InterPilot

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A look at HEMS Safety

Swissair 111 revisited

November - December 2009

DANGER! Helicopter Emergency Medical Services (HEMS)

By Capt Jeff Smith

In the United States, the number of Helicopter Emergency Medical Service (HEMS) related fatal accidents over the past several years has reached an all time high. Between 2002 and 2005 there were 41 accidents involving aircraft engaged on HEMS which resulted in 39 fatalities. This trend spiked upwards in 2008 which tragically set a record high with eight fatal HEMS accidents. Sadly, these accidents resulted in 29 fatalities. It should be noted that while HEMS operations have doubled in the US since 1991 (300,000 hours flown in 2005 compared with 162,000 in 1991) the accident rate has also risen (from 3.53 accidents per 100,000 hours for the years 1992-2001 to 4.56 per 100,000 flight hours in the period from 1997 to 2001.

The latest (at the time of writing) was in September of this year which resulted in the death of the pilot and both medical crew members. Certainly the United States National Transportation Safety Board (NTSB) was sufficiently concerned by the continued increase in accident number to convene a number of hearings to consider the HEMS accident rate issue. As a result of the hearings, held in February of this year, the NTSB has identified a number of problem areas in HEMS operations together with a list of recommendations. Interestingly, these recommendations parallel many of those that pilots have been advocating for many years. The four problem areas highlighted by the NTSB were:

Less stringent requirements for HEMS operations conducted without patients on board.

Flights without patients are operated under the FAA's Part 91 which for example, only require that flights be conducted clear of clouds when under 1,200 ft in Visual Flight Rules (VFR) compared with Part 135 operations which call for weather and visibility minimums of 1,000ft and 3nm respectively. Of the 41 HEMS accidents investigated by the NTSB between 2002 and 2005 10 were flights operated under Part 91 in conditions that would not have met the tighter Part 135 regulations. In addition while Part 135 allows a maximum duty time of 14 hours, Part 91has no flight time/duty time restriction. Clearly, this has serious fatigue implications. For example, a pilot could have reached his destination delivering a patient just inside his maximum duty hours but the positioning flight from the hospital back to base can be operated under Part 91 regulations and therefore the additional duty time is not counted and what's more the additional flight could cut into the pilot's off duty time. This presents two problems; first the pilot could be fatigued at the end of the duty period and further starting the next duty period fatigued due to inadequate rest. On the other hand under Part 135 rules a pilot could extend the duty period to position the aircraft but this would require a longer rest period before the next duty period.

A lack of flight risk analysis programmes for HEMS operations.

In the NTSB's investigation of recent HEMS accidents found that in every single accident the operator involved did not have an established flight risk analysis programme in operation that would assist pilots in making an objective determination of the prevailing risks. The nature of the HEMS mission brings elevated risk; operations are operated to off airport landing zones often at night and or in poor weather leading to a heightened risk of spatial disorientation. In addition, there are pressures to take or complete a mission. These factors are nothing new –they were first identified over 20 years ago in the NTSB's 1998 study of HEMS operations and again in the Air Medical Physician Association (AMPA) 2002 study which called for effective risk management programmes to be made mandatory.

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Lack of consistent and comprehensive flight dispatch procedures.

Currently, the operations specifications at most Part135 operations allow pilots to be notified of an assignment by the local 911 dispatch or hospital staff. The problem with this is that these medical staff do not have any expertise when it comes to flight operations especially concerning weather and night operations supplying on minimal information. The NTSB study found that as a result pilots then self brief using non aviation sources as a result, they are denied updated safety information. The scary part is, that for 11 of the 41 accidents studied, this missing information was critical and could have helped avoid the accident.

No requirement to use technologies like Terrain Awareness and Warning Systems (TAWS).

In 2002, the study by AMPA found that Controlled Flight into Terrain (CFIT) is a common factor in HEMS accidents, especially so during the landing and takeoff phases of flight. In nearly half the accidents studied by the NTSB (17 of 41) TAWS may have helped pilots avoid terrain. The value of TAWS as a safety tool is recognised by the FAA which requires the system to be installed in any fixed wing turbine aircraft with more than six passenger seats and it is a mystery why they have not made the same requirement for similar rotary wing aircraft. Certainly, it is unlikely that with TAWS system cost estimated at $30,000 per aircraft operators are likely to voluntarily install the equipment

Unfortunately, while the opinion of the NTSB carries considerable weight its recommendations are not regulatory and, as a result, the industry is a long way from implementing even these modest proposals. Furthermore, while making progress the recommendations fail to address a number of concerns presented by pilots. Members of IFALPA's Helicopter Committee are actively involved in the growing discussion on a number of levels. During their annual meeting this September, the committee proposed recommendations to deal with a long list of concerns:

Inadequate training

VFR operations have no training requirements beyond the annual evaluation. Simulators do not exist for many models, and few operators provide opportunities for pilots to receive any scenario based training.

Pressure to accept flights

Not a new problem for the profession, but the HEMS segment has some unique issues in this area. Overcapacity in some markets causes a shortage of revenue for some operators, and therefore pressure is place on pilots to take flights that may have been declined by others. Operational control is often ceded to medical directors by certificate holders who want to keep the customer happy, but this can result in pressure being placed on pilots by people lacking the necessary aviation expertise. Many contracts include lift-off times from 'call to launch' and have fiscal implications. The problem is that these may not allow time to adequately evaluate difficult weather situations.

Inadequate capability for safe night operations

Most HEMS operations in the USA are conducted single pilot in a VFR certified helicopter. Consider this scenario: An 02:00 launch to a roadside site, throw in overcast weather, reduced visibility, an unstable platform The wonder isn't the high number of Controlled Flight Into Terrain (CFIT) or Instrument Metrological Conditions (IMC) loss of control accidents but rather that anyone is surprised by the accident rate. There are a

The nature of HEMS operations means that the majority of operations are conducted off airport. Unfortunately, since most weather observation takes place at airports the accuracy of reports for remote sites may be sorely lacking.

Trooper 8 awaiting an auto accident victim. Sadly, this Aerospatiale SA-365N-1 crashed on September 26, 2008, in bad weather, killing four people.

range of technology-based solutions which would help mitigate the risk for example night vision aids, TAWS, radar altimeters, autopilots and stability systems which are included in the NTSB report. Yet the US does not support (and the NTSB did not recommend) mandating a two pilot crew for night operations (as required in many other countries) which has been shown to dramatically reduce the risk of accidents.

Operating environment concerns

The nature of HEMS operations means that the majority of operations are conducted off airport. Unfortunately, since most weather observation takes place at airports the accuracy of reports for remote sites may be sorely lacking. Furthermore, localized conditions may result in an AWOS report being actually worse than no report at all from a safety point of view since a report from a station 15 or 20 miles from the proposed landing site may entice pilots to "take a look" into what may be dramatically poorer weather conditions. An argument advanced is that newer aircraft are IFR capable and together with GPS based precision approaches should abrogate the problem. However, this approach is too simple since naturally the priority remains the development of these procedures at airports rather than helicopter landing sites. In the US there has been little discussion in the NextGen debate about the development of a low level IFR structure designed for the helicopter sector.

Fatigue

Again, not a new issue to the profession, but one that is more significant in a predominately single pilot environment operating 24 hours a day. Pilots typically work seven days on seven days off 12 hour shifts, switching between days and nights every other cycle. Ask yourself this question; How alert would you be at 02:00 at the beginning of a new night cycle?

Flight data and voice recorders

Adding to the problem is a lack of scientific data to show why pilots are failing. Most helicopters used for HEMS are below the weight requirements where this equipment is mandated. The result is that the majority of accidents (over 70%) simply get classified as a "human factors" mishap. Translated, the implication is "pilot screwed up, but no one really knows why".

What's going on to solve the problem?

Beyond the NTSB recommendations and the IFALPA helicopter committee efforts, there are numerous other organizations looking into the issues. The International Helicopter Safety Team (IHST) is a joint industry/regulator effort modelled on the CAST program that had some success in the airline industry. The IHST has a stated goal of reducing all helicopter accidents worldwide by 80% within 10 years. Recently, ICAO has empanelled a HEMS workgroup to study the issues and see if the Annexes need to be change. IFALPA has helicopter committee representatives participating in both the IHST and the ICAO efforts.

You might say; very interesting and worrying but what, exactly does this have to do with me? Certainly, Helicopters and helicopter pilots do not usually rank very high with many IFALPA members as worthy of much effort from the organization as a whole. But as IFALPA Deputy President Paul Rice stated in his remarks to the New Zealand Conference, anyone could become involved in an automobile accident on the way home from the airport, and find themselves in need of a HEMS transport. The reliability and safety of that system should be a concern to all of us.

IFALPA Helicopter Committee Vice Chairman Jeff Smith has been flying helicopters professionally for 40 years initially in the US Army and for the last 22 years as a check airman and instructor for Lear Siegler Services who provide helicopter flight instruction for the US Army's school of aviation at Fort Rucker. Jeff is also founding Board Member of the Professional Helicopter Pilot Association.

Swissair 111 - a lesson lost?

By Capt 'Boomer' Bombardi

More than 10 years have passed since Swissair Flight 111, a McDonnell Douglas MD-11, crashed into Peggy's Cove, Nova Scotia, Canada, on Sept. 2, 1998, with the loss of all 239 aboard. The aircraft crashed due to loss of control caused by a hidden on-board fire. The flight crew had a delayed indication of the fire, and had no means of reaching or extinguishing it. A divert to Halifax was attempted but was unsuccessful because of the delay caused by the lack of timely information about the intensity of the fire. It is an undisputed fact that the crew of Swissair 111 did not know the seriousness of the on-board fire. The flight crew of Swissair 111 did nothing wrong. Given the same circumstances and lack of vital information, my actions would have been the same as theirs. However, I maintain that if the Swissair pilots had better knowledge of the nature and intensity of the fire, and had initiated an earlier and more aggressive divert to Halifax, there would have been time to safely land the aircraft.

While this possibility has been discussed, this theory was never tested, until now. To attempt to document alternate scenarios, and put this speculation to rest, I was able to obtain the use of an MD-11 simulator to evaluate several diversion scenarios.

Some may ask, "Why use Swissair 111 as an example? There have been other smoke/fire/ fumes (SFF) accidents and fatalities." My point is that an aircrew needs to know the nature and seriousness of any emergency in order to take the proper actions to deal with it. Even though corrective measures were taken in other SFF accidents, the issue of being able to identify, extinguish and monitor a hidden fire has not been resolved. Swissair 111 is the most recent example and, hence, is used in this article.

A tribute at Peggy's Cove to the 229 reasons why research into improved fire detection systems should be pursued.

The known accident sequence began at 01:10:38 local time, when the first officer mentioned an unusual odor in the cockpit. At this point the aircraft was approximately 95 nm (176 km) from Halifax. About 21 minutes later, at 0131:18, the aircraft struck the water. It cannot be assumed that all 21 minutes would have been available for flying the airplane. The Canadian accident investigation report states that there was no response to an air traffic control radio message to Flight 111 at 0125:16, and the voice and data recorders stopped working at 0125:41. Conditions inside the cockpit and the status of the aircraft control systems in the final minutes of the flight are not known, but the aircraft may or may not have been flyable.

While the time from the first scent of the fire to the crash was 21 minutes, unknown is how much additional time the crew would have had to fly their diversion if the aircraft had been equipped with better fire sensors and warning systems, and the crew had earlier indications of the problem.

Nearly five minutes after the first scent, at 0115:10, the crew selected Halifax as the diversion target. Halifax was a Swissair-designated intermediate alternate airport, approved for MD-11 operations. At this point the aircraft was 60 nm (111 km) from Halifax. From 0115:10, Swissair 111 had approximately 16 minutes before loss of control and impact with the water.

We flew a number of simulator profiles, and for each test case, the aircraft gross weight was 501,800 lb (227,616 kg) with 112,200 lb (50,894 kg) of fuel aboard, altitude was Flight Level (FL) 330, heading was 058 degrees, and airspeed was Mach 0.82. In each case a maximum effort diversion was initiated to land as soon as possible.

The five test scenarios flown in the simulator offer compelling evidence that, had the crew of Swissair 111 been accurately warned of the extent of the fire the outcome may have been very different.

Test Case No. 1

The aircraft was 95 nm from Halifax, no winds. This was the position of the aircraft when the first indication of a problem surfaced. The aircraft's configuration for the diversion was engines at idle, speed brakes out, airspeed at the maximum allowed and fuel was being dumped.
The result: The aircraft landed at normal speed on Runway 05 at Halifax approximately 16 minutes later.

Test Case No. 2

In the second simulation we were closer to the field, using the actual accident scenario in which the crew asks at 0115:36 for a diversion to Halifax when they were 60 nm away. We flew the simulator in a more aggressive descent — engines at idle, speed brakes out, gear down, fuel dumping, speeds at times exceeding maximum limits. The result: The aircraft landed at normal speed 10 minutes, 15 seconds later. The accident aircraft struck the water approximately 15 minutes and 42 seconds after the start of the diversion at 0115:36.

Test Case No. 3

In the third simulation, starting from the same location as in Case No. 2, we added tail winds. We used a tail wind of 60 kt from FL 330 to FL 200, 30 kt from FL 200 to 6,000 ft, 10 kt from there to touchdown.

The result: The aircraft landed approximately 9 minutes, 47 seconds later, speed 169 kt. Once again, from 0115:36, Swissair 111 struck the water approximately 15 minutes and 42 seconds later.

Test Cases No. 4 and 5

We flew two additional simulations with less aggressive descents, the first included delayed landing gear extension, no fuel dumping and adhering to maximum speed limits, and the second further delaying landing gear extension until the last minute to help slow down. The result of both of these scenarios is that landing was 9 minutes, 19 seconds after the beginning of the diversion.

Conclusion

This simulator data indicates that if the crew had known the seriousness of the fire and had started an aggressive diversion to Halifax, they should have been able to safely land the aircraft. The diversion could have been initiated either from 95 nm or 60 nm from Halifax. With the results of the simulator data in hand, I met with representatives of the U.S. Federal Aviation Administrations (FAA) Fire Safety Team, from the William J. Hughes Technical Center. We discussed sensor technology as it would apply to identifying/monitoring SFF events in hidden areas of aircraft. Sensor technology has rapidly advanced since the crash of Swissair 111. The consensus of the representatives of the Fire Safety Team was that there are a variety of sensors that could be used to monitor inaccessible areas of the aircraft. However, research and testing would be needed to optimize the type and location of the sensors to ensure a timely response.

Admittedly, the unknown effect of the fire on the crew and on critical aircraft systems makes it impossible to say for certain whether sensors alone could have enabled the crew to land the aircraft. It is clear, however, that sensors and an effective extinguishing system or a means of accessing and extinguishing the fire surely would have enabled the crew to land safely. There were several comments/recommendations pertaining to identifying, monitoring and extinguishing hidden fires in the Transportation Safety Board of Canada (TSB) report on Swissair 111The FAA was urged to conduct a comprehensive research project to examine the feasibility of systems to identify, monitor and extinguish inaccessible aircraft fires.

Data from the simulator testing clearly indicate that SFF sensors could have made the difference with Swissair 111. The time has come to be proactive instead of reactive when it comes to inaccessible aircraft fires. I can think of 229 reasons why the FAA should move forward with this research. I can't think of one reason not to.

Capt. H.G. "Boomer" Bombardi first became involved with the issue of smoke/fire/fumes (SFF) in aircraft while flying C-141 aircraft for the U.S. Air Force. Flying for a major U.S. airline, Bombardi worked on several SFF projects, eventually joining Air Line Pilots Association, International's Air Safety Committee's In-Flight Fire Project.

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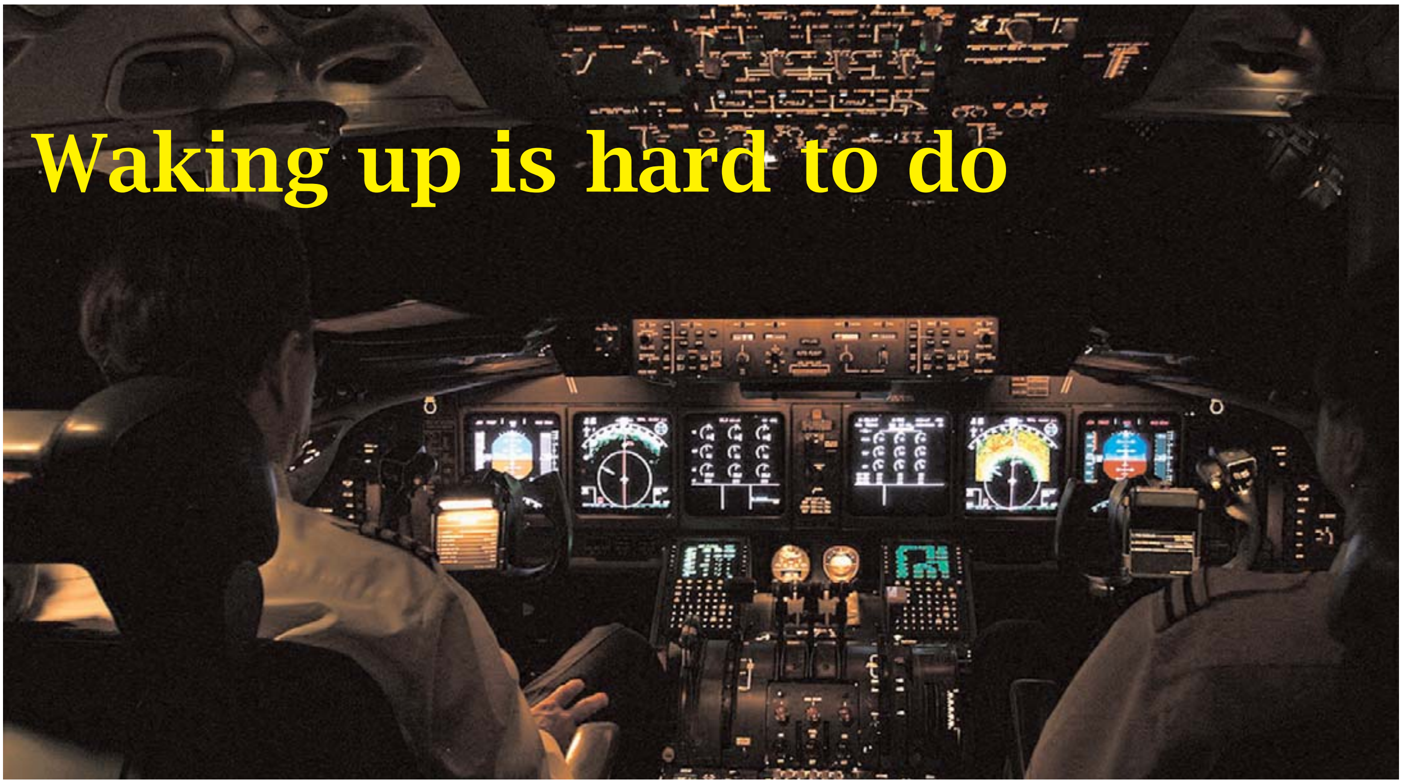
Waking up is hard to do



By Angela Williams

In his 2009 children's adaptation of original hit song 'Breaking up is hard to do', Neil Sedaka's quite right: "wakin' up is hard to do". The phenomenon of sleep inertia has gained much prominence following decades of research into fatigue and levels of alertness and is particularly relevant to occupations such as pilots where performance is often expected soon after waking from onboard crew rest berths. Whilst it's commonly thought that some sleep is better than none, pilots need to be concerned about their state of alertness following awakening and take steps to reduce impairment associated with sleep inertia and implement alerting strategies to re-engage themselves in the workplace.

So what is sleep inertia?

Sleep inertia is the state of transition from sleep to wakefulness that results in a measurable performance decrement immediately after waking. It's described as "the grogginess, disorientation, and sleepiness that accompany awakening from deep sleep". Throughout the duration of sleep inertia, people demonstrate all the outward physical signs of actually being awake, however aren't cognitively awake. The recently asleep brain isn't necessarily sleep deprived but grapples to move from a state of sleep towards full alertness. Its manifestation is most evident when an individual is abruptly awoken from sleep.

Effects of sleep inertia

Impaired performance and duration

One of the most significant effects of sleep inertia may include impaired performance, increasing the likelihood of errors. The greatest decrement in performance occurs within a few minutes after waking. A person's ability to perform certain tasks may be reduced for a period ranging from a few seconds to 75 minutes, according to the Australian Transport Safety Bureau (ATSB). When awoken from sleep naturally, reduced performance can last for as little as five minutes. When awoken abruptly, the effects of sleep inertia have been measured to last for periods of up to 30 minutes, although some researchers believe it may last in excess of one to two hours.

In a Harvard Medical School study of the time course of sleep inertia dissipation in human performance and alertness, it was found that subjective alertness and cognitive performance could be impaired for more than two hours after waking, even if subjects were not sleep deprived and awoke at their routine time.

Pilots that nap in-flight as a means of improving performance must be given sufficient time after waking from naps for sleep inertia to dissipate before high level performance is required.

Impaired decision-making capability

Sleep inertia may also impair decision making capability for at least 30 minutes after awakening. In a study conducted at Victoria University, it was found that the greatest impairments in decision-making occurred within the first three minutes after waking. Decision-making capability was reported to be as low as 51% of the subject's best decision-making ability before sleep. Decision-making capability was found to still be as low as 20% below optimum, 30 minutes after awakening. The results of the study found sleep inertia to be a period of confusion and decreased alertness, impairing the cognitive abilities of vigilance and alertness that are necessary for effective decision-making.

The effect of sleep inertia on decision making performance has significant implications for pilots who are often required to make complex decisions soon after waking. Decision-making is a complex cognitive process involving the accurate search and appraisal of information, understanding of options and selection of the best option with an appreciation of the consequences. The ill-effects of sleep inertia on the decision making performance of a pilot may be seen in a case where the pilot in command was awoken abruptly to fly medical workers to a

Sleep inertia is most pronounced when an individual is awoken abruptly from sleep. However this is particularly the case when sleep ends during the low point in the circadian cycle. For example when this guy realises he's just arrived at his station.

patient. The pilot conducted his pre-flight preparation within 15 minutes of departure. Soon after, the aircraft departed the patient's home with insufficient fuel for the return flight and crashed while attempting to land. All on board were killed. The accident investigation suggested the pilot in command might possibly have been affected by sleep inertia during preflight preparation and the early stages of flight.

Relationship between sleep inertia and fatigue

Sleep inertia is one component of fatigue that's relevant to the aviation industry. Sleep deprivation, stage of sleep, time of day and individual differences influence the relationship between sleep inertia and fatigue.

Sleep deprivation

The more fatigued a person, the greater the time taken to feel alert after waking. In a test, it was found that sleep deprivation increased the amount of deep sleep in naps and that this was associated with greater post-nap cognitive deficits. When sleep deprivation is intense, sleep inertia can last for up to three to four hours after a nap.

Stage of sleep

The effects of sleep inertia are more pronounced when awoken from deep or slow wave sleep (SWS). SWS in a well rested person usually occurs within 45 to 60 minutes. Shift workers or those already fatigued may reach SWS in as little as 20 to 30 minutes6. Awakening from stage one or two sleep produces no substantial sleep inertia effect. This is why it's recommended that naps be limited to 45 minutes.

Time of day

Low points in the circadian cycle induce a strong physiological need for sleep at around 0300 to 0500 and 1500 to 1700. Since the process of falling asleep is strongly influenced by circadian time, the reverse process of waking up may be similarly affected. Reduced performance during low points in the cycle was evident in a BAC 1-11 accident, which occurred in 1990 when incorrect bolts were fitted to the aircraft's windscreen. The windscreen blew out in-flight and the captain was sucked out, although was saved by a flight attendant that held onto him! The engineer fitted the windscreen between 0300 and 0500. The time of day that work takes place is a high risk factor of fatigue. Sleep inertia is most pronounced when an individual is awoken abruptly from sleep. However this is particularly the case when sleep ends during the low point in the circadian cycle. A nap taken during low points may result in intensified effects of sleep inertia upon abrupt awakening. This may further result in performance that's worse when compared with performance before the nap.

Individual differences

Most people experience some effects of sleep inertia upon awakening. Anecdotal evidence suggests that some individuals consistently experience strong sleep inertia effects while others feel they are able to become alert and function relatively quickly. In a study in 1999, two of the twelve subjects showed consistent and enduring sleep inertia effects. Factors such as individual circadian rhythms and personality are likely to be associated with individual differences.

Comparing the effects of sleep inertia and fatigue

The effects of sleep inertia and fatigue are comparable. Both result in similar symptoms such as reduced level of performance, reduced reaction times, reduced memory ability and impairment in decision-making. Although effects are similar, sleep inertia isn't necessarily the result of fatigue as adequate rest may have been obtained.
Strategies to counter sleep inertia and fatigue in the aviation environment

Fatigue management strategies

Fatigue management strategies must consider the effects of fatigue and work-rest cycles. Strategies can involve such areas as onboard crew rest berths, napping strategies, appropriate flight scheduling and adequate crewing. The ATSB recommends "Sleep inertia countermeasures be incorporated into fatigue management systems or organizational risk/safety audits". It doesn't recommend that operators deny workers sleep in order to prevent sleep inertia but recommends that operators acknowledge the potential effects that sleep inertia may have on performance and that reasonable steps are taken to mitigate those effects.

Fatigue Risk Management System

In August 2004, the Australian Civil Aviation Safety Authority (CASA), as part of its ongoing Regulatory Reform Programme, issued a Discussion Paper to the aviation industry on Fatigue Management. The purpose of the Discussion Paper was to consider the possible methods of managing fatigue in aircrew. CASA acknowledges the criticism directed at its current regulations relating to flight time and duty periods for flight crew because of its complexity, inflexibility, inappropriateness and lack of scientific basis. Consistent with modern systems based approaches to aviation safety, the alternative approach is referred to as a Fatigue Risk Management System

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(FRMS). The FRMS strategy would seek to manage fatigue risk by ensuring that the operator has a system that prevents the pilot from operating if performance is likely to be impaired to the point where safety is compromised because of excessive fatigue.

CASA's FRMS regulatory development for flight crew was put on hold in June 2009 in line with the International Civil Aviation Organisation's (ICAO) delay in the introduction of the Standards and Recommended Practices (SARP), which underpin Australian aviation legislation. ICAO is expecting to convene a special FRMS taskforce by the end of the year to gain a better understanding of what airline operators require to make FRMS operationally usable. The SARP is expected to become applicable in 2011.

Napping strategies

A nap is a short period of sleep at any time of the day that's 50% shorter than a night's sleep. Napping can enhance alertness, communication and performance during periods of sustained wakefulness when used in anticipation, in order to prepare for sleep loss in advance. A one hour nap may be ineffective if taken in the middle of the night, whereas a preventative nap lasting only 20 minutes, taken at the early stage of flight, may increase levels of alertness in flight crews towards the end of the duty period.

A study conducted by the National Aeronautics and Space Administration (NASA) and the US Federal Aviation Administration (FAA) examined the effectiveness of a planned in-flight nap to maintain performance and alertness in long haul flight operations. The volunteer pilots were divided into two groups: Rest Group and No Rest Group. The Rest Group was provided with a planned 40-minute in-flight nap during cruise over water. The No Rest Group had a 40-minute control period in cruise where they were instructed to maintain their normal activities. Subsequent performance was compared between the groups. The No Rest Group demonstrated reduced performance on night flights, at the end of flights and after multiple legs. The Rest Group maintained consistent performance night and day, at the end of flights and after multiple legs. After the nap, the Rest Group demonstrated improved vigilance performance from 16% in median reaction time to 34% compared to the No Rest Group. It was concluded that the nap obtained by the Rest Group was associated with improvements in performance and alertness compared to the No Rest Group.

Application of alerting factors

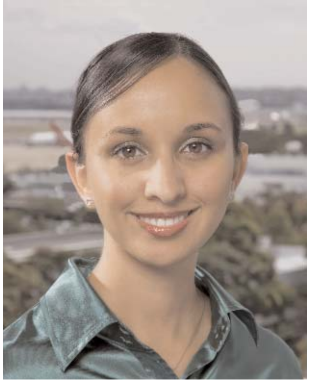
The application of alerting factors immediately after waking may counteract sleep inertia. In a study, researchers claimed to have completely removed sleep inertia by exposing subjects to a continuous moderate intensity noise of 75-decibels. It's also suggested that environmental factors such as cold (e.g. face washing) and light are likely to have the same alerting effect. The combination of a short nap with alerting factors would be most effective in countering sleep inertia.

Education

Education, including learning from pastaccidents, is a necessary strategy to countersleep inertia and fatigue within aviation. Although technological methods for detecting fatigue are being developed, self-assessment is currently the most practical means of detecting fatigue. Individual pilots therefore have a significant responsibility to manage their fatigue and use rest periods to ensure they are fit for work. AIPA hopes this article has served as a means of educating members on how to identify and address sleep inertia.

Conclusion

Much more research is required to determine the extent in which sleep inertia affects individuals as well as to conclusively determine the effectiveness of the strategies mentioned. Operators and individuals, from engineers working the graveyard shift to pilots crossing multiple time zones, must learn to fully appreciate the consequences of sleep inertia and fatigue and take appropriate action to prevent or mitigate as best as possible the symptoms and effects to ensure safety at all times.



Angela Williams is the Safety and Technical Officer for the Australian and International Pilots' Association (AIPA). In conjunction with AIPA's Safety and Technical Director, she manages the Safety and Technical Sub-Committee, consisting of six Portfolios and over 35 safety volunteers. Angela holds a Bachelor of Aviation with Distinction from the University of Western Sydney with a major in Human Factors. She also holds a Private Pilot Licence and is passionate about all things aviation.

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IFALPA in action: Participation in ICAO Annex ammendments

On November 19, ICAO introduced amendments to no less than 10 of its Annexes as well as to the PANS-ATM. In almost every case IFALPA representatives have been at the hub of these changes. To understand the role of the Federation as an advocate for safety improvement you must first appreciate the way the Amendment process at ICAO works. Amendments find their genesis in the various Panels, Subgroups and Working Groups that are created by ICAO to address specific issues. These groups then forward their recommendations to the Air Navigation Commission (ANC) for initial approval. With this approval received, the proposals are sent out to contracting states and other representative bodies (including IFALPA) for comments. These comments are then referred back to the ANC and then, with comments included, sent on the ICAO Council who consider the proposal for adoption as an amendment. These 'adoptions' are then sent to contracting states to begin the process of amalgamating them into their national regulations or conversely to allow the contracting state to file a difference. As you might imagine it is a long winded process spanning many years (usually 5-7) for a proposal to wend its way through the various stages and reach the implementation stage. Therefore, it's a process that requires equally sustained effort by IFALPA volunteers to ensure that policies that will continue the process of safety improvement are adopted and implemented to their maximum extent.

How is IFALPA involved?

The Federation is invited to send representatives to participate on the various groups that make up the first stage of the process (Panels, Sub-Groups & Working Groups). These are usually specialist pilot volunteers from the relevant IFALPA Standing Committees who act as a conduit to convey the Federation's position. This is why it is vital that in these times where pilots fly increasingly tight schedules that the cadre of volunteers is expanded. Following on from the panel process IFALPA has a coveted seat as an observer at the ANC, since the Federation is not a contracting state we have no voting rights but nevertheless have the right to express an opinion, an opinion that is given a great deal of weight both by the ANC itself and at National level. With the recent amendments the Federation has been able to make progress on a number of areas and, as stated above, this comes as the result of the hard work and dedication of a body of pilot volunteers who have made a difference. You could be part of that difference too.

Get involved in the work of the Federation, attend Standing Committee meetings, take up the training opportunities offered by IFALPA, become an IFALPA representative locally, in your Region or at ICAO itself. Remember you can make a difference; volunteers like you made a difference in these amendments and you can do the same.

Annex 1 – Personnel Licencing

Amendments affecting

Safety management Systems (SMS)
Medical risks to flight safety

Annex 2 – Rules of the Air

Amendments affecting

Emergency Communications using hand signals between RFF and crew
Alignment of cruising level using metric system

Annex 4 – Aeronautical Charts

Amendments affecting

Alignment of RNP/RNAV with Performance Based Navigation (PBN)

Annex 6 – Operation of Aircraft

Amendments affecting

Part I
SARPS relating to FTL
Performance operating limits relating to climb and descent procedures to reduce RAs with ACAS II

Part II
Definition for approach & landing operations using instrument approaches

Part III
As above for helicopters
SMS and SSP
Alignment between Annex and TIs for DG

Annex 9 - Facilitiation

Amendments affecting

Alignment of Border inspection agency procedures for the prevention of disease

Advanced passenger information services (APIS)

Entry and Departure procedures regarding radioactive material in medical cargo

Annex 10 – Aeronautical Telecommunications

Amendments affecting

Updating of requirements and inspection requirements for equipment becoming obsolete such as NDB/VOR and ILS

Annex 11 – Air Traffic Services

Amendments affecting

State Safety Programme (SSP)

Safety Management Systems (SMS)

Naming of waypoints

Contingency planning in view of public health emergencies

Annex 13 – Aircraft Accident Investigation

Amendments affecting

State Safety Programme (SSP)

Safety Management Systems (SMS)

List of examples for Serious Incidents and include factors for runway incursions

Annex 14 Vol I – Aerodromes

Amendments affecting

Aerodrome certification

Taxiway centreline marking

Information relating to runway incursions

Advanced visual docking guidance systems

Recalculation of extinguishing agents required for large aircraft

Definition of instrument runway

SMS

Annex 14 Vol II - Heliports

Amendments affecting

Heliport/helideck definitions & physical characteristics for surface level, elevated and ship

Obstacle limitation for surfaces and sectors

Requirements for heliports and helidecks

In all likelyhood, 787s will still be in service at the turn of the next century but the regulations that will affect it's operation are being made now - IFALPA ensures that pilots have a say in how they are developed.

Annex 15 – Aeronautical Information Services

Amendments affecting

PBN terminology

Procedures for Air Navigation Services – Air Traffic Management (PANS – ATM)

New procedures and models for the reporting of runway incursion or obstacles on the runway

Updated provisions related to air traffic services on:

1) horizontal speed control instructions;

2) visual approach;

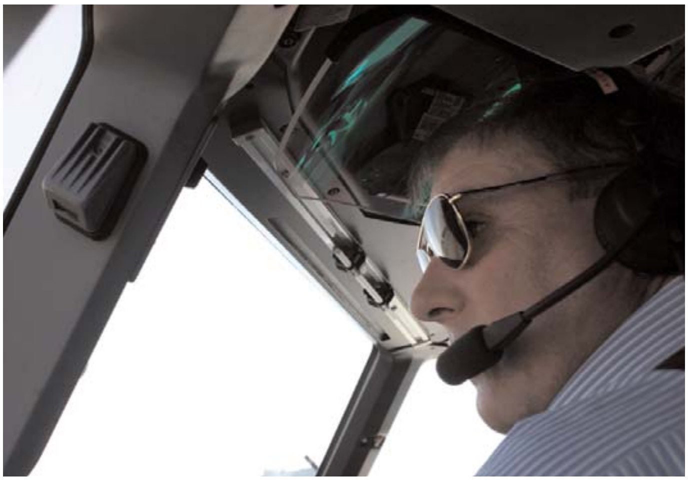
3) notification of suspected communicable diseases

4)phraseologies;

5) turnback procedures;

6) short-term conflict alert (STCA) procedures; and

7) strategic lateral offset procedures (SLOP).



Have an idea for an article or want InterPilot to cover your story? Contact Gideon Ewers, Tel. +44 1932 579041 or email gideonewers@ifalpa.org

Dates for your Diary

January

26

19th Executive Committee Meeting

Weybridge

Contact: Heather Price heatherprice@ifalpa.org

26-28

19th Executive Board Meeting

Weybridge

Contact: Heather Price heatherprice@ifalpa.org

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Standing Committee Chairman's Meeting

Weybridge

Contact: Heather Price heatherprice@ifalpa.org

February

No meetings scheduled

March

15

20th Executive Committee Meeting

Marrakech

Contact: Heather Price heatherprice@ifalpa.org

15-17

20th Executive Board Meeting

Marrakech

Contact: Heather Price heatherprice@ifalpa.org

19-23

65th Conference

Marrakech

Contact: Heather Price heatherprice@ifalpa.org

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21st Executive Committee &Board Meeting

Marrakech

Contact: Heather Price heatherprice@ifalpa.org

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Editor Gideon Ewers
Assistant Editor Lesley Bastille
Web Editor Mark Bradshaw
Art Editor Benbow McNabb

Contributors
Gavin McKellar, Boomer Bombardi, Angela Williams, Jeff Smith