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Teaching the Teachers

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TEACHING THE TEACHERS



The remains of the Husky™ Aviat Av-1B from the June 3, 2007 accident. U.S. Forest Service Photo courtesy of the Helena Flight Standards District Office.

BY JAMES WILLIAMS

In a previous article (“Beyond the \$100 Hamburger,” May/June 2007, available online at http://www.faa.gov/news/aviation_news/2007/media/MayJune2007.pdf), I touched on the importance of preparation and training, especially for flying in mountainous areas. One of the resources mentioned was *The Mountain Flying Bible* by Sparky Imeson. Mr. Imeson’s book is widely regarded as essential for any pilot thinking of flying in the mountains.

A few weeks later I read about an accident in Winston, Montana, on June 3, 2007. Media reports told a story of a pilot crashing with an in-

structor on board due to a down-draft. As the story unfolded I learned that instructor was none other than Sparky Imeson and the accident occurred during a mountain flying safety seminar.

The National Transportation Safety Board (NTSB) conducted an especially fast investigation of this accident, issuing its probable cause on July 25. The Board cited “the pilot’s failure to maintain an adequate airspeed while maneuvering at low altitude in a canyon that led to a stall” and “the pilot’s decision to fly along the canyon wall at a low altitude and low energy state....” (NTSB-LAX07CA187) This was a troubling event because it happened in a training environment. As aviators, we

pride ourselves on our strict training to rigid performance standards. But in training there should always be safety built into the system. According to the report, the pilots were flying 300 to 350 feet above the canyon in order to practice tight canyon turns. They were expecting to gain added lift over a patch of warm rocks. Instead, they crashed into the rocks after stalling, when the anticipated lift never materialized. As evidenced by the rapid turn around by the NTSB, the “how” of this accident is pretty simple, but the “why” is more difficult to understand. The goal of recurrent training, and all training for that matter, is to build proficiency and enhance safety. With that in mind, why would any instructor op-



erate so closely to the limit, as to have no safety margin, if things don't work out exactly as planned?

In an effort to answer these questions I contacted the FAA Aviation Safety Inspector investigating the case and Mr. Imeson. Both provided many useful details and valuable insights. Mr. Imeson, in particular, provided a detailed narrative covering the incident and some of the lessons learned from the experience. For the sake of training and safety, Mr. Imeson put issues of pride aside and critically examined his own actions and those of his fellow pilot. Just as importantly, we must recognize that, if it can happen to him, it can happen to any of us. For a complete copy of Mr. Imeson's account, you can visit his Web site at <<http://www.mountainflying.com/>> (it should be posted by the time this article reaches print).

According to his account, Imeson initially set a comfort level of no lower than 500 feet above ground level (AGL) for the flight to allow for a safety margin. Later in the flight, Imeson revised his assessment. As he stated, "After flying more than 40 minutes and evaluating the aircraft performance, I told J.C. [the pilot/aircraft owner] that I would revise my comfort level down to about 300-feet AGL." Imeson also related the accident sequence from his perspective.

Prior to the crash we flew along the side of a large bare and rocky hillside on our right. I would estimate that at this point we were about 500 feet AGL. This was about two miles up the South Fork of Beaver Creek, as the crow flies.

I was comfortable and maybe somewhat complacent, while looking down at my lap to check

the lesson plan to determine what would next present a challenge for J.C. to perform.

While I was looking down, J.C. transitioned to our left and descended to a small ridge to the south.

When I looked up, we were nearly over this small ridge. I was started to see we were only about 20 feet above snags that appeared to be at least 80 feet AGL.

There was a small drainage on the south side of this ridgeline. I should have said, "Let's make a left turn and get out of here." Instead it turned out to be a grievous mistake to state loudly, "We've gotta get out of here." Someone yelling like that would have scared me (and I'm fearless).

This must have startled J.C., because he made an immediate climbing right turn. Although I pushed on the stick and yelled, "Nose down, nose down," the airplane stalled.

It took some time for the pilots to be located. The aircraft was initially reported missing by Mr. Imeson's wife, Siew Hwa, at 3:30 pm on the day of the accident. The crash site was located at 9:40 am the next day, nearly 23 hours after the crash and

just over 18 hours after the aircraft was reported missing. According to the Associated Press, Mr. Imeson may have made this more difficult by attempting to walk out of the accident area in search of cell phone coverage. Initial reports in the press stated that in more than 18 hours of walking over two days he covered only about 1.5 miles due to his injuries and the rough terrain. Mr. Imeson later retraced his path with a handheld GPS and determined that he covered over 5 miles in that period. From his retracing, he also determined that he had only about $\frac{3}{4}$ of a mile left to reach houses with telephones. His concern was that the other pilot's injuries may be more severe than initially visible. He explained his decision as follows, "I figured that if the wreckage was located during an aerial search, then J.C. would be rescued; if not, I had a chance to expedite the rescue effort. So without reservation I told J.C. that I would head down the creek."

In a safety seminar environment, there should be controls in place to quickly ascertain not only that an aircraft is missing, but also where it could be located. One way of accomplishing this is through the use of Visual Flight Rules (VFR) flight plans. No



The engine, propeller, and cowling are among the few portions of the aircraft that remain easily identifiable. U.S. Forest Service Photo courtesy of the Helena Flight Standards District Office.



flight plan was filed for the accident flight. "Through my complacency we had not filed a flight plan." Imeson said. He continued, "I told my wife we were heading west and would return in about an hour." Imeson says that the route of flight was more to the northwest and that he feared this would delay rescue. This also factored into his decision to leave the scene.

In researching flying seminars and the safeguards used, I found one in particular that is worthy of noting and that was the Beechcraft Pilot Proficiency Program (BPPP). The BPPP is closely associated with the American Bonanza Society (ABS). The BPPP provides model specific training for Beechcraft pilots via a two and a half day initial course and a two day recurrent course. The courses are held about 12 times a year at various locations around the country. I spoke with Fred Brooks, a member of the BPPP Board of Directors in charge of safety. I also spoke with other members of BPPP while at EAA® AirVenture® 2007 this past summer.

One of the keys to safety is standardization. All BPPP instructors are standardized every two years and are required to participate in nine of the 12 seminars. This provides an experienced and proficient instructor corps that is well-versed in tried and tested Standard Operating Procedures (SOPs). The strong SOP concept provides a uniform and rigorous training environment that will stay with the student, much like air carrier training systems. The concept of initial and recurrent training is also modeled on the air

Flying Clubs

There are numerous type clubs and regional clubs that offer training seminars on various topics. One of the best is the Mountain Flying Seminar offered by the Colorado Pilots Association. The following is a list of some clubs that offer training seminars and their contact information. To know more about their specific programs, please contact them directly.

Beechcraft Pilot Proficiency Program

<<http://www.bppp.org/>>
Phone- 970-377-1877

Cessna Pilots Association

<<http://www.cessna.org/>>
Phone- 805-934-0493

Cirrus Pilot Proficiency Program (COPA)

<<http://www.cirruspilots.org/public/cppp/schedule.html>>

Colorado Pilots Association

<<http://www.coloradopilots.org/>>
Phone- (303) 367-0670

Mooney Aircraft Pilots Association (MAPA)

<<http://www.mooneypilots.com/>>
Phone- (210) 525-8008

Sparky's Lessons Learned

By Sparky Imeson

1) Probably the most important item to carry is a PLB with built-in GPS. The ELT in the *Husky* burned. Had it worked, the statistics say it takes around 8-10 hours for it to "pinpoint" you within about 400-square miles. Compare this to the two to four *minutes* and the *three square meter* accuracy of the PLB.

2) Wear a flight vest with some survival equipment. I found the "fishing" vests are too short and place all the weight of the contents on the neck when in a sitting position. Try a photography vest. These are longer and the weight rests on the thighs, while seated. Very comfortable.

3) None of the survival gear does much good sitting in the baggage compartment or draped over the pilot's seat, so wear the vest. When you get out of a burning airplane, the only survival gear you will have is what you are wearing.

4) It is a good idea to have a survival kit. I've carried one for the past 40 years, but not with the intention of using it after crashing. I thought it wise to have it in case I have a flat tire, encounter a mechanical problem, or become weathered in at a backcountry airstrip.

5) File a flight plan. I know with the delays encountered on the phone it is sometimes frustrating — but file a plan with some responsible person, if you can't get through to Lockheed Martin.

6) If you modify your route of flight, tell someone.

7) Never loosen the shoulder harness to be able to see around the pilot. Use seat cushions instead.

8) Forget the "Any landing you can walk away from is a good landing ..."

9) A new innovative aid is the SPOT satellite messenger. This is a small unit. It's inexpensive at \$149 for the unit and \$99 per year subscription for the 911 feature. It works where you can't get cell phone coverage.

10) If you are a flight instructor, arm wrestle with your student before going out flying. If the student wins, don't fly below 2,000 feet AGL.



usual stick mate had a flight to California later that day.

I have personal rules about not flying single pilot into weather or unfamiliar high-density airports and about not exceeding a 12-hour duty day with passengers on board. Still, I figured this flight would be fine given the excellent weather and my 10 trips to MEM in recent years. I figured I would have a 12-hour day and be able to depart for home during daylight hours.

My two passengers arrived shortly before 0700. I loaded them up, gave the safety brief, climbed in the cockpit, ran through the checklist, and fired up. As I started to taxi, one of the passengers said two more passengers were coming. I ran the engines to burn off some fuel, then shut down and removed the nose ballast required for weight and balance for single-pilot operations. I selected one passenger to ride up front with me and instructed him on the oxygen and seatbelt. We waited nearly an hour for the other two passengers. We got underway at 0757, about an hour behind schedule.

The flight to MEM was uneventful, except for winds that were not as favorable as forecast, which added to our tardiness. On the arrival and descent into MEM the vectors started for traffic creating further delay. We landed on 36R and taxied to the FBO. After a mix up with the rental car and another mix up with passenger items being incorrectly loaded into the crew car, the passengers finally got underway. They had five minutes to make the 20-minute run downtown to deliver their presentation.

After lunch, I returned to the FBO, fueled, prepared the aircraft, and then worked on my computer awaiting the return of my passengers for a planned 1700 departure. At about 1745 a passenger called to tell me they were going to stop for dinner and should be at the FBO at about 1830. They arrived at 1910. We loaded up and at approximately 1930 I contacted MEM ground for taxi, IFR to "XYZ." It took three attempts to make contact with ground; the controller was clearly

working several frequencies and getting frustrated.

I finally got clearance to taxi to 36L via taxiway Alpha and to hold short of taxiway Sierra. After a short hold at Sierra, I was instructed to continue taxiing to 36L via taxiway Alpha, then November. I monitored my progress on the airport diagram on my new multi-function display (MFD) on the panel. I remember thinking that this has got to be the best thing since heated wings. As more aircraft acquire this equipment, it should really cut down on the incursion numbers. How ironic.

I zoomed in on the airport diagram to see the taxiway letters better, to the point that I could only see the taxiway that I was on (November). It was a busy place: I was following one airliner, and had to wait for another to push back. I wound up following both airliners to runway 36L. I switched over to tower on 128.425. It seemed strange that the frequency was so quiet. I thought perhaps the tower had combined tower frequencies just as ground control had combined frequencies earlier during the taxi.

As I approached M2, a traffic alert on the MFD blanked out the airport diagram. I called the tower twice, with no reply, then switched to 119.7. Again no reply. I switched to 118.3 only to learn that I should be on 128.425.

In the process of switching frequencies I found I needed my "cheaters" (eyeglasses) to help with the low light, small print conditions. But with the glasses on, I couldn't focus, because I discovered that one of the lenses had popped out and was nowhere in sight. Annoying, but I did not have time to look for it.

Right about then, the tower cleared me for a 36L departure. I dimmed the overhead light, and reminded my passengers to be sure their safety belts were fastened. I remember being irritated because it was difficult to see. I taxied up to taxiway Mike—or so I thought—and went through the line-up items. Then I turned right, lined up on the centerline lights, and powered up.

The problem was that I accelerated down what I thought was 36L...but it wasn't. If I had just changed the airport diagram scale on my MFD, or been a little more vigilant, I would have seen that I was lined up on taxiway Mike. Between doing the speed checks, crosschecks, and looking for traffic, I failed to realize that I was not on 36L until just prior to rotation. I suddenly realized there were taxiway lights on both sides. My first thought was to get off that taxiway immediately. The quickest way off was to rotate, so I pulled back the yoke and side stepped to the runway. Right about then, the controller advised me that I had just departed from the taxiway and that he had a number for me to call after landing. It was the longest two hours and fifty minutes I have ever flown.

Why It Happened

I didn't think it could happen to me, but this incident is a perfect example of what we have all heard at many aviation schools, seminars, cockpit resource management courses, and safety stand-downs about the "snowball effect." It had been a day when nothing seemed to be going right. Delays, extended duty, fatigue, lack of nourishment, a hurry to get going all combined to create what could have been a fatal mistake.

We tend to look at hours of duty to gauge how performance is affected, but what happens before duty hours begin can have a major impact on how the duty day progresses. Without proper rest and nourishment, the cards began to stack against me. My day grew longer because I slept poorly. I skipped breakfast, so the only meal I had was lunch in MEM. I have no doubt that both factors played a part in this scenario.

As you might imagine, I've done a lot of "if only" thinking as well. The chain leading to this incident could have been broken at many points along the way. It could have been avoided:

- **IF** I had taken a copilot.



- **IF** we had been on schedule (and in daylight conditions)
- **IF** I had scaled the airport diagram so as to see the bigger picture.
- **IF** I had asked the tower to dim the lights that were distracting me.

But most of all:

- **IF** I had not been in such a hurry to depart, I would have realized that things were stacking up, slowed down, and double checked myself. This could have made the difference.

This has been the toughest period of my aviation career, but I take comfort in two aspects of this experience. First, and most important, no one was harmed. Second, I have a chance to share my story with other aviators. If just one other pilot benefits by avoiding my mistakes, then it will have been worth writing.



The pilot involved in this story is a 12,000-hour ATP corporate pilot who has been flying since 1969. He is typed in C500, HS125, C525S, CV240, CV340, and CV440. He flew more than 35 different aircraft before retiring from a thirty-year government career in 2001. He has flown in the U.S. (including Alaska), Canada, Mexico, Central America, and South America. Since 2001, he has flown corporate as well as two seasons of fire fighting. His experience includes thousands of hours flying at night and on instruments. He also has hundreds of day and night intercepts on aircraft utilizing F-16 intercept radar, Forward Looking Infrared night flying in close formation. He has never scratched an aircraft, never busted a check ride, had no incidents, accidents, or violations, and, until now, never had a need to fill out a NASA report.

Runway Safety

Runway Incursions have been a top safety priority for the FAA for quite some time. The airport surface is one of the most dangerous places an aircraft can be. Nowhere else are so many aircraft so close to each other and at such critical phases of flight. Add in other vehicles and personnel on the airport surface, such as airport authority vehicles, airport maintenance crews, and possibly construction crews, and it's no wonder that runway safety is so high on our list of priorities. As Associate Administrator for Aviation Safety Nicholas Sabatini says "We at FAA track runway incursions and we track them closely." Runway incursions are a threat to everyone involved in aviation as Sabatini states "...no one who flies is exempt."

To counter this threat, FAA has pushed forward many initiatives over the years. These range from programs aimed at studying incursions after they happen, to programs providing direct information to pilots to help prevent them. Last year, former Administrator Marion C. Blakey called for a summit with representatives from across FAA and industry to determine what steps could be taken immediately to reduce the risk. The group agreed to the following five point short term plan:

- Within 60 days, teams of FAA, airport operators, and airlines will begin safety reviews at the airports where wrong runway departures and runway incursions are the greatest concern. The FAA is compiling the list of 20 to 30 airports based on a variety of safety risk factors, including the record of past incursions.
- Within 60 days, disseminate information and training across the entire aviation industry.
- Within 60 days, accelerate the deployment of improved airport signage and markings at the top 75 airports, well ahead of the June 2008 mandated deadline.
- Within 60 days, review cockpit procedures and air traffic control (ATC) clearance procedures. This may include changing cockpit procedures to minimize pilot activities and distractions, while an aircraft is moving on the ground and to make ATC instructions more precise.
- Implement a voluntary self-reporting system for all air traffic organization safety personnel, such as air traffic controllers and technicians.

The group also discussed mid-term and long-term goals and strategies for preventing incursions. Some of the FAA's long term technological solutions include: cockpit warning systems, runway status lights, and Airport Surface Detection Equipment, Model X (ADSE-X). While some of these systems are coming online now, widespread deployment could take years and may not be possible in every location.

These improvements will add to an already impressive reduction in runway incursions. FAA exceeded its goal of reducing serious runway incursions by 25% during fiscal year 2007. There were only 24 serious incursions for more than 61 million operations. This equates to one incursion for every 2,545,000 operations, which surpasses the agency goal of one incursion per every two million operations. This is a continuation of work by both FAA and industry, which has led to a 55% reduction in serious incursions since fiscal year 2001.

Remember, our best defense against runway incursions will always be alert and conscientious pilots and controllers.

For more information on Runway Incursion Safety, see the FAA Web site at <www.faa.gov/runwaysafety>.



Scenario-Based Practical Test Standards

BY TOM GLISTA

Question: How are most practical tests for a certificate or rating conducted?

Answer: Evaluating maneuvers and procedures.

For example in the private pilot certification, the applicant is asked to plan a cross-country flight, which he/she knows will not be fully utilized. Then the examiner administers an oral exam on regulations, aircraft systems, weather, airspace, performance, weight and balance, and aeromedical factors. Once past that hurdle, the applicant goes out to fly. The planned cross-country flight begins, but soon is diverted to another airport (which again may not be completed). From there the applicant is put under the hood for some maneuvers and then followed by visual steep turns and stalls. The examiner pulls the engine to idle and the applicant goes through engine failure procedures. When close to the ground, the applicant breaks off the landing and completes ground reference maneuvers, then flies back to his/her home airport for take-offs, landings, and go-arounds. If the applicant maintains certain parameters (+/- 100 feet, +/- 10 degrees, +10/-5 knots), he/she passes.

Is this how we fly day-to-day? Depending on which statistics you look at, between 75% and 85% of all general aviation fatal accidents are attributed to human factors (what we used to call "pilot error"). However, I believe most of them are due to the lack of Higher Order Thinking Skills (HOTS). These skills are aeronautical decision making, risk management, automation management, situational awareness, and Controlled Flight into Terrain (CFIT) awareness. Yes, the National Transportation Safety Board (NTSB) classifies many accidents on lack of "stick and rudder" skills. But, when a pilot loses control of a Cessna 172 on landing with a 35 knot cross-

wind, is it really a stick and rudder skill problem or an aeronautical decision making and risk management problem? So to reduce accidents, we must be able to evaluate applicants' Higher Order Thinking Skills. But how, during a maneuvers-based practical test, do you evaluate HOTS? What we need is a better way for examiners to evaluate the applicant's HOTS.

We are always tweaking the FAA's Practical Test Standards (PTS) to meet training and testing needs. For example, around 2002 the FAA started adding CFIT and Aeronautical Decision Making (ADM) as a special emphasis item. In the 1990s we incorporated a requirement that the examiner develop a written "plan of action" (POA). "The 'plan of action' shall include all TASKs in each AREA OF OPERATION..." The intent was that the practical test be conducted, as much as practical, as a scenario. Unfortunately, some examiners' and inspectors' written POAs were to conduct Area of Operation 1 first, Area of Operation 2 second, etc. Did it meet the letter of the PTS? Yes. Was it what we intended? No. What we need to do now, is clarify what we originally intended.

Why do we need to transform the PTS to a scenario-based test? Here are just a few reasons. Scenario-based training has shown to be more effective in developing HOTS than maneuvers-based training. The air carrier industry and military have been training and testing this way for decades, and the FAA/Industry Training Standards (FITS) program is promoting general aviation to adopt scenario-based training. Research into the FITS training methodologies show that it is more effective (see <http://www.faa.gov/education_research/training/fits/research/>), but there is a disconnect between scenario-based training and a maneuvers-based test. Another reason is how, in a maneuvers-based test, does

the inspector or examiner evaluate higher order thinking skills? Most of this kind of test is a rote stick and rudder skill test without decision making opportunities. A scenario allows the applicant to make decisions, thus the examiner/inspector can evaluate the applicant's higher order thinking skills. Finally, scenario-based testing should help encourage the training community to adopt scenario-based training methodologies, including emphasis on HOTS. To help training providers, the FITS program has developed generic stand-alone syllabi for all of the tests. You can get copies (free) at <http://www.faa.gov/education_research/training/fits/training/generic/>.

The FITS Technical Team was tasked to develop recommendations for the FAA to transform the following PTS to a scenario-based test: Private Pilot Airplane Single and Multi-engine; Commercial Pilot Airplane Single and Multi-engine; Instrument Airplane; and Flight Instructor Single Engine, Multi-engine, and Instrument. These recommendations are complete. The recommendations included changes in the wording of the PTS, example scenarios, and a Judgment Assessment Matrix for each practical test.

Your next question is, "What's a Judgment Assessment Matrix?" This matrix is a tool that breaks down the components of judgment into individual parts for scoring. Consequently some of the subjectiveness is taken out of evaluating judgment and makes it more objective. Shown is part of the DRAFT Private Pilot Airplane Single Engine Land and Sea Judgment Assessment Matrix. To use it, the examiner only needs to circle the tenet under the level of accomplishment that the applicant achieves (worst action-Red, Okay action-Yellow, Best action-Green) NOTE: This matrix may also be valuable to an instructor in his or her everyday teaching.



| <p style="text-align: center;">DRAFT DOCUMENT</p> <p style="text-align: center;">JUDGMENT ASSESSMENT MATRIX</p> <p style="text-align: center;">PRIVATE PILOT For Airplane Multi-Engine Land and Sea</p> | | Worst Course Of Action | | | | | | Okay Course Of Action | | | | | | Best Course Of Action | | | | | |
|--|----------------------------------|--|----------------------|----------------------------|------------------------------------|---|----------------------------|--|----------------------|----------------------------|------------------------------------|---|----------------------------|---|----------------------|----------------------------|------------------------------------|---|----------------------------|
| | | Action of Pilot-In-Training Is The Worst Decision Given The Dynamics Of The Flight Environment | | | | | | Action of Pilot-In-Training Is Satisfactory Given The Dynamics Of The Flight Environment | | | | | | Action of Pilot-In-Training Is The Best Decision Given The Dynamics Of The Flight Environment | | | | | |
| | | Judgment Based Upon The Following SRM Tenets | | | | | | Judgment Based Upon The Following SRM Tenets | | | | | | Judgment Based Upon The Following SRM Tenets | | | | | |
| | | Task Management (TM) | Risk Management (RM) | Automation Management (AM) | Aeronautical Decision Making (ADM) | Controlled Flight Into Terrain Awareness (CFIT) | Situational Awareness (SA) | Task Management (TM) | Risk Management (RM) | Automation Management (AM) | Aeronautical Decision Making (ADM) | Controlled Flight Into Terrain Awareness (CFIT) | Situational Awareness (SA) | Task Management (TM) | Risk Management (RM) | Automation Management (AM) | Aeronautical Decision Making (ADM) | Controlled Flight Into Terrain Awareness (CFIT) | Situational Awareness (SA) |
| Private Pilot - (Multi-Engine) Area Of Operation & Subtask | | | | | | | | | | | | | | | | | | | |
| I. | Preflight Preparation | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| II. | Preflight Procedures | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| III. | Airport Operations | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| IV. | Takeoffs, Landings, & Go-Arounds | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| V. | Performance Maneuvers | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| VI. | Ground Reference Maneuvers | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| VII. | Navigation | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| VIII. | Slow Flight & Stalls | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| IX. | Instrument Maneuvers | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| X. | Emergency Operations | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |
| XI. | MultiEngine Operations | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA | TM | RM | AM | ADM | CFIT | SA |

Another part of the work is teaching the inspectors and examiners how to give a scenario-based practical test. Under today's PTS, an examiner can give a scenario-based PTS. But I believe what is stopping them is lack of guidance and training. So the FITS team is also developing recommended changes to the FAA inspector guidance and the *Designated Pilot and Flight Engineer Examiners' Handbook* (FAA Order 8710.3, as amended), and training for inspectors and examiners on how to construct and conduct a scenario-based practical test.

We are currently working towards implementation. First, as FITS Program Manager, I reviewed the recommended changes to the PTS developed by the FITS Technical Team. This included the example scenarios. Development of the Judgment Assessment Matrix included use and evaluation by flight instructors, checks pilots, and designated examiners. It went through at least 20 revisions before we came up with this format. Once this was done, all documents were sent to a FITS Review team for review and comment. This team includes representatives from across the GA spectrum including National Asso-

ciation of Flight Instructors (NAFI) Master Certificated Flight Instructors; representatives from the National Air Transportation Association (NATA), insurance industry, Aircraft Owners and Pilots Association (AOPA), AOPA-Air Safety Foundation (ASF), Cirrus Design, Cessna, major aviation universities, and small part 61 flight training providers; and pilot examiners. After those comments have been addressed, the final draft is sent back to me for final review and approval. This is where we stand today (I am writing this in November 2007).

The next step is to have the final recommendations reviewed by the General Aviation Joint Safety Committee's Personal Transportation Subgroup. This subgroup includes members for the major general aviation manufacturers, AOPA, AOPA-ASF, NAFI, General Aviation Manufacturers Association (GAMA), Small Aircraft Manufacturers Association (SAMA), shared ownership organizations, insurance representatives, training developers, National Business Aircraft Association (NBAA), universities, part 61 pilot school representatives, and others. It also includes people from the FAA's offices of Small Airplane Directorate, Airman Testing Standards, Certifica-

tion and General Aviation Operations, Accident Investigation-Safety Analysis, and others. Once a consensus is reached, the changes can be implemented.

The Airman Testing Standards Branch, which is in charge of changes to the PTS, not only oversees the PTS, but several handbooks as well. Many of these handbooks and PTS are on a revision cycle (FYI-the last time the Private Pilot PTS was revised was in 2002.). Due to limited resources, we must work within their cycle to implement the changes. Additionally, we must get the training and changes to the guidance implemented at about the same time.

This change to a scenario-based PTS is really an enhancement and clarification of what the FAA intended back in the 1990s. Changes are coming, but don't panic. They will be slow and purposeful. This time we will include all the tools to handle the changes.



Tom Glista is an Aviation Safety Inspector and the FITS Program Manager in Flight Standards Service's General Aviation and Commercial Division.



CHECKLIST

Know Your NOTAMs: Introducing the New “Super D”

BY SUSAN PARSON

The “D” (distant) NOTAM is changing! As part of an ongoing effort to improve the aeronautical information management system, the FAA is making changes that will help you find the information you need more easily. As of January 28, 2008:

- ✓ All “local” (L) NOTAMs will be incorporated into the new D format, except for military “local” (L) NOTAMs.
- ✓ The new D NOTAM definition will include information on taxiways, ramps, and aprons.
- ✓ All D NOTAMs will include one of 12 keywords, which will make it easier for you to sort, and spot, the specific data you need.

D NOTAM KEYWORDS

You may want to think of the D NOTAM keywords in terms of several broad categories: Airports, airspace, services, and miscellaneous. Let’s take a closer look.

Airport-related keywords: Five of the 12 D NOTAM keywords are specifically related to airports.

✓ **AD (Aerodrome):** According to its official definition, an “aerodrome” is a defined area on land or water that is intended for use for the arrival, departure, or surface movement of aircraft. The “AD” keyword will thus apply to any notice concerning hazards to aircraft operations on, or within, five statute miles (SM) of an airport, heliport, helipad, or maneuvering area.

✓ **APRON / RAMP:** The “apron” or “ramp” is a defined part of a land aerodrome that is intended to accommodate aircraft for the purpose of loading or unloading passengers, mail, cargo, and fuel or for parking or main-

tenance. The new D NOTAM format will use the keywords APRON or RAMP for any hazard associated with this part of the aerodrome. (*Note: Although “apron” and “ramp” are largely synonymous, the two separate keywords will be used for consistency with how these areas are described in specific locations and publications.*)

✓ **RWY (Runway):** This keyword applies to takeoff and landing surfaces, along with their associated lighting and signage.

✓ **TWY (Taxiway):** The TWY keyword will be used in D NOTAMs that address conditions pertaining to single or multiple taxiways. A D NOTAM that uses this keyword will identify each taxiway by letter or by letter and number.

Airspace-related keywords: Two of the 12 D NOTAM keywords pertain to airspace.

✓ **AIRSPACE:** Any hazard associated with special use airspace, aerial refueling, unmanned rockets, balloons, fireworks, parachute jumping, sky diving, or high altitude operations will be identified by the AIRSPACE keyword. The “USD” and “UAR” NOTAMs associated with Standard Instrument Departure (SID) procedures and Standard Terminal Arrival (STAR) procedures, respectively, will also be coded with the AIRSPACE keyword.

✓ **OBST (Obstructions):** The OBST keyword will apply to D NOTAMs on such hazards as moored balloons, towers, cranes, stacks, etc. This keyword will also address outages of obstruction lighting within a five SM radius of an airport, or any outage beyond the five SM radius that

pertains to an obstacle exceeding 200 feet above ground level (AGL).

Service-related keywords: Three of the 12 D NOTAM keywords apply to communication, navigation, or other services.

✓ **COM (Communications):** The COM keyword will be used to report the commissioning, decommissioning, outage, unavailability, and ATC frequency status of a communications outlet.

✓ **NAV (Navaid):** The NAV keyword will address the status of navigation aids, including VOR, ILS, GPS, WAAS, NDB, TACAN, MLS, etc.

✓ **SVC (Services):** The SVC keyword will provide information on the status of facilities and services. Examples could include fuel availability, or service hours for a part-time control tower.

Miscellaneous keywords: The final two of the 12 D NOTAM keywords will be used for information that does not clearly fit into the other 10 keyword categories. Rest assured, though, that the use of these “miscellaneous” keyword categories will be strictly limited:

✓ **(O) (Other aeronautical information):** The (O) keyword will be used for aeronautical information that may be useful to pilots even though it does not meet defined NOTAM criteria. For example, the (O) keyword might be applied to the controlled burn of a structure near the airport, but outside the five SM area that defines “aerodrome.” (Note: Any hazard within five SM of an airport would be reported using the “AD” keyword.)



✓ (U) (Unverified Movement Area): This keyword will apply to movement area or information that meets NOTAM criteria without having been confirmed by appropriate authorities (e.g., airport manager). Use of this keyword, however, is limited to cases where Letters of Agreement exist.

DECODING THE NEW D NOTAM

All D NOTAMs will follow a set format with several specific elements:

1. An exclamation point (!)
2. Identifier for the accountable location (e.g., IAD)
3. Identifier for the affected location or nearest public-use airport (e.g., IAD)
4. Keyword (*one of the 12 described*)
5. Surface identification (*if appropriate to the subject of the D NOTAM*)
6. Condition being reported
7. Effective time(s) of the condition (*reported as WEF or “when in effect”*)

The “surface identification” element is used only if needed. For example, it provides the runway identification for any runway-related NOTAMs or the taxiway identification for taxiway-related NOTAMs.

Now let’s look at a specific example, which would appear as follows:

!MIV MIV RWY 10/28 CLSD WEF 0802011200-0802121600

| HEADER | | | BODY | | | FOOTER |
|--------|----------------------|-------------------|---------|------------------------|-----------|----------------------------------|
| (!) | Accountable Location | Affected Location | Keyword | Surface Identification | Condition | Effective Times |
| ! | MIV | MIV | RWY | 10/28 | CLSD | WEF 0802011200- 0802021600 |

The (WEF) time includes both a “start” set and an “ending” set. The digits in each pair always appear in the following order: Year (2 digits) – month (2 digits) – day (2 digits) – Zulu (UTC) time (4 digits). Using the example above:

| | Year | Month | Day | Time (UTC) |
|--------------|------|-------|-----|------------|
| Start | 08 | 02 | 01 | 1200 |
| End | 08 | 02 | 02 | 1600 |

Putting it all together, the D NOTAM above advises pilots that Runway 10/28 at Millville Municipal Airport (MIV) will be closed from 1200Z (0800 EDT) on February 1, 2008, until 1600Z (1200 EDT) on February 2, 2008.

Pointer NOTAMs

When you are looking at the NOTAMs included in your preflight briefing package, you might notice D NOTAMs in the new format that look something like this one: **!CPR CPR AIRSPACE SEE DDY 12/045 PJE WEF 0802141400-0802141830**

Taking a closer look:

| HEADER | | | BODY | | | FOOTER |
|--------|----------------------|-------------------|----------|------------------------|----------------------|----------------------------------|
| (!) | Accountable Location | Affected Location | Keyword | Surface Identification | Condition | Effective Times |
| ! | CPR | CPR | AIRSPACE | n/a | See 12/045 PJE | WEF 0802141400- 0802141830 |

This D NOTAM is an example of a “pointer” NOTAM. As shown in the example above, a pointer NOTAM is a D NOTAM that “points” to a published D or FDC (Flight Data Center) NOTAM. All pointer NOTAMs will include the keyword appropriate to the condition or event in the reference NOTAM. In this example, the affected location is Natrona County Airport in Casper, Wyoming. The keyword indicates that the reported condition or event is related to airspace, and that it is in effect from 1400Z



on February 14, 2008, until 1830Z on February 14, 2008. The text (body) section of the D NOTAM points to a published NOTAM, 12/045, which pertains to a parachute jumping exercise (PJE).

The purpose of a pointer NOTAM is to make pilots aware of the existence of a condition or event that might require a lengthy description, and “point” to the location of more detailed information. This practice is intended to help reduce the volume of NOTAM information provided in a standard briefing. Pilots, who will be operating in this airspace during the “WEF” time, will know where to go to get detailed information, while pilots who are not affected can move on.

SOURCES AND RESOURCES

If you were stumped by the “PJE” notation in this particular example, an appendix of all approved NOTAM contractions is just a mouse click away at http://www.faa.gov/airports_airtraffic/air_traffic/publications/atpubs/NTM/notpd5.html

Another handy Web site to bookmark in your favorite Web browser is the home page for the FAA’s Aeronautical Information Management Service, which is at <http://nfdc.faa.gov/aimnews/index.html>

This FAA “AIMNEWS” page provides the latest information about the ongoing work to improve and enhance the overall aeronautical information service for the benefit of you, the FAA’s customers. It also includes downloadable information on the new D NOTAM format that you can print and keep handy while you get accustomed to the new structure. Similar information is available in a short online course at www.faasafety.gov, which can be used for credit in the FAASafety Team’s new Pilot Proficiency (WINGS) program.

Check it out, and fly safely!



Susan Parson is a special assistant in Flight Standards Service’s General Aviation and Commercial Division.

DON'T BE SHUT OUT

What do Pheasant Hunting Season in South Dakota, Penn State football, Notre Dame football, NASCAR® racing, and February 3, 2008, have in common? If you are a pilot, you might have an idea. If you have no idea, the answer is simple. Each event, including the February 3, 2008, Super Bowl™ XLII football game in Glendale, Arizona, will have implemented an FAA Special Traffic Management Program (STMP) to control the flow of non-scheduled instrument flight rule (IFR) aircraft in and out of the event area. FAA uses a slot reservation system to manage that flow. What this means for pilots planning on flying themselves into a STMP event is that the pilot must review the appropriate *Notices to Airmen* (NOTAM) for the designated event or time period and comply with the procedures outlined in the NOTAM. The NOTAM will list the airport or airports involved, the date or dates the STMP is active, the specific times, and any special routing procedures. In addition, the NOTAM will include any special guidance or restrictions.

Since each event is different, pilots must review the appropriate NOTAM for specific procedures, dates, and how to make and confirm a reservation. For more information about filing an Internet STMP, or e-STMP reservation, pilots can check the following Internet site: <http://www.fly.faa.gov/estmp/index.html>. The site explains the process, how to apply for a password, and how to apply for an arrival and departure slot reservation.

The key to complying with a STMP reservation program is filing the reservation in a timely manner and the issuance and receipt of a confirmation number for a particular reservation slot. The confirmation number is the key to getting into and out of the STMP area.

With the start of 2008, pilots can expect to find STMP in place for many special events in the year ahead, such as major air shows, sporting events and other high profile mass gatherings of people and aircraft. To make sure your reservation will be available when you want it, you need to review the appropriate NOTAM reservation information, make your reservation as far in advance as permitted by the NOTAM, and confirm that reservation. Don’t be shut out for failing to follow the STMP guidance. A pair of unused tickets is a terrible price to pay for not planning for your STMP arrival reservation.



MOST WIDELY USED NOTAM CONTRACTIONS

| | |
|---------|---|
| ABN | Airport Beacon |
| ABV | Above |
| ACFT | Aircraft |
| ADZD | Advised |
| ALS | Approach Lighting System |
| AMDS | Automatic Meteorological Observing System |
| AP | Approach |
| APCH | Approach |
| APP | Approach Control |
| ARFF | Aircraft Rescue and Fire Fighting |
| ASOS | Automatic Surface Observing System |
| ATIS | Automatic Terminal Information Service |
| AVBL | Available |
| AWOS | Automatic Weather Observing/Reporting System |
| AWW | Already |
| BA.NL | Braking action nil |
| BC | Back Course |
| BCN | Beacon |
| BERM | Snowbank(s) Containing Earth/Gravel |
| BLW | Below |
| BYD | Beyond |
| CAAS | Class A Airspace |
| CAT | Category |
| CFR | Code of Federal Regulations |
| CL | Centre Line |
| CLSD | Closed |
| CNL | Cancel |
| DH | Decision Height |
| DLY | Daily |
| DME | Distance Measuring Equipment |
| DMSTN | Demonstration |
| DISPLCD | Displaced |
| ENRT | En Route |
| EXC | Except |
| FAC | Final Approach Fix |
| FAN MKR | Fan Marker |
| FDC | Flight Data Center |
| FREQ | Frequency |
| GP | Glide Path |
| GPS | Global Positioning System |
| HAA | Height Above Airport |
| HAT | Height Above Touchdown |
| HIRL | High Intensity Runway Lights |
| MF | Initial Approach Fix |
| F | Immediate Fix |
| ELS | Instrument Landing System |
| EM | Inner Marker |
| ER | Ice On Runway(s) |
| LAA | Local Airport Advisory |
| LAT | Latitude |
| LDA | Localizer Type Directional Aid |
| LGTD | Lighted |
| LRL | Low Intensity Runway Lights |
| LLWS | Low Level Wind Shear Alert System |
| LLZ | Localizer |
| LONG | Longitude |
| LSR | Loose Snow on Runway(s) |
| MALSF | Medium Intensity Approach Light System with Sequenced Flashers |
| MALSR | Medium Intensity Approach Light System with Runway Alignment Indicator Lights |
| MM | Middle Marker |
| MNM | Minimum |
| MNT | Monitor, Monitoring, or Monitored |
| MU | Mtu Meters |
| NA | Not Authorized |
| NDB | Non-directional Radio Beacon |
| NMR | Nautical Mile Radius |
| OTS | Out of Service |

| | |
|----------|--|
| RAIL | Runway Alignment Indicator Lights |
| ROLL | Runway Center Line Lights |
| RCCO | Remote Communication Outlet |
| RELCTD | Relocated |
| RLLS | Runway Lead-In Light System |
| RQFD | Required |
| RTS | Return to Service |
| RVR | Runway Visual Range |
| RVRM | Runway Visual Range Midpoint |
| RVRR | Runway Visual Range Rollout |
| RVRT | Runway Visual Range Touchdown |
| RVY | Runway |
| SFL | Sequence Flashing Lights |
| SIR | Packed or Compacted Snow and Ice on Runway(s) |
| SLR | Slush on Runway(s) |
| SN | Snow |
| SNBKN | Snowbanks Caused by Piling (Windrow(s)) |
| SSR | Secondary Surveillance Radar |
| TDLZ LGT | Touchdown Zone Lights |
| TFR | Temporary Flight Restriction |
| TOL | Touch-and-Go Landings |
| TWR | Airport Control Tower |
| TWY | Taxiway |
| UNAVBL | Unavailable |
| UNMNT | Unmonitored |
| VASI | Visual Approach Slope Indicator System |
| VEF | With Effect From or Effective From |
| VE | With Immediate Effect or Effective Immediately |
| VGR | Wet Snow on Runway(s) |
| VTR | Water on Runway(s) |

HELPFUL LINKS

The following web addresses can be useful in obtaining aeronautical information and useful tools to enhance aviation information...

www.afss.com

Pilot Information Portal for flight service

www.duat.com

Direct User Access Terminal Site by DTC

(Data Transformation Corp.)

www.duats.com

Direct User Access Terminal Site by CSC (Computer Sciences Corp.)

www.faasafety.gov/SPANS/

Safety Program Airmen Notification System

www.alaska.faa.gov/at

AFSIAG Link

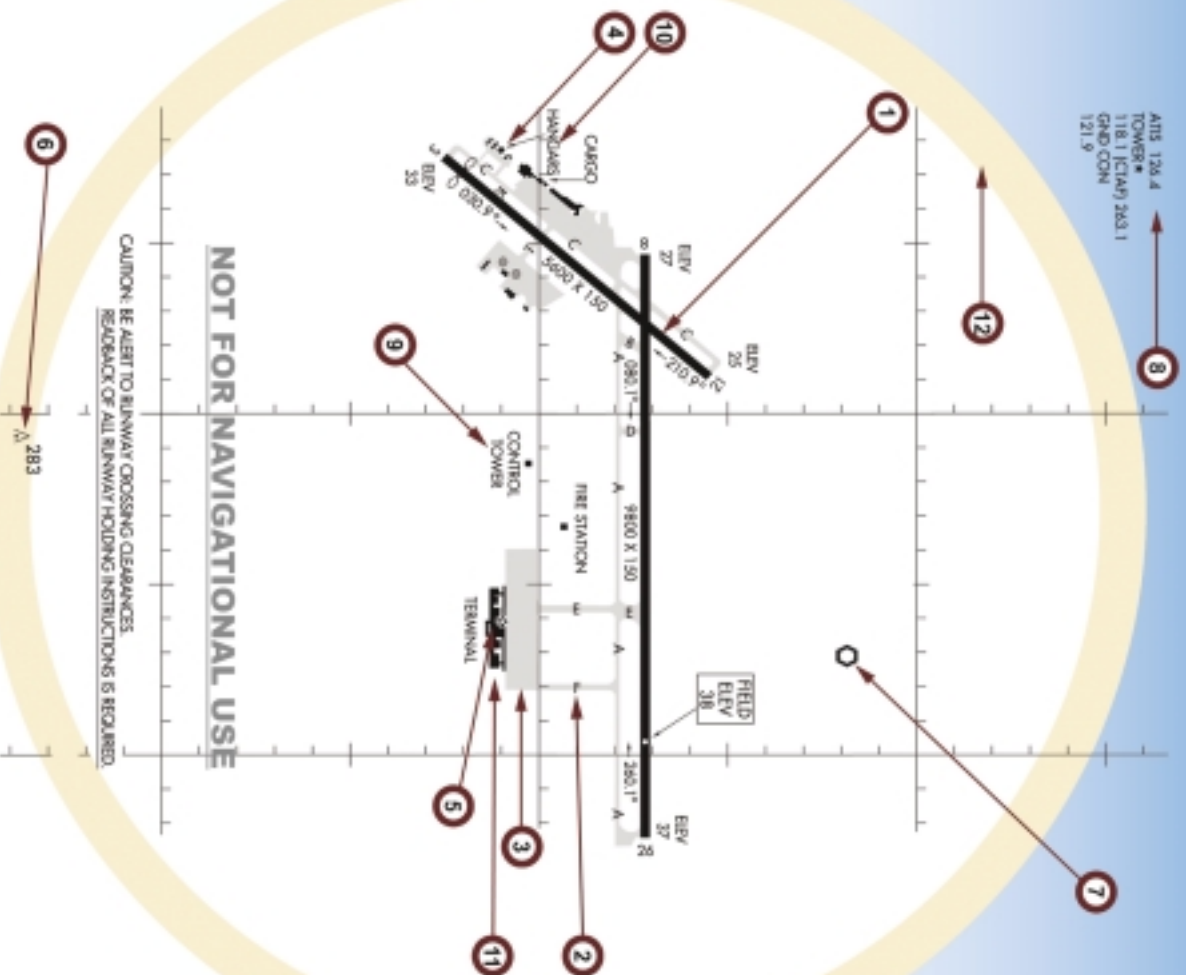
(Alaska Flight Services Information Area Group)

This site is informational in nature. Current NOTAMs are available from Flight Service Stations at **1-800-WX-BRIEF (1-800-992-7433)**.

The "D" NOTAM



ATIS 126.4
TOWER •
118.1 (CLAS) 263.1
GND CON
121.9



Keywords NOTAM Examples

- RWY** **1** RWY 31H CLSD
Runways 3 and 21 are closed to aircraft.
- TWY** **2** TWY F LOTS OTS
Taxiway F lights are out of service.
- RAMP** **3** RAMP TERMINAL EAST SIDE CONSTRUCTION
The ramp in front of the east side of the terminal has ongoing construction.
- APRON** **4** APRON SW TWY C NEAR HANGARS CLSD
The apron near the southwest taxiway C in front of the hangars is closed.
- AD** **5** AD ASN OTS
Aeronautical. The airport beacon is out of service.
- OBST** **6** OBST TOWER 263 (246 AGL) 2 2 8 LGTS OTS (ASR 1065881)
TIL 0707272300
Obstruction. The lights are out of service on a tower that is 263 feet above mean sea level (MSL) or 246 feet above ground level (AGL) 2.2 statute miles south of the field. The FCC antenna structure registration (ASRN) number is 5655881. The lights will be returned to service 2300 UTC (Coordinated Universal Time) on July 27, 2007.
- NAV** **7** NAV VOR OTS
Navigation. The VOR located on this airport is out of service.
- COM** **8** COM ATIS OTS
Communications. The Automatic Terminal Information Service (ATIS) is out of service.
- 9** SVC TWR 1215-0330 MON-FRI 1430-2300 SAT 1900-0100 SUN TIL 0707300700
Service. The control tower has new operating hours. 1215-0330 UTC Monday Thru Friday, 1430-2300 UTC on Saturday, and 1900-0100 UTC on Sunday until 0100 UTC on July 30, 2007.
- SVC** **10** SVC FUEL UNAVBL TIL 0707291600
Service. All fuel for this airport is unavailable until July 29, 2007 at 1600 UTC.
- 11** SVC CUSTOMS UNAVBL TIL 0706150800
Service. United States Customs service for this airport will not be available until August 15, 2007 at 0800 UTC.
- AIRSPACE** **12** AIRSPACE AIRSHOW ACFT 9600IBLW 5 NMR AIRPORT AVOIDANCE
ADZD WEF 0707152006-0707152280
Aircraft. There is an airshow being held at this airport with aircraft flying 5000 feet and below within a 5 nautical mile radius. Avoidance is advised from 2000 UTC on July 15, 2007 until 2200 UTC on July 15, 2007.

NOTE:

All "D" NOTAMs will have a keyword at the beginning of the text of each NOTAM.
Effective: 26 JAN 2008 Thru AUG 2009

The "D" NOTAM

ADS-B in the Gulf of Mexico

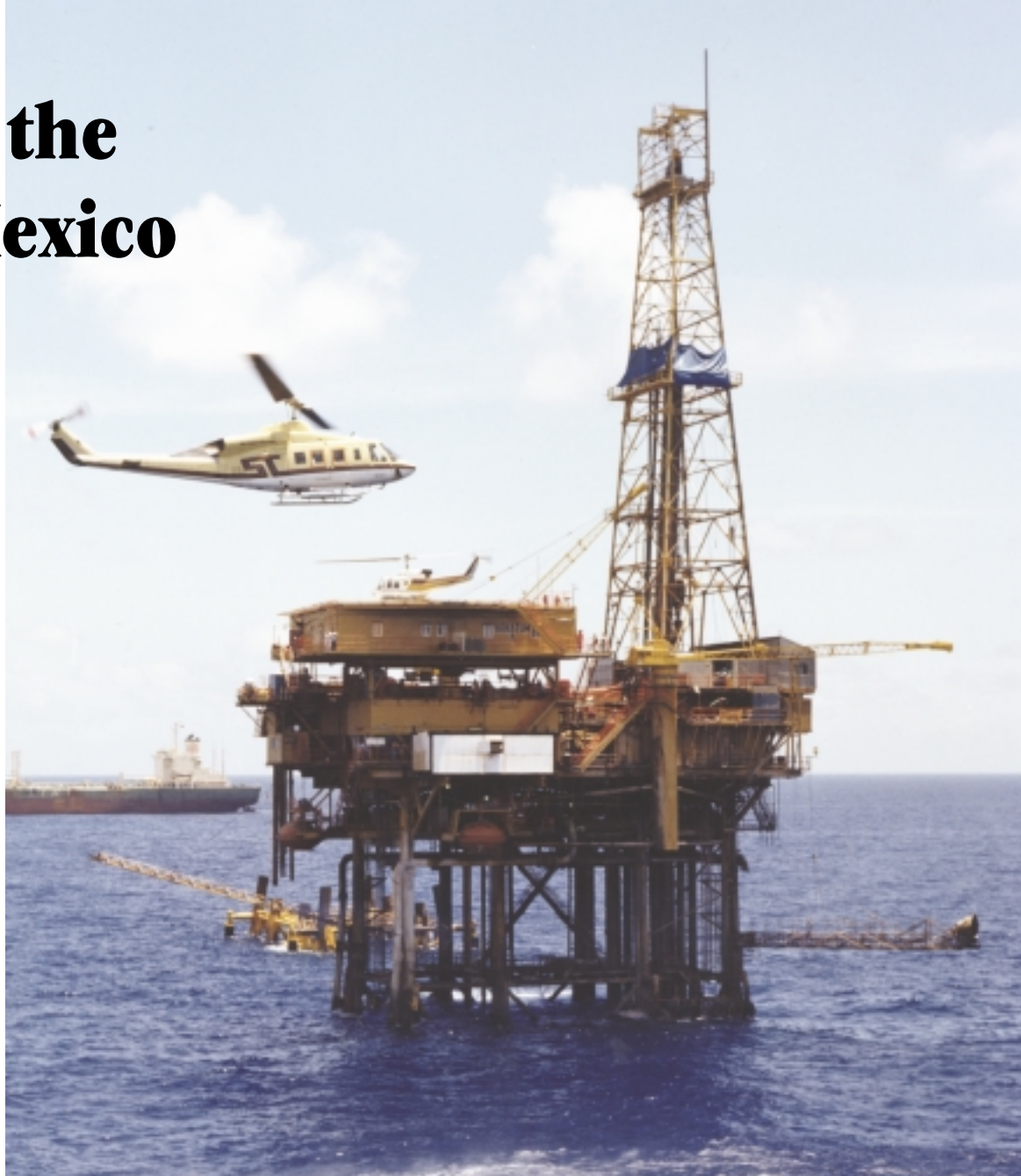
BY RICHARD TEMPLE

Does this photo look like a challenging location to you? If you said “yes,” then welcome to the environment that Gulf of Mexico (GOMEX) helicopter operators deal with everyday. Although flying day visual meteorological conditions (VMC) missions pose difficult challenges, many operators want to operate during night and instrument meteorological conditions (IMC), on a regular basis.

The majority of helicopters operating offshore in the GOMEX do so without the ability to communicate with or be seen by air traffic control, in addition to the lack of current weather reporting services. Well, ADS-B technology plans to solve those problems. And, not only will it provide surveillance for low-flying helicopters, but also for high altitude aircraft going to and from Mexico and Central and South America.

But what do the letters ADS-B stand for you ask? The following should answer your question.

- **Automatic**
 - Periodically transmits ID information with no pilot or operator input required
- **Dependent**
 - Position and velocity vector are derived from the Global Positioning System (GPS) or a Flight Management System (FMS)
- **Surveillance**
 - A method of determining position of aircraft, vehicles, or other assets
- **Broadcast**
 - Transmitted information



available to anyone with the appropriate receiving equipment

The GOMEX includes approximately 60,000 square miles, 650 helicopters, 5,000 oil and gas platforms, 4,000 flights per day (50% of the world's offshore helicopter traffic), and over two million flights per year. And, by December 2009, the FAA expects to have installed 20-30 communication stations, 26 weather stations, and 146 surveillance stations. Some platforms will have co-located communication, surveillance, and weather stations, required by pilots and air traffic

control with planned overlapping coverage to maintain maximum availability.

When the weather drops below VFR minimums, service to the oil rigs is reduced by up to 95%. This has a significant economic impact on offshore gas and oil activity, costing several millions dollars a day. Today, most operations occur with 100 miles of the Gulf coast, but future “deep water” operations will extend out beyond 200 miles with the growing need for oil.

ADS-B Equipage

The required airborne equipment depends on the particular airspace





A cockpit display of traffic information (CDTI) showing ADS-B traffic information. Photo courtesy of Garmin.

you want to operate in and whether you are seeking ADS-B “Out” or ADS-B “In” approval. ADS-B “Out” equipment will consist of a GPS receiver and a transponder capable of squitting ADS-B data once per second. ADS-B “In” equipment will also have a Cockpit Display of Traffic Information (CDTI) unit for traffic and flight information

Every second an ADS-B transceiver sends out its identification, position, altitude, and other data. This information, called ADS-B “Out,” will be received by other aircraft, if ADS-B “In” equipped and within reception range. The ADS-B ground station (ground based transceiver) retransmits the information to the nearest air route traffic control center (ARTCC), where the aircraft appears on the controllers’ radar displays.

The FAA has determined that two different data link frequencies will be required. The International Civil Aviation Organization’s (ICAO) international standard 1090 MHz Extended Squitter (ES) band is reserved for air transport applications and high altitude operations. The Universal Access Transceiver (UAT), operating on the 978 MHz band, will be primarily used by

general aviation aircraft. The ADS-B data will be transmitted by aircraft to ADS-B ground stations for processing. There are pros and cons for each data link, but to ensure that each type of aircraft will see the other, the data from each will be reformatted, called

ADS-R (rebroadcast), and re-transmitted on each frequency band.

Implementation of ADS-B requires an airspace rule change and the Notice of Proposed Rulemaking (NPRM) document, which appeared in the October 5, 2007, *Federal Register* (see http://www.faa.gov/regulations_policies/rulemaking/recently_published/), with comments due by March 3, 2008. Presently, the NPRM only addresses ADS-B “Out” equipage in the National Airspace System (NAS), but GOMEX operations are expected to commence before the rest of the NAS, thereby gaining early implementation and benefits. Meanwhile, ADS-B “In” is expected to be implemented after ADS-B “Out” is fully operational and is now being planned or currently operated in Australia, Europe, Asia, and Africa.

As with other technologies being introduced into the NAS, ADS-B will be performance-based and improve safety, capacity, and efficiency.



Richard Temple is an Aviation Safety Inspector with Flight Standards Service’s Flight Technologies and Procedures Division.





Mid-Winter Escapes by Air

BY H. DEAN CHAMBERLAIN

If you are planning on a mid-winter warm get-away this year in your private aircraft that will take you across a U.S. border, you need to review your flight plans for more than just fuel and oil. In today's world flying outside of the United States in a private aircraft to The Bahamas, for example, involves not only the traditional customs and flight procedures, but ensuring compliance of the new procedures developed by the Department of Homeland Security (DHS). For example, the Western Hemisphere Travel Initiative details the documents required to exit or enter the United States by air from the various countries and regions listed in the Initiative. These countries include Canada, Mexico, Central and South America, the Caribbean, and Bermuda. Although a valid passport is now the primary document, in some cases, other documents may be acceptable depending upon the document and the status of the individual as outlined in the Initiative.

The passport requirement does not apply to U.S. citizens traveling to or returning directly from a U.S. territory.

So the first part of any flight plan should be to check the Internet homepage of the DHS for the latest security requirements for departing and entering the United States. The next step should be a review of the U.S. State Department's Internet homepage, <http://www.state.gov/>, for current information about your destination country. That information includes everything from the history of the country, culture, local weather, and safety and crime issues to how to find medical services or reminding you which side of the road you are to drive on. The specific country information includes how to find the U.S. Embassy and consular services. As always, travelers are encouraged to register with the appropriate U.S. Embassy when traveling abroad. Finally, the Web site reminds every U.S. citizen traveling abroad that the person is subject to the laws of the respective country while in that country.

For the latest travel information and safety alerts, travelers can check the State Department's Internet homepage or telephone 1-888-407-4747 toll free in United States or by calling the following toll-line at 202-501-4444

from 8 am to 8 pm Eastern Time, Monday through Friday, except on Federal holidays.

FLIGHT INFORMATION

All pilots are reminded that when flying internationally, such as crossing the border to Canada, Mexico, or going offshore to The Bahamas, that they become subject to International Civil Aviation Organization (ICAO) rules in addition to the air rules of the country in whose airspace they are flying.

In addition to complying with U.S. aviation regulations, pilots need to monitor the following proposal. In September 2007, DHS issued a Notice of Proposed Rulemaking (NPRM) titled "Advance Information on Private Aircraft Arriving and Departing the United States." Among other things, the proposed rule would require the filing of electronic manifest data along with aircraft and flight crew data at least one hour before departure or arrival in the United States of private aircraft. Since this was issued as an NPRM when this article was being written, pilots are cautioned to check the DHS Internet homepage on the



status of this NPRM. The *Federal Register* issue containing the NPRM was September 18, 2007. The original deadline for public comment was November 19, 2007. Some or all of the information in the NPRM may be effective by the time this article is published. You need to check for it.

Using The Bahamas as an example, once you work your way through the U.S. Government's latest security requirements, you can go to one of the many Internet Web sites about The Bahamas to find flight information about the islands. The following Web site is a good starting point: <www.flying.Bahamas.com/>. The site provides information about the islands, as well as information about arriving by private plane. The private plane link provides information on contacts, Custom forms, a Pilot Bill of Rights, airport information, a pilot checklist, and pilot facts.

The Pilot Checklist provides guidance on what a pilot needs to know on all phases of the flight. When departing from the United States, you need to file an international flight plan. You also must have Coast Guard approved life jackets for each person on board. The Checklist also tells you how to activate and close your flight plan and of the need to land at an airport of entry (AOE) to clear Customs and Immigration. The Web site includes a copy of The Bahamas Customs Department "Inward Declaration and Cruising Permit For Private Aircraft Entering The Bahamas. (C7A)" The form specifies how many copies are required, which varies depending upon AOE. According to the Web site, private pilots need three copies of the C7A Bahamas Customs form, one Bahamas Immigration Card per person, and a passport as proof of citizenship. When reviewing some of the requirements, such as proof of citizenship, you need to review what is acceptable to the country you are going to, as well as what is needed to return to the United States. The requirements may differ.

When departing from The Bahamas, the Checklist notes the need to clear your required paperwork, how

you must depart from an AOE, how to activate and close your flight plan from The Bahamas, and how to enter the U.S. Air Defense Identification Zone (ADIZ) between The Bahamas and the United States.

According to the Checklist, when departing The Bahamas, private pilots need one copy of The Bahamas Customs General Declaration Outward Form (C7), they need to turn in The Bahamas Immigration card copy, and they need to file a flight plan. Everyone, six years and older, must pay a \$15.00 Government Departure Tax.

When flying in The Bahamas, the Checklist reminds pilots that no landing fee is required for single-engine private aircraft under 6,000 pounds on a non-commercial trip at any government-owned airport. Landing fees may apply at private airports. No tie-down fees are listed for government airports. Private airports may charge tie-down fees.

An important flight planning consideration for anyone planning on flying to The Bahamas is the lack of fuel at many of the airports. According to the list of airports with their respective services available on the Web site, the airport data noted that only Nassau and Freeport have lights for night flight. An instrument rating is required to fly into either airport after sunset. Some outlying island runways may have special use lights. The best plan

is to always call ahead to your landing airport to check on available services.

If you are an Aircraft Owners and Pilots Association (AOPA) member, you can access its Internet site for detailed international flight information for Canada, Mexico, and The Bahamas/Caribbean area. The site also has travel information for flying to Alaska. Included in the International Flying site are related links such as Customs information, *International Flight Information Manual* access, ADIZ requirements, required forms and paperwork, plus other related links.

This article is only a brief summation of some of the information one needs to check before flying across one of the U.S. borders, such as to The Bahamas. Each private flight—emphasis private, non-commercial with no compensation involved—requires complete flight planning and a search for the latest DHS security requirements. But if you want to make that short over water flight from Palm Beach, Miami, or Fort Lauderdale to the nearest island, it is only 46 nautical miles (NM) to Bimini and only 60 NM to Grand Bahama. Oh, by the way, the temperature at the Freeport, Grand Bahama Island airport on November the seventh, as this was being written, was 77 degrees F according to the 5 pm aviation report. What are you waiting for?



(photo courtesy of Thierry Pouille of Air Journey)



Count Down to Spring

BY H. DEAN CHAMBERLAIN

It is hard to think about spring arriving on Thursday, March 20, when winter only started on Saturday, December 22. But if you are a fair-weather pilot like I am, who hates the cold, one must always think positive, albeit, warm thoughts. For example, I know I am going to be cold so why go to an unheated hangar at the airport. Plus, the airport is many miles away. The roads may be icy or snow covered. So what is a fair-weather pilot to do cold-bound at home, if a trip to a warm clime is out of the question? I am glad you ask. Let me offer the following suggestions.

Each year at this time, *FAA Aviation News* tries to think of ways to challenge snow-bound pilots to keep engaged in aviation. The best recommendation is to travel to somewhere warm and do some proficiency flying, or even add a new rating. The challenge of a new rating is a great way to clear the mid-winter blues, while you find that little piece of aviation knowledge buried deep in your mind as your designated examiner patiently waits for your answer during your practical test. With a little planning and a check to see if you will need to take a knowledge test as part of your new rating, you can have all of the requirements finished before you schedule your mid-winter add on rating.

If a mid-winter get away is not possible, what can you do?

If you have Internet access, you can go to the FAA Safety Team's Web site at <<http://www.faasafety.gov>>. By following the links on the page, you can sign up to have local safety meetings and seminar notice information e-mailed to you using the Safety Program Airmen Notification System (SPANS). You can also find a wealth of knowledge available to you by completing some of the many online training courses listed on the site or by re-

viewing the information in the online media library. If you want to go out to a safety meeting or seminar, you can search any area of the country, by Zip Code & Radius, state, airport, or keyword for a list of scheduled events or safety seminars in your area. It is your choice.

For some "hands on" experience, you can find out which of your local flight schools have access to an FAA-approved training device. You may be only a telephone call away from logging some training device time in preparation for spring flying.

Another option is to use the Internet to search for National Transportation Safety Board (NTSB) accident or incident reports or National Aeronautics and Space Administration's (NASA) Aviation Safety Report System reports about the type of flying you routinely do or in the type of aircraft you routinely fly. What you are looking for are reports of accidents or incidents that match your flight profile. Then you can review the reports to see what mistakes or problems other pilots had that might enable you to avoid similar type results. As one old saying goes, it is better to learn from the mistakes of others, because you can't afford to make all of them yourself.

If you are not a member of a pilot organization, you might want to consider joining one. With a little searching, you might be able to find a local branch or group of the organization that will let you meet and talk "aircraft" with similar minded aviators. If you own or fly one particular type aircraft, for many aircraft types, there is a "type" club dedicated to supporting and promoting that particular aircraft. The benefit of type clubs is that each group represents probably the best single source of important operational, maintenance, and preservation infor-

mation available for its given aircraft make or model. The annual membership dues will "buy" you access to information that is not available anywhere else. This is especially important for old, out of production aircraft.

The Internet provides virtually unlimited access to information, not all of which is reliable, when you are stranded at home on a cold day. Internet searches of FAA directives can provide hours of creative information mining. For example, what does the type certificate data sheet for the make and model of aircraft you own or fly say about the aircraft? What is the approved fuel for the aircraft? What engine or engines can be put on the aircraft with only a logbook entry? If only one engine is listed for the aircraft, is it the one on your aircraft? If not, was the modification done correctly with all of the required paperwork submitted to FAA? If not, your aircraft is not airworthy.

When was the last time you reviewed the basic rules for the type of flying you do? For example, what are the direction of flight rules for visual flight? What are the loss of communication rules, if you are on an instrument flight? Test yourself and your friends by reviewing your appropriate rules. You might be surprised by what you have forgotten.

These are only some of the ways, home-bound aviators can pass the time, while staying involved in aviation. The days are what you make of them. The challenge is having fun, while waiting for that first 72 degree spring day. If you live in an area where all the days are 72 degrees or above, do you have a job for a cold-bound pilot? I will work for flight time or food. Have a safe winter flight season. See you in the spring.





Federal Aviation
Administration

Information for Pilots Considering Laser Eye Surgery



BY VAN B. NAKAGAWARA, O.D., F.A.A.O.;
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With the advances being made in medical technology, more people are considering other alternatives to corrective lenses, better known as eye glasses. Although this "Medical Facts for Pilots" (OK-06-148) brochure was published in 2006 and there have been some changes since then in refractive surgery procedures and results, we felt that the basic information would be helpful to anyone considering this type of surgery.

Currently, about 55% of the civilian pilots in the United States must utilize some form of refractive correction to meet the vision requirements for medical certification. While spectacles are the most common choice for aviators, recent studies show a growing number of pilots have opted for refractive surgical procedures, which include laser refractive surgery. The information in this brochure describes the benefits as well as possible pitfalls laser refractive surgery offers to those considering these procedures.

What is Refractive Error?

Refractive error prevents light rays from being brought to a single focus on the retina resulting in reduced visual acuity. To see clearly, refractive errors are most often corrected with ophthalmic lenses (glasses, contact lenses). The three principal types of refractive conditions: myopia, hyperopia, and astigmatism. Another ophthalmic condition that also results in blurred near vision is called *presbyopia*. Presbyopia is a progressive loss of accommodation (decreased ability to focus at near distance due to physiological changes in the eye's crystalline lens) that normally occurs around 40 years of age. Bifocals or reading glasses are necessary to correct this condition.

Myopia (nearsightedness, distant objects appear fuzzy) is a condition in which light rays are focused in front of the retina. About 30% of Americans are myopic.

Hyperopia (farsightedness, near objects appear fuzzy) is a condition in which light rays are focused behind the retina. An estimated 40% of Amer-

icans are hyperopic. However, this number may not be accurate. Young hyperopes (<40 years), who can compensate for their farsightedness with their ability to accommodate, are often not counted in this number and some studies incorrectly include presbyopes who also require plus power lenses to see clearly.

Astigmatism is a condition often caused from an irregular cornea. As a result, light is not focused to a single image on the retina. Astigmatism can cause blurred vision at any distance and may occur in addition to myopic or hyperopic conditions. Approximately 60% of the population has some astigmatism.

What is Laser Refractive Surgery?

In October 1995, the Food and Drug Administration (FDA) approved the use of the excimer laser to perform a refractive procedure called *Photorefractive Keratectomy* (PRK). PRK improves visual acuity by altering the curvature of the cornea through a series of laser pulses. The laser photoblates (vaporizes) the corneal tissue to a predetermined depth and diameter. PRK can be used to correct myopia, hyperopia, and astigmatism. Reported PRK problems such as postoperative pain, prolonged healing period, increased risk of infection, and glare (halos) at night, has resulted in Laser in situ *Keratomileusis* (LASIK) becoming the preferred choice for refractive surgery by patients and eye-care practitioners. A survey in the United States found that the percentage of refractive surgeons performing PRK had decreased from 26% in 1997 to less than 1% in 2002

LASIK is performed using two FDA approved devices: the microkeratome and excimer laser. During the LASIK procedure, the microkeratome slices a thin flap from the top of the cornea, leaving it connected by a small hinge of tissue. The corneal flap is folded aside and the excimer laser is used to reshape the underlying corneal stroma. The flap is then returned to its original position.



Is LASIK an Option for Me?

An eye care specialist should thoroughly evaluate your current ocular health and correction requirements to determine whether you are a suitable candidate for refractive surgery. Clinical trials have established the following selection criteria for LASIK.

Selection Criteria:

- * Age 18 years or older
- * Stable refractive error (less than .50 diopters [D] change within the last year) correctable to 20/40 or better
- * Less than - 15.00 D of myopia and up to 6 to 7 D of astigmatism
- * Less than + 6.00 D of hyperopia and less than 6 D of astigmatism
- * No gender restriction, with the exception of pregnancy
- * Pupil size less than or equal to 6 mm (in normal room lighting)
- * Realistic expectations of final results (with a complete understanding of the benefits, as well as the possible risks)

In addition to conforming to the above criteria, it is important that you possess normal ocular health and be free of pre-existing conditions that may contraindicate LASIK.

Contraindications:

- * Collagen vascular disease (corneal ulceration or melting)
- * Ocular disease (dry eye, keratoconus, glaucoma, incipient cataracts, herpes simplex keratitis, corneal edema)
- * Systemic disorders (diabetes, rheumatoid arthritis, lupus, HIV, AIDS)
- * History of side effects from steroids
- * Signs of keratoconus
- * Use of some acne medication (e.g., Accutane and/or Cor-darone)

Is LASIK Safe for Pilots?

Aviators considering LASIK should know that in initial FDA trials reporting high success rates (90%) and low

complication rates (< 1%), the criteria for success varied. In most clinical studies, success was defined as 20/40 or better distant uncorrected visual acuity (UCVA) under normal room lighting with high contrast targets, not 20/20 or better UCVA. While the majority of patients do experience dramatic improvement in vision after laser refractive surgery, there is no guarantee that perfect UCVA will be the final outcome. Even successful procedures may leave many patients with a small amount of residual refractive error that requires an ophthalmic device (eyeglasses or contact lenses) to obtain 20/20 visual acuity. If overcorrection results, patients may need reading glasses.

Compared to its predecessor (PRK), LASIK requires higher technical skill by the surgeon because a corneal flap must be created. Although rare, loss of best corrected visual acuity (BCVA) can occur when there are surgical complications such as those summarized below.

Surgical Complications:

- * Decentered or detached corneal flap
- * Decentered ablation zone
- * Button-hole flap (flap cut too thin resulting in a hole)
- * Perforation of the eye

Operation of an aircraft is a visually demanding activity performed in an environment that is not always user friendly. This becomes particularly evident if the choice of vision correction is ill-suited for the task. While the risk of serious vision-threatening complications after having LASIK is low (< 1%), some complications could have a significant impact on visual performance in a cockpit environment.

Relative Risk of Post-Surgical Complications:

- * Prolonged healing periods of 3 months or more
- * Night glare (halos, starbursts): 1 in 50
- * Under/over-correction: less than 1 in 100
- * Increased intraocular pressure: non-significant

- * Corneal haze: 1 in 1,000
- * Corneal scarring: non significant
- * Loss of BCVA: 1 in 100
- * Infection: 1 in 5,000
- * Corneal flap complications (dislocated flap, epithelial ingrowth): less than 1 in 100

Following LASIK, patients are cautioned to avoid rubbing their eyes and to stay out of swimming pools, hot tubs, or whirlpools for at least a week. Contact sports should be avoided for a minimum of two weeks, and many eye surgeons recommend wearing safety eyewear while playing sports. Even after the patient's vision has stabilized and healing appears complete, the corneal flap may not be completely re-adhered. There have been reports of corneal flap displacement up to 38 months after the procedure.

After surgery, women are cautioned to not wear eye makeup or use lotions and creams around the eyes for a minimum of two weeks and to discard all previously used makeup to reduce the risk of infection.

In some instances, LASIK may be an option for patients with higher refractive error than can be safely corrected with PRK or those with conditions that can delay healing (e.g., lupus, rheumatoid arthritis). Since LASIK minimizes the area of the epithelium surgically altered, it reduces some of the risks associated with delayed healing. Additionally, ablation of the underlying stromal tissue results in less corneal haze and the tendency for the cornea to revert back to the original refractive condition during the healing process (refractive regression), which improves predictability. Most patients do not require long-term, post-operative steroid use, decreasing the possibility of steroid-induced complications (cataract, glaucoma).

As with any invasive procedure, there are surgical risks, and the recovery process often varies with each individual. Post-LASIK patients report experiencing mild irritation, sensitivity to bright light, and tearing for a few days after surgery. For most vision stabilizes within three months to near-predicted results, and residual night



glare usually diminishes within six months. In rare cases, symptoms have lingered longer than a year. Earlier versions of LASIK used a smaller ablation zone, which sometimes resulted in glare problems at night. Ablation zones have an area of transition between treated and untreated corneal tissue. As the pupil dilates and becomes larger than the ablation zone light (car headlights, streetlights, and traffic signals lights) entering through these transition areas becomes distorted, resulting in aberrations perceived as glare. These patients often complain of difficulties seeing under low-light conditions.

Patients who develop postoperative haze during the healing process have complained of glare (halos and starbursts). Furthermore, it has been reported that exposure to ultraviolet radiation or bright sunlight may result in refractive regression and late-onset corneal haze. It is therefore recommended that all refractive surgery patients wear sunglasses with UV protection and to refrain from using tanning beds for several months after surgery.

For those with larger amounts of refractive correction, the predictability of the resulting refractive correction is less exact. This can lead to under-correction (requiring an additional laser enhancement procedure and/or corrective lenses) or over-correction of the refractive error. In the case of over-correction, premature presbyopia and the need for reading glasses can result.

It has been reported that there is a slower recovery of BCVA and UCVA with hyperopic LASIK compared with those having myopic LASIK. This is especially true for older patients who may be even less likely to achieve UCVA of 20/20 or better.

Older patients with presbyopia may opt for monovision LASIK, which corrects the dominant eye for distant vision and the other eye for near vision. The procedure is intended to eliminate the need for a patient to wear corrective lenses for near and distant vision. Anisometropia (difference in correction between the eyes)

induced by monovision may result in decreased binocular vision, contrast sensitivity, and stereo acuity. After an adaptation period, patients are able to see and function normally. Patients who report blurred vision, difficulty with night driving, and visual problems that may occur in low-light conditions typically do not adapt to monovision and may require an enhancement on their non-dominant eye so that both eyes are fully corrected for distant vision. Airmen who seek monovision correction should consult an eye care practitioner to assist them in compliance with standards outlined in the "Guide for Aviation Medical Examiners:

Airmen who opt for monovision LASIK must initially wear correction (i.e., glasses or contact lens) for near vision eye while operating an aircraft. After a 6-month period of adaptation, they may apply for a Statement of Demonstrated Ability (SODA) with a medical flight test. If the airman is successful, the lens requirement is removed from their medical certificate.

Advances in Refractive Surgery

Eye care specialists have traditionally used standard measurement techniques that identify and correct lower-order aberrations, such as nearsightedness, farsightedness, and astigmatism. However, no two people share the same eye irregularities or have similar refractive needs. Vision is unique and as personal as fingerprints or DNA.

Wavefront technology allows eye surgeons to customize the LASIK procedure for each eye, providing the possibility of even better vision. The FDA approved the first system for general use in October 2002. A laser beam is sent through the eye to the retina and is reflected back through the pupil, measuring the irregularities of the light wave (wavefront) as it emerges from the eye. This process produces a three-dimensional map of the eye's optical system. Measuring the cornea's imperfections or aberrations in this way allows the refractive surgeon to develop a personalized

treatment plan for the patient's unique vision needs. Correcting the patient's specific imperfections can result in sharper vision, better contrast sensitivity, and reduces problems associated with higher-order aberrations after surgery, such as haloes and blurred images. Studies indicate that 90-94% of patients receiving wavefront LASIK achieved visual acuity of 20/20 or better. However, those with thin corneas, high degrees of aberrations, severe dry eyes, or conditions affecting the lens and vitreous fluid inside the eye may not be good candidates for wavefront LASIK.

Other Advances in Refractive Surgery

The eye's optical system creates a limit as to how wide and deep the laser ablation should be, i.e., the wider the ablation, the deeper the laser must ablate into the cornea, which may result in delayed healing and prolonged visual recovery. The development of new lasers allows the creation of a wider ablation zone while removing the least amount of tissue. Studies have shown that this reduces problems with night vision and other side effects associated with laser refractive surgery.

Laser technology that provides variable optical zone sizes and beam shapes with scanning capabilities allows the eye surgeon greater flexibility in developing a more personalized laser vision procedure. A spot laser may be adjusted so minimal spherical aberrations are produced and a larger optical zone is created. Results from clinical trials indicate that 67% of eyes had UCVA of 20/16 or better and 25% had 20/12.5 or better. Additionally, there was an overall improvement in nighttime visual function and night driving, which is achieved by preserving the optical zone size and better shaping of the ablation profile.

During traditional LASIK, the corneal flap is created with a mechanical microkeratome manipulated by the surgeon's hand. While this method has worked well over the years, the performance of these devices can be



unpredictable and is the source of a majority of surgical complications. These difficulties result in irregularities in thickness between the central and peripheral areas of the flap that can induce postoperative astigmatism.

The IntraLase Femtosecond Laser Keratome, which received FDA approval in December 1999, is the first blade-free technology for creating the corneal flap. The laser keratome beam passes into the cornea at a predetermined depth, producing a precise cut that is reportedly more accurate than the microkeratome. Corneal flaps made with the laser keratome appear to adhere more tightly to the corneal bed at the end of the procedure, which may eliminate problems with long-term flap displacement. A reported disadvantage to this new technology is that surgical time is increased, leaving the stroma exposed several minutes longer, which has led to reported complaints of photophobia and eye irritation for up to two days after surgery. While it may take longer (4 to 7 days) to recover good vision, the approach appears to be associated with a lower incidence of dry

eyes, corneal complications, and enhancement procedures compared with traditional LASIK.

The FAA requires that civil airmen with refractive surgical procedures (e.g., PRK, LASIK) discontinue flying until their eyecare specialist has determined that their vision is stable and there are no significant adverse effects or complications. The airman should submit one of two documents to the FAA (a report from their eyecare specialist or "Report of Eye Evaluation" [FAA-8500-7]). These reports can be submitted directly to the Aerospace Medical Certification Division when released from care, or to their Aviation Medical Examiner during their next flight physical. This report should state:

" . . . that the airman meets the visual acuity standards and the report of eye evaluation indicates healing is complete, visual acuity remains stable, and the applicant does not suffer sequela, such as glare intolerance, halos, rings, impaired night vision, or any other complications. . . ." (Guide for Aviation Medical Examiners, July 2005)

If you are a pilot contemplating re-

fractive surgery, consult an eyecare specialist to determine if you are a good candidate for laser refractive surgery. Although the FAA and most major air carriers allow laser refractive surgery, professional aviators should consider how it could affect their occupational and certification status. As with any invasive procedure, there are many variables that can influence the final outcome. You should understand all risks as well as the benefits before electing to have a procedure performed that could compromise your visual performance in the cockpit.

For additional copies, download from our Web site at <www.faa.gov/pilots/safety/pilotsafety-brochures/> or contact FAA Civil Aerospace Medical Institute, Aerospace Medical Education Division, AAM-400, P.O. Box 25082, Oklahoma City, OK 73125

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SUGGESTIONS ANYONE?

Even though the *FAA Aviation News* is now in its 47th year, we strive to continuously improve the magazine and meet the needs of our customers. We are always interested in your feedback. Please let us know if there is a specific topic you'd like us to cover, or if you think a different format would be more effective.

Please e-mail your comments or suggestions to
AviationNews@faa.gov



WEIGHT AND BALANCE — And The Answers Are:

by H. Dean Chamberlain

The last issue of *FAA Aviation News* contained an article titled “Weight and Balance—How Much is Too Much?” Based upon the information provided in the article, *FAA Aviation News* asked what is the maximum weight two pilots can weigh in a Cessna 172S in the Normal category with full fuel. What can they weigh in the Utility category with full fuel? Are they within the airplane’s center of gravity (CG) limits? Can they do spins with full fuel? Note: Fuel weight is calculated at six pounds per gallon. Maximum fuel is 56 gallons with 53 gallons usable.

PILOT WEIGHT

Based upon the information provided in the article, each pilot can weigh 237.3 pounds in the Normal category. In the Utility category they can weigh 62.3 (yes, 62.3) pounds each.

Why the difference? The C-172S is certificated in two categories. Each category has its own operating authorizations and restrictions. The benefit of being certificated in two categories is that the airplane can be used for limited acrobatic training in the Utility category. This is important for pilot training in the aircraft.

OPERATING LIMITATIONS— NORMAL VS UTILITY

Please note in the following discussion that for any aircraft (by make, model, and serial number) each aircraft’s operating limitations define what that particular aircraft is authorized or not authorized to do. Pilots must comply with each aircraft’s own operating limitations.

Normal category airplanes are intended for nonacrobatic operations only. The regulations define these operations as any maneuver incident to normal flying, stalls (except whip stalls), and lazy eights, chandelles, and steep turns in which the angle of bank is not more than 60 degrees.

Utility category airplanes can do all of the maneuvers a Normal category airplane can do as well as limited acrobatics which includes spins, if approved for the aircraft, lazy eights, chandelles, steep turns, and similar maneuvers in which the angle of bank is more than 60 degrees, but not more than 90 degrees.

Based upon its dual certification, the C-172S has an operating limitation that requires spins to be done with the aircraft in Utility category rather than Normal category. This difference is significant because the maximum gross takeoff and landing weight changes from the Normal category 2,550 pounds to 2,200 pounds in the Utility category. As noted in the original article, this equates into a 350 pound difference in gross weight.

In addition to a significant gross weight change from the Normal to the Utility category, there is also a significant change in the C-172S’s center of gravity limits.

CENTER OF GRAVITY LIMITATIONS

Based upon the C172S Type Certificate Data Sheet, the CG limits in the Normal category are: Aft is 47.3 inches aft of datum at 2,550 pounds or less. The forward limits are a linear variation from 41.0 inches aft of datum at 2,550 pounds to 35.0 inches aft of datum at 1,950 pounds or less.

In the Utility category the CG limits are: Aft limits are 40.5 inches aft of datum at 2,200 pounds or less. The forward limits are a linear variation from 37.5 inches aft of datum at 2,200 pounds to 35.0 inches aft of datum at 1,950 pounds or less.

With full fuel in the Normal category and at max takeoff weight with our two 237.3 pound pilots, the aircraft is within CG.

With full fuel in the Utility category at max takeoff weight with our two 62.3 pound pilots the aircraft is out of CG.

PARACHUTES OR NOT?

Paraphrasing the regulation, (Title 14 Code of Federal Regulations §91.307) parachutes are required if the intentional maneuver (the spin) exceeds a bank of 60 degrees relative to the horizon or a nose-up or nose-down attitude of 30 degrees relative to the horizon. However, these requirements do not apply for flight tests for pilot certification or rating, or spins and other flight maneuvers required by the regulations for any certificate or rating when given by a certificated flight instructor or an airline transport pilot instructing in accordance with Title 14 Code of Federal Regulations §61.67. Since the provided information did not state this was a training flight or a flight test, parachutes are required. Based upon a review of three popular parachute manufacturers’ products, the average emergency parachute weighs between 10 to 15 pounds or so, depending upon size, style, and accessories. Pilots should weigh their parachutes with all attached gear for accurate weight and balance calculations. ✚



One Year and Counting

BY H. DEAN CHAMBERLAIN

Aircraft owners have one year remaining to upgrade their aircraft to a 406 MHz emergency locator transmitter (ELT) before the international COSPAS-SARSAT organization terminates the satellite-based monitoring of the current 121.5 MHz ELT frequency. The termination date is February 1, 2009.

COSPAS-SARSAT will continue the space-based monitoring of the current 406 MHz emergency distress frequency. For those who don't know, COSPAS is an acronym for the Russian words "Cosmicheskaya Sistyema Poiska Avaryinich Sudov," which mean "Space System for the Search of Vessels in Distress," indicative of the maritime origins of this distress alerting system. SARSAT is the U.S. acronym for Search and Rescue Satellite-Aided Tracking.

Aircraft owners with 121.5 MHz ELTs installed in their aircraft, who decide not to upgrade to the newer 406 MHz ELT, will have to depend upon over-flying aircraft, nearby air traffic facilities, or nearby airports that may be monitoring the 121.5 MHz frequency to alert authorities in the event of an aircraft accident. This means some accident aircraft with activated 121.5 MHz ELTs may go undetected for hours or days until authorities are notified of a missing aircraft by other means. These means may include unclosed flight plans or concerned family members or a fixed-based operator with a missing aircraft.

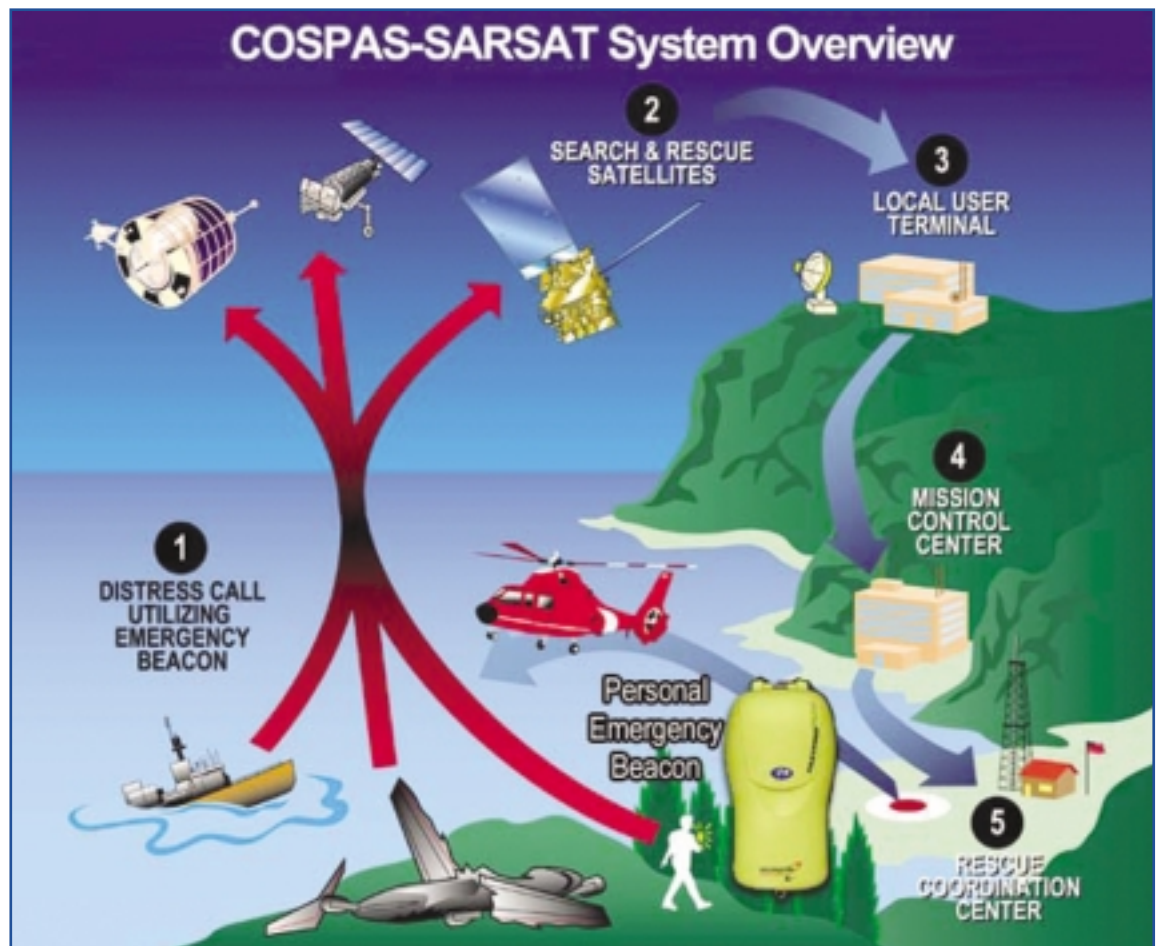
COSPAS-SARSAT

is terminating the monitoring of the 121.5 MHz frequency because of the number of false alerts on the frequency and the lack of a viable means to rapidly confirm the status of an alert. Located in the aeronautical communication band, 121.5 MHz frequency was not designed to be a satellite emergency distress frequency. Whereas the 406 MHz frequency is a dedicated and protected international emergency distress frequency. Not only is 406 MHz a protected frequency, but this distress frequency can be encoded with a unique identifier code that search and rescue organizations can use to identify and contact the registered owner of a 406 MHz distress beacon to verify the status of the alert. In the case of a 406 MHz alert, a telephone call may be all

that is necessary to verify the status of a 406 MHz alert and, if it is a false alert, to ask someone to turn it off. If not a false alert, this identification and notification capability also can speed up the search response.

In the case of a 121.5 MHz alert, someone must physically track down the device and turn it off in the case of a false alert. Because approximately 95 to 98 percent of 121.5 MHz distress alerts are false, a lot of resources are used in tracking down and deactivating these false alerts.

In terms of rescue, because of the verification capability of the encoded 406 MHz beacons, search and rescue (SAR) forces can respond to a 406 MHz distress alert in time measured in minutes or tens of minutes rather than the many hours that may



be required to verify a 121.5 MHz alert and respond. Some 406 MHz distress beacons have a built-in global positioning system (GPS) capability that can be used to encode the beacon's location so that SAR forces can more rapidly respond to a rescue event. Other 406 MHz beacons can be encoded with location information provided by onboard navigation equipment.

Although all current distress beacons can be roughly located through the use of Doppler technology, this is only a rough position. However, being able to pinpoint an alert to within a few yards rather than miles through the use of a position encoded 406 MHz that is broadcasting its longitude and latitude information can virtually take the search out of search and rescue.

So, if you want the protection that a 406 MHz ELT can provide, you have a year to schedule its installation before the countdown runs down. For more information about the COSPAS-SARSAT system and the United States's role in the system, you can check the National Oceanic and Atmospheric Administration's (NOAA) Internet Web site at <<http://www.sarsat.noaa.gov>>.

Remember, to meet the regulatory requirement for an ELT installation in an aircraft, the ELT has to meet the appropriate technical standard order (TSO). Although a TSO'd 121.5 MHz or a 406 MHz ELT meets the requirement for installation in an aircraft (14 Code of Federal Regulations §91.207), aircraft owners may want to think about replacing their 121.5 MHz ELTs with the newer, more powerful 406 MHz ELT.

For those aircraft owners adamant about not updating their 121.5 MHz ELT, there is a means of having some, but not all of the benefits of a 406 MHz ELT without buying a 406 MHz ELT. That option is purchasing and carrying a 406 MHz Personal Locator Beacon (PLB), especially one with a built-in GPS. The disadvantage of a PLB, and why it does not meet the regulatory requirement for carriage in an aircraft, is because it is not self-activating. It will

not automatically activate in the event of a crash. In fact, because these are designed to be carried and handled by people, such as hikers and others in various types of outdoor activities, PLBs require a deliberate activation process. For example, one type requires the antenna to be unfolded and extended, a protective cover lid to be lifted, and two buttons to be simultaneously pushed to activate the device. In the case of an aircraft crash, if the PLB is not within reach and if you can't physically follow all of the steps required to activate the PLB, it will not be activated. However, with this limitation, a PLB, like a cellular telephone and an aviation band transceiver, can provide a backup means of alerting SAR of an accident. It is not the best means, but for someone adamant about not

upgrading to a 406 MHz ELT, it is an option.

Of course, the best option is to add a 406 MHz ELT to your aircraft along with your current 121.5 MHz ELT and add a PLB to your survival kit as a handheld backup in case both your ELTs get damaged in the accident. In the case of an emergency water landing, where your aircraft sinks, a PLB in your coat pocket may be your only means of alerting SAR of the ditching.

Just remember if you install a new 406 MHz ELT in your aircraft and keep your old 121.5 MHz ELT installed in the aircraft, you must inspect and maintain both in accordance with the regulations.

The countdown has started; you have a year to decide what you are going to do. †

Smithsonian National Air and Space Museum Opens New Exhibit – America by Air

PHOTOS (next page) AND ARTICLE BY JAMES WILLIAMS

On November 13, 2007, the Smithsonian Institution's National Air and Space Museum invited *FAA Aviation News*, along with other publications to visit its newest permanent exhibit—America by Air. The exhibit tells the story of air transportation from the first scheduled airline service in 1914 to today and from the fledgling air mail service to today's ultra modern aircraft. The exhibit combines static display aircraft with artifacts and interactive activities to tell the story.

The exhibit is arranged in four sections covering the four basic phases in the history of air transportation: The Early Years of Air Transportation, 1914-1927; Airline Expansion and Innovation, 1927-1941; The Heyday of Propeller Airliners, 1941-1958; and The Jet Age, 1958-present. Some of the aircraft on display include: the Cockpit and forward fuselage of a Boeing 747-100 (which visitors can view the inside of), a Ford *Tri-motor*, a Curtiss JN-4D *Jenny*, a Boeing 247D (often referred to as the first modern airliner), a Douglas DC-3, and more.

The exhibit opened to the public on November 17. If you are in Washington, DC, don't miss a chance to visit this new exhibit.





TOP:
 Dr. Cristián Samper, Acting Secretary of the Smithsonian (left), and General John R. Daily (USMC, retired), Director of the National Air and Space Museum (right), welcome members of the media to “America by Air.”



LEFT:
 A view of “America by Air” showing a Curtiss JN-4D Jenny (foreground) and the forward fuselage section of a Boeing 747-100 donated by Northwest Airlines (background).

A mock-up of an Airbus A-320 cockpit that simulates arrivals and departures at Washington Reagan National Airport (DCA) for visitors to watch.



A Five-Minute Review

What do you remember?

BY H. DEAN CHAMBERLAIN

The following information is basic flight 101. Do you know the answers? References to Title 14 Code of Federal Regulations (14 CFR) are noted. Answers are on page 30.

1. What is the number of days for a VOR operational check? Within:
- A. 10 days
 - B. 20 days
 - C. 30 days
 - D. 40 days

[14 CFR section 91.171(a)(2)]

2. Which of the following is the correct VFR cruising altitude when operating below 18,000 feet MSL and on a magnetic course of zero degrees through 179 degrees above 3,000 feet above the surface unless other-

wise authorized by ATC?

- A. 3,000 feet
- B. 3,500 feet
- C. 4,000 feet
- D. 4,500 feet

[14 CFR section 91.159(a)(1)]

3. What is the fuel requirement for an airplane in day VFR conditions after the first point of intended landing, assuming normal cruising speed?

- A. 20 minutes
- B. 30 minutes
- C. 45 minutes
- D. 60 minutes

[14 CFR section 91.151(a)(1)]

4. What is the basic flight visibility

for VFR weather minimums in Class E airspace less than 10,000 feet MSL?

- A. Not Applicable
- B. 1 statute mile
- C. 3 statute miles
- D. 5 statute miles

[14 CFR section 91.155(a)]

5. What is the regulation dealing with flight restrictions regarding the President, Vice President or other public figures?

- A. 91.133
- B. 91.137
- C. 91.141
- D. 91.145

6. What does a flashing red ATC light signal mean to an aircraft on the surface?

- A. Cleared to takeoff
- B. Stop
- C. Exercise extreme caution
- D. Taxi clear of runway in use

[14 CFR section 91.125]

7. Rank the following aircraft according to right-of-way rules: airship; powered parachute; glider; and balloon

- A. Airship, powered parachute, glider, balloon
- B. Powered parachute, airship, balloon, glider
- C. Glider, balloon, airship, powered parachute
- D. Balloon, glider, airship, powered parachute

[14 CFR section 91.113(d)]

8. How close may an aircraft be



- operated to a vessel over open water?
- A. 100 feet
 - B. 500 feet
 - C. 1,000 feet
 - D. 1,500 feet

[14 CFR section 91.119(c)]

9. May a pilot of an experimental aircraft carry persons or property for compensation or hire?

- A. Yes
- B. No
- C. Situational Dependent

[14 CFR section 91.319(a)(2)]

10. Who is primarily responsible for maintaining an aircraft in an airworthy condition?

- A. Pilot
- B. Owner
- C. Operator
- D. Lessee

[14 CFR section 91.403(a)]

11. What is the normal test and inspection period for a required ATC transponder?

- A. 12 calendar months
- B. 18 calendar months
- C. 24 calendar months
- D. 36 calendar months

[14 CFR section 91.413(a)]

12. What is the minimum amount of flight time required for a flight review?

- A. 1 hour
- B. 2 hours
- C. 3 hours
- D. As required

[14 CFR section 61.56(a)]

13. How many takeoffs and landings must a pilot make in a tailwheel aircraft of the same category, class, and type, if a type rating is required, to be pilot in command carrying passen-

gers in that aircraft?

- A. 1 within 30 days
- B. 1 within 60 days to a full stop
- C. 3 within 90 days
- D. 3 within 90 days to a full stop

[14 CFR section 61.57(a)(ii)]

14. Can a private pilot act as pilot in command of an aircraft that is carrying passengers or property for compensation or hire?

- A. Yes
- B. No

[14 CFR section 61.113(a)]

15. What percentage of the cost of fuel, oil, airport expenditures, or rental fees must a private pilot pay when sharing the cost of a flight with passengers?

- A. None
- B. Fair share
- C. Pro rata share
- D. Half

[14 CFR section 61.113(c)]

16. When flying on the east coast of the United States in the mid-Atlantic area, what is the single most important document/s a pilot can read?

- A. The Washington DC ADIZ NOTAMS
- B. The Washington DC ADIZ NOTAMS
- C. The Washington DC ADIZ NOTAMS
- D. The Washington DC ADIZ NOTAMS

17. What transponder code must never be used within the Washington ADIZ?

- A. 1200
- B. 1200
- C. 1200
- D. 1200

[Washington D.C./D.C. Metropolitan ADIZ and FRZ NOTAM Effective 0500 UTC August 30, 2007. Section

2., D.C. Metropolitan Air Defense Identification Zone (DC ADIZ) Section 2, Part I, Number 6]

18. What is the approximate radius of the Washington DC ADIZ from the surface up to but not including Flight Level (FL) 180?

- A. 20 NM of 385134N/0770211W of the DCA VOR/DME
- B. 30 NM of 385134N/0770211W of the DCA VOR/DME
- C. 40 NM of 385134N/0770211W of the DCA VOR/DME
- D. 50 NM of 385134N/0770211W of the DCA VOR/DME

[Washington D.C./D.C. Metropolitan ADIZ and FRZ NOTAM Effective 0500 UTC August 30, 2007. Section 2., D.C. Metropolitan Air Defense Identification Zone (DC ADIZ) Section 2]

19. What is the maximum indicated VFR outer speed restriction beyond the Washington ADIZ out to 60 NM, if capable?

- A. 200 Knots
- B. 220 Knots
- C. 230 Knots
- D. 250 Knots

[Washington D.C./D.C. Metropolitan ADIZ and FRZ NOTAM Effective 0500 UTC August 30, 2007. Section 2., D.C. Metropolitan Air Defense Identification Zone (DC ADIZ) Section 4]

20. On a sectional chart Legend, what does "RP*" mean under Airport Data?

- A. Reporting Point
- B. Radar Point
- C. Recreational Pilots Prohibited
- D. Right Pattern with Special Conditions

[Sectional Chart Legend]



Safer Flying in Icing Conditions

If you've watched TV forecasters struggle to correctly predict winter weather, you probably realize that understanding icing—whether on the ground or in the air—is difficult and complex.

Aircraft icing is a continuing concern in all parts of aviation, from small planes to jumbo jets. It is an insidious hazard to aircraft. Wings, stabilizers, and control surfaces are carefully shaped to produce “lift”—the aerodynamic force that makes airplanes fly. Ice on these surfaces can make it hard for the pilot to control the airplane or even keep it airborne. Ice shedding off the wings also can damage the tail or be sucked into the engines.

The FAA has a multi-pronged approach to icing issues, using both immediate safety actions and longer-term rule changes.

Targeting Specific Airplanes

On October 31, 1994, an American Eagle ATR 72 airplane crashed near Roselawn, Indiana, after encountering icing conditions. The accident prompted the FAA to review aircraft in-flight icing safety and implement a comprehensive inflight icing program that increases the level of safety.

Since 1994, we have issued more than 100 airworthiness directives to address icing safety issues on more than 50 specific aircraft types. These orders cover safety issues ranging from crew operating procedures in the icing environment to direct design changes. We also have changed airplane flight manuals and other operating documents to address icing safety, and issued bulletins and alerts to operators emphasizing icing safety issues.

In 1999 and 2000, the FAA addressed activation of pneumatic deicing boots on many models by requir-

ing activation of boots at the first sign of ice accumulation. We have issued airworthiness directives on aircraft, such as the Mitsubishi MU-2 and more recently the Cessna 208 given their history of icing-related accidents and incidents.

Broad Transport Category Rule Changes for Greater Safety

In 2007, the FAA has taken major steps to change certification regulations applying to a wide range of icing-related standards.

Current FAA regulations do not require a way to warn pilots of ice buildup. A rule change proposed in April would require an effective way to detect ice buildup or let pilots know that icing conditions exist, and produce timely activation of the ice protection system. It will help avoid accidents and incidents where pilots are either completely unaware of ice accumulation or think it isn't significant enough to warrant turning on their ice protection equipment.

The proposed rule would mandate one of three methods to detect icing and activation the ice protection system:

- An ice detection system that automatically activates or alerts pilots to activate the ice protection system.
- A definition of visual signs of ice buildup on a specified surface (e.g., windshield wiper post or wings) combined with an advisory system that alerts the pilots to activate the ice protection system.
- Identification of temperature and moisture conditions conducive to airframe icing that would tip off pilots to activate the ice protection system.

The proposed rule would further require that after initial activation of the ice protection system, the system must operate continuously, automatically turn on and off, or there must be an alert to tell pilots when the system is to be cycled.

On August 8, the FAA published in the *Federal Register* (volume 72, number 152, page 44655) a final rule that

introduces new airworthiness standards for the performance and handling characteristics of transport airplanes in icing conditions. The new rule will improve the level of safety for new airplane designs when operating in icing conditions, and will harmonize the U.S. and European airworthiness standards for flight in icing conditions.

The rule adds a comprehensive set of airworthiness requirements that manufacturers must meet to receive approval for flight in icing conditions, including specific performance and handling qualities requirements, and the ice accretion (size, shape, location, and texture of ice) that must be considered for each phase of flight. These revisions will ensure that minimum operating speeds determined during the certification of all future transport airplanes will provide adequate maneuvering capability in icing conditions for all phases of flight.



Answers to the Five-Minute Review

1. C
2. B
3. B
4. C
5. C
6. D
7. D
8. B
9. B
10. B&C
11. C
12. A
13. D
14. B
15. C
16. A-B-C-D
17. A-B-C-D
18. B
19. C
20. D





Aviation Maintenance Alerts

Beech: A36; Loose Rudder Pedals; ATA 2720

A repair station technician writes, "Upon investigating a loose rudder pedal [*discrepancy*], the [*controls*] were disassembled. [*We found*] that the shaft had been double-drilled with the holes overlapping. This aircraft was certificated in January of 2002; it now has 1,015.4 hours time in service."

(Pilot's rudder pedal assembly: P/N 002-524040; left rudder pedal shaft: P/N 002-524016-5). Part Total Time: 1,015.4 hours.

Cessna: 172, 180, 182,185, 188; Elev. Torque Tube Corrosion; ATA 2730

(Specific applications are: all 172's, 180/182's through 1961, and all 185/188's. This safety article is published as received from the Wichita Aircraft Certification Office. Contact information follows the discussion.)

The Australian Civil Airworthiness Safety Authority (CASA) has issued an airworthiness bulletin (AWB 53-006) recommending inspections for corrosion damage on the elevator torque tubes (P/N 0532001-31) in Cessna model 172 airplanes. This part has been installed on Cessna model 172's since it was introduced in 1956, and it continues to be installed on new Cessna model 172 production airplanes. The part is an aluminum tube exposed to wheel spray during landings, or spray from floats during water landings. The tube is oriented horizontally, so it tends to retain water. Exposure to moisture (particularly in coastal regions) over many years leads to corrosion damage.

CASA reports similar problems with the P/N 0734110-7 torque tubes used on the Cessna model 188 airplanes. This part is also used on the Cessna model 180's, the early model 182's (through 1961), and the model 185 airplanes.

Two SDRs in 1992 and 1994 were found in the FAA data base on P/N 0532001-31, where corrosion was an issue. One submitter suspected the corrosion was due to coastal weather conditions.

No SDRs were found for P/N 07341100-7, where corrosion was an issue. However, two SDRs for the same airplane (one SDR for each side) were found for a Cessna model 170 in 1995, where the torque tubes were found rusted and pitted. The new parts had to be locally fabricated from a drawing. The submitter recommended the tubes be inspected on the airplane. The P/Ns were identified as 0334106 and 0334206.

(For further information contact Aerospace Engineer Mr. Gary Park, Aircraft Certification Office, 1801 Airport Rd., Room 100, Mid-Continent Airport, Wichita, KS. 67209; 316-946-4123.) Part Total Time: (as indicated).

Lycoming: IO360; Cracked Turbo Support Struts; ATA 8120

(This discrepancy combines two reports from the same mechanic on the same day. Evidently, he has opened two crates containing left and right replacement engines for a Partenavia aircraft.)

"Upon removing the engine from the shipping crate, I found the [new] turbo-support strut cracked (P/N LW18607). These brackets crack all the time on this airplane... [*this is a*] very poor design!"

(If these parts are "cracking all the time," why are your two reports the only ones in the SDRs data base for this part number? I know the paper work is a pain—but the more you report, the greater the attention that can be brought to bear. Please include some photos next time—cracked parts still in a box would have great impact!— Ed.) Part(s) Total Time: 00.0 hours.



Lycoming: TIO-540-S1AD; Cracked Turbo-Oil Line Adapter; ATA 8120

An Airframe and Powerplant mechanic provides the following description for this turbo-charger's *oil-inlet adapter*: P/N LW-14465.

"This part is bolted to the turbocharger assembly between the hot and cold sections. The high pressure oil line connects to this part via a fitting in the top of the part.

"After an annual inspection, the engine was run-up and systems checked. An oil seep was noted in the turbocharger area. The high pressure oil line and fitting (P/N LW 14465) was removed and cleaned: the crack was noted. This part was replaced with a new [unit].

"After researching the aircraft records, it was noted the exhaust system—including the turbocharger waste gate and control rod end—had not been overhauled with the engine core as required by Lycoming. The turbocharger itself was replaced with a new unit at the time of overhaul. It is unknown if P/N LW-144654 was replaced at that time.

"This part is critical to safety of flight (in my opinion) for the following reason. Another aircraft I'm familiar with, a Cessna 421, had this fitting come apart in flight. It caused an oil-fed, in-flight fire. Examination (after an emergency landing) revealed the high pressure oil line was still connected to the fitting and the threads in the fitting and the adapter were (also) still intact—not stripped. A crack was discovered in that part as well. It is assumed this crack swelled when heated to operating temperatures and the parts separated.

"This part is manufactured from (apparently)...cast aluminum. Maybe a stronger material should be considered." (Part time since overhaul listed as 522.38 hours.) Part Total Time: (unknown).

Piper: PA46; Cracked Fuel Pressure Tube; ATA 7310

A repair station Airframe and Powerplant mechanic says, "The pilot described a loss of power over Ensenada (CA). He continued the flight to Gillespie (TX). The engine quit upon landing—the fire department responded, but no action was required, except for absorbent to collect the fuel dripping from the belly. [The cause was found to be] a cracked fuel tube at the fuel control unit (Pratt & Whitney P/N 3033981). The reason for the crack is unknown. Fuel streamed the full length of the fuselage..." (The crack was found on the end B-nut taper at the fuel control.) Part Total Time: (unknown).



The Aviation Maintenance Alerts provide a common communication channel through which the aviation community can economically interchange service experience and thereby cooperate in the improvement of aeronautical product durability, reliability, and safety. This publication is prepared from information submitted by those who operate and maintain civil aeronautical products and can be found on the Web at <http://www.faa.gov/aircraft/safety/alerts/aviation_maintenance/>. Click on "Maintenance Alerts" under Regulations and Guidance. The monthly contents include items that have been reported as significant, but which have not been evaluated fully by the time the material went to press. As additional facts such as cause and corrective action are identified, the data will be published in subsequent issues of the Alerts. This procedure gives Alerts' readers prompt notice of conditions reported via Malfunction or Defect Reports, Service Difficulty Reports, and Maintenance Difficulty Reports. Your comments and suggestions for improvement are always welcome. Send to: FAA; ATTN: Aviation Data Systems Branch (AFS-620); P.O. Box 25082; Oklahoma City, OK 73125-5029.



• Regarding Weight and Balance Article

Permit me to make a comment regarding the Table on page 9 of the November/December 2007 issue of *FAA Aviation News*. The title of the article is "Weight and Balance—How Much is Too Much?" The line in question on the Table is line 4 on the Normal and Utility Categories, titled "Pilot and Front Passenger (FS 34 to 46)? 37.0*?"

The Table seems to imply that the average moment arm of 37 inches should be used for all passengers. I believe that this is not advisable because:

- Tall individuals will move the front seat further back and also tend to be heavier than people of average height. In fact, the weight of people having the same BMI (Body Mass

Index) is inversely proportional to the square of height.

- The right front seat in a Cessna 172 (C-172) can be moved much further back than the left front or pilot's seat. Using the 37" lever arm when the right front seat is occupied by a large passenger may result in exceeding max Gross Weight (GW) and the rear Center of Gravity (CG) limit simultaneously.

I fly a C-172 for Angel Flight and although the importance of providing accurate weight estimates is stressed, I recently had a flight where a mother was supposed to accompany a sick son. However, the father showed up for the actual flight which resulted in a sixty pound increase in weight. It just happened that my copilot could not make the trip and thus we were well within the GW and CG limits.

John Lawton
Via Internet

Thank you for your comments. Your points are valid. The numbers used in the article were taken from a Cessna 172S NAVIII sample handbook. As noted in the handbook, the number 37.0 represented an adjustable seat positioned for an average occupant. We used the average position to simplify the calculations. As you pointed out, if someone is other than the "FAA average" weight and size, then a pilot should use actual weight and seat station to ensure accuracy. According to Type Certificate Data Sheet No. 3A12 for the Cessna 172 type design through the 172S model, the 172S model's adjustable seat range for the two front seats is 34.0 to 46.0 inches aft of datum.*

For more information about BMI, you can check out the Internet Web site for the Centers for Disease Control and Prevention at <http://www.cdc.gov/nccdphp/dnpa/bmi/adult_BMI/about_adult_BMI.htm#Interpreted> or the National Institutes of

Health Web site at <<http://www.nhlbisupport.com/bmi/>>.

• Was It Too Easy?

The November/December 2007 issue's back cover had a picture of an aircraft with the caption "Can you identify the aircraft in this photo taken by Michael W. Brown?" Well, at last count the magazine has received more than 30 responses. Most of the replies were correct. The aircraft is a World War II Consolidated PB4Y-2 Privateer. This particular aircraft, a former forest fire aerial tanker, is on display at the Yankee Air Museum in Belleville, Michigan.

What made this photograph question interesting was the detail in some of the replies. Some of the answers included the history of how the Navy used the Privateer as patrol planes and anti-submarine work. Others wrote how the single tail Privateer evolved from the B-24 and of the twin versus single tail design history of the B-24 and the Privateer. One person told of flying Privateers for the Navy in 1949 and 1950 out of Whidbey Island, Washington, and Kodiak, Alaska. He told how "...our alternate air doors would freeze open when operating in the cold." Another reader told how the model was redesignated a P4Y in 1951 as a radar and electronic-counter measure platform during the Cold War. Another told of seeing a foreign navy's Privateers departing on a bombing raid during the Algerian war. Based upon the information provided FAA Aviation News and available on the Internet, the PB4Y-2 provided valuable service to the Navy and later to the Coast Guard during its service life. A few later served as civilian fire fighting aerial tankers.

We want to thank everyone who took the time to send a response. Now the question is, was this photo question too easy?

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, 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





FAA EXCEEDS ANNUAL GOAL FOR GA SAFETY

The number of fatal general aviation accidents declined by five percent this year, the Federal Aviation Administration (FAA) announced recently.

The FAA's goal was to have no more than 331 fatal general aviation accidents during the 12 months ending September 30. The actual number was 314. Fatalities in general aviation accidents also declined significantly, from 676 in fiscal 2006 to 564 in fiscal 2007. For these calculations, "general aviation" includes not only privately flown planes but also non-scheduled air taxi flights.

"This record is due to a dedicated commitment to safety by everyone in general aviation," said FAA Associate Administrator for Aviation Safety Nicholas A. Sabatini. "In particular, manufacturers are providing sophisticated technology like GPS and glass cockpits—and the training to go with them—and the FAA is vigorously encouraging adoption of these safety enhancements."

In October 2006, the FAA ushered in a new effort to help aircraft owners, pilots, and aviation maintenance technicians avoid mistakes that lead to accidents. Called the FAA Safety Team (FAASTeam), the program is devoted to decreasing aircraft accidents by promoting a cultural change in the aviation community toward a higher level of safety. The program features data mining and analysis, teamwork, instruction in the use of safety management systems and risk management tools, and development and distribution of educational materials. The FAASTeam's Web site is www.faasafety.gov.

For more than 37 years, the FAA has pursued a comprehensive program to improve the safety of the general aviation community. The original program introduced the concept of a joint effort sponsored by the FAA and

the aviation community to reduce the aviation accident rate. Over the years, the endeavor evolved into the Aviation Safety Program, and demonstrated that the general aviation accident rate could be reduced. In the 1990s, the program expanded to include aviation maintenance technicians

REAL-TIME AIRPORT INFORMATION FOR TRAVELERS

Travelers can find airport delay information for their departure and destination airports by visiting a special Federal Aviation Administration (FAA) Web site.

"We want to help provide consumers with a better travel experience by enabling them to know what to expect before they get to the airport," said Hank Krakowski, chief operating officer for the agency's Air Traffic Organization.

The Web site, www.fly.faa.gov, allows travelers to check whether they can expect to encounter delays at specific airports. General information—if operations are running smoothly or if there are delays—can be obtained simply by moving a mouse cursor over one of the airports featured on a map of the United States. More detailed information, including current average delay times and the reason for the delay, can be obtained by clicking on the airport.

Travelers equipped with pagers, cell phones, or personal digital assistants, such as BlackBerry devices, can obtain delay information from the FAA via e-mail. Users can register for the free "Aviation Information System," at the www.fly.faa.gov site.

The FAA also advises travelers to check on their actual flight's status with the airlines, Krakowski said.

Created with the traveling public in mind, www.fly.faa.gov has received numerous awards, including the Center of Excellence for Information Tech-

nology (CEIT) award.

UPDATED AC ON AVIATION WEATHER SERVICES PUBLISHED.

The FAA has published the latest update to Advisory Circular (AC) 00-45 *Aviation Weather Services*. The new AC 00-45F cancels AC 00-45E and is effective now. AC 00-45F is a supplement to its companion manual, AC 00-6A *Aviation Weather*.

The AC describes what services are provided by the aviation weather service program which is a joint effort by the National Weather Service (NWS), FAA, and Department of Defense (DOD). The AC is available for free via the Internet at: http://rgl.faa.gov/Regulatory_and_Guidance_Library%5CrgAdvisoryCircular.nsf/0/2FDBB0759757C5158625738B007442E7?OpenDocument.

FAA EXTENDS COMMENT PERIOD FOR ADS-B NPRM

The FAA first issued its NPRM regarding Automatic Dependent Surveillance-Broadcast (ADS-B) on October 5, 2007, with a scheduled closing of the comment period on January 3, 2008. In response to requests for more time from many industry groups, the comment period has been extended to March 3, 2008. For more information on the comment period extension, please see the November 19, 2007, *Federal Register* page 64966-64968.

For more information about ADS-B, please see "ADS-B in the Gulf of Mexico," on page 15 of this issue.

FAA EXPANDS SATELLITE NAVIGATION SERVICE

The Federal Aviation Administration (FAA) is increasing capacity at thousands of general aviation airports throughout North America by expand-





ing coverage of a satellite-based navigation system to Canada and Mexico.

The Wide Area Augmentation System (WAAS) improves the accuracy and integrity of Global Positioning System (GPS) satellite signals and provides highly precise approaches that can be used in all weather conditions. The expansion integrated nine new international Wide-Area Reference Stations into the network. In Canada, they are located in Goose Bay, Gander, Winnipeg, and Iqaluit. In Mexico, they are in Mexico City, Puerto Vallarta, Merida, Tapachula, and San Jose del Cabo.

For WAAS users, this expansion of service provides more locations where vertically guided approach procedures based on WAAS can be developed and used. The FAA already has published more than 900 Localizer Performance with Vertical (LPV) approaches throughout the United States and use of WAAS has steadily increased. More than 18,000 aircraft currently are equipped to fly LPV approach procedures.

Canadian and Mexican aviation authorities have supported this work at the highest levels under the auspices of the North American Aviation Trilateral Agreement.

FAA EXCEEDS TARGET FOR AIR TRAFFIC CONTROL STAFFING

The Federal Aviation Administration (FAA) exceeded its air traffic controller staffing targets for the fiscal year that ended on September 30, 2007, by hiring more than 1,800 controllers during the year, topping the 2006 year-end total by 256 controllers. As a result, the agency now employs 14,874 controllers.

"We're getting a lot of enthusiastic new recruits who are interested in becoming air traffic controllers," said Acting Administrator Bobby Sturgell. "Controller hiring, training, and staffing

is a major priority and we are on track to meet future traffic needs."

The FAA will hire and train more than 15,000 controllers over the next decade to replace controllers who are expected to retire, those who are promoted, and those who leave for other reasons. The agency's detailed controller workforce plan maps out projected retirement numbers through 2016 and target numbers for the end of each fiscal year.

Fiscal 2007 was the peak year for controllers who were hired in the early 1980s to become eligible for retirement for the first time. During the year, 828 controllers retired, and the agency expects retirements to continue to increase every year through 2012. The controller workforce plan calls for a steady increase in the total number of air traffic controllers through 2016 for a total of more than 16,000 controllers.

During fiscal year 2007, the FAA hired 1,815 new controllers. They included people with prior FAA or Department of Defense air traffic control experience, students who successfully completed a program of study as part of the FAA's collegiate training initiative, and qualified applicants recruited through job announcements.

A controller hired in 2007 will make an average of nearly \$50,000 in cash compensation—including base salary, locality and premiums—by the end of the first year. By the end of the fifth year average compensation is \$94,000. The FAA also pays new hires while they are in training, as well as for training costs.

FAA EXPANDS AIR TRAFFIC EDUCATION PROGRAM

The number of prospective air traffic controllers is expected to increase significantly now that nine new colleges and universities have been selected by the Federal Aviation Administration (FAA) to train students to

be controllers.

There are now 23 schools chosen by the FAA to participate in the agency's Air Traffic Collegiate Training Initiative (CTI) program. The CTI program is part of a broader effort by the agency to recruit, train, and hire controllers as the current workforce faces retirement. CTI schools are accredited and offer a non-engineering aviation degree in aviation programs.

"We have a plan in place to make sure the nation's airspace system is managed by an appropriate number of highly motivated, properly trained controllers," said Hank Krakowski, Chief Operating Officer of the FAA's Air Traffic Organization. "The CTI program is a big part of that plan."

Of the 1,815 new controllers hired in fiscal year 2007—a number exceeding the target set in the agency's controller workforce plan—approximately 800 were graduates of CTI schools. Graduation does not guarantee acceptance to the FAA Academy in Oklahoma City, but those accepted are allowed to skip the initial, five-week basic training in air traffic control.

Nine additional schools were chosen after being evaluated in three areas: organizational foundation and resources, organization credibility, and curriculum and facilities. They are: Arizona State University; Community College of Baltimore County (Maryland); Florida Community College-Jacksonville; Green River Community College (Washington); Lewis University (Illinois); Kent State University (Ohio); the Metropolitan State College of Denver (Colorado); Middle Georgia College, and the University of Oklahoma.

The nine schools join fourteen others that renewed their commitment to the program, which was first established in 1990 at Minneapolis Community and Technical College.

The FAA evaluates all CTI programs on a regular basis. The next evaluation will take place in January.



Editor's *Runway*

from the pen of H. Dean Chamberlain

Hello, I Am Glad You Found Me

This column is not on the back inside cover anymore. That location is now reserved to highlight six FAA employees this year. Featured will be those FAA men and women whose job is aviation safety. Dan Petersen from the Lincoln, Nebraska, Flight Standards District Office is our first Aviation Safety Inspector recognized. Like thousands of other inspectors, his passion is aviation. As you read his story, I think you will find many of your friends, family members, and very possibly yourself reflected in his love of flying. I hope you enjoy his story and that of the future FAA employees we plan on publishing.

This new personality feature is the beginning of our long-discussed changes in *FAA Aviation News*. Our next issue incorporates many of our long-awaited changes. The front cover design will be new as well as some of our new departments. The departments will feature medical, maintenance, and operational topics among other topics. Our goal is become the safety magazine you want. One that features relevant safety topics with a contemporary layout and style that is easy to read. We will retain some of our long-standing columns. Others will be replaced or added. You will also see some new writers appearing for the first time, while others will become responsible for standing departments.

Our challenge has been and will continue to be providing you, our readers, with information that will not only make your aviation activity, whether it is flying, building, or maintaining a specific type of aircraft, safer, but we also want to show you how it all fits into the larger global aviation picture. For example, the recent announcement that one of the American icons of general aviation manufacturing, Cessna, plans to build its new light sport aircraft, the Model 162 *SkyCatcher*, in China shows the global aspect of general aviation as does the proliferation of new light sport aircraft being manufactured in countries around the world. Add in the future changes in our National Air Space, such as the much discussed migration from a radar environment to a satellite-based navigation system, and you can begin to see the importance of change. With so much change going on in aviation, it is only natural that this magazine changes its image.

We hope you like the change. One thing will not change. We will answer your questions and comments as soon as we can. We work for you. So tell us what you think of the changes. We love the good, but we will answer the not so good.

Thanks for listening.



FAA FACES

BY LYNN MCCLOUD

“My heart has always been in GA.” That is Dan Petersen’s view from the cockpit of his classic WACO ATO. Petersen logged some 8,000 of his 11,000-plus hours on the TWA flight line, but more recently, the FAA *King Air* he flies at work and the two WACOs and 1948 Cessna 195 he flies for fun with his father account for his log-book entries.

Petersen is a Supervisory Aviation Safety Inspector at the Lincoln, Nebraska, Flight Standards District Office (FSDO). As a general aviation pilot, airline captain, certificated flight instructor (CFI), corporate pilot,

and freight hauler, Petersen acknowledges that before joining the FAA in 2003 as an Aviation Safety Inspector he had some preconceived notions about the FAA. “Let’s just say that I minded my p’s and q’s.”

Now that he is part of FAA, Petersen is working to cultivate a different image. “I want inspectors to have a collaborative relationship with pilots and operators,” he says. “After all, we have a common goal: Safety.”

Enforcement is just one tool, Petersen says. “Other tools include counseling, education, and training.” A big training proponent, Petersen directs pilots to the FAA Safety Team resources and programs (See their Web site at <www.faasafety.gov>) and encourages pilots to join the Aircraft Owners and Pilots Association (AOPA) because of the AOPA Air Safety Foundation’s training resources.

“Safety takes work,” Petersen says, “and we need to foster an attitude change.” When Petersen talks about attitude, he is talking about hard-to-reach pilots. “Typically, the pilots we see at FAA safety meetings are the same pilots over and over. While this is great, how do we reach the pilots who aren’t there, the ones who do not do any sort of extra training?”

For example, Petersen says, “Some pilots only practice steep turns every 24 months for their flight review.” Yet, he points out, some skills, such as steep turns, slow flight, and stalls should be practiced more often.

Petersen sees other challenges for GA safety, especially new technology. “The advanced aircraft systems are going to require training. We need to make sure our CFIs are qualified to provide training to pilots and pilots who purchase technically advanced aircraft or advanced avionics systems should take advantage of additional training.” The irony that frustrates Petersen: “A pilot will purchase a \$16,000 GPS, but will not spend \$25 an hour for an instructor to train him on this equipment.”

At the same time technology poses its challenges, pilots should not neglect stick and rudder skills, such as those developed by the steep turns he mentioned earlier. “Today’s pilot has a difficult task to maintain proficiency with technological advancements at the same time he or she maintains basic stick and rudder skills,” Petersen says. “When we look at preliminary accident/ incident reports, we still see loss of directional control on takeoff or landing, overshoot, and undershoot accidents.”

“In short, pilots need to take an active role in their training.”

When asked if, as a supervisory inspector, he has one message for the GA community, Petersen is quick to respond with his update on the classic line, “I’m from the government and I’m here to help you.” He says, “Inspectors are approachable. We really want to help. Feel free to call on us. Safety is our passion.”

And, when it comes to Dan Petersen as pilot, quick on the heels of that passion for safety is his passion for classic aircraft. His answer to, “What was your sweetest ride?”

“The DC-3.”

How long since he has flown a DC-3?

“Too long.”



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Dan Petersen

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