FAA Aviation news

MAY / JUNE 2001

AVIATION SAFETY FROM COVER TO COVER

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Characteristics of U.S. Midairs

U.S. Department
of Transportation

**Federal Aviation
Administration**

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FAA Aviation news

MAY/JUNE 2001

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FEATURES

DEPARTMENTS

FRONT COVER: Mario Jimenez built this Bushby Mustang II based at Shannon Airport (EZF), Fredericksburg, VA. It has been flying since 1987. (Thomas C. Shapiro photo)

Characteristics of U.S. Midairs

by Robert C. Matthews, Ph.D.

On August 9, 2000, a Piper PA-31 *Chieftain* and a PA-44 *Seminole* collided in midair in Burlington County in southern New Jersey. The PA-31 was operating as an unscheduled Part 135 flight under contract with the U.S. Navy and had nine persons on board. The PA-44 was operating as an instructional flight and had a student and an instructor on board. All 11 people were killed. Both aircraft were destroyed. An unoccupied home also was destroyed.

The collision quickly led the FAA's Office of Accident Investigation to review all 329 midair collisions involving U.S. registered aircraft from 1983 through the date of this accident. The review confirmed some well-understood characteristics of midairs and found some characteristics that had not been identified in the past.

GENERAL CHARACTERISTICS OF MIDAIRS

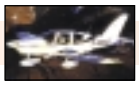
Midair collisions in the U.S. had decreased steadily for over 30 years, but the number has stabilized since 1995 at about 16 per year. From 1983 through August 2000, the U.S. had a total of 329 midair collisions involving 658 aircraft. The 658 aircraft included 14 balloons; 25 gliders; and nine military aircraft, four of which were helicopters.

For the past two decades, midair collisions in U.S. airspace have almost exclusively involved general aviation (GA) aircraft. Midairs involving large commercial aircraft have been virtually eliminated in U.S. airspace.

Since 1995, GA has averaged one midair collision per 1.6 million flight hours. Given that a midair involves two aircraft, this yields an average risk of a midair today of about one per 800,000 flight hours. For instructional and recreational flight, the risk approaches one per 400,000 flight hours. In short, any single pilot's chance of a midair is small, but it is not insignificant.

Yet "only" 56 percent of the 329 midairs involved fatalities and "only" 40 percent of the 658 aircraft had fatalities. This was somewhat surprising: 60 percent of all aircraft involved in midairs manage to land safely, while both aircraft manage to land safely in 44 percent of all midairs. In short, midairs are not always catastrophic.

The aviation community has long understood that poor weather is not a factor in midairs. All 329 midairs from 1983 through August 200 occurred in visual meteorological conditions (VMC). Perhaps the only surprise related to weather was the utter ab-



sence of any exceptions to the rule of VMC. Bright sun was the only commonly cited factor related to weather. Similarly, darkness does not explain midairs. Only six of the 329 midairs occurred at night and just four occurred at dusk.

The review also found that "inadequate visual lookout - failure to see and avoid," remains the most common causal factor identified by the National Transportation Safety Board (NTSB). Accident reports from the NTSB indicate that about 88 percent of pilots involved in midairs never see the other aircraft in time to initiate evasive maneuvers; only 12 percent of the 658 pilots appear to have begun reacting to an impending collision. The second most common factor, though a distant second, was pilot failure to follow procedures. These procedures most commonly include inappropriate entry into landing patterns and failure to use the UNICOM radio frequency at nontowered airports.

However, the failure to see and avoid other aircraft is not strongly correlated to closing speeds. In fact, most midairs involve relatively low closing speeds, as one aircraft usually strikes the other aircraft from the rear, from above, or from a quartering angle.

Traffic density is a major factor in midairs. The typical midair occurs at low altitude on approach and landing or, somewhat less frequently, on takeoff and climbout. In short, most midairs occur near airports, especially nontowered airports. This has been understood for years and it makes intuitive sense. Any highway traffic engineer can tell us that the risk of a multi-vehicle collision increases as traffic density increases. Surprise: multi-vehicle accidents tend to occur where we find concentrations of vehicles operating in a fixed space.

Conversely, midairs at high altitude are rare events. Most of those that do occur at high altitude involve formation flying. Formation flights account for 14 percent of all midairs. These include professional performances and practices and well-prepared amateurs, but ill-prepared amateurs are badly overrepresented. In short, be prepared if you plan to fly along side a friend or family member. Agree upon clearly stated communication procedures and clearly stated flight paths relative to each other, and allow for major differences in aircraft performance.

This notion of traffic concentration helps to explain why student pilots are involved in a disproportionate share of midairs: student pilots are involved in 36.5 percent of midairs and account for 22.5 percent of pilots involved in midairs. This arithmetic indicates that about 7.25 percent of all midairs involve students in both aircraft. The high frequency of students may reflect their relative lack of experience. However, it also reflects traffic density, as students tend to fly to and from nontowered airports, with frequent takeoffs and landings and frequent entry into traffic patterns. These are the phases of flight in which traffic density is high. The high share of student flights also may suggest that, at least in those flights that result in midairs, instructional pilots may be distracted with instruction and not properly monitoring the flight.

Yet, despite the high percentage of instructional flights, the data indicates that experience is not a very effective insurance policy against midairs. Half the pilots involved in midairs since 1983 had more than 1,500 hours total flight time, while one-third of the pilots had more than 3,000 hours.

INHERENT LIMITATIONS OF SEE AND AVOID

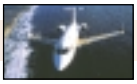
The 329 midair collisions indicate that see-and-avoid has inherent limitations as a tactic or strategy for avoiding midair collisions. This is certainly true of midair collisions that involve high closing speeds, but it is also true of midairs that involve low closing speeds.

The human eye can detect and recognize an aircraft the size of a PA-31 or a comparable Cessna at a maximum of 1.5 miles. If the closing angle is head-on, or nearly so, even two small and relatively slow civil aircraft close at speeds in excess of 200 knots. This allows a maximum of 25 seconds for evasion under ideal conditions. However, the ideal is reduced by various factors, including the following.

- First, substantial time is required to scan the horizon properly. The human eye requires small changes in the radial being scanned, plus time to focus on each new scan. To scan just 130 degrees of the horizon and focus on interim target areas, a pilot requires up to 20 seconds. A target aircraft may not be visible when the pilot scans and focuses on a radial and, by the time the pilot returns to that radial, closing time may be prohibitively short.
- Ideal conditions also are reduced when a pilot's attention is focused inside the cockpit, where workload reduces the time a pilot spends scanning. Workload is highest during approach/landing and takeoff/climb-out, when most midairs occur.
- See-and-avoid also is limited by the absence of visual contrast between a target aircraft in a clear or hazy sky, which substantially shortens the 1.5 miles. This is especially true when either pilot is flying toward the sun. In addition, high-wing aircraft restrict a pilot's ability to scan above his or her altitude, while low-wing aircraft restrict the ability to scan below the aircraft.

Any of the factors identified above can reduce the effectiveness of see-and-avoid. The combination of any two or more factors can reduce the practical time available for a safe, evasive maneuver to just a few seconds or less. This is true even where closing speeds are relatively slow due to closing from the rear, from above, or from quartering angles.

Does all this mean that see-and-avoid is useless or that it should be abandoned? Hardly! Though we know a lot about the characteristics of midair collisions, the fact is that we know relatively little about the role of see-and-avoid or other factors when



collisions are narrowly avoided between two GA aircraft. No aviation safety agency in the world could, with a straight face, advise pilots to forget about visual scanning. In short, the point here is not that visual scanning and see-and-avoid lack any merit. Rather, see-and-avoid has real merit, but, as a primary strategy for further reductions in midairs, its limitations are equally real.

In the end, however, the number of midairs in the U.S. has decreased significantly and steadily for at least 35 years, even as traffic has increased. The improvement, especially when measured per 100,000 flight hours, has been too persistent and too substantial to be the product of mere chance, as indicated in Table One. Something really has changed for the better. Factors include improved air traffic control services and coverage, changes in airspace structure, and the introduction of transponders.

In the airline world, midairs in U.S. airspace appear to have virtually disappeared. Fatal midairs in large commercial aircraft (over 30 seats) were a fairly common event for more than 30 years (1946-1978) with a steady average of about one fatal airline midair per year. However, following the 1978 midair collision in San Diego, the once common accident scenario has disappeared. The principal factors explaining this rather sudden and dramatic change include: on-board Traffic Collision Avoidance System (TCAS), corresponding ATC equipment, and the requirement to be equipped with Mode C in airspace around the nation's busiest commercial airports.

CONCLUSIONS

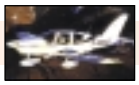
The bottom line, of course, is how a typical GA pilot can hope to reduce his or her risk of midair even further. The temptation is to recommend an expensive technological fix that is comparable to the current version of TCAS now used by the airlines. In fact, the best hope for a pilot to reduce his or her risk of a midair collision rests with strategies that are less sexy and not so very new.

For example, the data suggests that disciplined adherence to procedures (proper entry into landing patterns, proper departure patterns) and proper use of the UNICOM frequency at uncontrolled airports could go a long way towards reducing the number of midairs. Similarly, operating into and from towered airports, when possible, could reduce risk. Flight instructors can reduce their risk by forcing themselves to remain cognizant of other aircraft, or even by choosing to conduct some initial training at airports and in airspace that have very little traffic. Yet, old fashioned scanning (see-and-avoid) remains the primary strategy. The catch is that, as a basic tool for avoiding midair collisions, see-and-avoid has its limits and requires other strategies or tactics if a pilot is to reduce his or her risk.

Robert C. Matthews is with the Safety Analysis Branch of FAA's Office of Accident Investigation.

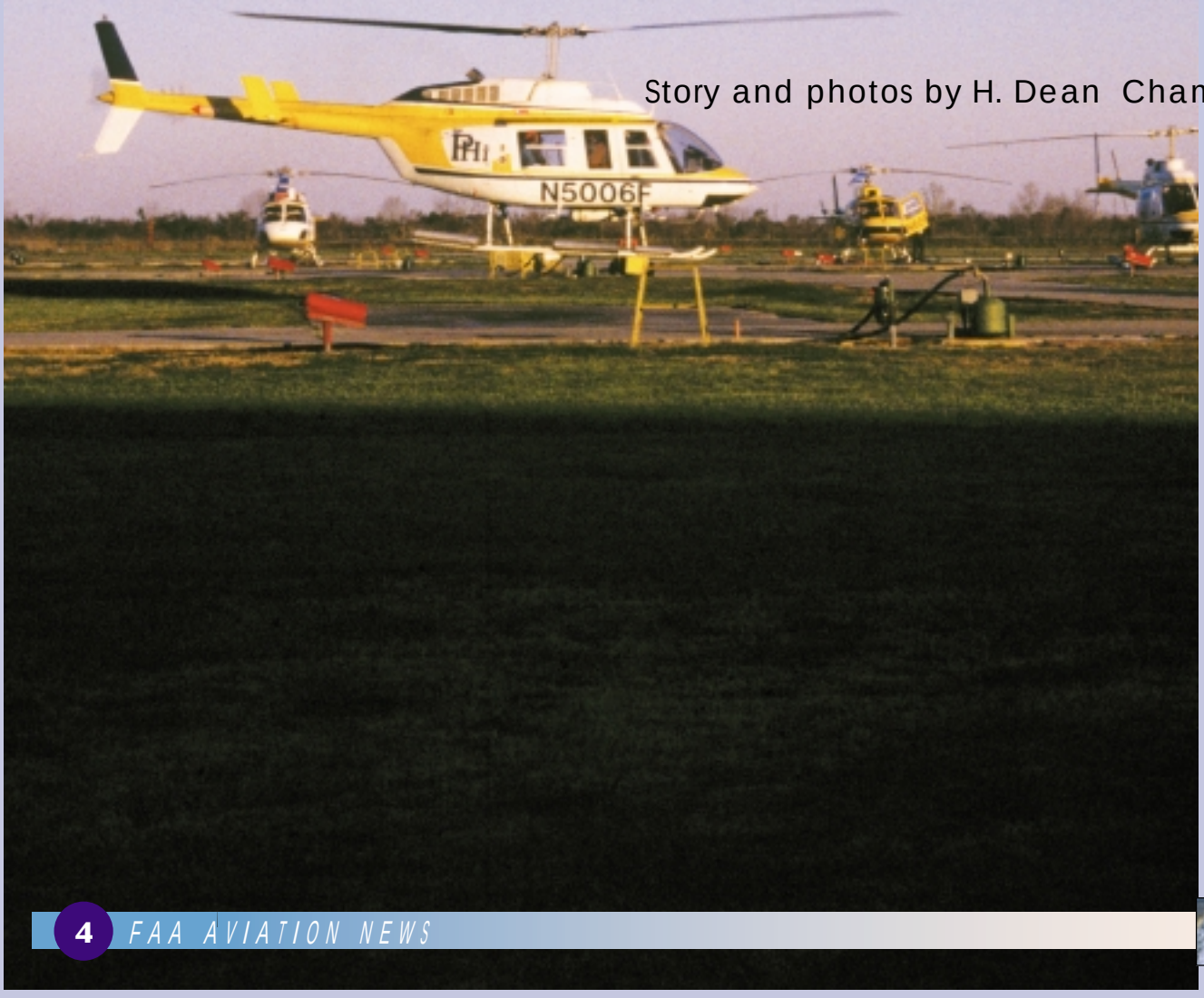
Table 1. MIDAIR COLLISIONS 1983-1999
*(*2000 accident totals are preliminary for the entire year. The 2000 numbers used in this article were only until August, so the totals will not match the numbers used in the article.)*

Year	Midair Collisions	Fatal Midairs	Aircraft Involved	Aircraft with Fatalities	Onboard Fatalities	Total Onboard
1983	14	8	28	12	20	54
1984	25	14	50	22	45	93
1985	25	14	50	18	32	115
1986	29	17	58	24	121	178
1987	25	13	50	22	39	108
1988	19	9	38	11	15	58
1989	18	12	36	21	38	63
1990	21	12	42	18	24	82
1991	23	13	46	18	34	88
1992	13	7	26	10	26	74
1993	13	7	26	13	20	114
1994	12	8	24	12	19	38
1995	15	8	30	13	21	48
1996	19	6	38	10	17	75
1997	15	11	30	17	26	61
1998	15	12	30	20	24	48
1999	17	8	34	13	17	51
2000*	10	11	38	18	32	65
Total	**337**	**190**	**674**	**292**	**570**	**1,413**



HSAC: A ROLE MODEL FOR THE FUTURE?

Story and photos by H. Dean Chamberlain



Born of tragedy, the Helicopter Safety Advisory Conference (HSAC) has matured into a model of safety cooperation within the highly competitive world of offshore oil support in the Gulf of Mexico. Made up of major petroleum companies, drilling companies, helicopter operators, oil industry service companies, helicopter manufacturers, and associate members, the voluntary membership of HSAC represents the operators and users of about 600 helicopters working offshore in the Gulf of Mexico (GOMEX). In addition, other users of the GOMEX airspace include fish spotters, the military, and the Coast Guard. They all operate aircraft over the Gulf and participate in HSAC meetings since they all share the common airspace and potential risks of operating offshore.

Other important participants in HSAC include the Federal Aviation Administration (FAA) and its many elements, and at least to me, a surprising player, the military's Southeast Air Defense Sector. One normally doesn't think of air defense when one thinks of what is essentially an everyday yeoman's job of flying oil crews and parts safely offshore, but, when any aircraft—and in the case of the offshore oil industry, a helicopter—is inbound to the beach and it fails to comply with established border entry procedures and passes a certain line offshore, the Southeast Air Defense Sector can scramble jet fighters to intercept and investigate the inbound target. In most cases, the intercept goes undetected by the inbound aircraft as the military pilots try to avoid alarming the intrusive pilot.

Since offshore safety is everyone's business, HSAC members constantly work to maintain the highest level of safety within the offshore community. That cooperative spirit of working towards a common safety goal was noted in HSAC's Vice Chairman David P. Milling's review of his audio-visual presentation last October at Flight Safety Foundation's annual meeting. During his presentation, one of his slides showed how that spirit manifests itself in the HSAC slogan "Dedicated to Safety through the Spirit of Cooperation."

When asked how such competitive companies as the oil industry can work so well together, Milling compared HSAC to two football teams during a game. "When the teams are on the field, they compete to win, but when the game is over, they are all friends," he said. This is the secret of HSAC's success. In the field, HSAC members compete for business, but when safety is at stake, all of the members work together for the benefit of all. The cooperative spirit may be as simple as sharing accident data to the complexities of responding to a downed helicopter in the Gulf.

When he is not serving as the Vice Chairman of the voluntary HSAC organization, Milling is the Vice President and General Manager of International Helicopter Transport, Incorporated (IHTI), of Metairie, LA.

According to a brief history HSAC provided *FAA Aviation News*, HSAC's beginning can be traced back to the death of 19 people killed in an offshore platform accident in January 1978 when a landing helicopter made contact with an oil platform crane. Workers on the platform as well as some of those on the helicopter died in the ensuing breakup of the helicopter. The following month, the Safety Committee of the International Association of Drilling Contractors invited helicopter operators and users to a meeting to discuss GOMEX safety issues. A sub-committee was formed named the Helicopter Safety Advisory Committee. Charter members included Shell Oil Company, Gulf Oil, Tenneco Inc., Tenneco Oil Company, Petroleum Helicopters Inc., Evergreen Helicopters Inc., Air Logistics, Mobil Oil, Chevron Oil, Houston Helicopters, Offshore Helicopters Inc., and Marlin Drilling Company.

In October 1978, the first base-area agreement was established.

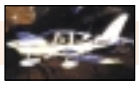
In January 1979, for the first time, the FAA participated in a meeting with the group. The role the FAA plays in the offshore work includes both air traffic control support, such as the cooperative development of the new navigation grid system offshore and future airspace requirements, as well as the traditional Flight Standards Service's functions dealing with pilot certification and aircraft airworthiness issues, as well as monitoring the safety of the helicopter operators offshore. Since the U.S. offshore oil industry stretches along the Gulf Coast from Florida to Texas, this is a major geographic area spanning two FAA regions. The Southern Region is responsible for operations originating from Florida and Mississippi. The Southwest Region is responsible for the states of Louisiana and Texas.

In addition to the United States government's oversight and involvement in the Gulf, since much of this area is in international airspace and waters, operations in the Gulf involve international rules as well as Mexican regulations in its territorial waters and airspace.

As a result, the FAA's two regions play an important role in working both with the U.S. operators and the international aspects of the Gulf of Mexico. This is done both through the regional headquarters as well as at the local field office level.

One of the important FAA organizations in this arena at the local level is the Baton Rouge (Louisiana) Flight Standards District Office (FSDO). The FSDO, responsible for the entire state of Louisiana, invited *FAA Aviation News* to attend the January HSAC meeting in New Orleans to observe first-hand the important role HSAC plays in the Gulf. The Baton Rouge FSDO plays a very active role in the safety initiatives in the Gulf since a significant amount of the offshore activities take place in its area of responsibility along the Louisiana coast. Louisiana is also the home of two of the largest offshore operators working in the Gulf: Petroleum Helicopters Incorporated (PHI) and Air Logistics.

In recognition of the important safety role HSAC plays in offshore safety, the FSDO presented HSAC its Good Friend Award at the January meeting held in the New Orleans suburb of Kenner, LA. [HSAC alternates

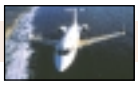


its meetings between New Orleans and Houston.] The FSDO Manager Sheryl Hammans presented the award to Milling during the quarterly meeting. Her remarks described how HSAC's regular and associate members and their various committees contribute to the overall safety in the dangerous operating environment, such as hurricanes, the Gulf presents to all who go offshore.

Noted in the FAA award were HSAC's participation, cooperation, and partnership in the development of the IFR GPS Grid System Satellite Navigation system for the Gulf. The award told how HSAC has worked closely with FAA and industry, including the air carrier industry, to help develop better weather reporting, radio communications, and surveillance techniques for use over the Gulf. Because of its expertise operating in the Gulf, HSAC members are involved with various government agencies helping to develop the next national airspace system.

One of the greatest advantages of an organization such as HSAC is that it provides "one-stop" shopping for government agencies such as FAA, the National Oceanic and Atmospheric Administration (NOAA), and the National Aeronautics and Space Administration (NASA) while working on projects involving airspace over the Gulf. HSAC provides access to the "key" operators working in the Gulf. As a result, HSAC has participated in international aviation activities as well as working on new projects to make the Gulf a safer operating environment. One such project is the current NASA ADS-B surveillance multilateration system test being set up in the Gulf.

The Baton Rouge FSDO's Good Friend Award concluded with the following: "Gulf of Mexico helicopter operations are 50% of the world-wide helicopter offshore activity. They operate in hazardous environmental conditions without the redundant safety features available to airline operations, and yet, these Gulf of Mex-



ico helicopter operators have a safety record comparable to that of the air carrier industry. Their pledge is demonstrated in their proactive steps to apply state-of-the-art technology, their ability to persevere against opposition, and to lead the aviation industry into the future."

Working off-shore is a very hazardous operation for both those who live and work on the oil rigs and platforms as well as to the flight crews flying daily to and from those rigs and the beach. In its efforts to reduce the flight risks as much as possible, HSAC developed a series of recommended safety practices for both those on the platforms as well as those flying to the rigs. From standardized passenger safety briefings to recommended flight altitudes to operating procedures for use in high-density traffic locations to recommended safety practices for operations involving helicopters and platform cranes to developing design criteria for helicopter landing platforms, HSAC works hard to reduce the offshore hazards.

In addition to its recommended safety practices and various safety committees, HSAC is well aware of the environmental concerns within the Gulf of Mexico area. Because of its concern for the impact of helicopter operations in the Gulf and along its shores, HSAC has designated the Chairman of its HSAC Government Liaison Committee as the person to lead the work on these sensitive issues. In addition to its programs reminding pilots of recommended flight procedures over noise sensitive and environmental areas, HSAC provides data so that pilots can review maps of the sensitive areas as well as provide a means of downloading the maps via computer as well as other related material. Its website contains information that pilots can use to contact sites maintained by the U.S. Fish and Wildlife Service that provide data and maps of the many wildlife areas and refuges along the Gulf Coast. Together, both HSAC and the U.S. Fish and Wildlife Service are working to protect the sensitive wildlife and environmental areas of the Gulf. After all, as noted on its license plates, Louisiana says it is a "Sportmans' Paradise."

In addition to its various safety committees, one of the most important functions HSAC provides its membership is its compilation of safety data for the offshore fleet. Using actual flight hour and incident/accident provided by the user community, HSAC compiles the data into a generic report that can be used by all without a loss of competitive advantage from reporting the data. The 1999 Gulf of Mexico Offshore Helicopter Operations and Safety Review was compiled from the voluntary input of 25 helicopter operators. Although all of the data is unofficial and is neither verified nor reviewed for accuracy by HSAC, it is believed to be representative of the operations in the Gulf. As noted on its webpage, HSAC assumes no liability or accuracy or completeness for its data, but as John R. Davis, executive vice president, Evergreen's Quality Aviation Services Incorporated, said, it is in everyone's best interest to provide good data. Company names are removed. Then the data is used to produce generic reports that permit operators to review safety or accident trends and other factors that may need to be addressed by HSAC or the operator.

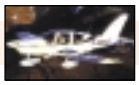
The importance of the HSAC process is outlined in the accident statistics for 1999 which is the last tabulated year. That year, 1999, had a greater than normal number of accidents, nine, and an accident rate of 2.29 per 100,000 flight hours. Those nine accidents are greater than the 16-year average of 6.7 accidents, but to put these numbers in perspective, according to the HSAC report the U.S. accident rate per 100,000 hours for all commercial helicopter operations was 3.87 and the fatal rate was 0.92. The HSAC member rate were 2.29 and 0.25 respectively.

What makes the HSAC numbers significant was the fact that the 25-reporting operators operated a reported 601 helicopters which included single engine, light twin, medium twin, and heavy twin aircraft. These aircraft carried 2,664,848 passengers during 392,712 flight hours on 1,459,781 flights. With an average reported flight duration of 16 minutes, one can begin to understand the number of flight operations that are occurring each day in the Gulf. Compare these numbers with your standard air carrier flight that may spend that much time taxiing from its gate to the runway, and you can begin to understand the significance of the offshore operators' numbers.

Add in the hazardous environment these flights operate in including the fact the majority of these flights were done single-pilot VFR in single-engine helicopters. They operate many, many miles offshore in all kinds of weather ,landing and taking off from platforms surrounded by all kinds of equipment, towers, and cranes. One can begin to understand the unique and critical safety role the voluntary HSAC organization plays in the offshore oil industry. A role that other operators may want to consider in developing safety plans for their own segment of aviation.

For more information about HSAC, readers can contact HSAC by writing to the Helicopter Safety Advisory Conference, c/o Betty Martin, Marathon Oil Company, P.O. Box 60136, Houston, TX 77205-0136 (telephone 281-443-2905) or by visiting its Internet website at <www.hsac.org>. For more information about how the FAA works with HSAC, readers can contact the Baton Rouge FSDO's Aviation Safety Program Manager, Kay Fulkerson, at 225-358-6811 or visit its Internet Website at <www.faa.gov/fsdo/btr>.

FAA Aviation News wishes to thank HSAC and the Baton Rouge FSDO for their support and help with this article. Both organizations as well as the many offshore operators and other government agencies that work daily to make the Gulf of Mexico offshore aviation industry as productive and as safe as it is all need to be recognized for their efforts. Their collective cooperative spirit and efforts are role models that other segments of the aviation community may want to emulate. ✢



There Is A New Generation Out There

Story and photos by H. Dean Chamberlain

As one who attends aviation safety meetings for both personal (I am a pilot and aircraft owner) as well as professional reasons (I am an FAA safety writer), the Ultralight/Lightplane safety meeting at the Lafayette, LA airport was one of the best meetings I have ever attended. As one who is critical of most presentations (I have seen more bad audio-visual presentations than I care to remember), I was pleasantly surprised at this meeting.

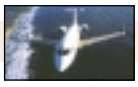
Jointly sponsored by the Louisiana Department of Transportation and Development (DOTD) Aviation Division and the FAA's Baton Rouge Flight Standards District Office (FSDO) Aviation Safety Program Manager, the day-long meeting provided important safety information, as well as a discussion on the proposed Sport Pilot rules, a presentation on disorientation, aeronautical charting, airspace issues, and a review of U.S. Fish and Wildlife rules. The speakers were extremely knowledgeable and, more importantly, most were a joy to watch and to hear speak. They were entertaining, at times funny, and educational. What made the meeting such a surprising event was its subject matter.

The meeting was designed for the ultralight vehicle/light aircraft community. (There had been three ultralight fatalities in the state in the previous six months.)

Yes, the ultralight vehicle community. For anyone who has not kept pace with the FAR Part 103 ultralight community for the past 20 plus years, there is a new generation out there. Although some "old timers" attended the meeting, the majority of the more than 80 plus people filling the new Petroleum Helicopter Inc. training facility classroom donated for the event were young to middle age adults. Many were with their spouses. A few brought their children.

What made this group of conscientious flyers different from most other safety meetings and groups I have observed was their enthusiasm. These folks were excited about flying, and they were excited about their chance to increase their aviation knowledge. And, their excitement was contagious. It was great just to listen and watch them get involved with the various speakers.

This was a group of flyers, some of whom were certificated pilots, who cared enough about safety and who wanted to comply with and learn more about the various regulations for the airspace they fly in and the type of flying they do to come out on a very cold, clear, crisp Louisiana morning to attend the meeting. One man said he drove two hours to attend the meeting. What made the turnout so surprising was that the area had had several days of cold, wet weather and freezing nights. There was some question if anyone would show up because of the weather. But, show up



they did. The only problem was the weather was just too cold and windy to fly safely in an ultralight vehicle that morning.

Based upon the people attending this meeting, gone, I think, are the days of the late 1970's and early 1980's when the pioneers of the ultralight movement were leaping off tall hills and mountains in California and other places with their powered hang gliders, many in defiance of the FAA's rules, as they developed the sport of hang gliding.

Although a few of the basic ultralight vehicle models from that period can still be found, like the Wright Brothers and their fabric and wire aircraft that has since evolved into today's modern aircraft, those early powered hang gliders and ultralight vehicles have evolved into some very sophisticated ultralight vehicles and the larger "light" experimental aircraft that may out-perform that classic aviation icon, the Piper J3 *Cub*. And since many of these experimental aircraft no longer meet the rule definitions of a FAR Part 103 ultralight, they are by definition aircraft and must meet the appropriate airworthiness and pilot certifications standards such as for the experimental or the newer primary category aircraft.

A quick review of ultralight vehicles these days can include the traditional two or three axis "airplane" type ultralight, rotorcraft, glider, powered parachute, or trike. An ultralight can be powered or unpowered. For the FAR §103.1 definition of an ultralight, please see the sidebar on page 13.

Mr. Jim Stephenson makes a point during his presentation.

SPORT PILOT RULEMAKING EFFORT

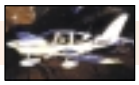
The hottest topic of the meeting was the proposed new Sport Pilot rulemaking effort. Presented by Jim Stephenson, founder of the Aero Sports Connection (ASC), he outlined the current FAA and industry philosophy behind the proposed new rule. For those unaware of the Sport Pilot concept, the original FAR Part 103 rule restricts operations. Limitations such as ultralight vehicle airspeed, weight, and fuel capacity (for powered ultralight vehicles) have always been contentious items for many in the ultralight community. There are other issues that many ultralighters and the FAA disagree on also.

For example, FAR Part 103 does not require any ultralight operator to meet any aeronautical knowledge, age, or experience requirement to operate those vehicles. No airman or medical certificates are required to operate a legal ultralight vehicle. The rule also does not require that ultralight vehicles meet any airworthiness standards or have certificates of airworthiness.

Because of a number of accidents over the years, FAA and the ultralight community recognized that something needed to be done to promote safety within the rule.

The solution was the adoption of a policy where the FAA permitted through its exemption process the use of two-place ultralight vehicle operated under the exemprion to be used as trainers for the ultralight community. Exemption were granted over the years to three organizations to promote safety by allowing the organizations to designate instructors approved by the respective three exemption holding organizations to teach new ultralight vehicle operators how to fly their unique craft. The exemption detailed under what conditions these two-place "ultralight vehicles" could be used, since FAR Part 103 restricts legal ultralight vehicles to only one seat. The exemption permitted the use of these unregistered two-place ultralight vehicle to be flown and operated under the rules of FAR Part 103.

However, over the years the proliferation of two-place experimental air-



craft and their sibling unregistered two-place ultralight vehicle has created an interesting issue for both FAA and the ultralight community. Experimental aircraft require the pilot to have a pilot's certificate and a current medical as well as an airworthiness certificate and a registration certificate. Things that many in the ultralight community don't want. Some ultralight vehicle operators have either been denied medicals for health reasons or know that they could not pass an FAA third class medical because of known medical problems. So, they are opposed to any type of medical requirement.

The proposed Sport Pilot rule, the formal Federal Notice of Proposed Rulemaking (NPRM) is pending as this is being written, will correct or bridge the gap between the current FAR Part 103 and the traditional pilot and aircraft rules by establishing new rules for both the pilots of such craft and the certification of the aircraft itself.

As you can imagine, all of the various proposals Stephenson outlined were vigorously discussed by many of those attending the meeting. It must be emphasized that he was only discussing what might be contained in the NPRM. Until the NPRM is published, any proposals discussed are subject to change.

As being discussed, the proposed Sport Pilot rule will establish a new category of pilot certificate and airworthiness standards for these simpler aircraft that cannot meet the FAR Part 103 rule definition of an ultralight vehicle. Once the Sport Pilot concept is published as a Federal Notice of Proposed Rulemaking and people have an opportunity to comment on the rule, at some point in the future, the FAA will use those comments in its final Sport Pilot rulemaking effort.

Anyone interested in the proposed Sport Pilot rulemaking effort should keeping looking for the release date of the proposed Notice of Proposed Rulemaking (NPRM) in the *Federal Register* and submit comments as outlined in the NPRM.

LOUISIANA STATE ULTRALIGHT RULES

Although the FAA provides minimal regulation of ultralight vehicles through Title 14 Code of Federal Regulation (CFR) Part 103, Part 103 has no licensing or certification requirements. Because of the lack of federal licensing requirements for Part 103 operators, Louisiana has a state law governing the licensing requirements for ultralight vehicles and operators within the state. Managed by the Louisiana Department of Transportation and Development (DOTD) Aviation Division, the program is designed to promote safety within the ultralight community since there are no federal licensing requirements. The State's Aviation Director Anthony M. Culp told the meeting, "We are not trying to hurt the ultralight aviation enthusiast, we are concerned with safety. Myself, my staff and everybody involved from the FAA on down including Kay Fulkerson, we have jobs only because you fly aircraft whether the FAA calls them air-

Aviation Safety/Compliance Officer for the State of Louisiana Donald A. "Chip" Chiasson, left, listens attentively to a point being made by the State's Aviation Director Anthony M. Culp, right.

Dr. Keith Landry, left, makes a point during a most vivid and memorable presentation on disorientation for ultralight operators.

craft or not, we call them aircraft. You are up in the air and we call you pilots. We believe in this sport, and we want to support it.

"But we also believe in safety. That is our job. We have had three ultralight deaths this year. Two were improperly or untrained pilots. One took off in an aircraft with an engine that had not been run before. The third fatality was properly trained but did not heed his training. That is what we are trying to prevent. That is why the State of Louisiana has a law that requires ultralight pilots to be trained and licensed. We try very hard to make sure that training is the appropriate training. We are not looking to put insurmountable obstacles in front of anyone here. We want adequate training. We are getting that. We have some excellent CFI's out there who are doing a marvelous job," he said.

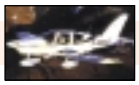
Donald A. "Chip" Chiasson, Aviation Safety/Compliance Officer, directs the state's program. According to him, "Louisiana is the only state that requires ultralight pilots to have a state issued ultralight license and vehicle registration. The law goes back to 1983. At that time 14 other states also had ultralight requirements. Only Louisiana had a law. The other states' regulations were dropped when things got tough, Louisiana has a law for your safety. We did this because the FAA said you didn't have to have a license to fly these things so people were buying these things, going out there taking off, and killing themselves. Something had to be done. It is a great sport, but that is why Louisiana has a state law designed to protect people."

For more information about Louisiana's ultralight licensing requirements, readers can call "Chip" Chiasson, DOTD, Division of Aviation, at 225-274-4149.

DISORIENTATION 101 FOR ULTRALIGHT OPERATORS

Doctor Keith Landry, a family practitioner, who is also an FAA Aviation Medical Examiner, described the dangers that ultralight operators can expect if they inadvertently enter a cloud or conditions less than those that define visual flight rules. Although no one present admitted to ever flying into a cloud, a few indicated that they might have come close to "wispy" type clouds or even possibly flown through such clouds.

Showing his creativity, Dr. Landry used cleverly handmade models made out of colored pipe cleaners and clay



to vividly show how a person's inner ear responds to the three flight axes and what happens when the person loses visual reference in flight. He made the point that unless someone has the training, is current, and has the proper instruments for flight into instrument meteorological conditions, everyone needs to stay out of the clouds because of the risks involved. It goes without saying that an IFR clearance is required in controlled airspace.

Since most ultralights have minimal instrumentation and the operator has no training requirements, VFR or IFR, flight into a cloud poses significant risks to the operator in addition to the fact that the ultralight is violating the regulations (CFR §103.23 Flight visibility and cloud clearance requirements and CFR §103.21 Visual reference with the surface.) CFR §103.23, Visual reference with the surface, says, "No person may operate an ultralight vehicle except by visual reference with the surface."

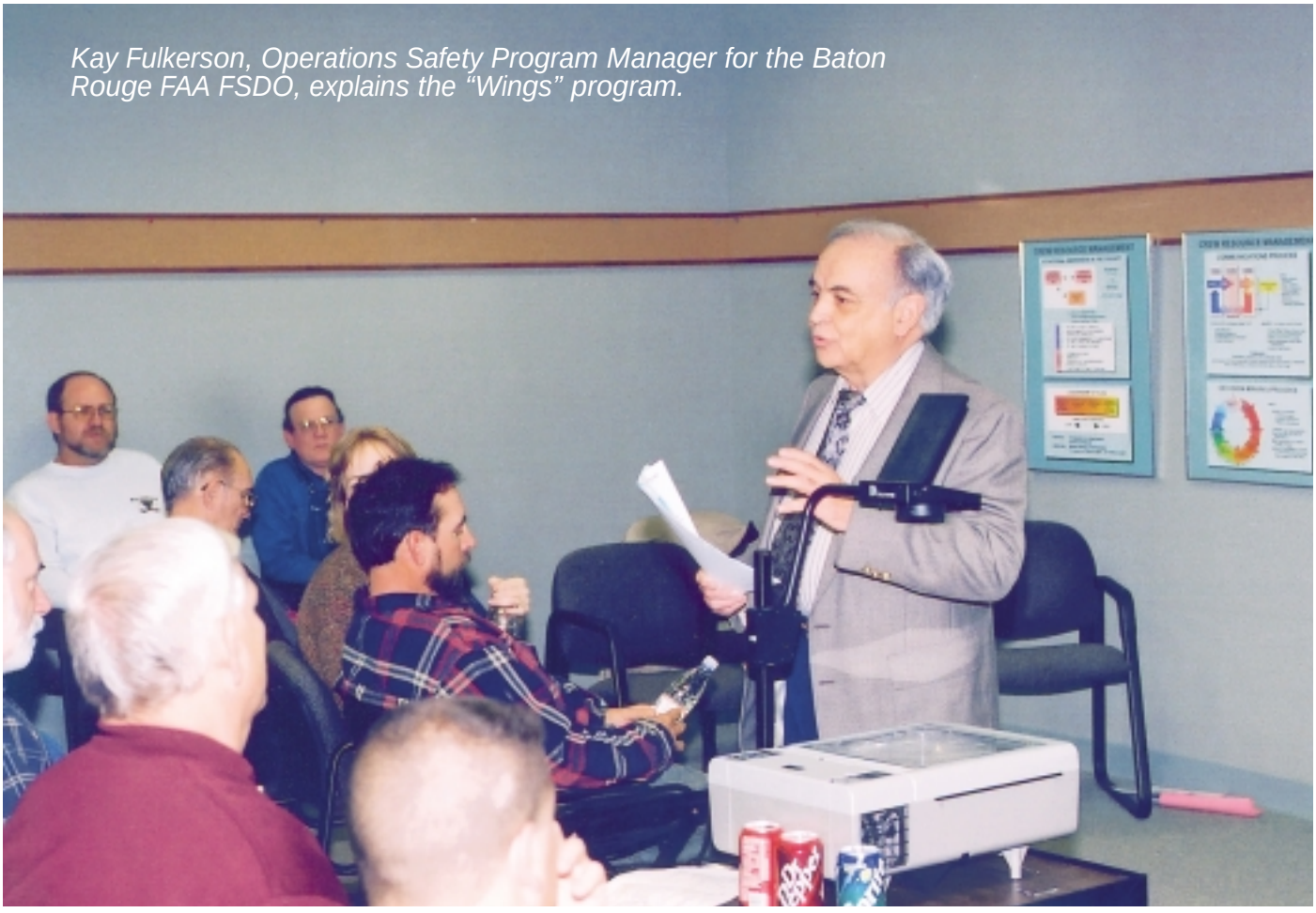
U.S. FISH AND WILDLIFE SERVICE AND PILOTS AND OPERATORS

An interesting subject discussed at the meeting has implications for all pilots and ultralight operators. Apparently, some observers believed that a Louisiana ultralight operator taking off and landing his vehicle near some water was bothering some nearby ducks. For those not familiar with the U.S. Fish and Wildlife Service's (USFWS) regulations, there is a very strong penalty involved for anyone convicted of violating one of its wildlife regulations. For example, under the Migratory Bird Treaty Act (MBTA), it is unlawful "by any means or manner to pursue, hunt, take, capture [or] kill" any migratory birds except as permitted by regulations issued by the Service. As noted in the USFWS Internet website, a migratory bird in the United States generally includes all native birds, except those non-migratory species such as quail and turkey.

Because of the penalties involved in such activity, the vehicle can be confiscated by the U.S. Fish & Wildlife Service, the proper way to fly near such wildlife was discussed in detail. The basic rule is to avoid such birds by a wide margin.

In another example, an ultralight vehicle was being used to try to keep birds away from a fresh water crawfish farm. The birds were feeding on the crawfish being raised in the ponds. At issue was the allegation the ultralight vehicle was being used to "herd" the birds.

Although ultralight vehicles have been used effectively in training certain types of birds to migrate, including the production of a movie about the training project, the USFWS takes a dim



Kay Fulkerson, Operations Safety Program Manager for the Baton Rouge FAA FSDO, explains the "Wings" program.

view of anyone using aircraft or in this case an ultralight vehicle in a manner that might be threatening to migratory birds.

The same applies to flight operations in designated wildlife preserves charted on aeronautical charts.

Pilots and ultralight vehicle operators are cautioned to review the appropriate USFWS rules and to comply with them. As noted in the Service's website, "Restricted activities are not confined to those that may injure or kill birds." "Under the provisions of the MBTA, the unauthorized take of migratory birds is a strict liability criminal offense that does not require knowledge or specific intent on the part of the offender. As such, even when engaged in an otherwise legal activity where the intent is not to kill or injure migratory birds, violations can occur if bird death or injury results."

The USFWS also has specific rules dealing with other types of animals and birds such as hunting from the air.

It has special regulations dealing with eagles.

For more information about the USFWS, readers can visit its website at <www.fws.gov>.

ULTRALIGHTS AND FAA "WINGS"

Kay Fulkerson, the Operations Safety Program Manager for the Baton Rouge FSDO, told everyone about the FAA's Pilot Proficiency Award Program better known as the FAA's "WINGS" program. Advisory Circular (AC) 61-91H subparagraph (f) lists the training requirements for ultralight vehicles.

These include one hour of ground training on preflight operations to include operating limitations, weight and balance computations, performance data, vehicle servicing, use of optional equipment, and standard emergency equipment.

One hour of basic vehicle control, turns, and other maneuvers directed towards mastery of the vehicle.

One hour of flight training to include airport and traffic pattern operations, including departures, normal and crosswind approaches and landings, maximum performance takeoffs, and steep approaches.

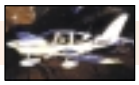
All applicants must attend at least one FAA-sponsored or FAA-sanctioned aviation safety seminar or industry-conducted recurrent training program.

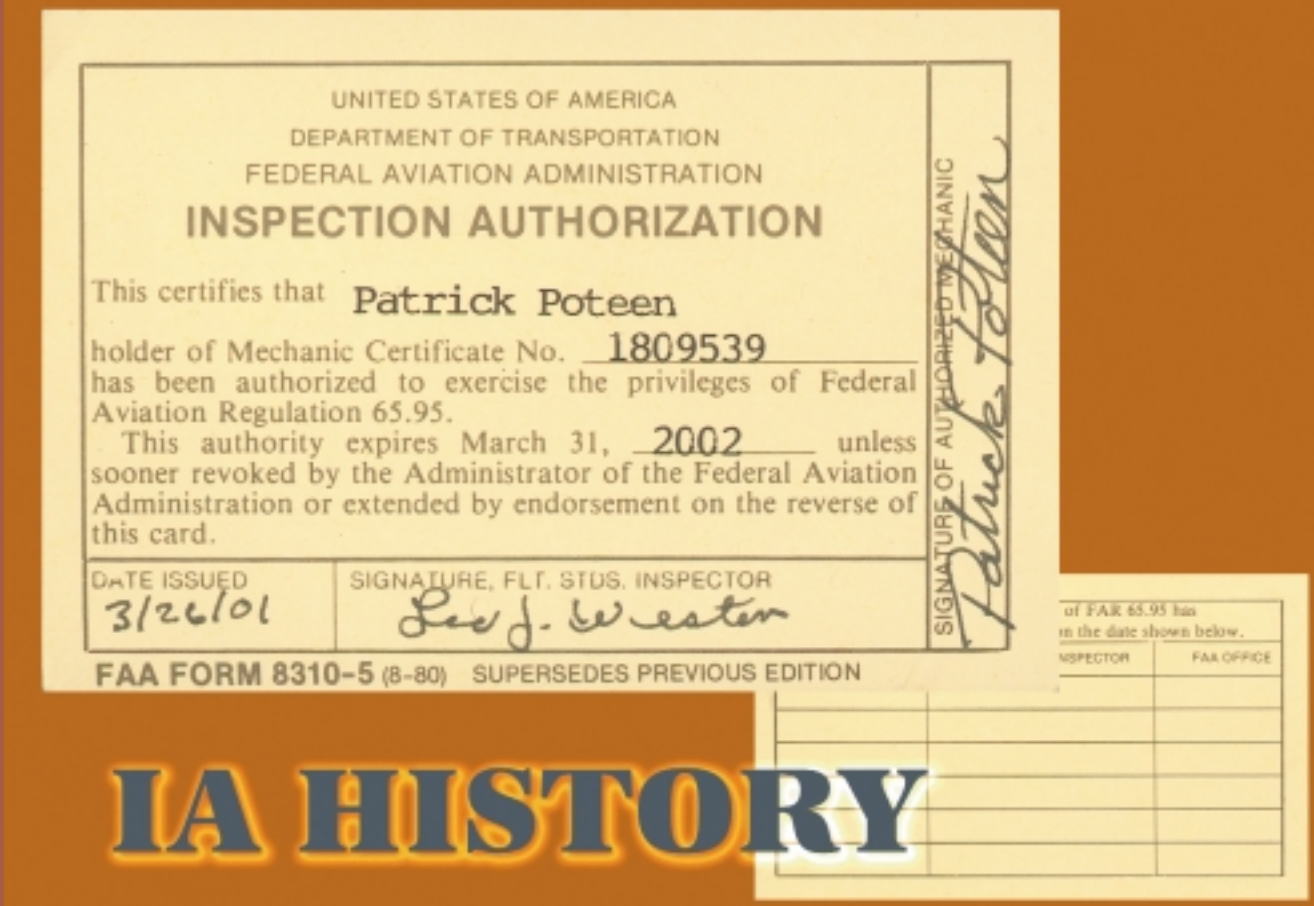
All training must be completed within a 12-month period for a given "WINGS" phase.

Applicants who successfully complete the training are awarded the appropriate "WINGS" pin and certificate for the first 10 phases and a certificate for phases 11 through 20.

PART 103 ULTRALIGHT VEHICLES

Sec. 103.1 Applicability. This part prescribes rules governing the operation of ultralight vehicles in the United States. For the purposes of this part, an ultralight vehicle is a vehicle that: (a) Is used or intended to be used for manned operation in the air by a single occupant; (b) Is used or intended to be used for recreation or sport purposes only; (c) Does not have any U.S. or foreign airworthiness certificate; and (d) If unpowered, weighs less than 155 pounds; or (e) If powered: (1) Weighs less than 254 pounds empty weight, excluding floats and safety devices which are intended for deployment in a potentially catastrophic situation; (2) Has a fuel capacity not exceeding 5 U.S. gallons; (3) Is not capable of more than 55 knots calibrated airspeed at full power in level flight; and (4) Has a power-off stall speed which does not exceed 24 knots calibrated airspeed.




UNITED STATES OF AMERICA
DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
INSPECTION AUTHORIZATION
This certifies that Patrick Poteen
holder of Mechanic Certificate No. 1809539
has been authorized to exercise the privileges of Federal Aviation Regulation 65.95.
This authority expires March 31, 2002 unless sooner revoked by the Administrator of the Federal Aviation Administration or extended by endorsement on the reverse of this card.
DATE ISSUED 3/26/01
SIGNATURE, FLT. STDS. INSPECTOR Lee J. Weston
SIGNATURE OF AUTHORIZED MECHANIC Patrick Poteen
FAA FORM 8310-5 (8-80) SUPERSEDES PREVIOUS EDITION

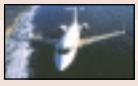
IA HISTORY

by Bill O'Brien

For all intents and purposes the Inspection Authorization (IA) is a walking, talking, two-legged, repair station who is responsible for ensuring that trust, responsibilities, and values of the maintenance profession are maintained at the highest levels of excellence. But have you ever wondered how the IA came to be. To accomplish this little insight into who we (the IA) are and where we came from we must go back in time, 63 years to be exact. The year is 1938, the CAA Act was passed, and the brand spanking new Civil Aeronautics Agency (CAA) was opened for business on August 22. The new Federal agency was responsible for the certification of private and commercial aircraft.

That same year, before the CAA was even out of its bureaucratic diapers, the fledgling regulatory agency was already on the receiving end of complaints from the National Association of State Aviation Organizations (NASAO). It seems, with the up surge in pilot training under the Federally-sponsored Civilian Pilot Training Program, that all the CAA inspectors were being siphon off from performing general aviation functions to support this pre-war pilot training program. Since a CAA inspector was responsible for inspecting and signing off all major repairs, owners of private and state-owned aircraft had to wait up to a year before an CAA inspector came out to check the repair to their aircraft and sign it off.

NASAO formally recommended to the CAA Administrator to appoint civilian designee mechanics to do the work. The CAA reluctantly agreed and made a policy decision, and Designated Airworthiness Maintenance Inspectors (DAMI) were born. It is important to note that mechanics were the second designees the CAA created. The first designees were physi-



cians who were allowed to conduct pilot flight physicals for a fee. Pilots did not join the designee ranks until 1941.

Despite the fact that a DAMI was now part of the CAA policy, very few DAMI certificates were issued during the war years because very little civilian flying was allowed. However, with the war's end the DAMI program finally took on official status on January 15, 1946, when the DAMI was formally institutionalized in the Civil Air Rules. This major transformation from policy to rule was not because of any change of heart on the CAA's reluctance to appoint designees in general, but was directly because of massive CAA budget and personnel cuts enacted by the Truman Administration after the war.

By June 30, 1948, there were 1,693 DAMI appointed. Each DAMI was appointed on a "need" basis by an individual CAA inspector. There was no test given, and in many cases the CAA inspector's decision was subjective, not objective, in nature and some mistakes were made.

On September 29, 1950, President Truman signed an amendment to the CAA Act that allowed DAMI to issue Airworthiness Certificates to GA aircraft every year. Now the DAMI could do everything that a CAA inspector could do, except process violations of the Civil Air Rules (CAR). The DAMI was now considered by the GA industry as a 1,200-pound aviation maintenance gorilla.

The CAA issued DAMI certificates that were totally different from the 2 1/4" by 3 1/4" buff-colored IA card that we stuff in our wallets today. The CAA DAMI certificate was big (11" by 15"), printed on high quality paper, and was mounted in its own glass and wood frame supplied by the government.

The CAA was an agency that knew how to impress. The first words on the certificate were written in fancy English script after the words: "The United States of America" were: "Reposing special trust and confidence in the integrity, diligence, and discretion of [insert name] and finding that he has the necessary knowledge, skill, experience, and impartial judgement to merit special public responsibility. I [CAA inspector who signs the certificate] designated him as an Aviation Safety Representative and authorize him to act as a Designated Aircraft Maintenance Inspector."

I am sure those words were a lot more awe inspiring to a newly designated DAMI back then in 1950, instead of the 1972 parting comment: "Here's your IA card, kid. Don't screw up!" that I got from an FAA inspector at North Philadelphia General Aviation District Office when I passed the IA exam.

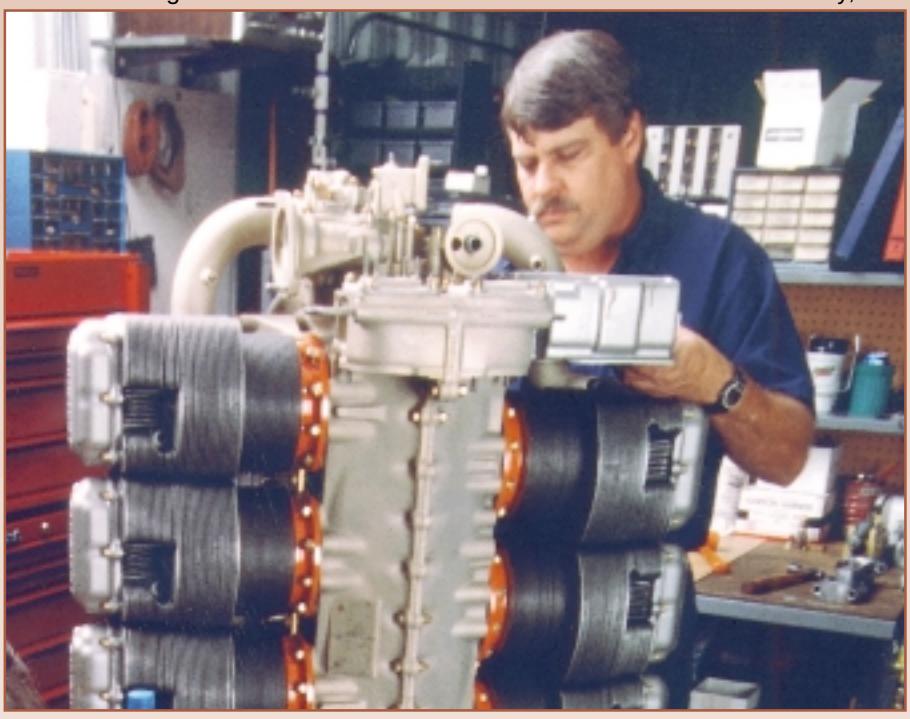
But even 1,200-pound gorillas have problems. Around the fall of 1953 the CAA's DAMI program started to run into trouble. It seems that under then existing law the CAA, which issued a DAMI certificate and allowed that designee to represent the United States Government and issue CAA airworthiness certificates, was not exempt from tort claims because of something the designee did while acting as a DAMI.

The triggering factor, which brought the CAA/DAMI/tort claims problem to a head, centers around a word of mouth story about a DAMI who on finding that a small GA aircraft's fabric was bad, took a pen knife and in front of the owner cut the "N" number off the tail to prevent it from flying. The aircraft's owner went ballistic and sued both the DAMI and the CAA.

With personal property rights as the central issue, the outcome even then was predictable and the CAA paid for a recover job. To prevent other tort claims against the agency, the CAA on June 17, 1956, issued two big changes to the CAR. Section 24.43.1 of the CAR did away with the DAMI and created the Inspection Authorization and at the same time the rule did away with the "annual inspection" requirement. In addition all the DAMI's were grandfathered into the IA ranks. It's a sure bet that none of the DAMI's were not very happy about losing those extra 400 pounds of muscle and power.

I should explain here why the DAMI's were unhappy. Up until June 1956, if you owned a GA aircraft you had to get two inspections performed on it each year. The first inspection was a periodic inspection (similar to a 100-hour inspection) performed by an A&E mechanic and then a DAMI would be called in to perform an "Annual Inspection."

If the aircraft was airworthy, the



(Phillips 66 Company photo)

(Phillips 66 Company photo)

DAMI would issue a new CAA Airworthiness Certificate which was good for one year. Under the new rule, the new periodic inspection (a combination of both the periodic and annual inspection) was now performed by an IA, and the airworthiness certificate duration was unlimited as long as the aircraft was maintained in accordance with the CAR.

On April 1, 1958, the FAA came into existence and over the next eight years the FAA performed the tedious process of re-codifying the Civil Air Rules into the Federal Aviation Regulations (FAR). In 1966 the term "periodic inspection" was dropped without fan fare from the FAR and the term "annual inspection" was reinstated.

However the likes of the DAMI was not altogether forgotten by a sentimental agency like the FAA. The DAMI is still found in FAR § 183.27, which allows DAMI to approve maintenance on civilian aircraft used by U.S. military flying clubs overseas. But that's enough about history lessons, let's pound the regulatory books for a couple of minutes.

FOUR RULES

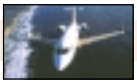
There are only four rules that govern the Inspection Authorization itself. FAR sections 65.91, 65.92, 65.93, and 65.95. The requirements of these rules are referred to in about a half a dozen places on the IA application form. These rules or their applicable paragraphs must be complied with at least twice in an IA career—once when the candidate makes the original application for an IA and again when the IA renews.

I am willing to bet nine out of 10IA's, who have held their authorization for at least three years, no longer accurately remember what those four rules mean any more. I am so sure of that bet that I am even willing to go further and bet that most IA's have no idea what they are signing for every March when they fill out the yes/no questions on the FAA Form 8610-1 Mechanic's Application for Inspection Authorization when they file for IA renewal.

However, in the IA's defense, I have noticed that most IA's pay very close attention filling out the yes/yes/no/no/yes blocks on the form and marked them in the proper sequence. They even take the time to sign their name legibly so the IA renewal application doesn't get kicked back.

As I write this I can remember a couple times when I was a little too casual filling out the IA renewal application and had to suffer the embarrassment of having the FAA call out my name in public at the IA meeting. My ears still get red when I relive having to assume a sinner's penitent stance in front of the FAA table and correct the offending block on the IA renewal form while my peers gleefully watched and commented on my discomfort.

So to avoid wearing your own personalized sack cloth with ashes in your near future let's look at the four IA rules in numerical order, so you will know what is behind the yes/no block



you are signing off.

Section 65.91: Inspection Authorization

This rule is important because it clearly states that if an applicant applying for the IA and meets all the requirements, then that applicant is entitled to the IA. In other words this rule does away with the original CAR "need" requirement that the CAA used to control the number of DAMI.

The same rule, § 65.91(c)(2), requires a new applicant or a individual who is renewing the IA to have three years as an A&P and for at least two years before applying the mechanic must have been actively engaged maintaining certificated aircraft. The term "actively engaged" is determined to be a mechanic working at least 35 hours a week as defined by the Department of Labor with allowances for absences because of sickness, vacation, and interruptions in employment caused by external factors such as business closures, strikes, etc.

Section 65.91 also requires a base of operations where an IA can be reached in person or by telephone. This does not necessary means the phone has to be located in the hangar where the IA works, but it shouldn't ring on the far side of the moon either.

The same rule also states that the IA must have "available" all equipment, current data, and facilities necessary to properly inspect the aircraft.

Section 65.92: Inspection Authorization: Duration.

The rules states that every IA authorization turns back into a pumpkin on March 31. In addition, the IA also ceases to be if any of the mechanic ratings or the authorization itself is surrendered, suspended, or revoked. The IA authorization also departs this plane of existence if the mechanic no longer has the data, facilities, or equipment to do the job.

In addition, any IA authorization that is suspended or revoked shall upon the FAA's request, be returned to the FAA. In summary this newer "even numbered" rule just clarifies the initial section 65.91 requirements and makes it easier for the FAA to enforce.

Section 65.93: Inspection Authorization: Renewal

Most IA's know the five IA renewal requirements by heart.

1. You have to "perform" at least one annual inspection for each 90 days you have had the authority. Yes, you could have performed four annual inspections in February.

2. Performed at least two major repairs OR two major alterations for each 90 days you have had the authority. Yes, all eight major repairs or eight major alterations can be performed in February.

3. Perform or supervise a progressive inspection. For those of you who have forgotten what a progressive inspection is, think of a real formal, stretched out annual inspection, which is broken up into phases, controlled by its own inspection manual, and spread out over 12 calendar months.

4. Attend an eight-hour renewal meeting acceptable to the FAA. This is the most popular option with IA's, because it gives them a chance to interface with the FAA, their peers, and find out what is happening in the general aviation community.

5. This one is the least popular option, and for good reason this part of the rule says you can meet your IA renewal by taking an oral quiz administered by an FAA inspector.

Section 65.95: Inspection Authorization: Privileges and Limitations

This rule says an IA can do four things:

1. Perform annual inspections

2. Perform or supervise progressive inspections

3. Perform inspections of major repairs if the data was FAA approved.

4. Perform inspections of major alterations if the data was FAA approved.

The same rule requires the IA, if he/she changed his/her base of operation to notify the local FSDO in writing and tell them that a new 800-pound gorilla is in their back yard.

Well, there you have it, a bit of history and a regulatory overview of the IA requirements. In closing I would like to offer the local FSDO and the IA community a suggestion based on an idea that came out of this little writing effort of mine. The suggestion is offered only in hope of tying the past, the present, and the future of aviation maintenance community just a little bit closer together.

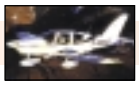
My suggestion is both simple and personal. I would like the local FAA office manager or his/her representative to consider saying these words to each brand new IA and at the close of each year's IA renewal meeting. Begin by addressing a brand new IA with the individual's name. For a group of IA's, address the assembly with the term IA.

"The Federal Aviation Administration, reposing special trust and confidence in your integrity, diligence, and discretion and finding that he or she has the necessary knowledge, skill, experience, and impartial judgement, to merit special public responsibility the FAA, now grants/renews your Inspection Authorization.

"The FAA now formally charges you with preserving the safety, values, and principles of our maintenance profession and urges you to continue the quest for aviation excellence."

Maybe, just maybe, if we say the above closing epilogue at enough IA meetings or to each brand new IA, enough times, out loud, and in public, the rest of the aviation industry would finally understand what the inspection authorization is all about.

Bill O'Brien is a National Resource Specialist in Flight Standards' Continuous Airworthiness Maintenance Division.



First Response to Aircraft Accidents

Civil aircraft accident strategies and guidelines

by Rick Lee

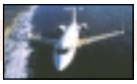
Photo by Charles Morganti (Gregg County ATCT, Longview, TX)

The possibility of the average person being among the first to arrive at the scene of an aircraft accident is probably too insignificant to be quantified. Working at an airport significantly increases your prospects of having to deal with an accident, but it will still be a rare event. When it does happen, however, you need to be prepared to respond. The first few minutes after an accident has happened are crucial to not only the persons directly involved, but also the unknown individuals who may potentially find themselves in a similar situation in the future. We will discuss some guidelines and strategies, with regard to aircraft accidents that may ultimately save lives.

This information was developed for airport managers, airport personnel, and aviation people who are likely to be among the first to arrive on an aircraft accident scene. The discussion will cover four basic areas: notification and reporting, controlling the accident scene, interfacing with the investigators, and an overview of accident investigation process.

Notification and Reporting

The regulatory requirements for reporting of accidents, incidents, overdue aircraft, and preservation of aircraft wreckage, mail cargo, and records are contained in Title 49 U.S. Code of Federal Regulations Part 830 (49 CFR 830), commonly referred to as "NTSB 830." This is a fairly brief and very informative document, which should be readily available to all airport personnel as well as aircraft owners and pilots. [Note: It can be found at <http://www.ntsb.gov/alj/legal.htm>.] Having this document in hand will settle a lot of discussions as to what the definition of an "accident" is and what the requirements are.



NTSB 830 requires the operator of an aircraft to immediately notify the NTSB in the following instances:

- Accident
- Flight control malfunction or failure
- Flight crew incapacitation
- Turbine engine structural failure
- In-flight fire
- In flight collision
- Property damage in excess of $25,000.00
- Aircraft overdue and believed to be involved in an accident

Although notification is the operator's responsibility, the important issue is that someone notifies the proper authorities.

Who Ya Gonna Call?

Ghostbusters don't care about aircraft accidents, but the FAA and NTSB do. There are several numbers to call with notification, regardless of your location:

- Local Flight Standards District Office (FSDO)
- Any area Flight Service Station
- Any area Air Traffic Control Tower
- FAA Safety Hotline (1-800-255-1111)

Do Not Disturb

Information on preservation of wreckage, among other things, is found in 49 CFR 830.10. The wreckage should not be disturbed until the NTSB takes custody, except under the following circumstances:

- To remove injured or trapped persons
- To protect the wreckage from further damage
- To protect the public

People Come First

The initial concern at any accident should be for the well being of the occupants and any other people directly involved. When assisting in the removal of trapped persons, try to minimize the possibility of further injuries by controlling the number of people involved in the rescue. Trained and experienced rescue personnel should be utilized whenever possible. Exercise personal protection protocols at all times. It is in no one's best interest for you to become a victim yourself.

In the event of fatalities, the bodies may be removed before the arrival of NTSB or FAA investigators. It is of great assistance, though, to document the positioning of the bodies and to take note of what was done to the wreckage to facilitate removal.

Protect Yourself

At any given accident site, there are potentially numerous personal hazards that may be encountered. Always remember that, unless you have a really good reason to get personally involved with the accident site, like getting the injured out, leave the accident site to the experts! However, the more knowledge that you have about aircraft systems, the better you will be able to defend yourself from personal injury and illness.

Battery electrolytes are likely to be encountered in almost every accident. There are two types of batteries in common use, lead-acid and nickel-cadmium. Both contain an ionic electrolyte, which is corrosive and can cause physical injury. The lead-acid electrolyte is basically sulfuric acid and is extremely harmful to come in contact with it. The nickel-cadmium electrolyte is less aggressive, but should still not be allowed to come in contact with any part of your body or clothing. The Ni-Cad is primarily found in turbine engine equipment. In recent years, however, many aircraft operators are converting to the lead-acid type for economic reasons. The point is that either type may be encountered and you should not get involved with the battery system unless you know what you are dealing with.

Fuel, oil, and hydraulic fluids may also be encountered. Though most are basically benign, you do not want to ingest any or let them come in contact with any soft membranes [i.e. eyes]. The larger jet aircraft frequently use "Skydrol" for hydraulic fluid. This is a corrosive and should be avoided much the same as battery acids.

Many aircraft are equipped with high pressure bottles containing oxygen, nitrogen, compressed air, or fire extinguishing agent. Care should be taken when working around these bottles. Remembering that oxygen bottles are color-coded green and that nitrogen bottles are color-coded black will improve your safety margin. The key concern with fire extinguisher containers is that most use an explosive cartridge to release the bottle contents. The most common agent will be an inert gas, but a discharge in a confined area will displace the oxygen in the air and may cause breathing distress.

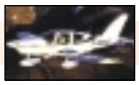
Always be aware of the fact there may be high pressure fluids trapped in lines or hoses on the aircraft. It is not uncommon to have pressures of 2,000 to 3,000 psi present in some aircraft.

Bloodborne pathogens, which can potentially cause serious illness, must always be considered. Use personal protection protocols to prevent contact with any blood or bodily fluid. The rule of thumb we use in the FAA is: " If it's wet and it's not yours, don't touch it!"

The best way to prevent becoming a victim yourself is to be prepared before the accident ever happens. Visit a local aviation facility and familiarize yourself with the basic types of aircraft and aircraft systems. Particular attention should be paid to egress areas and identification of hazardous materials and components. There are several "First Responder" training courses currently available in the industry.

Secure the Scene

Controlling the environment of the accident is important to the investigation process as well as to the safety of the affected personnel. As previously discussed, the scene should be disturbed only to the extent necessary to facilitate rescue operations. Once that is accomplished, the scene should remain untouched until the NTSB or FAA arrive. If overnight security is required, the local law enforcement or Civil Air



Patrol wing are resources that are frequently used.

Access to the scene should be limited to individuals who have a need to be there. These include:

- FAA investigators
- NTSB investigator
- State aviation personnel
- Law enforcement personnel
- Rescue personnel as required

After rescue operations are complete, no one should be allowed access to the scene without proper identification. FAA and NTSB investigators will identify themselves with proper credentials upon arrival on the scene, even though they may be dressed in casual or work clothing and may not be wearing any external identification. Neither FAA nor NTSB delegate the on-site investigation to local representatives.

When interfacing on scene with the FAA and NTSB, there are some guidelines to follow. The investigation process must be objective. Try to avoid expressing personal opinions or suspicions when briefing investigators. The people who need to know the facts are the NTSB Investigator In Charge [IIC], the FAA IIC, and the ranking local law enforcement officer, if present. Law enforcement personnel, as well as FAA and NTSB, will inspect airman or aircraft records and certificates.

In many cases, the news media is present at the scene. They have their own job to do, but caution should be exercised with regard to what information they are privy to. No real conclusions are going to be made at the scene, so be careful that any comments you may make do not become news items and portrayed as fact. If you do choose to be interviewed, give out only factual information that you know to be true.

Accident Investigation Basics

Although the FAA and NTSB cooperate completely, they are actually running two parallel investigations. The NTSB is tasked with determining the probable cause and causal factors in the accident. The FAA provides technical support and their investigation determines if any areas over which the FAA has oversight are involved. The NTSB has overall responsibility for the accident.

In most cases, the FAA will be first on scene, since they are responding from the local FSDO. The FAA IIC will be in contact with the NTSB and can make decisions under delegation from them. If there are any financial resources to be expended in the investigation, the NTSB will make those decisions. All information acquired is important. Aside from determining how and why the accident happened, enough background information must be obtained to facilitate actions and recommendations to prevent further occurrences.

In the event of a major crash with significant loss of life, the same notification protocols should be used. The local FSDO should have a "Disaster Plan" to deal with such a situation, just as all airports should have an emergency plan for dealing with accident situations. FAA guidance, in the form of Advisory Circular 150/5200-31, Airport Emergency Plan, is available to assist in creating or revising an airport emergency plan. [The AC can be found on the web at <http://www.faa.gov/arp/150acs.htm>, just be aware that it is 212 pages long if you want to print it. It can also be ordered free from U.S. DOT Subsequent Distribution Office, Ardmore East Business Center, 3341 Q 75th Avenue, Landover, MD 20785.]

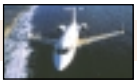
Summary

The key to successfully handling an accident at your airport is managing your resources. No one has all the answers committed to memory. Knowing who to contact and where to find help is paramount. But remember, FAA and NTSB investigators will always be in charge of an aircraft accident. They may call for assistance from local law enforcement, Civil Air Patrol, or local rescue and emergency professionals. The most important thing to do is be prepared. When the accident happens, the adrenaline will be flowing and a lot will be happening. The key is to stop, assess the situation, and devise an initial plan before leaping into action. The time you spend preparing for the accident you hope will never happen may save lives when it does.

Remember the Lives We Save...

- May be those of the crash victims.
- May be those of the potential crash victims of the accident that we prevent.
- May be our own.

Rick Lee is the Airworthiness Safety Program Manager at the Baltimore FSDO.



NIGHT VISION GOGGLES IN CIVILIAN AVIATION

by G. J. Salazar, M.D. and Van B. Nakagawara, O.D

Night vision goggles? Aren't they for the military and police? Not anymore! On January 29, 1999, the FAA issued the first Supplemental Type Certificate (STC) to permit use of night vision goggles by a civilian helicopter EMS (emergency medical service) operator. Since then several more have been issued to other commercial operators. In addition, rulemaking was initiated (but at the time of this writing is temporarily on hold) for changes to FAR Part 91 that would permit use of this technology by general aviation pilots. With this in mind, it will only be a matter of time before pilots start hearing more and more about these significant aids to night flying. Therefore, it is important for pilots to become aware of this technology and understand some of the basic operational issues.

NIGHT VISION GOGGLES

Night vision devices include a variety of different technologies, such as forward-looking infrared radar (FLIR) and night vision goggles. The focus of this article will be on night vision goggles, more commonly known by the acronym NVG. The simplest analogy to explain how NVG's work is a video camera. The basic principle is the same in that the user is not directly seeing what they look at, but rather is viewing an electronic image of the scene.

NVG equipment may be monocular or binocular. However, in aviation, binocular, helmet-mounted equipment is almost exclusively used. Like a video camera, an NVG is an electro-optical device. Electromagnetic energy, both visible and infrared, reflected from the terrain at night enters the NVG through the objective lens. These photons of light energy are directed to an electronic processing unit called the image intensifier, which contains several components. The photocathode element in the image intensifier converts the light photons to electrons and moves them to the microchannel plate (MCP) which accelerates and multiplies them several thousand times. The electrons then strike the phosphor screen, which is ultimately responsible for emitting the visible light the user will see through the eyepiece lens as a focused image.

Unlike the video camera, the NVG does not require much light to produce an image. Light as faint as a starlight or low-level moonlight will suffice. However, the efficiency of the equipment will be degraded in total darkness or with too much light. The image intensifier will increase what little light energy there is on average several thousand times. State-of-the-art NVG's are capable of intensification on the order of 35,000 times or more. That amplified or intensified energy is projected onto the phosphor screen, which creates the visible image the user-sees through the eyepieces. The NVG image is monochrome, i.e., in one color, typically either green or amber depending on the type of phosphor used. NVG equipment lacks the ability to produce a multicolor representation of a scene.

Aviation NVG models are helmet-mounted with electrical power supplied by a battery pack attached to the back of the helmet (see page 22). As with any optical device, the user has a variety of ways of adjusting fit and focus. The NVG binoculars and mounting assembly are cumbersome, weighing approximately one pound. In addition, one must factor in the weight of the helmet and battery pack.

ADVANTAGE OF NVG's

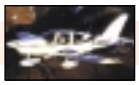
The advantages of this night vision aid technology in aviation can be summed up as an increase in nighttime situational awareness for pilots. This technology does not turn night into day, but it does permit the user to see objects that normally would not be seen by the unaided eye. This would markedly decrease the possibility of collisions with terrain or man-made obstructions. Many other benefits exist, but the bottom line is that this technology, when properly used, has the potential to significantly increase nighttime flying safety.

DISADVANTGAGES OF NVG's

Unfortunately, this increase in safety comes with a significant price. Some of the disadvantages of NVG's include:

- decreased field of aided view
- decreased visual acuity
- loss of depth perception
- lack of color discrimination
- neck strain and fatigue
- high initial cost to purchase
- require on-going maintenance
- need for recurrent training
- requires modification of aircraft lighting

Current NVG's provide approximately 40 to 60 degrees of aided nighttime circular field of vision, although the user retains some unaided vision by being able to look peripherally around or under the goggles. With a reduced field of vision, effective scanning techniques are even more important than with unaided vision alone. Because one is looking at an electronic image, depth perception is lost. The user must learn to recognize terrain contrast and shadowing to replace some of the lost depth perception cues. Thus, the ability of the pilot to determine precise closure on terrain or other aircraft when these are first detected is limited.



Low-light level operations inherently produce decreased visual resolution, acuity, and contrast, thereby making hazard detection more difficult. Visual acuity from NVG devices provides a vast improvement over unaided human night vision, which can be 20/200 or worse. With properly focused goggles at starlight or quarter moon, one can have nighttime visual acuity equivalent to 20/40 or 20/30. The latest generation of goggles can achieve 20/25; however, this is difficult to accomplish in an operational setting. Enhanced vision with NVG's is proportional to altitude and airspeed. With NVG's, "lower and slower" improves visual acuity. Therefore, a helicopter pilot would have some advantage over his or her fixed-wing counterpart in determining terrain features in low light conditions. In addition, newer generation equipment provides greater contrast detection, thereby improving situational awareness. It is important to note that NVG-aided acuity of 20/30 or 20/40 assumes proper cockpit lighting, properly focused and well-maintained goggles, and ideal environmental conditions.

As mentioned previously NVG's produce monochrome images. Because the eye can differentiate more shades of green than other phosphor colors, the night vision phosphor screen is typically green. This allows the user to see more detail, but with an inability to detect differences in color. Changing illumination can affect visual acuity. External incompatible light from the ambient environment could result in "washout" or halo effects, when using NVG's. This could result in glare, flash blindness, and afterimage for the pilot. Particularly troublesome is ensuring aircraft and cockpit lights are NVG-compatible. Incompatible lights make the outside scene less visible with NVG's. Changing cockpit lights to be NVG compatible is very complicated and expensive. NVG's are sensitive to light ranging from yellow-green to near-infrared wavelengths. FAA required aircraft position and anti-collision lights could cause problems for goggle wearers. NVG's are also subject to interference by environmental factors, such as rain, clouds, snow, mist, dust, smoke, and fog. In anything more than very small amounts, any of these will tend to severely degrade the performance of the equipment.

During prolonged use of helmet-mounted NVG devices, the potential for neck discomfort and other problems, such as increased general fatigue, exists because of the weight of the helmet, battery pack, and NVG device.

CONCLUSION

In summary, while NVG and other night vision technology are potentially great safety enhancements for select nighttime flight operations, they are an expensive and sophisticated pieces of equipment requiring considerable effort to implement and maintain. Night vision goggles do not turn night into day and if not properly used, rather than preventing accidents they could be the cause of one. Operational use of these devices should be accomplished only after pilots have received extensive, supervised ground and in-flight training with the equipment. Once trained pilots must strive to maintain proficiency by ongoing use and recurrent training.

G. J. Salazar, M.D. is the Regional Flight Surgeon in FAA Southwest Region, Fort Worth, Texas. Van B. Nakagawara, O.D., is a Research Optometrist at FAA's Civil Aeromedical Institute in Oklahoma City, Oklahoma.

The background for this profile of the Helicopter Night Vision Device depicts the image the operator sees in the device. (The pilot's photo is by EG & G, the background by FAA's CAMI, and the digital montage by Mario Toscano.)

You're Not Tired, Are You?
Fatigue, physiological training for pilots

by Eric Simson

It's about 8 p.m. You've completed the aircraft inspection and pre-flight checklist and found no problems. The flight plan has been filed, and a check of the weather shows clear skies to your destination, two hours away. Your qualifications are current and you consider yourself a better-than-average pilot.

Life couldn't be better—but are you really ready for that flight? How well you will be able to perform could come down to whether you are able to stay alert and awake. A dangerous situation, fatigue, could ruin your perfect day.

TYPES OF FATIGUE

Your body is a "well-oiled machine" and, like most machines, works on a cycle. The cycle, in the case of the human body, is the Circadian rhythm, also referred to as the "biological clock." It is a 25-hour period in which the body goes from a state of rest, through activity, and returns to rest. As we are in a 24-hour world, this usually does not present a problem. So long as we are working within the body's activity schedule, this type of fatigue, Circadian fatigue, is less likely to be a problem. Unfortunately, when we work outside the "normal" series of daily events, such as late at night or where time zones are crossed which detract from the hours in our day, circadian fatigue can, and often does, pose a serious hazard.

In the average Circadian cycle, we come from our deepest state of rest, at about 4 to 6 a.m., and gradually increase to a peak of alertness around 4 to 6 p.m. From there we begin a slow energy decrease until 10 to 11 p.m., where we experience a significant plunge, returning to the deep sleep realm at about 1 to 2 a.m. The times indicated here are approximate. As individuals, our capabilities will vary depending on whether we are "early birds" or "night owls." Those who naturally rise early tend to go to sleep early, and just the opposite is true for those who wake later.

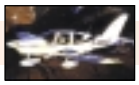
Additionally, we experience acute and chronic fatigue. Acute fatigue is experienced as we actively perform tasks requiring muscle and mental activity. Chronic fatigue is accumulated fatigue as the result of time involved with various activities, even if they are not of a strenuous nature.

These three types of fatigue—Circadian, acute, and chronic—do not act independently on an individual. Instead, they act synergistically. That is, they compound one upon another and "add up." This effect can cause you to feel "good to go" as you start a late evening event, only to find yourself becoming tired and unable to concentrate after a short while. The results are loss of situational awareness, task/target fixation, and complacency. In an aircraft, these could add up to a mishap.

Getting back to the 8 p.m. flight we started at the beginning, let's look at things you might do and how they could affect your ability to resist fatigue. As happened to a military pilot, who had a fatal mishap in a tactical jet aircraft, you could choose to wake as usual and try to cram a lot of activities into your day before the flight. In his case, he woke at about 5 a.m., went for a run, did some weight lifting, and spent the day catching up on some yard work. This type of schedule, before a late flight, would result in acute fatigue from physical exertion, accumulated fatigue from being awake for a long time, and Circadia fatigue as normal bedtime approaches. As you can well imagine, this situation, along with other factors, created a significant disadvantage in this pilot's ability to combat fatigue. The same factors have caused countless instances of controlled flight into terrain, near mid-airs, and mid-air collisions.

SOLUTIONS?

What could we do to improve upon this scenario? For starters, you could get up a little later in an effort to change your Circadian rhythm. Essentially, what you would be doing is reversing some of the sleep debt that may have accumulated up to that time. Light, heat, sounds, and smells help to set your biological clock naturally and would wake you up closer to your normal time, so you'll have to shield yourself from those things in order to sleep later. Second, it's important not to overly exert yourself during the course of the day before a late flight. Taking care of some paperwork that has been piling up might be a better, and less physically demanding, activity. Additionally, some research suggests a nap a few hours before the event can be a real "pick-me-up" that could result in a little energy boost. By napping, you would be well rested—not exhausted—and prepared for the effects ofCircadian fatigue.



What you eat is also important. Eating a candy bar or drinking something having high sugar/high caffeine properties will only provide a short-term fix. The sugar will burn off quickly, resulting in a rapid lack of energy, and too much caffeine can cause dehydration and irritability. Food that is high in protein, such as peanuts, will provide energy for a longer period of time, without the rapid "energy crash" associated with the metabolism of sugars.

I'm sure there are some skeptics out there who believe they can be just as alert late at night as they are during the day and that coffee and candy will keep you awake. I was one myself when I was provided this information in a night vision goggle course, so I tested the theory. Starting out on a road trip at 3 a.m., after five hours of sleep, I drank about three to four cups of coffee between 4 and 6 a.m., eating a piece of hard candy every five minutes as I began to nod off. Thankfully, the sun came up then and woke my biological alarm clock. On the return, I started at the same time, with the same amount of sleep, and drank one to two cups of coffee between 4 and 6 a.m., eating a handful of peanuts every 30-45 minutes to stay awake. And, I wasn't nearly so drained of energy when the sun came up as I had been on the previous trip.

Recently, the use of melatonin has been promoted, through the media, as a way to assist with Circadian fatigue and jet lag. While studies have demonstrated some benefit from its use, they have also indicated drawbacks from the sedative and hypnotic effects. Additionally, melatonin ingested at the incorrect time may further desynchronize an already troubled Circadian rhythm through the addition of another cue. Therefore, it is cautioned that melatonin should not be taken within 24 hours of flying, and professional guidance should be sought in the proper use of this neurohormone to achieve maximum benefit without adverse reaction. [Sanders DC, Chaturvedi AK, Hordinsky JR (1998). Aeromedical Aspects of Melatonin—An Overview. Washington DC: DOT/FAA/AM-98/10]

CONCLUSIONS

Fatigue can be a factor when flying late, but it doesn't have to be. The choice is strictly up to you: Prepare for the flight ahead of time and be ready to combat fatigue. And, if you feel fatigued before you fly...don't.

+

Mr. Simson is an aviation physiology instructor at the Civil Aeromedical Institute's Aeromedical Education Division

This is reprinted from the Fall 2000 The Federal Air Surgeon's Medical Bulletin.

CALENDAR OF EVENTS

July 14-15 - Hagerstown Fly-In—Drive-In and Young Eagles Day, Hagerstown, MD

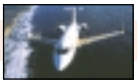
To be held at the Hagerstown Regional Airport-Richard Henson Field (HGR), the event will feature free first flights for young people, ages seven through seventeen with parents permission, on both days. For more information contact Gary Hartle at (717) 597-9328 or June Green at (301) 739-0074.

July 12-22 - Dayton Air Show, Dayton, OH

To be held at the Dayton International Airport, featuring the USAF Thunderbirds, Patty Wagstaff, the U.S. Army Golden Knights, and many more. For more information, contact Kim Dell at (937) 898-5901 or see their website at <http://www.airshowdayton.com>.

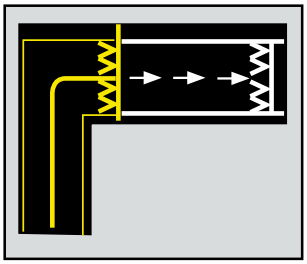
November 27-30 - The Third International Aviation Security Technology Symposium, Atlantic City, NJ

Will be sponsored by the FAA Aviation Security R&D Division and National Safe Skies Alliance at the Tropicana Resort and Casino in Atlantic City. Topics include: Trace Detection; Bulk Detection; Human Factors; Technical Integration; Operational Testing and Evaluation; Deployment; Aircraft Hardening; Emerging Technologies; and other related topics. For more information, see <http://www.safeskiesinternational.org/symposium_2001.htm>.



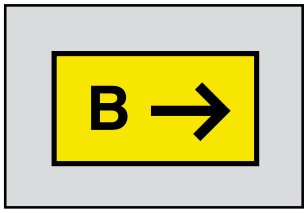
RUNWAY SAFETY CORNER

This time we plan to test your runway signage knowledge. In the following multiple choice questions, circle the correct answer. (The answers can be found on page 28.)



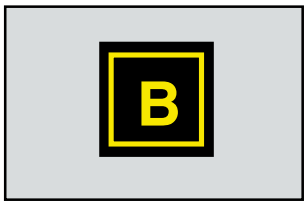
Question 1. What is the purpose of the yellow demarcation bar marking?

a. Delineates runway with a displaced threshold from a blast pad, stopway, or taxiway that precedes the runway.
b. Delineates entrance to runway from a taxiway.
c. Delineates beginning of runway available for landing when pavement is aligned with runway on approach side.



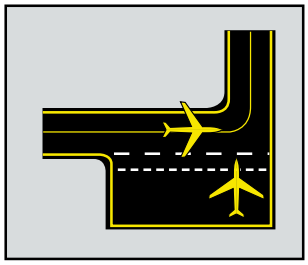
Question 2. When turning onto a taxiway from another taxiway, what is the purpose of the taxiway directional sign?

a. Indicates direction to take-off runway.
b. Indicates designation and direction to exit taxiway from runway
c. Indicates designation and direction of taxiway leading out of an intersection.



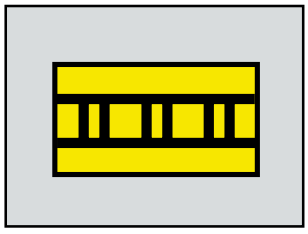
Question 3. What purpose does the taxiway location sign serve?

a. Identifies taxiway on which an aircraft is located.
b. Provides general taxiing direction to named runway.
c. Denotes entrance to runway from a taxiway.



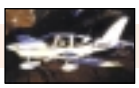
Question 4. What is the purpose of the hold position markings on a holding bay?

a. Identifies taxiway on which the aircraft is located.
b. Holds aircraft on the taxiway when there is an operation need.
c. Identifies area where aircraft prohibited from entering.



Question 5. What purpose does the ILS critical area boundary sign serve?

a. Identifies the exit boundary for the runway protected area.
b. Identifies the exit boundary for the ILS critical area.
c. Identifies area where aircraft is prohibited from entering.



• ELT Rule Change

Regarding the recent changes to Federal Aviation Regulation § 91.207 (*Federal Register* Dec. 22, 2000), I understand the addition of section (f)(11), but I do not understand why the wording of (f)(1) was changed. It used to read ..."turbojet powered aircraft", and now it reads ..."turbo-powered aircraft". Was this an oversight, or was there a purpose?

A crafty operator with either turbopropeller or even turbocharged engines might interpret the rule as exempting him from having an ELT for the next three years.

Pat Atchison
Via Email

The Federal Register *made a mistake. A correction was made on March 23, 2001*

FAA AVIATION NEWS welcomes comments. We may edit letters for style and/or length. If we have more than one letter on the same topic, we will select one representative letter to publish. Because of our publishing schedules, responses may not appear for several issues. We do not print anonymous letters, but we do withhold names or send personal replies upon request. Readers are reminded that questions dealing with immediate FAA operational issues should be referred to their local Flight Standards District Office or Air Traffic facility. Send letters to H. Dean Chamberlain, FORUM Editor, FAA AVIATION NEWS, AFS-805, 800 Independence Ave., SW, Washington, DC 20591, or FAX them to (202) 267-9463; e-mail address:

Dean.Chamberlain@faa.gov

• New Instrument Chart Format

I am writing about the *FAA Aviation News*, April 2000, Page 27, "New Government Instrument Chart Format" article. It seems to me, for uniformity and ease of understanding, the insert missed approach icon paths should be directionally oriented as such paths are depicted on the chart proper, i.e. north at top.

Harold Blank
Portland OR

The missed approach icons are designed to make it easy for the pilot to read and understand the missed approach procedure without the need to make any mental adjustments for direction. In the case of the icons, the pilot just needs to follow the icons in the direction indicated. In the case of the chart's planview, the flight path is directionally oriented, north up, to show the complete procedure.

• Navigation Equipment Requirements for IFR

According to the *Aeronautical Information Manual*, Section 1-1-21,b,1,(b), "Aircraft using GPS navigation equipment under IFR conditions must be equipped with an approved and operational alternate means of navigation appropriate to the flight." Does this mean an aircraft equipped with dual IFR approach-approved GPS-coms cannot be legally flown in IFR conditions unless also equipped with a non-GPS navigation system?

Robert Checchio
Dunellen, NJ

Yes. Also, a non-GPS approach procedure must exist at the alternate airport when one is required. If the non-GPS approaches on which the pilot must rely require DME or ADF, the aircraft must be equipped with DME or ADF avionics as appropriate. AIM 1-1-21 f,6,(h).

• Airspace And Books

Great info, thanks so very much. But can you direct me to any articles that will help me to understand airspace definitions & requirements and ATC procedures within them? My textbooks do not seem to bring these airspaces alive for me. Actually, I wish someone had written live articles about how some actual pilots navigated in them...true to life, minute to minute rewrites of all the communications and the pilots flying reactions to the clearances and his own headings, altitudes, etc. That's what I would call teaching. So much more useful than the bland, dead textbook rehash of Federal Aviation Regulations. Know of any great articles that actually do this

Rog in Jacksonville, Fla.
Via Email

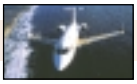
Although we will not endorse any particular company, many companies produce videotapes on airspace and operating in that airspace. One or more companies also produce audio tapes that can be used to gain familiarity with the air traffic control system. Various aviation catalogs and magazines list the products.

• Complaint Department

I enjoyed your feature article on mountain flying in the April special issue. Only "complaint" is that the photos are so beautiful that I had to read it twice because the views distracted me.

Gregg Hendry
via the Internet

Saying thank you for complaining is a bit unusual, but we will take this type of "complaint" anyday. Glad you enjoyed the article, despite your "complaint."



ONE BILLION PASSENGERS IN 10 YEARS?

The Federal Aviation Administration's (FAA) reports that at the FAA's 26th Annual Commercial Aviation Forecast Conference Secretary of Transportation Norman Y. Mineta discussed with aviation leaders the challenges facing an air transportation system that continues to expand rapidly into the new millennium. The secretary based his remarks on *FAA Aerospace Forecasts Fiscal Years 2001-2012*, which predicts annual U.S. passenger levels to soar to more than one billion by 2010.

"Commercial aviation will continue its tremendous growth rate over the next decade, further underscoring our nation's reliance on this vital form of transportation," Secretary Mineta said. "Of course, guaranteeing the safety of the travelling public is and always will be our number-one responsibility. However, working together to close the gap between demand and the capacity of our transportation infrastructure is a central challenge for us in the aviation community."

The FAA forecast is released annually and provides a statistical prediction of aviation levels over the next 12 years. The report provides extensive historical and forecasting data for commercial air carriers, regional/commuter airlines, general aviation, the military, and cargo airlines.

According to FAA predictions, the total number of domestic passengers on U.S. air carriers is expected to increase from 604.1 million in 2000, and grow 3.6 percent per year to 927.4 million passengers in 2012. In addition, U.S. air carrier international enplanements are projected to increase from 54.6 million in 2000 to 108.4 million in 2012, a growth of 5.9 percent each year for continued total annual enplanement levels well over the one billion mark. Furthermore, the nation's fleet of large air carrier jets with 60 or more seats is expected to grow from 4,417 aircraft in 2000 to 6,313 aircraft in 2012, an annual increase of 3 percent.

Outpacing the large air carriers, regional commuter airline enplanements are forecast to increase from 79.6 million in 2000, and grow 5.7 percent a year, reaching 154.1 million in 2012. The most stunning growth rate is projected to occur in the regional jet fleet, with an expected rise from 569 aircraft in 2000 to 2,190 aircraft in 2012, an annual increase of 11.9 percent.

The cargo fleet is also expected to increase from 1,073 aircraft in 2000 to 1,760 aircraft in 2012, an increase of 4.2 percent a year.

It is projected that aircraft operations at FAA air traffic control centers that handle en-route operations will increase from 46 million in 2000 to 61.7 million in 2012. Given the projected increases over the next 12 years, the FAA is working with the aviation industry to develop a comprehensive plan of action that will provide solutions to both near- and long-term capacity challenges.

FAA Administrator Jane F. Garvey, who introduced Secretary Mineta at the agency's forecast conference, said, "The FAA is aggressively taking on the challenges of addressing our expanding airspace system needs for both the long and short term. However, to be successful in this undertaking, we must continually work with the airlines, the airports, and the entire aviation community. Partnership is key."

The FAA's efforts to modernize the air traffic control system include replacement of new computer systems and software at its facilities, programs to unleash the benefits of satellite navigation, development of equipment on board aircraft to increase critical flight and weather information for pilots, as well as programs to provide operators maximum flexibility to fly more timely and fuel-efficient routes.

To obtain a copy of the FAA forecast report, members of the public can contact FAA's Statistics and Forecast Branch at (202) 267-3355. The media can contact FAA's Office of Public Affairs at (202) 267-3883.

THE NUMBERS

The National Transportation Safety Board (NTSB) on March 16 released its report on U.S. civil aviation statistics for the year 2000. As reported, the number of accidents decreased from 2,053 to 1,975. However, the number of fatalities increased from 697 to 748.

The NTSB reported that 92 persons were killed in air carrier accidents (14 CFR 121 operations). There were 49 accidents involving Part 121 operators. This was an increase of one from the 48 in 1999. The 121-accident rate for 2000 was 0.440 per 100,000 departures compared to a rate of 0.449 in 1999.

Part 121 charter airlines had zero fatalities with a reported five accidents. There were four accidents in 1999. Their accident rate was 1.131 per 100,000 departures compared to 0.979 in 1999.

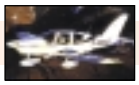
Part 135 scheduled airlines had five fatalities compared to 12 in 1999. The 2000 accident rate per 100, 000 departures was 1.231. The 1999 rate was 1.546.

Air taxis had 80 accidents in 2000. There were 73 in 1999. The number of fatalities in 2000 was 71. According to the report, this was "...almost double the total for 1999."

Their accident rate per 100,000 hours was 3.29 in 2000 compared to 1999's 3.23.

General aviation (GA) had 1,835 accidents in 2000. In 1999, the number of GA accidents was 1,913. The number of fatal accidents in 2000 was 341. The 1999 number was 342. The actual number of GA fatalities in 2000 was 592. The 1999 number of fatalities was 630. The GA accident rate per 100,000 hours was 5.96 compared to 6.49 in 1999.

The NTSB website contains the



complete report with supporting tables at <www.ntsb.gov/aviation/stats.htm>.

AIRPORTS AUTHORITY POLICE WAIT TABLES FOR CHARITY

Airport Police Officers, Marines, and Olympians teamed up to wait tables and raise money for Special Olympics Virginia. Officers from the Metropolitan Washington Airports Authority (MWAA) armed themselves with trays and aprons to support Special Olympics as part of the national Cops and Lobsters fund raising events at Red Lobster restaurant.

The officers hustled to wait tables during lunch and dinner, working for tips and donations that go to Virginia Special Olympics. United States Marines and Special Olympic athletes pitched in and helped raise more than $3,800 during one day on March 2nd and another day was planned for April 13th.

This is the seventh year that the Authority Police have been involved in this program and they have raised nearly $15,000 for Special Olympics. Authority police have been associated with Special Olympics Virginia for many years and raise funds with annual events such as Torch Run, Dulles Day Plane Pull, and Cops and Lobsters. On September 15th of this year, MWAA Police will host its largest fund raising activity, Dulles Day Family Festival, featuring the 9th Annual Plane Pull competition at Dulles International Airport.

Arport police officers, Marines, and Olympians armed themselves with trays and aprons to support Special Olympics.

MARINE CORPS BASE CAMP LEJEUNE WATER HEALTH SURVEY SEEKING FAMILIES

Because some of our readers may have been in the Marine Corps from 1968 through 1985, *FAA Aviation News* is reprinting part of a media release provided by Marine Corps Public Affairs. According to the release, Marine Corps officials are still seeking former Marine families who conceived children while living in base housing at Camp Lejeune, NC from 1968 through 1985. The Agency for Toxic Substances and Disease Registry (ATSDR), a public health service agency, is conducting a health survey concerning these children. While the Marine Corps has received many calls, they still have not achieved sufficient participation in the survey. To be successful, they hope to reach at least 80% of the estimated 16,500 eligible individuals. To date, there is still a need to reach approximately 4,000 people. The health survey focuses on compounds which are often used in dry cleaning or as degreasers and that existed in low amounts within the MCB Camp Lejeune water distribution system between 1968 and 1985. All wells that were found to contain these substances were closed in 1985. This survey attempts to enhance our understanding by gathering data for use in a scientific research study about the effects that these substances may have on children when exposed before birth.

If you or someone you know were pregnant and lived aboard MCB Camp Lejeune between 1968 and 1985, you are encouraged to participate in this survey whether or not your child has exhibited any adverse health symptoms. To participate, call the National Opinion Research Center (NORC) at 1-800-639-4270. Currently many individuals are calling, so we ask for your patience as it may take up to a week to get a return call.

Also, NORC can be reached via e-mail at: [4827-lejeune@norcmail.uchicago.edu].

For more general information about the survey, you can call the ATSDR at 1-888-422-8737, extension 5132. The Marine Corps has established a toll-free number at 1-877-261-9782. Information can also be found on the following Internet web pages:

<www.lejeune.usmc.mil/water/watersurvey.htm>,

www.usmc.mil/camlejwatersurvey> or <www.atsdr.cdc.gov.

Answers to Runway Safety Corner Quiz on page 25.
1-a, 2-c, 3-a, 4-b, 5-b

Editor's Runway

from the pen of Phyllis-Anne Duncan

Air Rage

Recently, on return from a restful week in Florida, I boarded an air carrier whose exit row seating is configured with three aft-facing, three forward-facing seats on each side of the aisle. I took my favorite spot—forward-facing, right side, next to the over-wing exit. I stowed my computer bag beneath the seat in front of me, settled back, fastened my seat belt, and opened a Frederick Forsythe thriller just purchased in the JAX book shop. In but a few seconds I heard an audible sigh and looked up to see a woman frowning at me.

"Are you going to sit there?" she asked. I responded that I was and received another sigh and an eye-rolling that would rival any adolescent expression of disgust. She took the seat facing me and bent down to put her computer bag beneath the seat.

"Is that your bag under there?" she asked. I replied it was. "Well, where am I going to put mine?"

"It'll fit right on top of mine," I replied. "I've stuffed a briefcase and a computer bag under there before with no problem."

No buying it. She rested her computer bag against the window exit. (Yes, you read that correctly.) She set her purse next to the computer bag, then removed her coat, folded that up, and lay it on the floor beside the other two items.

Okay, vacation was suddenly over. "Excuse me," I said, "this is the exit row, and those things can't stay there."

As the saying goes, if looks could kill, I'd be e-mailing this in from the great beyond. "I'm not moving them," she declared.

"The exit row has to be clear," I explained, hoping a flight attendant would soon arrive to tell us all the obvious.

"You can't tell me what to do with my belongings," she declared.

"Well, actually, I can, and I can prove that to you if you'd allow me to get my identification out of my briefcase."

Saved by the flight attendant, who arrived and said, "Oh, my, those things can't stay there. Who do they belong to?" Two other passengers who were sitting in this exit row and who had overheard the exchange pointed at the woman.

"I'll take care of these," the flight attendant said and took all three items away for stowage in the overhead compartments.

"Do you work for this airline?" the woman demanded. I replied that I didn't. "What gives you the right to have my things moved? What if they're stolen? I'll hold you responsible."

I gave her my name, said I worked for the FAA, and provided my supervisor's phone number, and suggested she give him a call. My offer of contacting my supervisor silenced her, but it was a passive-aggressive silence. Not only did the flight attendant have to remind her to fasten her seat belt, but she spent the first part of the one and a quarter-hour flight crossing her legs and kicking me in the shins until I learned to anticipate it and move my legs aside.

In one of those epiphanous moments rare for someone my age, I realized both of us were prime candidates for air rage. She because she resented the fact that the regulations applied to her, and I because I resented getting my shins kicked. Though her outward behavior was obviously the worse of the two of us, inside I was practically begging her to get in my face so that a lesson about air rage could be learned. (A moment of childishness that quickly passed, but don't even try to tell me you haven't been there.) Then, thankfully, I realized she was operating from ignorance. No one had ever explained to her the need for keeping the exit rows clear.

Airlines do not want to alarm people, so it's easy for them to say, "Seat backs upright, tray tables stowed, exit rows clear because the FAA says so." It troubles passengers to hear that all those things have to be done to assure that the aircraft can be exited in the event of an emergency evacuation. That and, lately, the emphasis in Congress and in the national news media has been on customer service, not safety. I mean, I like to get where I'm going, too, but when I hear that a flight is delayed because of a mechanical or weather, I'm glad, not outraged at a temporary inconvenience.

On other flights when I've asked people to stow their luggage, they've mostly been positive, saying, "You know, I've always wanted to know why I have to do that." When I explain the reason—not that they're simply regulations that have to be followed, that it's for their safety—people are understanding, even grateful for the knowledge. My fellow exit-row traveler that particular day wasn't interested in safety, which is too bad for her and for the shins of any future person sitting across from her.

I know it's not my job to assure that the exit row is clear—but it is my responsibility as an FAA employee to respond to any incident of non-compliance. Technically, the non-compliance would have occurred if the flight attendant hadn't cleared the exit row, but if I can help educate the public on a safety issue, that spares them the time to take care of their safety checks. Many times we forget that safety is their primary job—not serving beverages and food or stowing your items in the overhead compartment.

Well, my supervisor never heard from Ms. Shin-Kicker, and I really hope the rest of her day was better than its beginning—sitting across from a vacationing FAAer who was concerned about her safety.

'Til next time…

U.S. Department
of Transportation

Federal Aviation
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