



Aviation Human Factors Industry News September 7, 2007

Vol. III. Issue 32

Bolt missing part in wing of ANK aircraft

A bolt missing a washer on an Air Nippon Co. (ANK) aircraft could have triggered an explosion similar to the one that blew open a China Airlines jet, the transport ministry said Thursday.

The defect was found last Wednesday during ministry-ordered emergency inspections of Boeing aircraft with similar structures as the China Airlines 737-800 jet that exploded at Naha Airport on Aug. 20.



The accident was caused by a bolt that had fallen loose and pierced a hole in the fuel tank of the 737-800. Fuel leaked, caught fire and exploded, but the passengers and crew had evacuated before the blast, according to investigators.

On Wednesday, **inspectors found that a washer was not attached to a bolt supporting the arm of a flap on the ANK aircraft's left main wing.**

The bolt hole was just beside a fuel tank.

The missing washer, with a hole 1.57 centimeters in diameter, was supposed to keep the bolt and a nut attached to another metal part, called a downstop, which sits flush against the arm.

The downstop has a hole with a diameter of about 1.04 to 1.06 cm, while the nut is 1.06 cm in diameter.

The downstop's hole is not a perfect circle and can actually be bigger than the nut, depending on the precision of the manufacturer and wear and tear.

Without the washer with the smaller hole, the bolt and the nut could have slipped through the holes in the downstop and the arm, officials said.

The aircraft operated by ANK, a group company of All Nippon Airways Co., has been in service since January and has logged about 1,300 hours of flight time.

The washer was likely left out when the aircraft was made, officials said. That part of the aircraft was not covered in routine checks, and maintenance workers could not have touched the bolt area.

"We cannot deny that (the washer) was not attached in the manufacturing stage," the ministry said.

The Ministry of Land, Infrastructure and Transport reported the defect to authorities in the United States, where Boeing is based, and requested an investigation to determine the cause.

In the China Airlines incident, the bolt, together with the nut, had cut into the fuel tank, according to the investigation.

China Airlines is believed to have replaced the nut in July, but may have forgotten the washer.

Before the explosion at Naha Airport, there were two cases reported abroad in which the nuts had detached, including one leading to a fuel leak.

The U.S. Federal Aviation Administration ordered emergency inspections of 2,300 Boeing aircraft worldwide with the same structure as the China Airlines jet that burst into flames.

Four more cases involving detached parts have been reported so far

Passengers criticize CAL over unclear evacuation instructions

Passengers on a China Airlines (CAL) plane that exploded on last month at the Okinawa airport criticized the flight crew after returning to Taipei yesterday, saying their ability to handle the emergency was very



poor, as they gave unclear evacuation instructions that could have caused potentially fatal delays.

Many in a group of about 30 passengers who returned to Taipei yesterday told reporters that passengers were crying and screaming for help inside the 737-800 aircraft that caught fire on Monday after landing on the southern Japanese island.

The fire broke out as the plane neared its gate following its flight from Taipei to Okinawa's Naha airport. All 157 passengers and eight crew on the CI-120 flight escaped unhurt minutes before the plane's left engine exploded and ripped the plane apart, sending flames and columns of black smoke billowing into the air.

Nevertheless, the returning passengers said that crew members did not see the fire as soon as passengers looking through the plane windows did, causing panic among the 157 passengers and attempts to open the doors.

They said emergency exits didn't open fast enough, and they didn't know where to gather for evacuation.

"Inside it was normal, but outside you could see smoke," said Lin Hsiu-cheng, 52, a returning tourist from southern Taiwan. "Everyone was scared, and why couldn't (the crew) see it?"

"Finally all four doors opened," she said, her voice quickening and eyes widening as she spoke. She said the explosion occurred a minute after she got out.

Another passenger surnamed Liao said, "The crew was not clear on what to do. We witnesses were much more clear."

But, CAL defended its crew's reactions.

"If the crew hadn't been on the ball and the clients hadn't cooperated, then the result could have been different," said Chen Peng-yu, CAL's assistant publicity vice president.

In addition, the CAL has decided to boost its compensations to passengers for burnt luggage, with passengers taking economy-class seats to receive a NT\$65,000 compensation fee each, compared to NT\$80,000 for those taking business-class seats.

China Airlines has a troubled safety record, with four deadly accidents in the past 13 years, including a crash in the Japanese city of Nagoya in 1994 in which 264 people were killed.

Taiwan's Unfriendly Skies

China Air's latest mishap underscores its reputation as one of Asia's most ill-starred airlines.

The 157 passengers aboard a China Airlines Boeing 737-800 got off lucky Monday.

Their plane was close enough to the gate that they all got out of the aircraft after its left engine exploded at

Naha Airport in Okinawa. But far too many people haven't been so fortunate.

Since 1970, the Taiwanese carrier has been involved in at least 10 crashes that have involved fatalities.



In Okinawa, the plane ended up lying on its side as flames and smoke billowed out of it. According to witnesses on the ground, the crew had just docked at the gate when ground staff told them it was on fire.

What is it about China Airlines? It is Taiwan's largest airline and flag carrier, owned by the China Aviation Development Foundation, which belongs to the government of the Republic of China. And it has a spectacular record of disaster over the last 37 years. Its "full loss equivalent" rating, or the sum of the proportion of passengers killed for each fatal event, at 6.23 is the highest of any other East Asian airline.

Its record for FLEs, as they are called by airsafe.com, a consumer awareness group, is worse than that for Garuda Indonesia, the whipping boy of airline analysts across the world. Such patrician carriers as Singapore Airlines International and Cathay Pacific have records below 1.0. Qantas has a record of zero. According to another measure, since 1970, China Air has averaged 4.16 fatal events per million flights against a worldwide average under 1.

In the current mishap, the airline could have been the unlucky recipient of somebody else's negligence – a chunk of debris on the Naha runway might have somehow gotten into the engine of the 737-300, a relatively new plane. It could have been the company with which China Air contracts for its maintenance.

Or it could have been negligence on the part of the ground crew. The engine exploded after the plane had landed, according to the transport ministry, and terrorism was ruled out as a cause. Shares of China Airlines fell as much as 3.9 percent to NT\$12.50 and traded at NT\$13.05 as of 11 a.m. in Taipei.

But since 1970, China Air has been the unlucky recipient of disasters like these:

August 1970: China Airlines YS11 is on final approach in bad weather into Taipei when the plane hits a ridge 800 meters from the runway. Two of the five crew members and 12 of the 26 passengers die.

November 1971: China Airlines Caravelle is believed to have been destroyed by a bomb over the Formosa Strait. All 17 passengers and eight crew members are killed.

February 1980: China Airlines 707-300 is on final approach into Manila Airport in a “steep and unstablized approach,” lands hard short of the runway, rips off two engines and parts of a wing. Two of 122 passengers are killed.

February 1986: China Airlines 737-200 touches down but aborts landing in the Pescadores Islands, Taiwan. All six passengers and seven crew members are killed in the attempt to go around.

October 1989: China Airlines 737-200 hits cloud-shrouded high ground at 2130 meters in “incorrect takeoff procedure” near Hualien, Taiwan. All seven crew members and 49 passengers are killed.

April 1994: China Airlines A300-600 stalls and crashes due to crew errors during approach to Nagoya, Japan. All 15 crew and 249 of the 264 passengers are killed.

February 1998: China Airlines A300-600 crashes into a residential area in Taoyuan short of the runway during a second landing attempt in bad weather. All 15 crew and 182 passengers plus seven persons on the ground are killed.

August 1999: China Airlines MD11 drags a wing and crashes at Chek Lap Kok in Hong Kong during an attempt to land in a typhoon. The aircraft comes to rest upside down and on fire. Three of the 300 passengers are killed.

May 2002: China Airlines 747-200 breaks up in flight near the Penghu Islands, Taiwan about 20 minutes into a flight from Taipei to Hong Kong while the aircraft was just above 30,000 feet. No distress signal or other communication was received prior to the crash that killed all 19 crew members and 206 passengers.

There have been lesser incidents. In 1985, a Boeing 747 went out of control, recovered, and managed an emergency landing at San Francisco International Airport. In 1993, another China Air 747 touched down more than two thirds of the way down the runway at Hong Kong's old Kai Tak Airport and ended up in the water. All 396 aboard lived to tell about it. In 2002, a China Air flight took off from a taxiway in Alaska, nicked an embankment on the way out and damaged its landing gear, although it was able to land safely.

Several factors contributed to the problems. Heavy maintenance for several years was **contracted to a shadowy firm** in Tainan that had formerly belonged to the US Central Intelligence Agency. Also, the airline's pilots were largely drawn from the ranks of the republic's air force, and **they tended to fly like air force pilots, taking chances they needn't take.**

China Air has been working hard to correct its faults, analysts say. The airline brought in expatriate pilots several years ago as captains to alleviate what had become known as an **"ex air-force flying club."** The first few years, the analyst said, were trying. "I talked to one (expatriate) pilot who said 'you have to remember at all times that the guy in the right-hand seat is trying to kill you.'"

It also sent young pilots off to other countries, particularly Australia, "to learn the proper way of flying," he says, although they were frustrated when they came back because seniority kept them in the co-pilot's seat.

The May 2002 disintegration was not due to pilot error, and an investigation concluded that **faulty repair by a contractor of the aircraft after it dragged its tail on an earlier takeoff resulted in the disintegration.**

To some extent, says, an airline analyst, the latest incident is bad luck. **It takes about five years, the analyst says, for the bad memories of airline incompetence and disaster to fade and restore passenger confidence.** Unfortunately, the last disaster for China Air was just three months more than five years ago.

Engine Surges Involved In Control Loss

Gates Learjet 35. Substantial damage. No Injuries.

Nighttime VMC prevailed on March 22, 2006, when the flight crew began a **"standing-start" takeoff** from runway 27L at Philadelphia International Airport for a cargo flight. The pilot held the wheel brakes until the engines spooled up to 70 percent N2, high-pressure rotor speed, then released the brakes and increased power.



The NTSB report said that the pilot disengaged the nosewheel steering system when the copilot called out “airspeed alive” at about 60 kt. **Airspeed was about 95 kt. when the airplane began to turn to the right.** “The cockpit noticed fluctuations with the engine indications and **called for an abort,**” the report said. “The pilot reduced the power to idle and corrected back to the left using left rudder pedal and light braking. The airplane then turned to the right again, and the pilot corrected once again to the left. The airplane continued to turn left and **departed the left side of the runway, tail-first at a 45-degree angle.**” The **right main landing gear collapsed, and the right wing –tip tank struck the ground** before the Learjet was stopped.

NTSB said that surging of the left engine during takeoff and the flight crew’s subsequent loss of control of the aircraft **resulted from the operator’s inadequate maintenance of the engine’s fuel computer harness.** Company maintenance records indicted that the harness **had been check six days before the accident.** However, investigators **found several discrepancies, including deteriorated and missing shielding, corrosion, a worn ground wire and a broken connector pin.**

Why Qantas engineer flew coop

A QANTAS engineer on the run after allegedly forging a license and conducting safety checks on thousands of international aircraft was only caught because he was due for a payrise.

The Sydney airport engineer, who sent more than 1000 international flights into the sky **without being qualified to verify their safety** was yesterday identified by colleagues as Tim McCormack.



He is under investigation by the Australian Federal Police, **faces a 10-year jail sentence if found guilty of forgery, and is also liable for as much as \$2.5 million in Civil Aviation Safety Authority fines.**

"He only got caught because the maintenance manager called him in on a number of occasions and he didn't show up," a CASA spokesman revealed yesterday.

"It wasn't anything bad, he was just due for an payrise."

Colleagues yesterday said when his manager finally caught up with the engineer and asked to see his license in order to validate the payrise, **McCormack "freaked out".**

"He went to his girlfriend's place, took off for about three hours and returned with the dodgy license," a colleague said.

Management "took one look at it and knew it was a fake" then alerted CASA and the federal police.

"Nobody really knows why he did it - it's not even worth that much more money," the colleague said.

Inspecting and signing off on aircraft without a valid license is considered one of CASA's top offences and carries a fine of between \$2000 and \$2500 for each offence.

"The problem is this guy has signed off on potentially thousands of aircraft," a CASA spokesman said.

The Australian Licensed Aircraft Engineers Association (ALAEA) said McCormack was in a "fragile" state when he called the office last week for help and the union was concerned for his welfare.

"He's had the AFP knocking on his door saying his license is dodgy. He didn't know what to do," the ALAEA's trustee Steve Re said.

"We haven't heard from him but that doesn't mean he won't come back with all his documents. This is being splashed about in newspapers and on TV like you'd see someone on the run for murder," Mr Re said.

Qantas has reviewed the licenses of its 2000 aircraft maintenance engineers and said it went through "everything the guy touched" but found "nothing of concern," Qantas' executive general manager of engineering David Cox said.

He said the AFP was working with airport security on the matter.

An online industry forum yesterday discussed the issue, with one insider saying "there are a number of people masquerading as LAME's in QF at the moment".

[PAMA Looking for Beta Test Volunteers](#)

PAMA is now in the process of **validating the exam for their industry** consensus standards program with a beta test. The beta test, to be offered nationwide, is 200 questions in length (twice the length of the



THE way to stay technically in tune

actual exam). Four hours will be permitted to complete the exam.

PAMA is soliciting individuals with all levels of experience to take the exam. The results will be the determination of the 100 best exam questions and the establishment of the "cut score" or passing grade. The top 100 test items will become the actual 2-hour AMS/AME exam. The cut score will not be revealed and Beta testers who achieve above the cut score on the 100 selected items will receive a "Pass" notification and be awarded the appropriate certification Aviation Maintenance Specialist or Aviation Maintenance Engineer.

The beta test opportunity is being offered free to all testers and those that pass will receive free initial certification. If you are interested in participating in the test offering, please contact Angela Springel at aspringel@pama.sae.org.

Seatbelt came undone before Snowbird crash

Canadian Forces Snowbird pilot Capt. Shawn McCaughey is seen in this undated photo



A report into the fatal crash of a jet from the Snowbirds aerobatic squadron says **the pilot lost control of his plane when his seatbelt became unfastened.**

Capt. Shawn McCaughey was killed May 18 during an air show practice at Malmstrom Air Force Base near Great Falls, Mont.

The [interim investigator's report](#) says **McCaughey was flying upside down during a pre-show practice session when his seatbelt came unfastened**, he fell out of his seat and lost control of his Tutor jet.

"What we're talking about is an interference between a component that leads from the parachute to the seatbelt buckle," said Air Force Col. Christopher Shelley, director of flight safety, speaking with CTV's Jill Macyshon from Air Force headquarters in Ottawa. **"That component seemed to interfere with the locking mechanism of the seatbelt."**

He said the connection with the parachute is there to maximize a pilot's chance for survival by launching the parachute as soon as possible after an ejection sequence.

But there was no ejection sequence at the time of the accident and McCaughey's plane hit the ground at about 45 degrees nose down.

The crash occurred during an inverted pass about 22 minutes into the show, when the No. 2 aircraft dipped low, wavered, and left the formation inverted.

The report says the aircraft climbed, then rolled upright before nosing over at about 750 feet above ground level.

The four-paragraph summary says the probe will now focus on how the seatbelt came loose.

According to the summary, **preventive measures are already being implemented, including changes to the pilot restraint system, to the aircraft operating instructions and enhanced training for aircrew and passengers.**

Seatbelt has malfunctioned before

It's not the first time a seatbelt has come undone during a stunt.

In 2002, one year after the seatbelts were installed in the Tutor jets, another pilot complained his restraint had unbuckled while he was flying upside down. He regained control of the jet but not without difficulty.

"It's a subtle kind of failure that's very difficult to detect," said Shelley. He said a couple things were done after that first incident to try and prevent future accidents.

"All the equipment was checked to make sure it had all the correct tolerances, and that it was put together properly," he said. "Procedures were emphasized with the ground crew and the pilots to make sure that the parts were assembled correctly when they do their seat belts up and also that they check to make sure the seatbelts were in fact fastened."

Shelley said **an improved design of the lanyard connector was underway though it wasn't implemented at the time McCaughey's jet went down.**

Though the Tutor jets have them now, Shelley said a thorough investigation will take a look at what else can be done to prevent this kind of accident from ever happening again.

"It usually takes a year for these reports (to be completed) but it can be delayed if there are technical issues that take more investigation or if we find a new avenue we have to look into," he said. "We take the time it takes to do the investigation correctly."

Maintenance is 'second to none'

One thing that likely won't turn up during the investigation is the overall maintenance of the planes, which one Snowbird calls "second to none".

"The maintenance on these aircrafts is second to none, it's very rigorous and thorough," said Maj. Rob Mitchell, a commanding officer with the Snowbirds. "Every year or 400 hours or so, planes are practically torn down and rebuilt. **They're essentially new airplanes when they come out of the periodic shop.**

"Even day to day, for every hour of maintenance they are scrutinized for two hours by **(maintenance workers)** before we fly and after we fly," he said, speaking with CTV News.

Mark Miller, an aviation expert who has flown with the Snowbirds, agreed with Mitchell, telling CTV Newsnet this probably wasn't the case of an old aircraft falling apart.

"That's not the case here," he said. "I love this plane. It's stable, nimble and easy to pilot. They always maintain it to near new condition."

He said **the only question in the investigation will be why the Air Force didn't immediately fix the seatbelt glitch five years ago when a pilot first complained.**

"It's fixed now but the question is, why wasn't it fixed then?" he said.

Human Interest Story

World War II combat vet flies for 90th birthday

The serene flight spans 140 miles through summer skies, but when George Mulroy is in the air this morning, he'll remember combat in subzero cold.

Sixty-four years since his last wartime flight, the retired Air Force major from Calverton, NY will again be inside a B-17 Flying Fortress - **this time as a 90th birthday gift** from his family and a nonprofit historic aviation foundation.



"You're standing out there, 27,000 feet up, trying to keep warm; the windows are open and it's about 40 below," Mulroy **recalled yesterday of his time as a gunner over northeast England in 1943.**

"You're keeping your arm out, and anybody coming close, you're trying to keep them away."

This trip will be quite different. Mulroy is scheduled to take off at 9:30 a.m. from Cape May, N.J., with his son, George, and daughter-in-law, Eileen, for the hour-long ride to Farmingdale's Republic Airport.

He'll see the spot where he often stood as a waist gunner on that same type of plane in World War II and, according to his family, finally get an opportunity to relieve an experience he brings up constantly.

"He wasn't the pilot, he was the right-wing gunner, and he tells us all the time," Mulroy's niece Linda Giustino, of Massapequa, recounted with a laugh.

"My 12-year-old even knows all about it."

The story is one worth telling. In 1942, the Bronx native, 24, joined the U.S. Army Air Force, and within a year, was flying bombing missions.

It was there he won the Purple Heart after being wounded. Later, he was commissioned and served in Korea and Vietnam before retiring in 1962.

After moving to a home in Calverton - where he still lives - Mulroy settled into a career in Grumman Aircraft Engineering Corp.'s wiring department in Bethpage. Meanwhile, he told war stories and attended reunions of his old servicemen.

But it wasn't until a niece heard about the Collings Foundation in Stow, Mass., that the B-17 re-entered his life. [The "living history" education company owns 22 vintage airplanes from the Wright Brothers-era on, including fighters from World War II, Korea and Vietnam.](#)

Since the foundation was transporting some of its planes from Cape May to Farmingdale for a weekend display anyway, it jumped at the opportunity to accommodate Mulroy, donating a ride that would have otherwise cost three civilians nearly \$1,000.

["It's the veteran's chance to take one last flight,"](#) said Ken Giles, the foundation's director of operations. "And most of the time, they're very emotional. Many haven't even seen the airplane since leaving the corps 60-plus years ago."

That was true of Mulroy. And yesterday, with 18 hours before the big flight, he was reflective. "I was very lucky," he said. "I have a lot of memories. Mostly combat, and trying not to get shot at."

[Midnight Sift Nugget](#)

[Benefits of Napping](#)

1. [What are the benefits of a nap?](#)

[Naps](#) have been shown to benefit almost every aspect of human wellness. The benefits to the body include better heart functioning, hormonal maintenance, and cell repair. They help you live longer, stay more active, and look younger. No organ is as affected by [naps](#) (or the lack thereof) as



the brain. The benefits result in greater alertness, improved memory retention and creative insight. **Napping** can make you a faster typist, better dancer or anything else requiring complex and coordinated motor skills.

Also, a **nap's** effects on mental health include improved mood, lowered stress, and greater psychological balance.

2. [Should I let my employees take naps?](#)

Absolutely. Working long hours, especially the kind of labor that is repetitive and prone to fatigue-related errors, exacts a great toll on money, safety, and health. The more the public learns about the cost of fatigue and the benefits of **napping**, the more employees will realize they have a **right to ask for a nap room at work** and employers will realize that allowing them to have one can only benefit their bottom line.

3. [Can I really get benefits in 20 minutes or less?](#)

Yes, you can. Benefits of **naps** can accrue in as little as five minutes. A 20-minute **nap** can increase alertness, improve physical dexterity, boost stamina, and lower stress. I call this the All-Purpose **Nap**, because its benefits don't vary much across the day. So you always know what you're going to get.

4. [Do naps make you groggy?](#)

The experience of grogginess, known as Sleep Inertia, can occur after any kind of sleep. The culprit here is Slow Wave Sleep (SWS). This stage is, in terms of brain activity, the polar opposite of wakefulness, when the brain's electrical activity is busily multitasking and therefore highly desynchronized (operating on many frequencies). During SWS, we have almost completely tuned out the external world and our entire brain rhythm synchronizes into a slow, uniform pattern. Sleep inertia is the lag that occurs while the brain once again recreates those multiple faster frequencies. This period can be minimized by either shortening or lengthening the **nap** to avoid waking up in SWS. Otherwise, it can be quickly dispelled by physical activity, noise or other sensory stimulation (such as a shower) or, for those who must, with a shot of caffeine.

5. [If I have trouble napping, what can I do?](#)

The first thing to understand is that everyone is physically able to **nap**. But when working through periods of exhaustion, people employ methods that hinder this natural ability. For instance, in order to stimulate short bursts of energy, we consume caffeine, and high calorie/high fat/high sugar containing foods and drinks.

All these interfere with our ability to fall asleep. Securing a safe place to **nap** where there are no disruptions from ringing phones or passersby will help immensely.

Darkening the nap area or wearing an eyeshade stimulates the sleep inducing hormone, melatonin. While people's tolerance toward temperature varies, it is important to bear in mind that when falling asleep, body temperature drops. Compensate by raising the room temperature or use a blanket.

6. [Will a nap interfere with my nighttime sleep?](#)

No, **napping** does NOT interfere with nighttime sleep, as long as your **nap** lasts less than three hours and is completed three to four hours prior to your normal bedtime. It is unfortunate that many information sources on sleep hygiene are misinformed about this fact and encourage people to avoid **napping** if they are having trouble sleeping at night. There is no evidence to support this claim whatsoever.

7. [If I nap, can I sleep less at night?](#)

Naps will never be a replacement for a good night's sleep. Under extreme circumstances, a strategic napping regimen has been shown to help maintain functioning in the absence of normal nocturnal sleep. For most people most of the time, however, nocturnal sleep is essential

[Motorcycle Fatalities on the Rise](#)

While overall traffic deaths are at record lows in the United States, **motorcycle-related fatalities are up for the ninth straight year.**

“In fact, for the first time, motorcycle deaths in 2006 outnumbered those of pedestrians,” according to a National Safety Council (NSC) press release. **“This troubling increase owes a lot to failure to wear helmets – a deadly trend fueled by states without helmet laws – including some states that have actually repealed them.”**



NSC says **only 20 states** and the District of Columbia require helmets for bikers on the road.

Another factor in the increasing number of motorcycle-related fatalities is that more people are purchasing and licensing motorcycles. **Motorbike registrations rose by 48 percent between 1995 and this year.**

More than 4,800 motorcycle drivers and passengers died across the US in 2006, according to the National Highway Traffic Safety Administration. That's a 104 percent increase in motorcycle-related fatalities during the past decade.

NSC says that nearly half the riders killed in 2006 were 40 and older. The safety council urges riders to purchase and wear Department of Transportation (DOT) approved helmets, even if they aren't required by law.

GO FIGURE

Motorcycling Safety

What does this number represent? **4,553**

Answer: It's the number of motorcyclists who were killed in traffic crashes in the United States in 2005.

Here are some other motorcycle statistics:

- **2,143** motorcycle riders killed in traffic crashes were in the 40+ age group
- **87,000** motorcyclists were injured in traffic crashes in the United States in 2005 (14% more than were reported in 2004)
- Motorcycles accounted for only **0.3%** of all vehicle miles traveled in the US in 2004
- Per vehicle mile, motorcyclists are approximately **34** times more likely than passenger car occupants to die in a traffic crash
- In 2005, **26%** of fatal motorcycle crashes involved a collision with a fixed object
- **27%** of all fatally injured motorcycle operators in 2005 had blood alcohol concentrations of .08 g/dL (grams per deciliter) or higher—a higher percentage than any other type of motor vehicle driver



(Source: [Traffic Safety Facts from NHTSA's National Center for Statistics & Analysis](#))

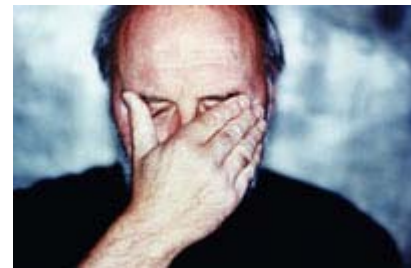
The 9 Steps to Change Your Safety Culture

1. Practicing What You Preach (and Vice Versa)
2. Meeting Regulatory Standards
3. Building a Base of Support
4. Promoting the Company Line
5. Training Your Supervisors
6. Providing Management Meaningful Data
7. Holding Management and Supervisors Accountable
8. Recognizing Safety Achievements
9. Gaining Access to Top Management



Caregiver stress: When helpers need help

A study published in the *New England Journal of Medicine* (February 16, 2006; Vol. 354, pp. 719–30) has called attention to the stress that results from caring for family members with medical and psychiatric illnesses. The evidence comes from an unusually large sample — nine years of Medicare records for a half-million couples over age 65. Researchers at Harvard Medical School and the University of Pennsylvania found that in the months and years after a wife or husband was hospitalized (often a sign of severe illness), the risk of death for a caregiving spouse rose. In some situations, having an ill partner was as risky as losing a spouse.



The danger was greatest in the first months after hospitalization, declined for six to nine months, then began to climb again. The authors of the article theorize that the effects of stress accumulate when caregivers lose social, emotional, economic, or practical support — and especially when, as is common, they have health problems of their own. Apart from the direct health effects of stress, they may also stop taking care of their own medical and nutritional needs, or fall back on maladaptive ways of coping such as excessive drinking.

The more disabled or debilitated a wife or husband was, the greater the risk to the caregiver. Cancer, for example, was less stressful than a hip fracture, which usually demands more direct physical care and interferes more with everyday activities.

The risk of death was greatest of all for people caring for a husband or wife with dementia or a psychiatric disorder. This result confirms what other studies have suggested. In their stress hormone levels, caregivers for people with dementia resemble severely depressed patients. Their lymphocytes — blood cells in the immune system — become less active, and their risk for high blood pressure and heart disease rises. They often have high levels of depression, anxiety, and anger. Even their intellectual functioning may decline.

An Italian study found that the average caregiver devoted three-fourths of his or — more commonly — her time to a patient with dementia. At the end stage, caregivers might have as little as two hours a week of free time. So their low quality of life is not surprising.

The families of people with severe and chronic mental illness undergo similar stress. Often a spouse is the only person available to compensate for the patient's limitations, provide emotional support, and cope with unmanageable behavior.

Psychiatric illnesses may also carry an extra burden of shame and stigma for the family.

The evidence in the *New England Journal of Medicine* study should help policymakers push for changes in the health care system. But it will take time to find out which approaches are most effective. Certainly caregivers, especially seniors with low incomes, would benefit from a greater availability of home health aides, visiting nurses, and social workers to provide practical support, ongoing education, encouragement, and help in solving practical problems. Caregivers may be less stressed if they understand the disease better or learn routines or strategies to cope with predictable problems. Health aides can provide respite from burdensome physical tasks like bathing, toileting, and dressing. Social workers may help the caregiver locate community resources and support networks, or advocate for services.

Equally important, caregivers must be able to take care of themselves. Some researchers have begun exploring whether such approaches as stress management, meditation, or yoga can reduce the burden and therefore the risk. A caregiver's depression or other psychiatric symptoms should, of course, be evaluated and treated. This study may focus attention on all these ways of providing more help for the helpers.

Picture This!



END