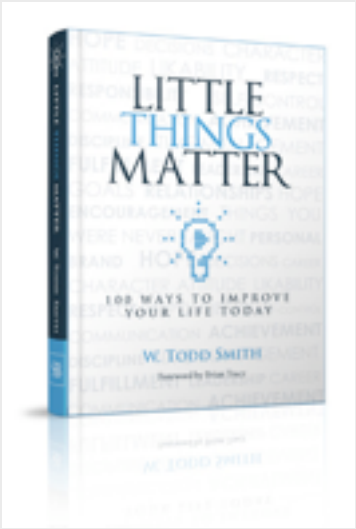
"We understand diet and exercise, but not really sleep yet," said Capt Knowles. Nevertheless, most long-haul air carriers already use double crews, and cockpits have been redesigned to include bunks. Airlines also strive to bring their back-up crews aboard tired, so their initial flight duty is to sleep.

Judging from the lively discussion that followed the presentation, the oil industry audience was fascinated.

"Sleep is measured by duration, quantity and quality. In the oil and gas industry, with our 12 hours on, 12 hours off, shift pattern, we miss all three," said one delegate. "Now we know what the problem is and we need to tackle it."

Little Things Matter

100 Ways to Improve Your Life Today



As a dynamic entrepreneur for 30 years, Todd has enjoyed professional, ranking him in the top 1/100 of 1 percent of people in his chosen fields. Convinced that achieving success at anything comes from doing the Little Things, Todd took important subjects that apply universally and broke them down into bite-sized pieces that everyone can understand and implement.

You will learn how to:

- **Become more likable**
- **Develop deeper relationships**
- **Improve communication skills**
- **Gain more respect**
- **Strengthen your self-image**
- **Improve time-management skills**
- **Develop positive character traits**
- **Enhance leadership skills**
- **Make better decisions**
- **Become more disciplined**
- **Enjoy a happier, healthier, and more fulfilling life**
-

Whether you are an employee, a sales professional, student, stay-at-home parent, or the owner of your own business, you will learn valuable life lessons that can enhance every aspect of your life.

This unique 280-page hardcover book, printed in two colors, is a great resource because of the many helpful hints on how to improve your life. It is also an ideal gift that will be treasured by anyone who wants to improve his or her life.

The Foreword was written by Brian Tracy—one of America's leading authorities on the development of human potential and personal effectiveness

http://www.amazon.com/Little-Things-Matter-ebook/dp/B0049U47YC/ref=sr_1_1?s=books&ie=UTF8&qid=1291124290&sr=1-1

QUESTION: What percentage of fatal car crashes involve a drowsy driver?

Answer: About 16.5 percent of deadly crashes (one in six) involve a driver who is drowsy, according to the U.S. National Highway Traffic Safety Administration (NHTSA). This percentage is substantially higher than most previous estimates, suggesting that the contribution of drowsy driving to motor vehicle crashes, injuries, and deaths has not been fully appreciated previously.

The NHTSA also reports that:

- Younger drivers age 16-24 were nearly twice as likely to be involved in a drowsy driving crash as drivers age 40-59.
- Two out of three drivers involved in drowsy driving crashes were men.
- Vehicles in which the driver was alone--unaccompanied by a passenger--were nearly 50 percent more likely to be involved in a drowsy driving related crash than those who had company on their drives.

On the topic of drowsy driving, a new report from the AAA Foundation's third annual Traffic Safety Culture Index offers its own startling findings:

- Two out of five drivers (41%) reported having "fallen asleep or nodded off" while driving at least once in their lifetime; one in ten (11%) reported having done so within the past year; and 4% said they did so in the past month.
- More than one in four drivers (27%) admitted they had driven while they were "so sleepy that [they] had a hard time keeping [their] eyes open" within the past month.
- More than half (55%) of those drivers who reported having fallen asleep while driving in the past year said that it occurred on a high-speed divided highway.
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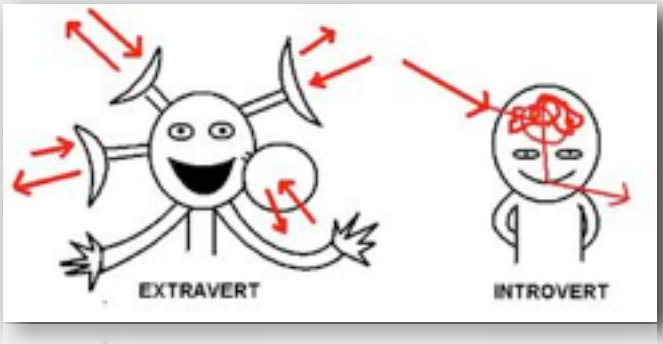
Source: AAA Foundation, “Asleep at the Wheel: The Prevalence and Impact of Drowsy Driving” November 2010. http://www.aaafoundation.org/pdf/2010DrowsyDrivingFS.pdf

Extraverts Are More Vulnerable to Effects of Sleep Deprivation After Social Interaction



Researchers have found that vulnerability to sleep deprivation is influenced by the interaction between waking social activity and individual personality traits. Results of a new study, which appears in the November 1 issue of the journal SLEEP, show that extraverts who were exposed to 12 hours of social interaction were more vulnerable to subsequent sleep deprivation than those who were exposed to an identical period of isolated activity. Speed on the Psychomotor Vigilance Task (PVT) for extraverts in the socially enriched group was significantly slower at 4 AM, 6 AM, and noon compared with speed for extraverts in the socially impoverished condition. Introverts' speed on the PVT was relatively unaffected by prior social exposure.

"Extraverts exposed to socially enriched environments showed greater vulnerability to subsequent sleep deprivation than did extraverts exposed to an identical but socially impoverished environment," said principal investigator and lead author Tracy L. Rupp, PhD, research psychologist in the Behavioral Biology Branch of the Center for Military Psychiatry and Neuroscience at Walter Reed Army Institute of Research in Silver Spring, Md. "The ability of introverts to resist sleep loss was relatively unaffected by the social environment. Overall, the present results might also be interpreted more generally to suggest that waking experiences, along with their interaction with individual characteristics, influence vulnerability to subsequent sleep loss."

According to the authors, social interactions are cognitively complex experiences that may lead to rapid fatigue in brain regions that regulate attention and alertness. Therefore, high levels of social stimulation may be associated with an increase in the need for sleep. However, some

individuals have a trait-like resistance to sleep loss that appears to be rooted in genetic differences. In particular, introverts may have higher levels of cortical arousal, giving them greater resistance to sleep deprivation.

Rupp noted that the results may have implications for industries that require workers to maintain alertness during periods of sustained wakefulness. Potential performance consequences resulting from team assignments or independent work may vary depending on an individual's personality traits.

Black Sprinters' Navel Advantage

To size up a sprinter's potential speed, start by examining his/her navel. That's the conclusion of researchers at Duke University, who dared to examine the historically verboten question; Why do Africans and African-Americans tend to run faster than whites? The answer, says Science Daily, lies with the bellybutton, which makes the body;s center of gravity. An analysis of prior studies of human measurements revealed that, on average, people of West African origin have longer legs then people with European heritage; the longer legs, and shorter torsos, place their center of gravity 3 percent, or roughly an inch, higher. Collating a century's worth of sprinting records revealed that this height difference translates into a 1.5 percent boost in speed-enough to make a big difference in the results of sprinters, in which fractions of a second separate winners from losers. "Locomotion is essentially a continual process of falling forward, and mass that falls from a higher altitude falls faster,: says research leader Andre Bejan. The converse holds true for swimmers: Europeans have a 3 percent longer torso than West Africans, which equals a 1.5 perent speed advantage in the pool. The researchers were careful to note that they focused on the athletes' geographic origins and physical measurements, not race, which they deem a 'social construct."