September-October 1992

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September–October 1992

FAA Aviation News

Volume 31 Number 5

FEATURES

DEPARTMENTS

On the Cover:
No, there is nothing wrong with this chart. It is a portion of the Lake Huron sectional chart prototype showing the new charting changes. For more information see the article on page 12.

On the Back Cover:
One of ballooning's major events, the annual Albuquerque International Balloon Fiesta, is October 3–11, 1992, in Albuquerque, NM. This colorful scene from last year shows the number of balloons at the event. Photograph courtesy of Lowell M. Baker, Jr.

The FAA/Industry Partnership

by Thomas C. Accardi, Director, Flight Standards Service

Over the past 10 issues of *FAA Aviation News* we have featured a series of articles called the "FAA/Industry Partnership." We are about to put that series "on hiatus" for a few issues to begin our series on FAA's partnership with aviation education organizations. So, perhaps this is a good time to reflect on just what that series has meant—that is, what is the FAA/Industry partnership?

There has always been a relationship between the aviation industry and its regulatory body; it has not always been perceived as a partnership, however, by either partner. It may be perfectly natural for the regulated to believe there can only be an adversarial relationship with the regulator. In many areas of business that may truly be the case, but in the aviation industry both sides have a common interest that intrinsically draws them together. That common interest is the desire to provide the public with the safest aviation services in the world. The FAA/industry partnership has certainly achieved that, and both continue to search for new ways to improve that record.

When I requested that the staff of *FAA Aviation News* begin a series on the FAA/industry partnership, the FAA was just beginning to implement its Compliance for the 90's policy. We were coming off an unprecedented and demoralizing time in the long relationship between FAA and the aviation industry. Levels of trust and confidence had eroded. The reasons are varied; perhaps it is more a cyclical phenomenon than anything. Regardless, FAA felt it had to change its compliance posture in order to fulfill the other portion of its Congressional mandate—fostering aviation. More importantly, industry had blocked reception of FAA's safety message, and restoring those lines of communication was of the most vital importance. The Compliance for the 90's program—remedial training and self-disclosure—were only the beginning. When there are barriers to communication, one party has to take the lead in re-establishing a two-way flow. We decided to reach out to industry by offering to feature the major aviation organizations in Flight Standards' safety magazine.

The Aviation News Staff tells me that when they initially approached several organizations, those organizations were skeptical. After all, some of these same organizations had just spent the last several years lambasting the FAA in their own publications. Was FAA merely returning the "favor?" The staff explained that what we wanted to present to people was the fact that these organizations very often have worked *with* the FAA in major safety initiatives. FAA wanted to recognize the efforts of the industry in a partnership whose existence they perhaps did not accept or realize.

We found about what we expected—that the industry put safety first, even ahead of that supposed adversarial relationship with the FAA. From AOPA's "trip planning" to HAI's "fly neighborly" program to NAAA's "Operation SAFE," along with many others, the industry was striving to keep the world's best safety record the best. All along what the aviation industry was doing right far outstripped the occasional incidents of non-compliance we found during surveillance. That, of course, makes our job easier and much more comfortable for everyone concerned.

The reason we are not finishing our FAA/industry partnership series is that there will always be new facets to that partnership. This series of articles has taught us many new and interesting things about our aviation organizations. Hopefully, those organizations and their members have learned a little about the FAA as well. We intend to keep up our side of the partnership for safety, and we have no doubts about our partners. ■


Mr. Accardi.

Mr. Accardi is a former airline and corporate pilot and flight instructor with more than 6,500 flight hours. In the FAA, he has been an air traffic controller, a Principal Aviation Safety Inspector, an Air Carrier Specialist, and Regional Flight Standards Division Manager before becoming Flight Standards Service Director.

Each season brings a new set of problems for a pilot to be aware of—in winter it is ice and snow.

Avoiding Frigid Flight Fright

by Wayne Phillips

About the time that this edition of the *FAA Aviation News* finds its way into mailboxes around the country, northern states aviators are rediscovering the exhilarating experiences of clawing through layers of wing frost with fingernails, thawing cryonic Lycomings and Continentals back to life for flight, and discovering that some cockpit heaters provide as much warmth as a match in a mineshaft. With proper preparation, though, flight during the winter months can be a zestful, invigorating encounter with winter. Density altitude is rarely a consideration, and, believe it or not, velvet smooth flight is possible at mid-day as blankets of snow snuff the thermals and their batterings that are all too common in the heat of August.

Winter flight, whether in Rhinelander, Wisconsin (the home of righteous, soul warming chili at the terminal restaurant) or in Aspen, Colorado (the home of soul warming skiwear) requires a different approach and attitude. There are hazards that are unique to frigid flying, and the pilot in command should become reacquainted with winter coping techniques.

CLOTHES MAKE THE PILOT

Preparation begins in the clothes closet! A December flight from a Minnesota airport requires much more than a pair of loafers, a sweater, and a country club golf jacket. A thorough winter pre-flight inspection takes more time and effort than in warm weather. In some instances, longjohns, a parka with hood, fur-lined gloves and boots, and a scarf around the face is the battle armor against a 30-minute engagement with blustery north winds and sub-zero wind chills. Take some good advice from hot air balloonists who will always caution passengers to dress in layers. All that "heavy gear" can be shed down to sweater and pants if the on-board stove can produce a reasonable amount of BTU's. Otherwise, pilot and passengers will be swimming in perspiration with a resultant loss of body heat. Footwear is also especially important not only for warmth but for negotiating icy ramps. Hand-towing an airplane on ice without foot traction can result in an unceremonious and hazardous "home plate slide" into the nose gear with a strong possibility of losing some facial skin to the prop blade.

An ice and snow-covered airplane presents a challenge to the pilot who wants to fly. If a heated hangar is not available, pilots have been known to resort to a variety of unorthodox removal techniques.

PREFLIGHTING, PREHEATING, AND STARTING

After you have outfitted yourself properly, preparing the machinery for flight is another matter for extraordinary care. While most FBO's will routinely provide pre-heating services for their own rental equipment, the pilot flying his or her own plane will find that FBO's may charge them for the same pre-heating service. With the cost of flying being fairly pricey already, the frostbound pilot might be tempted to grind the engine's TBO down a few hours by attempting to start in sub-freezing temperatures without the benefit of pre-heating. Before you make that decision based on cost alone, consult the aircraft's manual and do what the manufacturer recommends.

That aircraft manual is the authority for pre-heating advice. Typically, a turbo-charged engine will require external heat when the temperature falls to 20 °F. A light single may get by without pre-heating down to 15 °F. Turbine engines usually do not require heat, although a power cart should be used in cold weather because reduced battery capacity can lead to slow turbine speeds and hot starts.

Almost every pilot from Student to ATP is mindful of the dangers of attempting flight with frost and old snow adhering to the airframe. When the white stuff is thick and stubborn, aviators have developed unorthodox ways of removal. These range from chopping with ice scrapers to bathing the airplane in windshield washer fluid to throwing hot water on the snow and ice encrusted areas. Of course, each of these methods can produce more harm than good. The best solution is to either hangar the machine the night before or de-ice it and dry it in a heated hanger before flight. Failure to remove all the liquid moisture can result in frozen control surfaces once the aircraft is wheeled into the sub-freezing outdoors.

If pre-heating or hangar storage is part of the pre-flight planning, engine starting will probably be normal. However, if such services are not available and the motor refuses to yield to the usual starting routine and prayers, opening the pilot operating handbook will reveal a section called "Cold Weather Starting," which includes procedures for flooded engine starts. If a fuel-injected plane is the equipment of the day, the book should be handy on the lap. Chances are, it will be needed since fuel-injected engines are notorious for difficult cold weather starting.

In the event of a dead battery, become familiar with the manufacturer's recommendation for using an external or auxiliary power unit (APU). Procedures for starting with an APU may differ from aircraft to aircraft, and using the wrong procedure could damage the electrical system. For example, on the Beech *Baron*, the battery switch should be ON, other electrical switches should be OFF, and a battery must be in the system before connecting an APU, but for the Cessna 182, the master switch has to be turned ON before tying into an APU.

GROUND OPERATIONS

Ground operations warrant more than casual thought. With glass-slick ramps, taxiways, and runways, brakes can become worthless.

Consider that most flooded engine techniques normally require that the mixture control be set at idle cut-off while the throttle is advanced full forward. In this situation, not only does the PIC require an extra hand to manipulate ignition, mixture, and throttle, but imagine the potential for a pirouette into a nearby fuel truck as the tach launches from zero to 2500 RPM in a heartbeat and the wheels are locked on a banana peel surface. Of course, the same slip-sliding away can happen during the run-up when the power is increased for the magneto check.

Although we have all learned that the FAA recommended taxi speed is described as a "brisk walk," a quartering surface wind of 15 knots will dictate a "slow crawl," especially if a high wing airplane is making its way to or from the runway. A review of aileron and elevator positioning to offset the wind's upsetting tendencies during taxi will never come at a better time.

Exercise extreme caution when taxiing downwind on an icy taxiway since taxi speed can increase considerably even at idle RPM. Slowing to little more than a full stop well before the end of the taxiway can eliminate the need for a plow and a tug.

Cockpit heater operation might best be viewed as a pre-flight checklist item. Although heaters and defrosters in single engines are simple to operate (Two positions: frostbite and Frigidaire), multi-engine pilots will need to become familiar with the proper operation of heaters. Some heater start and shutdown procedures can be complicated in twins. Any time when using the aircraft's heater, it is important to recall

the potential for carbon monoxide poisoning and how to recognize its symptoms.

UP, UP, AND AWAY—AT LAST

A definite "heads up" disposition is required for take-off on icy runways with strong winds. There will be times when the pilot will have no directional control while accelerating on the runway other than with ailerons and rudder. Certain winter conditions will mandate that a take-off not be initiated at all. The best action is a very sssll-looooooowwww taxi back to the ramp.

Once airborne, the VFR pilot will not only be exposed to the beauty that winter aviating can provide, but also the tricks that it can play. The lake that was such a great checkpoint enroute to some distant destination last June suddenly becomes blurred with snow. Is that the lake, or is it just one of so many fields that slide under the wings during cross-country flight? Familiar roads can disappear under drifts. Airports become invisible.

And what about the destination airport? Is it closed for snow removal? Closed for the winter? Since winter days are shorter, will required services be available for the cross-country trip that might arrive after the early sundown? Although the Flight Service Specialists do their absolute best to provide current and valid NOTAM's concerning airport conditions and other information, a telephone call to the destination FBO might well be worth the long distance charge.

One winter on an IFR flight to Rifle, Colorado, controllers at Denver Center would not authorize an instrument approach to the airport because it had been NOTAMed closed for snow removal. The pilot, however, had called the FBO before departure and learned that the snow removal operation had been completed. After a conversation with the controller and the supervisor on the frequency and a quick confirmation telephone call to the airport by Denver Center, the controller granted an approach clearance.

WINTER WEATHER—NOT SUCH A WONDERLAND

From November through March, the seasons can produce weather that can snare and scare the fair weather pilot. Snow squalls, icing, mountain obscuration, and severe turbulence associated with the more southerly jet stream are just samples of nature's offerings during the winter months. The thorough pilot will devote more time deciphering weather information during the winter season when changes occur so rapidly.

Westbound cross-countries can produce near hover flight for mini-power flying machines thanks to the "Northwest Express." In some parts of the country, particularly in the Rockies and other rugged terrain, 9,000-foot winter winds aloft can exceed 60 knots on crystal clear days, not only undermining the best ETA and fuel requirements planning but also creating the dreaded mountain wave.

Training manuals pay little attention to the mountain wave phenomenon. Whether the Appalachians, the Cascades, the Smokies, or the Rockies, the effects of rivers of cascading air can totally deplete the flight capability of many light aircraft when caught in the downward rush. Under just the right conditions, the mountain wave can impact a flight hundreds of miles downwind of the peaks.

Turbulence is almost always associated with strong winter winds. Recall the significance of tightly spaced isobars on the surface analysis chart (if you can find one). Reading and interpreting winds aloft forecasts is a skill that should be revitalized during winter months. Committing maneuvering speeds to memory and knowing their significance is not a bad idea either.

Whether a flight is VFR or IFR, review communication procedures with weather data providers while in flight. All too often, flyers will conduct a long VFR or IFR cross-country flight relying solely on the pre-takeoff weather briefing. With the whims of winter weather, updates should be obtained frequently while enroute. It is surprising to learn that many pilots are unaware that Flight Watch is not available in all parts of the country and at all hours of the night or that communicating with an FSS through a VOR requires an understanding that the "122.1R" listed at the VOR facility box means that the FSS *receives* on that frequency, not the pilot.

IFR flights during the winter months expose the pilot to a medley of meteorological challenges, such as lake effect squalls and obscuration from snow and blowing snow. Add ice pellets and freezing drizzle to the menu. Of all the wintertime traps lurking in the murk, icing is potentially the most lethal and a healthy respect for it is essential for surviving winter IMC flight. Instrument pilots should invest time addressing go/no go decision-making. In the winter virtually all Area Forecasts have the standard disclaimer: "Chance of light to moderate icing in cloud and precipitation," which seems to render the instrument rating useless during the winter. However, through careful observation of freezing level reports, PIREP's, top reports, ceilings, low pressure and frontal positions, a reasoned decision with "escape options" can be made.

In order to make reasonable icing decisions, you must study the conditions ripe for the formation of ice, including an examination of the cloud types that produce rime, clear, or mixed ice. Of course, icing hazards come in two varieties: induction and structural.

Induction icing can present itself as either carburetor ice or a blocked air intake. While carburetor icing remedies (see article on page 8) are generally discussed and practiced during the first hours of flight training, the instrument pilot flying rented equipment might not be aware of an alternate induction air source or its operation. Likewise, the aircraft's anti-ice and de-ice systems, if installed, require familiarization.

As far as *structural icing* is concerned, ice avoidance techniques in flight must be an integral part of winter risk management. A simple matter of getting into the habit of requesting an unrestricted climb clearance to on-top conditions can mean the difference between an uneventful flying excursion or an anxious predicament caused by meandering around in icy clouds. Icing exiting maneuvers should be contemplated. For example, if while on an instrument flight in wintertime IMC you encounter icing in stratus clouds, a simple change in altitude of a thousand feet or so can normally bring relief since icing layers in stratus clouds are usually thin. On the other hand, a bout with clear ice in cumulus clouds may require an immediate, controlled descent to the nearest airport with an instrument approach if circumnavigation is not possible. If necessary, you should declare an emergency to expedite a descent and approach clearance. (A noteworthy point to make is to be certain that a current set of approach charts covering all possible alternates for the route to be flown is available—just in case.) The essential wisdom is this: If you encounter icing, do something now! This bit of advice must be carved into the mind of the IFR pilot.

WINTER LANDINGS AND SHUT-DOWN

No matter if the flight concludes at the end of an approach to minimums or after hours in exquisite, pristine blue sky, wintertime landings can press piloting skills to the max. As with the takeoff, a landing on a sheet of ice can bring the flight to an embarrassing conclusion. If wind conditions allow, touchdown should be made at a low speed to avoid skating the length of the runway only to be stopped by the fence at the far end. If braking is nil, a go-around may be the more savory alternative to a nose-over into the fluff.

Brisk crosswinds are especially testy during landings on glass-like runways. Alertness and positive control use is imperative with little reliance on the brakes or the nosewheel steering. The pilot should understand that a landing at another airport where the wind is more aligned with the runway is probably a prudent decision if prevailing conditions at the home airport are beyond the skill level.

The rusty winter flyer may want to practice approaches and landings to a strip with an inch or three of fresh snow. Not only will the exercise illustrate the value of soft-field landing procedures, but the pilot will soon recall the difficulty of flare altitude judgement resulting from whiteout.

Once the airplane is gingerly taxied into its outdoor space, if inside storage is unavailable, securing the aircraft well is important. Although a medium breeze would have little affect on a 152 on dry pavement, a loose Cessna on ice propelled by wind could produce a delicate meeting with an insurance adjuster.

If you plan to continue the flight after a short stay on the ground, engine heat preservation is an important consideration. An old horse blanket or ragged quilt secured around the cowling might retain enough heat to avoid the pre-heating charge when it is time to get up and go again.

On the market there are many fine weather flying books which provide some extra winter flying insights. Such pearls of knowledge as "heavier icing is generally found in new clouds more so than in old clouds," or "icing is typically more severe in the northeast quadrant of a low" come from writers who have been there. The conscientious pilot might direct his or her reading activities to such publications for practical solutions to winter weather risk management.

A final thought when preparing for winter flying: Take some advice from mountain search and rescue pilots who increase their chances for winter survival in the event of an off-airport landing by carrying both a survival kit and a sleeping bag on every winter flight. The Colorado Civil Air Patrol can speak of a tragedy near Snowmass recently where two airline pilots on a sightseeing tour in their *Comanche* crashlanded. They survived the landing but succumbed to the elements.

Wintertime flying can be a rewarding adventure. There is no need to become a homebound couch potato when the mercury slides to sub-freezing. To borrow the well-worn motto, all that is required is to, "Be Prepared!"

Thorough preparation is the absolute best way to avoid Frigid Flight Fright! ■

SURVIVAL KIT

This can be a commercially prepared item, or something you put together yourself. It need not weigh more than a few pounds altogether, and you may never use it—but some "bare" essential components of a winter survival kit are:

- **Shelter.** A high visibility plastic tube tent, with emergency space blankets (these fold into a space no bigger than a deck of cards).
- **First Aid.** A complete first aid kit.
- **Food.** High-energy dehydrated food, enough to last at least three days per person.
- **Warmth.** An all weather fire starter kit. (Matches too, of course, but these alone are not good enough).
- **Signalling.** Heliographic mirror, aluminum foil, aerial flares, a hand-held transmitter.
- **Outdoor living.** A strong knife, a good compass, cable saw, tin pot (to melt snow in for drinking water), candles.

Equipment of this kind is designed for minimal weight and can be bought at outdoor or camping stores. Get the best you can afford.

Courtesy of HAI

Snow clouds—rotor induced or otherwise originated—are potentially capable of bringing about pilot incapacitation from flicker vertigo. Rotor blade movements, in the presence of landing lights or other illumination reflected by snow, have caused pilots to become dizzy to the point of losing consciousness—another compelling reason for avoiding whiteouts, especially when alone at the controls.

The city lights at night can be spectacular, but how are you at landing in the dark?

by Bruce Edsten, Accident Prevention Program Manager, Louisville, Kentucky, Flight Standards District Office

Daylight is becoming a scarce commodity as we approach and pass the autumnal equinox. As winter nears our night currency may need some touching up after those long, lazy, hazy days of summer. FAR § 61.57(d) requires three nighttime takeoffs and landings to a full stop within the preceding 90 days for a PIC to be considered night current. Three takeoffs and landings while staying in the pattern at your local, familiar airport may meet the intent of the rule but are you ready to navigate at night or handle an emergency at night? The following article, reprinted from the Accident Prevention Program Newsletter published by the Louisville FSDO, offers some food for thought about night flying. ***—Editor***

Night flying has lots of advantages. It is almost always cooler, and that usually means smoother air, so it is a lot more comfortable all the way round. If you fly rental airplanes, the selection is better at night so your favorite mount is more likely to be available. There are fewer folks up there in the sky with you, and that makes for fewer communications and traffic hassles. On top of that, it is fun and just plain pretty looking down on all the twinkling lights!

Of course, if you have not flown at night for a while you will need to get current, and any opportunity to get an instructor up with you can be very educational—far beyond the obligatory three takeoffs and landings. For instance, when was the last time you did a DF Steer? Or a no-gyro approach or maybe a Precision Approach Radar (PAR) approach? These are great practice exercises and are almost invariably easier to accomplish at night when the ground personnel are not quite so busy.

If you are going out there with an instructor, you might want to try some lights-off landings. With a little practice these are actually fun, and they are a great hedge against that day when your entire electrical system goes kaflooey. (Those of us who are intimately familiar with Murphy's Law know that the Busted Electrical System Corollary states that your flashlight will also pick the same time to quit.) I usually start students off with some airwork without cockpit lights to get them listening and feeling for clues about airspeed, power, etc. Next is a series of landings with emphasis on outside visual references, eventually working into landings with no landing lights and no cockpit lights. It is not as tough as it sounds. Night landings are pretty easy at the

"Probably the most important item to be considered in planning a night flight is YOU, the pilot. Flying at night requires a bit more attention to the task at hand than flying in the daytime, so you want to be sure you are up to it."

huge international airports because it never really gets DARK there. The effect of a lights-out landing can be heightened by selecting a remote airport without a lot of bright city lights around it. That is how it should be done.

Is night flying more dangerous? Some folks think so. In most places outside the U.S., night VFR is prohibited unless you are IFR-rated, equipped, and filed as soon as the sun goes down. Some places further restrict night operations to multi-engine aircraft only, in addition to the VFR prohibition. How come? The problem is our eyes. We just do not have what it takes to operate in the dark like cats and owls and other nocturnal critters. To operate an airplane effectively at night, humans must compensate with technology and brains.

At night, the see-and-avoid concept depends on aircraft lights. You need to have the navigation lights and anti-collision lights in good working order. It is also handy to have cockpit and instrument lighting, and a trusty flashlight is a must (though not FAR Part 91-required) for your flight bag in case any of the other lights fail. As a rule, I have two flashlights in the bag and a spare set of batteries as well. This equipment should all be carefully preflighted, and you best not go if all are not working!

Another part of your preflight planning is an appropriate weather briefing. Many night accidents are a result of running into some unexpected weather and not being able to handle it. A cloud formation that would give you no trouble whatsoever in the daytime may not even be visible at night until you are inside it!

The dark also hides terrain features, so careful planning of your route of flight is very important. As a rule, you can expect such things as buildings and radio towers to be properly lighted, but there is a lot of high-level real estate out there that has nothing on it at all. Consult the appropriate charts, and give hills and mountains a wide berth.

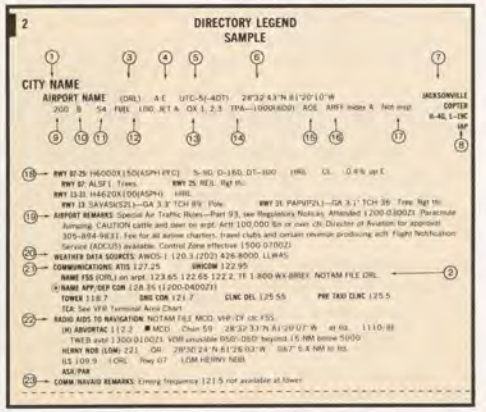
Another consideration in selecting a route is fuel—specifically, how much do I need, and where can I get some more? The FAR require that you plan for a 45-minute reserve at night, but remember that is a MINIMUM. The prudent pilot will carry some extra, just in case. (One pilot's spouse insists upon an extra 15 minutes of fuel for each family member on board.) A check of the Airport/Facility Directory will show you which airports are attended after dark and whether they have the kind of fuel you need. A quick phone call to that planned fuel stop can be worth a lot, just to be sure they are really going to be open. The airports that are most likely to be open at night are the ones near the larger cities where airplane traffic is a 24-hour occurrence. Planning a night flight to one of those airports has another advantage, since the larger airports are easier to find—all those lights and major highways provide additional references for pilotage.

Lights play a big role once you get to the airport, too. Without a rotating beacon, many airports would be difficult or impossible to find. Does your destination airport have one? You can also find airports by looking for other lighting aids such as Runway End Identifier Lights (REIL), Approach Light Systems (ALS), or High Intensity Runway Lights (HIRL). In many case these and other lighting aids can be turned up to extra bright by the tower or FSS. Increasingly, airport lighting aids are operated by Pilot Controlled Lighting (PCL) devices. This can be a BIG help in picking the airport out the clutter of city lights. Check the *Airport/Facility Directory* and current charts for details.

How about landing aids such as VASI or PAPI? Within limits these approach aids will provide obstruction clearance through your descent and final approach if you remain on slope. Use them whenever you can. You may want to select a different runway or even a different airport to assure you can take advantage of these aids. In any case, be sure to check NOTAM's to see if the lights you are counting on are working tonight.

Probably the most important item to be considered in planning a night flight is YOU, the pilot. Flying at night requires a bit more attention to the task at hand than flying in the daytime, so you want to be sure you are up to it. Fatigue brought on by a full day at work (or play!) can significantly reduce your capacity to the point where you are simply no longer a safe pilot. The problem is the eyes, remember? We have enough trouble seeing at night when we are rested and healthy, and it only gets worse with fatigue. The effects of altitude will only make thing still worse; oxygen is very important to good night vision. Section 8–2 of the *Airman's Information Manual* even states that, "For optimum protection, pilots are encouraged to use supplemental oxygen above 10,000 feet during the day, and above 5,000 feet at night." Be realistic about your abilities, and leave the trip for another time if you are tired.

Doing it in the dark can be very rewarding. Proper attention to planning and pilot currency will make it safe. ■


2

DIRECTORY LEGEND
SAMPLE

CITY NAME

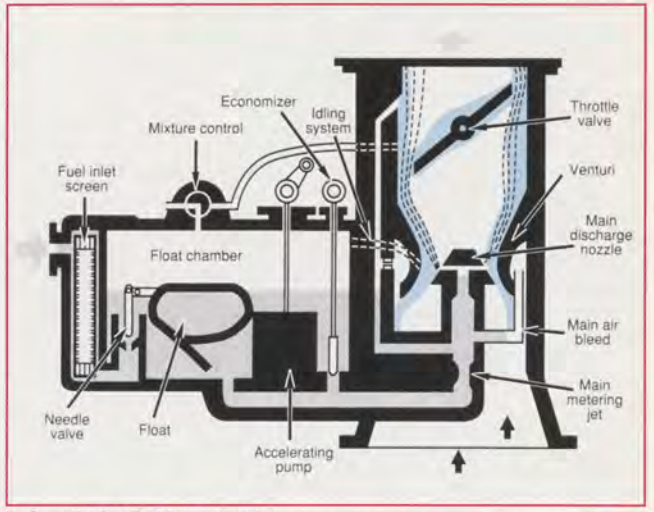
AIRPORT NAME (ORL) A E UTC-5(-4DT) 28°32'43"N 81°20'10"W JACKSONVILLE COPTER
200 B S4 FUEL 100LL JET A OX 1, 2, 5 TPA—1000(600) ROE ARFF Index A Not insp 0-4E, L-19C
IAP

RWY 07-25: H6000X150(ASPH-PFC) S-90, D-180, DT-300 HIRL CL 0.4% up E
RWY 07: ALSF1. Trees. RWY 25: REIL. Rgt tfc.
RWY 13-31: H4620X100(ASPH) HIRL
RWY 13: SAVASI(S2L)—GA 3.3° TCH 89' Pole. RWY 31: PAPI(P2L)—GA 3.1° TCH 39' Tree. Rgt tfc.
AIRPORT REMARKS: Special Air Traffic Rules—Part 93, see Regulatory Notices. Attended 1200-0300Z‡. Parachute Jumping. CAUTION cattle and deer on arpt. Actl 100,000 lbs or over ctc Director of Aviation for approval 305-894-9831. Fee for all active charters, travel clubs and certain revenue producing acft. Flight Notification Service (ADCUS) available. Control Zone effective 1500-0700Z‡.
WEATHER DATA SOURCES: AWOS-1 120.3 (202) 426-8000. LLWAS.
COMMUNICATIONS: ATIS 127.25 UNICOM 122.95
NAME FSS (ORL) on arpt. 123.65 122.65 122.2. TF 1-800-WX-BRIEF. NOTAM FILE ORL.
NAME APP/DEP CON 128.35 (1200-0400Z‡)
TOWER 118.7 GND CON 121.7 CLNC DEL 125.55 PRE TAXI CLNC 125.5
TCA: See VFR Terminal Area Chart.
RADIO AIDS TO NAVIGATION: NOTAM FILE MCO. VHF/DF ctc FSS.
(H) ABVORTAC 112.2 ■ MCO Chan 59 28°32'33"N 81°20'07"W 48 mi 1110 BB
TWEB avbl 1300-0100Z‡. VOR unusable 050°-080° beyond 15 NM below 5000'.
HENRY NDB (LOM) 221 OR 28°30'24"N 81°26'03"W 087° 6.6 NM to fld.
ILS 109.9 I-ORL Rwy 07 LOM HENRY NDB.
ASR/PAR
COMM/NAVAID REMARKS: Emerg frequency 121.5 not available at tower.

Page from Airport/Facility Directory. If you are not sure how to read the airport entries, check the legend sample on page 2 of the Directory. Number 12 indicates fueling information and number 18 indicates lighting information.

Carburetor Icing!

by Rand M. Sanders



Ice formation in a float-type carburetor

WHAT IS CARBURETOR ICE?

- The formation of ice in the carburetor that may form at the fuel discharge nozzle, in the venturi, on or around the butterfly valve, or in the passages from the carburetor to the engine.

WHY IS CARBURETOR ICE DANGEROUS?

- Because it may restrict the power output of the engine or even cause the engine to quit operating.

WHAT CAUSES CARBURETOR ICE?

- Carburetor ice forms during the vaporization of fuel, combined with the expansion of air as it passes through the carburetor, both of which cause a sudden cooling of the mixture.
- If water is present, this cooling may reduce the temperature in the carburetor below freezing. If so, the moisture will be deposited as frost or ice inside the carburetor passages.
- The temperature drop in the carburetor can be as much as 40 °C (104 °F) but is usually 20 °C (68 °F) or less.

IS CARBURETOR ICE A PROBLEM IN FUEL INJECTION SYSTEMS?

- It is NOT a problem for fuel injected engines because such systems do not use a carburetor, i.e., fuel is vaporized by other means.

WHAT ARE THE IDEAL CONDITIONS FOR CARBURETOR ICE?

- When the cooling effect in the carburetor is sufficient to bring the temperature inside the carburetor down to 0 °C (32 °F) or colder and if moisture is visible in the air.
- When the relative humidity of the outside air is high, ice can form inside the carburetor in cloudless skies and when temperatures are as high as 25 °C (77 °F). It sometimes forms with outside air temperatures as low as –10 °C (14 °F).
- When the temperature and dewpoint approach 20 °C (68 °F).
- When the temperature is between –7 °C (20 °F) and 21 °C (70 °F) with visible moisture or high humidity.
- During low or closed throttle settings, an engine is particularly susceptible to carburetor ice.

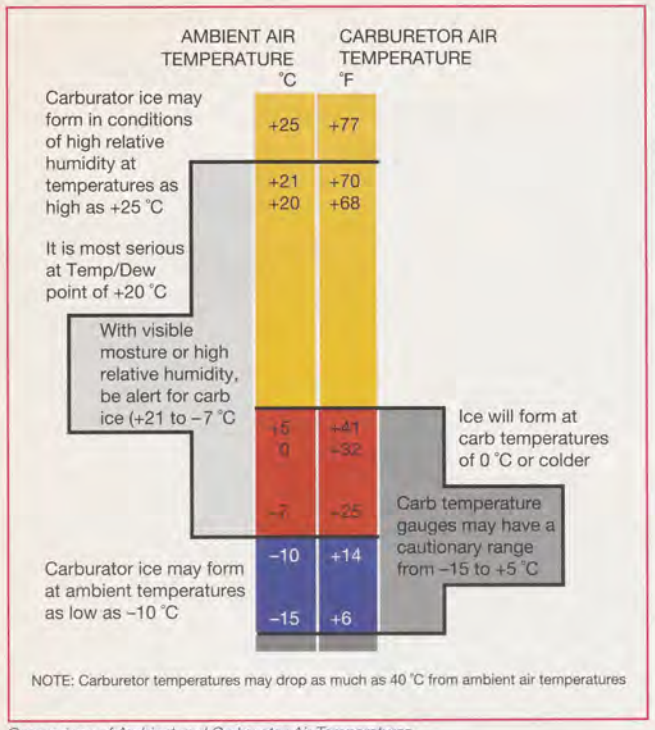
HOW DO YOU DETECT CARBURETOR ICE?

- Because carburetor ice may restrict the power output or cause the engine to quit operating—
- For an airplane with fixed-pitch props the first indication of carburetor icing is a loss of engine RPM.
- For an airplane with constant speed props, the first indication of carburetor icing is usually a drop in manifold pressure. There will be NO reduction in RPM.
- Engine roughness.
- In aircraft equipped with a carburetor air temperature gauge, a needle in the yellow arc (–15 °C to 5 °C) indicates the carburetor air temperature at which carburetor icing is most likely to occur.

HOW CAN YOU PREVENT/ REMOVE CARBURETOR ICE?

*[**Editor's note:** Follow the procedures indicated in the POH for your aircraft, which may differ slightly from the generic procedures offered below.]*

- Use carburetor heat, which is an anti-icing device that preheats air before it reaches the carburetor.
- Carburetor heat is usually adequate to prevent icing but it may not always clear ice which has formed.



NOTE: Carburetor temperatures may drop as much as 40 °C from ambient air temperatures

Comparison of Ambient and Carburetor Air Temperatures

When the carburetor air temperature gauge needle is in the yellow arc, carburetor icing is most likely to occur.

- Make periodic checks for carburetor icing when conditions are conducive to its formation.
- When detected or suspected, full carburetor heat should be applied immediately and should be left "on" until all ice has been removed.
- If ice is present, applying partial carburetor heat or leaving it on for an insufficient time might aggravate the situation.
- If a pilot suspects carburetor icing conditions and anticipates closed throttle operations, the carb heat should be applied "full on" before closing the throttle and left on during the closed throttle operation. Periodically, open the throttle smoothly for a few seconds to keep the engine warm, otherwise, the carburetor heater may not provide enough heat to prevent icing.

SAY AGAIN, HOW DO YOU CHECK FOR ICE AND WHAT DO YOU DO IF ICING IS PRESENT?

Apply Carburetor Heat:

- There will be a drop in RPM for fixed-pitch propeller aircraft or manifold pressure for constant speed propeller aircraft.
- If ice is present and as it clears, RPM or manifold pressure will rise, often accompanied by engine roughness as the water is ingested.

Turn off Carburetor Heat only when ice is clear:

- RPM or manifold pressure will rise to a setting greater than that before application of carburetor heat.
- The engine should run more smoothly after the ice has been removed. ■

***Editor's Note:** Mr. Sanders is a Technical Sergeant in the U.S. Air Force Reserves where he flies as a boom operator on KC-10A's. He is an airline transport pilot, CFI, and flies with the North Carolina Wing of the CAP. He promises to write some time in the future about how misfueling caused both engines to quit on the Convair 240 in which he used to fly air freight.*

Sir Hiram Maxim

The crewmembers of Maxim's "aerial steamship" ready it for its trial run on its dual rail tracks. The craft had a 108-foot wingspan with twin 18-foot steam driven pusher propellers and a gross weight of 8,000 pounds. (The first successful Wright Flyer in 1903 weighed only 605 pounds.)

"Maxim speaks of Lilienthal as a parachutist, and likens him to a flying squirrel.... Lilienthal after alluding to the unwieldiness of Maxim's machine, says, 'After all, the result of his labors has been to show us how not to do it.' If any two men should be friends rather than foes, these are the two. Each has certain ideas and publications which the other lacks and it is the greatest of pities that they cannot clasp hands over the watery channel."

Sir Hiram Maxim and His Forgotten Legacy to Aviation

by Louise Oertly, Associate Editor

James Means, an American aeronautical enthusiast and publisher of the influential *Aeronautical Annual*, wrote this editorial in 1895. He was talking about two of the better known aviation figures of his day, Otto Lilienthal and Sir Hiram Maxim, remembered today for their gliders and—machine guns?

That's right. Maxim's chance interest in the automation of guns led him to invent the first efficient machine gun. However, when the U.S. War Department called the gun ingenious but impractical, he showed his invention to the British War Office who immediately saw its possibilities in helping the British maintain their widespread empire. That is why U.S.-born Maxim was eventually knighted by Queen Victoria after he became a British subject.

Born in Sangerville, ME on February 5, 1840, Maxim inherited his mechanical ability and interest in aviation from his father, who designed a two-rotor helicopter. The craft was never built because a practical engine was not available—a fact that would later influence Maxim aeronautical experiments. With less than five years of formal education, Maxim left home and wandered the eastern U.S. and Canada working at a variety of jobs, studying science and engineering in his spare time. By the time he was 24 he was in New York working as a draftsman at his uncle's iron works.

He carried out important pioneering work in the field of electric lighting and was on the verge of producing a practical incandescent light bulb in 1879 when Thomas Edison patented his famous "light in a vacuum." This interest had been spurred by his job with one the first electric companies in the U.S. Eventually his mechanical ability and fertile imagination led him to form a company which produced everything from mousetraps to automatic sprinkler systems. With his gun factory in England a financial success, he was now able to pursue an interest of long standing–aeronautics.

Over the years the thought of flight had intrigued Maxim, so in 1891 he took a scientific approach to studying the problem of flight. He first studied wing forms and propellers using a whirling arm, then a wind tunnel to determine the best configurations for flight. The next step was to solve the problem of engine power, maintaining that "without a doubt the motor is the chief thing to be considered. Scientists have long said, give us a motor and we will very soon give you a successful flying machine." With this in mind he developed a light-weight 180 horsepower steam engine—he was skeptical about the reliability of the internal combustion engine. Two of these steam engines would be required to power the design that came off Maxim's drawing board.

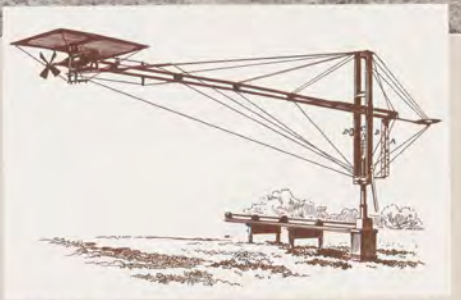
The gigantic multi-engine craft measured roughly 200 feet from front to back and had a 108-foot wingspan and two 18-foot propellers. With a gross weight of 8,000 lbs., including the three person crew, the craft would have a total lifting surface of 4,000 square feet. Maxim calculated that his two steam engines would produce a combined thrust of 2,000 lbs. and, at 40 mph with wings at 7¼° pitch, a total lift force of 10,000 lbs.

Keeping in mind the money, time, and work involved in his craft, Maxim installed an elevator fore and aft and set outer wing panels at a dihedral angle to provide stability. He maintained, unlike Lilienthal, that human skill was totally inadequate for maintaining equilibrium. To further protect his craft, he built a 1,800' dual rail "runway" that consisted of a lower heavy steel rail for the craft's four red-painted cast iron wheels and a upper guiderail of 3 by 9 inch Georgia pine to keep the craft from escaping into uncontrolled flight.

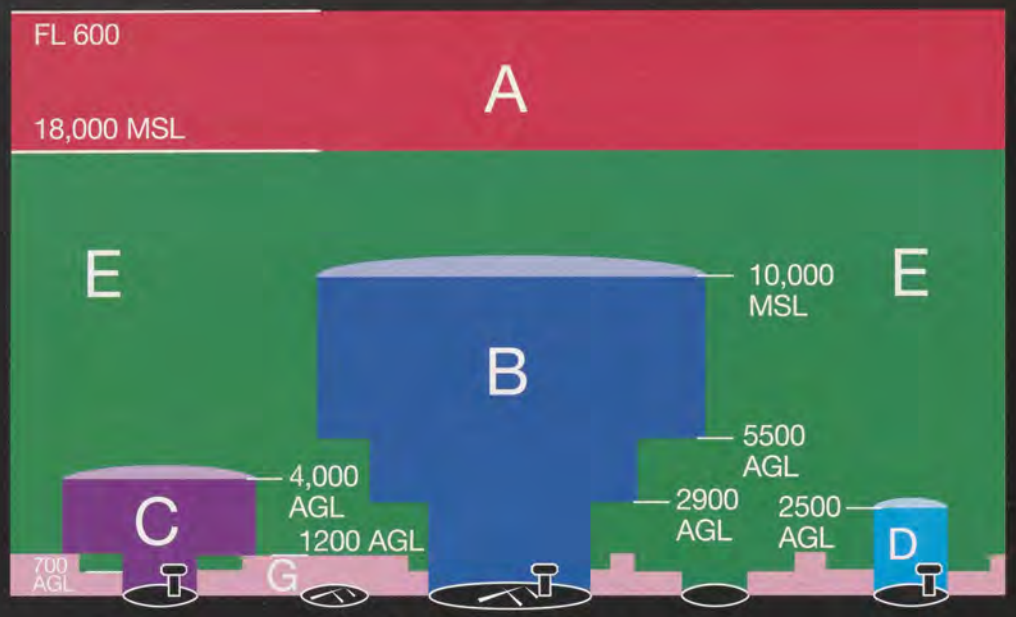
Experiments began in late 1892 and journalist H.J.W. Dam described his 1893 flight in Maxim's craft this way. "A rope was pulled, the machine shot forward like a railway train, and, with the big wheels whirling, the steam hissing, and the waste pipes puffing and gurgling, flew over the 1,800 feet of track in much less time then it takes to tell it." Although Maxim's test runs were marred by a series of breakdowns and mishaps, none were serious enough to stop his experiments—not until July 31, 1894, that is. On this day his craft lifted off the ground as usual—only this time one of the upper guiderails snapped allowing the machine to float through the air. But not for long. The flight came to an abrupt end when a piece of the broken rail smashed into one of the propellers. It is interesting to speculate how long his enormous machine would have sustained powered flight if it had not been for that chunk of wood.

Even though Maxim had proved his theory that a powerful engine could lift a heavy object, investors were not willing to put more money into the project, and Maxim was too involved with his other affairs to continue his experiments. But he was optimistic about the future of aviation. In 1893 before his experiments came to an abrupt halt, he told a journalist, even "under the most unfavorable circumstances aerial navigation will be an accomplished fact inside of ten years."

Once upon a time there were two gentlemen from Dayton at a place called Kitty Hawk... ■



In 1891 Maxim built this machine for testing the efficiency of the screw-propeller and the lifting power of his airplane design.



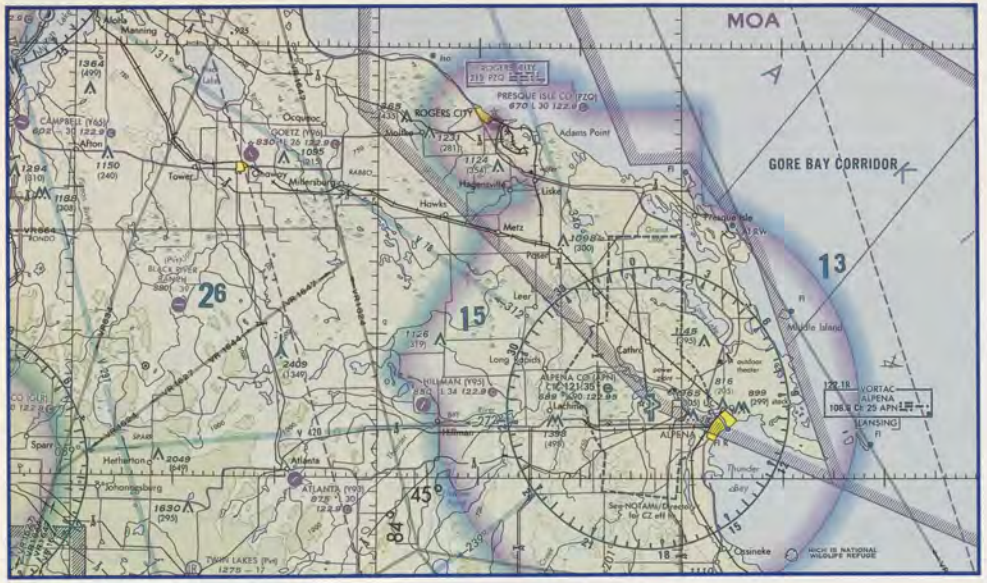
Charting the ABC's of Airspace Reclassification

by Louise Oertly, Associate Editor

Just in case you have been busy with election year politicking and not heard yet, on September 16, 1993, a new rule on airspace reclassification goes into effect—an event most airspace users are apprehensive about. Instead of the more familiar acronyms (ATA, TCA, etc.), the rule will establish six classes of U.S. airspace that will be designated by a single letter of the alphabet—A, B, C, D, E, and G (but no F; the International Civil Aviation Organization's Class F—ATC provides separation service to IFR aircraft so far as practical—has no equivalent in U.S. airspace). As daunting as this may sound, in fact there are very few changes to the FAR and those changes that have been made are favorable to pilots. Basically, the airspace reclassification rule eliminates much of the overlapping airspace confusion. The main problem will be the re-education of all airspace users from the low-time student to the high-time ATP. FAA and industry will soon have videos and publications ready for Accident Prevention Program meetings.

In our March/April 1992 issue, the article, "The ABC's of Airspace Reclassification," explained how the rule came about. To help you make a smoother transition into the new system, this article explains each class; compares VFR and IFR operations; lists any rule changes; and shows how it will appear on aeronautical, planning, and route charts. The first phase of airspace reclassification goes into effect on October 15, 1992, when changes begin appearing on VFR charting products. An insert explaining these changes will be provided with the charts, but we have printed them in this article grouped with the airspace they affect.

The FAA's goal in reclassifying the airspace is to simplify the airspace designations and to standardize equipment and pilot requirements for operation in U.S. airspace, not to confuse you. And this thought may help—you are not alone—even FAA's inspectors and air traffic controllers have to be re-educated too.



Look familiar? Above is a portion of the Lake Huron sectional chart with the old symbology for the control zone at Alpena. As of October 15, that same portion of the chart (below) will have a different look. The new symbology tells you that it is a control zone with a tower and with arrival extensions without communications requirements. (NOT TO BE USED FOR NAVIGATIONAL PURPOSES.)

CLASS A

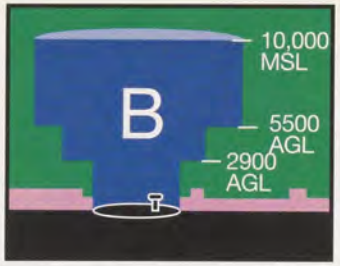
[Positive Control Area (PCA)]

- JET ROUTES
- AREA HIGH ROUTES
- OFFSHORE ADDITIONAL CONTROL AREAS AT OR ABOVE 18,000' MSL

CLASS A AIRSPACE	IFR	VFR
Operations Permitted	Yes	No
Entry Prerequisites	ATC Clearance	n/a
Minimum Pilot Qualifications	Instrument Rating	n/a
Two-way Radio Communications	Yes	n/a
Aircraft Separation	All	n/a
Differs from ICAO	No	n/a
Changes Existing Rule(s)	No	n/a

CHART INFORMATION

Not Pertinent to VFR Chart.



CLASS B

[Equivalent—Terminal Control Areas (TCA)]

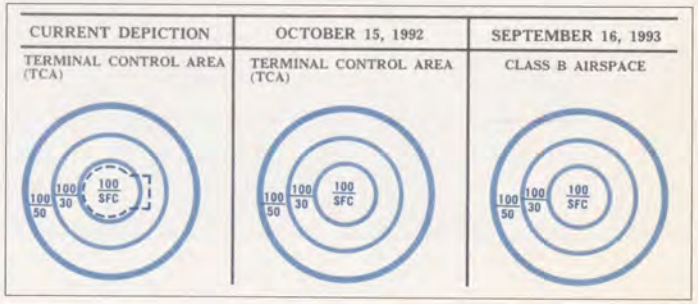
CLASS B AIRSPACE	IFR	VFR
Operations Permitted	Yes	Yes
Entry Prerequisites	ATC Clearance	ATC Clearance
Minimum Pilot Qualifications	Instrument Rating Certificate	Private or Student
Two-way Radio Communications	Yes	Yes
Aircraft Separation	All	All
Traffic Advisories	Yes	Yes
Safety Alerts	Yes	Yes
Minimum Flight Visibility	n/a	3 Statute Miles
Minimum Distance from Clouds	n/a	Clear of Clouds
Differs from ICAO	Yes*	Yes*
Changes Existing Rule(s)	No	Yes**

* ICAO does not have speed restriction in Class B. U.S. will retain 250 KIAS rule below 10,000' MSL.

** Reduces cloud clearance from standard to clear of clouds.

CHART INFORMATION

There are no charting symbology changes. However, beginning on October 15, 1992, the control zones associated with any airport in the Terminal Control Area (TCA) surface area will cease to be charted. The control zones will continue to legally exist until the TCA's become Class B airspace on September 16, 1993. See page 16 for the new symbology for Part 93—Fixed Wing Special VFR Flight. On a VFR chart a box indicates Part 93 and "No SVFR" indicates that fixed wing SVFR operations are prohibited.



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CLASS C

[Equivalent—Airport Radar Service Areas (ARSA)]

CLASS C AIRSPACE	IFR	VFR
Operations Permitted	Yes	Yes
Entry Prerequisites	ATC Clearance	Radio Contact
Minimum Pilot Qualifications	Instrument Rating	Private or Student Certificate
Two-way Radio Communications	Yes	Yes
Aircraft Separation	All	Between IFR & VFR
Traffic Advisories	Yes	Yes
Safety Alerts	Yes	Yes
Minimum Flight Visibility	n/a	3 Statute Miles
Minimum Distance from Clouds	n/a	500' Below, 1,000' Above 2,000' Horizontal
Differs from ICAO	Yes*	Yes**
Changes Existing Rule(s)	No	No

* ICAO does not have speed restriction. U.S. will retain 250KIAS rule below 10,000' MSL and 200KIAS below 2,500' AGL within 4NM of the primary airport.
** ICAO requires ATC clearance.

CHART INFORMATION

On April 2, 1992, Terminal Radar Service Areas (TRSA) began to be depicted with a solid black line. This interim conversion will be completed August 20, 1992. TRSA's, as entities, will not become an airspace class on September 16, 1993. Beginning on October 15, 1992, the solid magenta line formerly used for TRSA's is used for Airport Radar Service Areas (ARSA). This change will be completed on sectional and terminal area charts by March 4, 1993. Also beginning on October 15, 1992, the Control Zones associated with any airport in the ARSA surface area will coincide with the ARSA surface area and cease to be charted. The ARSA's will become Class C airspace on September 16, 1993. Any extension of a control zone that exceeds an ARSA surface area will be depicted with a magenta segmented line. The magenta segmented line denotes controlled airspace extending upward from the surface to the overlying or adjacent controlled airspace. Such extensions will become Class E airspace on September 16, 1993. There are no operating rule changes. Pilots may continue to operate VFR underneath the ARSA/Class C shelf without contacting air traffic control.

CLASS D

[Equivalent—Airport Traffic Areas (ATA) and Control Zones (CZ)]

- **AIRSPACE REQUIRING COMMUNICATIONS WITH ATC BY VFR AIRCRAFT**
- **TOWERED CONTROL ZONES**
- **TOWERED AIRPORTS WITHOUT STANDARD INSTRUMENT APPROACH PROCEDURES**

CLASS D AIRSPACE	IFR	VFR
Operations Permitted	Yes	Yes
Entry Prerequisites	ATC Clearance	Radio Contact
Minimum Pilot Qualifications	Instrument Rating	Student Certificate
Two-way Radio Communications	Yes	Yes
Aircraft Separation	IFR & SVFR	n/a
Traffic Advisories	Workload Permitting	Workload Permitting
Safety Alerts	Yes	Yes
Minimum Flight Visibility	n/a	3 Statute Miles
Minimum Distance from Clouds	n/a	500' Below, 1,000' Above 2,000' Horizontal
Differs from ICAO	No	Yes*
Changes Existing Rule(s)	Yes**	Yes**

* ICAO requires ATC clearance.
** Generally, the upper limits of the Control Zone lowered from 14,500' MSL to 2,500' AGL and Air Traffic Area lowered from 2,999' AGL to 2,500' AGL. Communications required.

CHART INFORMATION

Those Control Zones (CZ) with an operating control tower will continue to be depicted with a blue segmented line. The vertical limit, in MSL, in now charted in hundredths of feet. The Air Traffic Area (ATA) and its communications requirement with air traffic control remains until September 16, 1993, at which time a like communications requirement for all aircraft within the Class D airspace is established.

Arrival extensions will either be charted as part of the basic surface area with the blue segmented symbology or as a separate surface area indicated by the magenta segmented line. Communications with air traffic control are not required within the airspace encompassed by the magenta lines which will be Class E airspace.

CLASS E

[Equivalent—Controlled Airspace—General]

- NONTOWERED CONTROL ZONES
- 700 FOOT TRANSITION AREAS
- 1,200 FOOT TRANSITION AREAS
- FEDERAL AIRWAYS
- OFFSHORE CONTROL AREAS BELOW 18,000' MSL
- ADDITIONAL CONTROL AREAS BELOW 18,000' MSL
- CONTINENTAL CONTROL AREA

CLASS E AIRSPACE	IFR	VFR
Operations Permitted	Yes	Yes
Entry Prerequisites	ATC Clearance	None
Minimum Pilot Qualifications	Instrument Rating	Student Certificate
Two-way Radio Communications	Yes	No
Aircraft Separation	IFR & SVFR	n/a
Traffic Advisories	Workload Permitting	Workload Permitting
Safety Alerts	Yes	Yes
Minimum Flight Visibility	n/a	3 Statute Miles*
Minimum Distance from Clouds	n/a	500' Below,** 1,000' Above 2,000' Horizontal
Differs from ICAO	No	No
Changes Existing Rule(s)	No	No

* Operations at or above 10,000' MSL—5 statute miles.

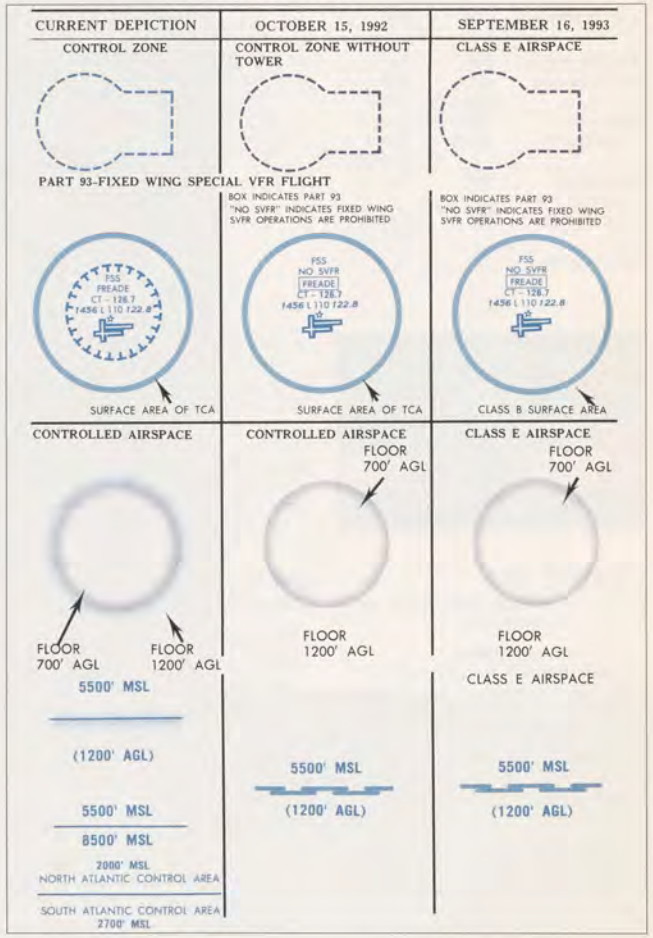
** Operations at or above 10,000' MSL—1,000' below, 1,000' above, 1 statute mile horizontal.

CHART INFORMATION

Beginning October 15, 1992, Control Zones (CZ) without an operating control tower will be depicted with a magenta segmented line which denotes controlled airspace extending upward from the surface to the overlying or the floor of the adjacent controlled airspace; therefore, the vertical limit is not depicted.

Effective October 15, 1992, the blue vignette (light-blue shaded) line will not be used to depict the 1,200 foot or above airspace, unless it abuts uncontrolled airspace. Where the outer edge of the 700 foot transition area (magenta vignette) ends, the 1,200 foot or greater area automatically begins. Effective September 16, 1993, these areas become Class E airspace extending upward from other than the surface.

New symbology will be used beginning October 15, 1992, to depict the boundary of controlled airspace with floors other than 700 feet or 1,200 feet. This symbology will also be used to distinguish the floors of the domestic offshore areas and the offshore control areas beyond 12 NM of the U.S. coast.



CLASS G

[Equivalent—Uncontrolled Airspace] As noted in the illustrations, there will continue to be airports in Class G airspace. At those airports with an instrument approach procedure, the floor of controlled airspace will generally be a Class E area extending upward from 700' AGL. There are no charting or operating rule changes.

CLASS G AIRSPACE	IFR	VFR
Operations Permitted	Yes	Yes
Entry Prerequisites	None	None
Minimum Pilot Qualifications	Instrument Rating	Student Certificate
Two-way Radio Communications	No	No
Aircraft Separation	None	None
Traffic Advisories	Workload Permitting	Workload Permitting
Safety Alerts	Yes	Yes
Minimum Flight Visibility	n/a	1 Statute Mile*
Minimum Distance from Clouds	n/a	Clear of Clouds**
Differs from ICAO	No	Yes***
Changes Existing Rule(s)	No	No

* Operations at or above 10,000' MSL—5 statute miles; Night operations below 10,000' MSL—3 statute miles; day or night operations at or above 10,000'MSL—5 statute miles.

** Operations more than 1,200' AGL, but less than 10,000' MSL–500' below, 1,000' above, 2,000' horizontal. Operations at or above 10,000' MSL—1,000' below, 1,000' above, 1 statute mile horizontal.

*** ICAO requires 3 statute miles visibility

CURRENT DEPICTION	OCTOBER 15, 1992	SEPTEMBER 16, 1993
UNCONTROLLED AIRSPACE	UNCONTROLLED AIRSPACE	CLASS G AIRSPACE
1200' OR GREATER CONTROLLED AIRSPACE	1200' OR GREATER CONTROLLED AIRSPACE	1200' OR GREATER CLASS E AIRSPACE

The pilot of this Piper Cheyenne III *flies away safe in the knowledge of the new airspace reclassification systems. How about you?*

International Altimetry

by Perry Thomas, ASRS Analyst

This is the first in a series of articles reprinted from ASRS Directline, a quarterly publication that addresses particular areas of safety that appear in pilot reports received by NASA's Aviation Safety Reporting System. (ASRS Directline is free from ASRS, NASA-Ames Research Center, Moffett Field, CA 94035.) More and more private aircraft are making international flights, so if you are contemplating such a journey and a hectopascal sounds foreign to you, read on. ***—Editor***

The use of Hecto Pascal or Millibars by some countries has, on occasion, caused experienced international flight crews, who are accustomed to inches of mercury, to incorrectly set their aircraft altimeters.

Europe

"[A] three-man, wide-body type aircraft flight crew experienced in European operations" was engaged in a difficult (nine degrees drift over water in heavy rain) VOR-DME approach to an MDA of 420 feet. The transition altitude had been 4,000 feet so the experienced, but weary, flight crew was late receiving ATIS, reducing the time available for completing their landing data. QNH was given as 9–9–1."

The first officer was flying the approach, and the captain called 1,000 feet MSL in descent. Shortly thereafter, the second officer called, "300 feet radar altitude—go around!" A missed approach was flown, and the "captain questioned the tower about [the] altimeter setting. . . 29.91. . . this was confirmed. A second voice, however, corrected that statement to 991 *millibars*" [emphasis added].

The aircraft's altimeters were reset from 29.91 to 991 millibars—a 640-foot difference (see Figure 1). The flight crew later calculated they had come within 160 feet of hitting the water.

Was this merely an isolated incident? Here is another occurrence from the other side of the world.

The Orient

It was the end of a long overwater flight:

"Approach control gave the altimeter as 998 hectopascal. I read back 29.98. [The] approach controller repeated his original statement. Forgetting that our altimeters have settings for millibars and hectopascal (which I had only used once in my career and that was six months ago), I asked where the conversion chart was. 'Old hand' captain told me that approach meant 29.98. Assuming that he knew what he was doing, I believed him. We were a bit low on a ragged approach, and I knew we were awfully close to some of the hills that dot the area. . . but it was not until we landed and our altimeters read 500 feet low that I realized what had happened."

Quotes from Other ASRS Reports

"Never having used mb before, the significant of 971 mb wasn't apparent to me until I read the equivalent Hg 26.68."

"Dealing in millibars did not make an impression. . . [because of] the very low [atmospheric] pressure."

The "copilot who had copied the ATIS gave me 2997 when I asked for QNH. Gusty winds and [the controller's] thick accent weren't helping things. [Obstructions] seemed unusually close to our altitude. [The] copilot had assumed 9–9–7 to be 29.97." (500 feet low)

"[Given] altimeter of niner-seven-eight hPa. The [words] hPa were somewhat muted. We set 29.78 [inches]." (900 feet low)

Factors

Several human and procedural factors appear to increase the possibility of incorrectly set altimeters in international operations.

The Question of Q's

We all tend to forget things we either have not used in a while or that we do not use very often. For those of us who need a memory refresher, here are three important "Q" altimeter settings.

QNE: The standard altimeter setting of 29.92 inches of mercury (Hg) or 1013.25 hectopascal (hPa) or 1013.25 millibars (mb). (See the sidebar "What's a Pascal" on p. 19 to find out why hPa and mb are the same.)

- ON THE GROUND—a variable elevation reading that is above or below actual elevation (unless the station pressure happens to equal 29.92 Hg).
- IN THE AIR—positive separation by pressure level but at varying actual or true altitudes.

QNH: Height above sea level when corrections are applied for local atmospheric pressure that is above or below the standard altimeter setting of 29.92 Hg. QNH is the altimeter setting provided in the ATIS information and by ATC.

- ON THE GROUND—the actual elevation above sea level when the aircraft is on the ground.
- IN THE AIR—the true height above sea level without consideration of temperature.

QFE: An altimeter setting that is corrected for actual height above sea level and local pressure variations.

- ON THE GROUND—zero elevation when the aircraft is on the ground. Thus, for an aircraft at the gate at Denver (actual airport elevation above sea level, 5,333 feet) the aircraft altimeters would read zero if set to QFE.
- IN THE AIR—the height above ground without consideration of temperature.

Fatigue

International flights from the United States are generally of long duration through several time zones. The element of fatigue in long distance flights is inescapable.

Workload on Approach

Transition from standard altimeter setting flight levels (QNE) to sea level altimeter setting altitudes (QNH) are at generally much lower altitudes than in the United States. Many countries provide altimeter settings corrected for actual height above sea level and local pressure variations (QFE) which alone can cause significant confusion for pilots used to flying QNH. Obtaining altimeter setting and landing data closer to the approach segment complicates the task of preparing data for landing at the very time the flight crew may be most fatigued.

Language Difficulties

Rapid delivery of clearances coupled with unfamiliar accents and contraction of hectopascal (hPa) or millibars (mb) increase the potential for error.

Communication Procedure

Only *one* person receiving the approach and landing data then passing that information to the rest of the crew means that a misconception or misunderstanding is less likely to be detected until too late.

Cockpit Management

There is often inadequate crew briefing for approach and landing with no mention of how the altimeter setting will be expressed—that is, Hg, mb, or hPa. Flight crews also may not adequately review approach charts for information. Some airlines do not provide the second officer with approach plates. Unless he or she makes an extra effort to look at one of the pilot's charts, the altimeter setting standard may be unknown.

Experience Level and Currency

At least one airline experiences a constant turnover in the international group as senior pilots retire and other crew members bid off international schedules to upgrade to captain or first officer. Many of the international reports submitted to ASRS mention that at least one flight crew member is new to the operation. Airline training is usually reported as being adequate, but some of the training for international operations may not be used or need to be recalled for months after the training is received.

What's a Pascal?

The term "hectopascal" is derived partly from the name of a 17th century philosopher and mathematician and partly from the Greek.

Blaise Pascal was born in 1623 in France. A youthful genius in mathematics, at age 21 he developed and built the first digital computer. Pascal's Law of Pressure was developed in 1647 and is the principle that created hydraulic lifts and eventually the hydraulic brakes in our automobiles. Using Evangelista Torricelli's work on the principle of the barometer, Pascal developed his own method of measuring barometric pressure.

Hecto is an irregular contraction of the Greek word for hundred from the metric system of measurement—hence hecto pascal, often abbreviated to HP or hPa. In common usage, one hPa equals one millibar.

Recommendations

- Review approach charts before the descent, approach, and landing phase. Each flight crew member should pay particular attention to whether altimeter settings will be given in inches (Hg), millibars (mb), or hectopascal (hPa).
- Use precise radio phraseology; confirm with ATC any radio communication that is not fully understood. (Radio phraseology considered "acceptable" in one country may not be accepted or understood in another.)
- Keep more than one flight crew member in the communications loop—including for ATC clearances and ATIS messages.
- Practice good cockpit management technique. Include in the approach briefing how the altimeter setting will be expressed.
- Observe proper crew coordination. Flight crews need to cross check each other for accurate communication and procedure. Question anything that does not seem right.

Some of the aspects involved, such as fatigue, will be more difficult to overcome. Implementing sterile cockpit procedures, avoiding distractions during periods of high cockpit workload, and getting adequate crew rest and nourishment will help to avoid those famous last words—I ASSUMED. ■

The Aviation Safety Reporting System is a cooperative program established by the FAA's Office of the Assistant Administrator for Aviation Safety and administered by the National Aeronautics and Space Administration.

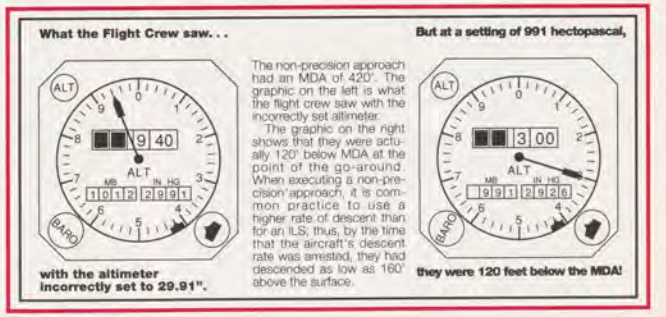


Figure 1

Aviation Maintenance Technician Awards Program

by Bill O'Brien, National Resource Specialist–Sport Aviation Airworthiness, AFS–310

We rarely appreciate someone who is always there—the man or woman who works alongside us, giving a hundred percent, whose only thanks most of the time is the satisfaction in a job well done. Unbelievably, sometimes we put these people down because their job might not be as glamorous or as neat and clean as our own.

Aircraft mechanics and technicians must surely be at the top of the list of professionals who are taken for granted. Why is this so? There are probably several reasons, but if we have to blame someone, maybe it would be Hollywood for the creation of the stereotypical greasy mechanic in the movies or perhaps the producers of the TV sit-com *Wings* who created "Lowell," the room temperature IQ mechanic. It's about time for a change!

To initiate that change, on October 1, 1992 the FAA will implement the Aviation Maintenance Technician Awards Program. This new awards program will recognize the maintenance technician when he or she completes a certain number of hours of training every year. However, the FAA will also put a different "spin" on this awards program by also recognizing the maintenance technician's employer's investment in recurrent training. Why? It is the employer who must bear the burden of training costs and the short-term loss of productivity.

The awards for both the technician and employer are broken down into five phases, and qualifications for each phase get progressively more extensive.

Awards Program Overview

The awards program is actually two separate programs—one for technicians and one for employers. The technician's award will be in the form of an FAA "Certificate of Training" and a tie tack/lapel pin for each phase successfully completed, similar in spirit to the Accident Prevention Program's "Wings" (and not to be confused with that aforementioned sitcom). The employer's award will be in the form of an FAA "Certificate of Excellence" and will be based on the percentage of maintenance technicians who have received any one of the five FAA Certificates of Training in the past calendar year. Both the technician and the employer awards are divided into Phases I–V.

The program is designed so that each additional phase (award) is more demanding than the preceding one. In order to be eligible for an award the requirements for the particular phase must be completed within a calendar year.

History of the Aviation Maintenance Technician Award Logo

The logo that will be used for the Aviation Technician Awards Program lapel pins was one of 11 designs submitted by mechanics and technicians in response to articles in *FAA Aviation News* (November/December 1990) and *Aviation Equipment Magazine* (September 1990). Over 300 mechanics who attended maintenance seminars in Lafayette,LA, Pittsburgh, PA, and Trenton, NJ were asked to choose the best logo from the 11 designs submitted. The design was chosen because of the following reasons:

- It is the exact size and shape of a standard AN-5 fastener (1/2 inch across); this represents the strength in maintaining a common standard of integrity and trust.
- The two perfect circles within the hexagon represent the continuing cycle of maintenance and inspection which must be unbroken and perfect today and every day to ensure aviation safety.
- The formula—Knowledge + Professionalism = Safety—is not only the aviation maintenance industry's commitment to maintaining the aircraft entrusted to their care but a personnel commitment as well.
- The two aircraft located in the center of the logo represent the 1903 Wright Brothers flyer superimposed over the proposed 2001 space plane. The Wright Flyer represents the maintenance community's proud past by the fact that the Wright Brothers mechanic, Mr. Charles Taylor, the first aircraft mechanic, was there at the very beginnings of aviation. The space plane, with its technological advancements and low orbit capability represents our bright future of the maintenance profession.

The aviation maintenance community and the FAA believe that this symbol represents the best of what the aviation maintenance industry has to offer. It will take hard work to earn it. It should be worn with pride!

Eligibility Requirements for Technician and Employers

The following individuals are eligible for the technician award:

1. An FAA-certificated mechanic or repairman.
2. A student in a FAR Part 147 school who is maintaining a course average of C or better.
3. FAR Part 147 school instructors.
4. Avionics, propeller, and instrument technicians.
5. Any individual who is employed full-time by a FAR Part 121, 135, or 145 operator who actively performs maintenance on aircraft or their component parts.

To be eligible for the employer's award the employer must:

1. Be involved full-time in the business of maintaining or repairing aircraft and/or their component parts.
2. Employ at least five full-time technicians.

Phase Requirements and Description for Technicians

A technician may apply for one of the five awards as long as the following requirements are satisfied.

For the Phase I or Bronze award, the technician must have completed at least four hours of FAA or industry training in the prescribed calendar year.

The Phase II or Silver award requires that the technician attend one FAA or industry maintenance seminar, and satisfactorily complete eight hours of FAA or industry training.

The technician receives the Phase III or Gold award when he or she has attended one FAA or industry maintenance seminar, and has satisfactorily completed a three-day FAA or industry training seminar.

The Phase IV or Ruby award comes when the technician has attended one FAA or industry maintenance seminar, and has satisfactorily completed a five-day FAA or industry training seminar or has taught a three-day (15-hour) maintenance course on aircraft systems.

For the final award, Phase V or Diamond, the technician must have attended one FAA or industry maintenance seminar, have satisfactorily completed a five-day FAA or industry training seminar or have taught a three-day (15-hour) maintenance course on aircraft systems, and have satisfactorily completed a college-level course in either management or technical subjects

Phase Requirements for Employers

When a specific percentage of employees in a maintenance organization has received any one of the five phases of awards within the calendar year, that employer becomes eligible for one of the five "Certificates of Excellence." The percentages are as follows:

5% for a Bronze Certificate of Excellence
10% for a Silver Certificate of Excellence
15% for a Gold Certificate of Excellence
20% for a Ruby Certificate of Excellence
25% for a Diamond Certificate of Excellence

Applying for an Award

At any time during the calendar year any eligible technician can apply either in person or by letter to the local FAA Flight Standards District Office (FSDO) for an award. The technician must show that he or she is eligible. First, there must be acceptable proof that the individual is indeed an aviation maintenance technician. This proof may be in the form of either an FAA mechanic or repairman certificate, a statement from a FAR Part 147 school certifying that the student is maintaining at least a C average, a statement from a FAR Part 147 School certifying that the individual is an instructor at that school, or a statement from a FAR Part 121, 135, or 145 operator certifying that the individual is employed by that operator to maintain aircraft or related components.

The second required item is a short, signed and dated letter to the local FSDO describing the phase requested, where the training was received, who did the training, what training was received, how long the training was in hours, and the date of the training.

The third required item is some form of proof that the training was received. Copies of a certificate of training, attendance, or graduation are acceptable as long as they corroborate the information supplied in the letter.

At any time during the calendar year an eligible employer can apply by letter to the local FSDO for an award. The employer's letter should state the award requested, that the organization works full-time on aircraft or their component parts, and that the total number of technicians working full-time is at least five. The employer should attach copies of employees' FAA Certificates of Training dated for the applicable calendar year.

Both the technician and employer should allow at least 30 days for the FSDO to process the award request. But this small delay in recognition is short considering the U.S. Government has been certificating mechanics for 66 years. The time has come to recognize these hard-working, dedicated people who play a large part in the achievement of the outstanding safety record of U.S. registered aircraft.

And on October 1, 1992, we will! ■

Definitions

Training Seminar is defined as a formal meeting at least four hours in length in which technical training is conducted. Seminar training sessions at least an hour long may be combined to meet the four-hour requirement.

Validation means proof of attending a maintenance seminar in the form of a certificate that shows the date, instructor, location, and subjects covered.

For the purpose of this awards program, ***calendar year*** is defined as the period of time from October 1 of one year to September 30 of the following year.

STATUS OF THE FAR

As promised, the *FAA Aviation News* is publishing an annual listing of the Federal Aviation Regulations (FAR) in loose-leaf form and their latest changes and prices. Many of the FAR are reprinted commercially, some in book form. It is important to keep in mind that the rules are amended often in some cases, and existing provisions may be nullified or changed by this process unless they are updated continuously. Commercial publications may or may not provide updates.

The FAR are sold in two ways by the Superintendent of Documents—subscription and single sales. When you order a subscription, for which there is an annual change, the changes will be sent to you automatically as they are issued. Single sales are a different matter. The changes to these parts are infrequent, and no direct notice of a change is sent out. Therefore, you must order and pay for each change as it is issued.

Another way of obtaining the FAR is to purchase the bound volumes of the U.S. Code of Federal Regulations. Three volumes of Title 14 contain the Federal Aviation Regulations:

Parts 1–59	(SN 869–017–00042–6)	$25.00
Parts 60–139	(SN 869–017–00043–4)	$22.00
Parts 140–199	(SN 869–017–00044–2)	$11.00

These volumes are only updated annually, so the latest changes would have to be obtained from another source.

The following pages contain the current status and price list for the loose-leaf FAR. Color highlighting indicates those rules considered of special interest to general aviation pilots. To order any of the FAR parts, send check, money order, or credit card number to the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402–9325. Add a 25% charge for foreign mailing on the single sale items. Remember to use the stock number.

Parts Sold on Subscription Service

Part	Title	Code Letter	Price Domestic	Price Foreign	Changes Issued
1	Definitions and Abbreviations	FA001	30.00	37.50	—
11	General Rule-making Procedures	FA011	30.00	37.00	—
13	Investigative and Enforcement Procedures	FA013	30.00	37.50	12
21	Certification Procedures for Products and Parts	FA021	34.00	42.50	35
23	Airworthiness Standards: Normal, Utility, Acrobatic, and Commuter Category Airplanes	FA023	35.00	43.75	30
25	Airworthiness Standards: Transport Category Airplanes	FA025	39.00	48.75	31
27	Airworthiness Standards: Normal Category Rotorcraft	FA027	35.00	43.75	23
29	Airworthiness Standards: Transport Category Rotorcraft	FA029	36.00	45.00	25
33	Airworthiness Standards: Aircraft Engines	FA033	27.00	33.75	9

Parts Sold on Subscription Service

Part	Title	Code Letter	Price Domestic	Price Foreign	Changes Issued
36	Noise Standards: Aircraft Type and Airworthiness Certification	FA036	32.00	40.00	23
43	Maintenance, Preventive Maintenance, Rebuilding, and Alterations	FA043	32.00	40.00	—
45	Identification and Registration Marking	FA045	30.00	37.50	16
47	Aircraft Registration	FA047	28.00	35.00	8
61	Certification: Pilot and Flight Instructors	FA061	36.00	45.00	27
63	Certification: Flight Crewmembers Other Than Pilots	FA063	33.00	41.25	13
65	Certification: Airmen Other Than Flight Crewmembers	FA065	30.00	37.50	15
71	Designation of Federal Airways, Area Low Routes Controlled Airspace, and Reporting Points, Jet Routes, and Area High Routes[3]	FA071	29.00	36.25	—
91	General Operating and Flight Rules *Preamblefree	FA091	53.00	66.25	—
93	Special Air Traffic Rules and Airport Traffic Patterns	FA093	31.00	38.75	27
103	Ultralight Vehicles	FA103	32.00	40.00	5
108	Airplane Operator Security	FA108	29.00	36.25	10
121	Certification and Operations: Domestic, Flag, and Supplemental Air Carriers and Commercial Operators of Large Aircraft	FA121	60.00	75.00	82
125	Certification and Operations: Airplanes Having a Seating Capacity of 20 or More Passengers or a Maximum Payload Capacity of 6,000 Pounds or More	FA125	32.00	40.00	20
127	Certification and Operations of Scheduled Air Carriers With Helicopters	FA127	31.00	38.75	22
129	Operations:Foreign Air Carriers and Foreign Operators of U.S.-Registered Aircraft Engaged in Common Carriage	FA129	30.00	37.50	22
135	Air Taxi Operators and Commercial Operators	FA135	45.00	56.25	40
137	Agricultural Aircraft Operations	FA137	32.00	40.00	8
139	Certification and Operations: Land Airports Serving Certain Air Carriers	FA139	29.00	36.25	3
145	Repair Stations	FA145	29.00	36.25	10
150	Airport Noise Compatibility Planning	FA150	30.00	37.50	2
152	Airport Aid Program	FA152	31.00	38.75	12
159	National Capital Airports	FA159	30.00	37.50	13
161	Notice and Approval of Airport Noise and Access Restrictions	FA161	29.00	36.25	—

* Not included with subscription. For a particular FAR Part 91 preamble, write to DOT, M–443.2, Washington, DC 20590.

Parts Sold on Single Sale Basis

Part	Title	Price[1]
31	Airworthiness Standards: Manned Free Balloons (SN 050-007-00246-7)	2.25
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	Change 2 (050–007–00559–8)	4.50
	Change 3 (050–007–00842–2)	1.25
34	Fuel Venting and Exhaust Emission Requirements for Turbine Engine Powered Airplanes (SN 050–007–00883–0)	1.00
35	Airworthiness Standards: Propellers (SN 050–007–00247–5)	2.75
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	Change 2 (050–007–00369–2)	3.00
	Change 3 (050–007–00558–0	4.50
	Change 4(050–007–00845–7)	1.25
39	Airworthiness Directives[2] (SN 050–007–00229–7)	1.75
49	Recording of Aircraft Titles and Security Documents (SN 050–007–00232–7)	1.75
	Change 1 (050–007–00336–6	2.00
	Change 2 (050–007–00792–2)	1.00
67	Medical Standards and Certification (SN 050–007–00248–3)	3.50
	Change 1 (050–007–00341–2)	1.75
	Change 2 (050–007–00611–0)	4.50
	Change 3 (050–007–00617–9)	2.75
	Change 4 (050–007–00861–9)	1.00
	Change 5 (050–007–00882–1)	1.25
73	Special Use Airspace[3] (SN 050–007–00274–2)	1.75
	Change 1 (050–007–00291–2)	2.00
	Change 2 (050–007–00402–8)	1.75
	Change 3 (050–007–00815–5)	1.00
	Change 4 (050–007–00850–3)	1.00
	Change 5 (050–007–00889–9)	1.00
	Change 6 (050–007–00891–1)	1.00
75	Establishment of Jet Routes and Area High Routes[3] (SN 050–007–00275–1)	2.75
	Change 1 (050–007–00326–9)	2.00
	Change 2 (050–007–00941–1)	1.75
77	Objects Affecting Navigable Airspace (SN 050–007–00276–9)	4.50
	Change 1 (050–007–00855–4)	1.00
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	Change 1 (050–007–00285–8)	1.75
97	Standard Instrument Approach Procedures[4] (SN 050–007–00278–5)	3.00
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99	Security Control of Air Traffic (SN 050–007–00830–9)	1.75
	Change 1 (050–007–00831–7)	1.00
	Change 2 (050–007–00873–2)	1.75
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	Change 3 (050–007–00736–1)	1.25
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	Change 5 (050–007–00836–8)	1.50
	Change 6 (050–007–00917–8)	2.00
109	Indirect Air Carrier Security (SN 050–007–00512–1)	1.75
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	Change 3 (050–007–00911–9)	1.00
158	Passenger Facility Charges (SN 050–007–00906–2)	1.25
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Parts Sold on Single Sale Basis

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	Change 3 (050–007–00676–4)	1.00
	Change 4 (050–007–00734–5)	1.50
	Change 5 (050–007–00832–5)	2.75
	Change 6 (050–007–00849–0)	1.00
183	Representatives of the Administrator (SN 050–007–00233–5)	3.00
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	Change 2 (050–007–00398–6)	1.75
	Change 3 (050–007–00503–2)	1.75
	Change 4 (050–007–00527–0)	1.75
	Change 5 (050–007–00634–9)	3.50
	Change 6 (050–007–00862–7)	1.00
185	Testimony by Employees and Production of Records in Legal Proceedings and Service of Legal Process and Pleadings (SN 050–007–00237–8)	1.75
	Change 1 (050–007–00859–7)	1.00
187	Fees (SN 050–007–00234–3)	2.75
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191	Withholding Security Information From Disclosure Under the Air Transportation Security Act of 1974 (SN 050–007–00359–5)	1.75
	Change 1 (050–007–00502–4)	1.75
	Change 2 (050–007–00857–1)	1.00

[1] Add 25% for foreign handling.

[2] Due to their length, complexity, and frequency of issuance, individual Airworthiness Directives (AD's) are published separately in the Federal Register. Microfiche or paper copies of the AD's in summary form are sold by DOT/FAA for the Superintendent of Documents. Ordering information is in Advisory Circular 39–6P, "Announcement of Availability—Summary of Airworthiness Directives," (free from DOT, M–443.2, Washington, DC 20590) or call 405–680–6901 for an order form.

[3] Due to their length, complexity, and frequency of issuance, individual airspace designations, airways descriptions, restricted areas, jet route descriptions, and IFR altitudes are not included in the publication of these basic Parts. Such descriptions are published in the Federal Register and depicted on appropriate aeronautical charts. Aeronautical charts can be obtained from the Distribution Branch, N/CG33, NOS, NOAA, Riverdale, MD 20737–1199.

[4] Standard Instrument Approach Procedures are published in the Federal Register by reference to FAA documents which are available for examination in the Rules Docket (AGC–10) and the National Flight Data Center, FAA Headquarters, Washington, DC, and at the appropriate FAA regional offices and Flight Inspection District Offices. These Instrument Approach Procedures Charts can be obtained from the Distribution Branch, N/CG33, National Ocean Service, NOAA, Riverdale, MD 20737–1199.

* This change incorporates Amendment 75–5 which removes and reserves Part 75, effective December 1991.

Remedial Training's New, "Blameless" Policy

H. Dean Chamberlain

FAA Administrator Richards announces new policy at Oshkosh '92.

Before the implementation of FAA's Remedial Training Program in 1990, many pilots reacted to contact with the FAA much in the same way they would a trip to the dentist. (Some might say they would prefer the dentist!) Remedial Training has gone a long way to enhance lines of communication between the FAA and its customers; yet, many potential participants still had one small, sticking point—that they had to admit to the non-compliance before being considered eligible for remedial training. Comments from aviation groups and letters like the one following, convinced us that Remedial Training should be offered to any pilot who feels he or she needs it and not be withheld in an attempt to assign blame. Consequently, FAA Administrator Thomas Richards announced on August 3 at the EAA Fly-in at Oshkosh, WI that pilots would no longer be required to admit to a violation in order to be considered eligible for the Remedial Training Program. All the other eligibility requirements remain the same, including demonstrating a cooperative attitude toward the remedial training. It really does not matter whose fault it is when non-compliance occurs; what matters is returning a safe airman to the national airspace system. If there was ever any doubt about the validity of remedial education over arbitrary punishment, read on:

FAA
Flight Standards Service

Dear Sir/Madam:

This letter is in response to the Remedial Training Program I was given for my having entered the San Diego TCA inadvertently. I feel compelled to address the real benefit of this program for its educational value rather than a penalty or punishment for an accident event. I have been a private pilot for nearly 30 years. During this time span I have accumulated only 400 hours as pilot in command. I realize that flight training and licensure were not as difficult in the 1960's as they are now. The last 250 hours of my flight time has been in the last five years in my Cessna 210. I have also maintained currency by reading magazines, the FAR, and the AIM.

I had heard terrible reports of what would happen to me if I "busted the TCA" and, therefore, approached the Letter of Investigation from the FAA Flight Standards District Office with great concern. I wasn't going to admit to anything, and I was prepared with legal counsel if things started looking serious. I truly believe the people who fly airplanes are all serious, safe pilots. None of us would intentionally fly dangerously. I realized the purpose of the TCA but tried to stay clear of it so I wouldn't be hassled. What a mistake!

Having had this experience of remedial training has been one of the best things that has happened in my flying career. The flight instructor assigned me was extremely knowledgeable and able to get his message across in a clear, concise manner. The five hours I spent with him were priceless in terms of the knowledge I gained. Now I know how to *use* the TCA, TRSA, and ARSA and how to get all the information I need to be really safe in our busy skies. After the flight instruction and ground school, I spent some time with the controllers at Miramar Naval Air Station. This experience put everything together with what I had experienced in the flight training. This also showed me the other side of whom I was talking to and how eager they are to help.

In summary I want to recommend the Remedial Training Program to all pilots before they break into the TCA or are involved in some other rule infraction. In fact, I think every VFR pilot should get some training every five years or so to encourage them to become instrument-rated. You can be sure that's my next move.

Once again, thank you for the *"severity"* of your punishment for my infraction—I had a ball and truly needed this experience.

Very sincerely,

Robert D. Rens, DDS

• AD's On-line

The reason I am writing is to ask if there is an on-line service, such as DUATS, that I can access with a computer to find specific airworthiness directives (AD) on aircraft, as well as special type certificates. I have limited space and the cost of buying AD's is prohibitive—not to mention the constant updates required to keep them current. I just purchased a new laptop computer with a modem which allows me to access DUATS and other libraries of information and I just love it. I believe the possibilities are endless and feel that an on-line service is needed.

William A. Tuite III
Alvin, TX

Presently, the FAA sells AD's only in paper copy or microfiche form and has no immediate plans to put them on-line. However, there are several private companies that have advised the FAA that they are available to do individual AD research for a fee. The FAA office that publishes the AD's does not recommend one company above another.

AOPA Frederick, MD	**1–800–654–4700**
Aircraft Technical Publishers (ATP) Hawthorne, CA	**1–800–227–4610**
Aviation Compliance Services Atlanta, GA	**1–800–783–0327**
Flightline Malvern, PA	**1–800–842–1716**
UNICOM Richardson, TX	**214–644–1158**

• Alternate Weather

In your response to the continuing saga of use of alternate airports wherein area forecasts may be utilized to determine forecast alternate weather conditions...you state that the airport may not be authorized for use as an alternate airport if weather observing and reporting capability is not available. In some western sections of this country there are few instrument airports, and alternates according to your standards are sometimes beyond useful cruising distances. The use of a nearby non-instrument airport is certainly feasible under the regulations, FAR § 91.169 (c)(2). This would certainly allow area forecasts in such instances. The symbol A NA applies to airports with published instrument approaches.

Gordon S. Hall
Memphis, TN

You are right. FAR § 91.169(c)(2) states, "If no instrument approach procedure has been published in FAR Part 97 of this chapter for that airport, the ceiling and visibility minimums are those allowing descent from the MEA, approach, and landing under basic VFR." Pilots must be careful to ensure that any weather conditions that might make their filed destination airport go below minimums is not wide spread enough to make their alternate go below minimums.

• Citylad Reminder

I believe that there are many pilots out there that truly realize the importance of pilot reports (Re: May/June 1992 News/Brief article, "PIREP's—Standardizing Turbulence?") However, when I pick up the "weather phone" everyday, I hardly ever hear the word "PIREP" or see the letters "UA." I think the problem comes down to. . . we don't know what to say or how to say it. So here is a little acronym (oh no! Not another one!) that I derived from the AIM and use as a guide.

Just remember, "a citylad reports turbulence!"
***C**louds (in cloud/precip?)*
***I**ntensity (light, moderate, severe, extreme?)*
***T**ime*
***t**Ype (of aircraft)*
***L**ocation*
***A**ltitude*
***D**uration [occasional (–1/3), intermittent (1/3–2/3), continuous (+2/3)]*

I'm no "citylad," but I still do PIREP's.

Mark D. Merritt
Norman, OK

FAA AVIATION NEWS welcomes comments from its readers. We may edit letters for style and/or length. We will select one representative letter from those on the same topic for publication, and, because of our bimonthly publishing schedule, responses may not appear for several issues. We will send personal replies only upon request. We will not print anonymous letters, but we will withhold names upon request. Address: Editor, FAA AVIATION NEWS, AFS–810, Washington, DC 20591.

• Stall/Spin Recovery

I am writing to congratulate you on recovering the camera and film from the wreckage of N66315 so that you could print the picture on page 14. With only 110 feet of altitude, 42 mph airspeed, a 20° bank and 180 ft/min descent rate, it is obvious that the plane must have crashed. Fortunately, it apparently did not burn. Tough way to illustrate an article on Stall/Spins.

A.E. McLaughlin, Jr.
Long Island, NY

• Setting the Record Straight

As President of the International Aerobatic Club (IAC), I read with interest your article on "Airshows" and the November/December 1991 news brief on "Helping Set the Media Straight." Your introductory paragraph in the latter article accurately expresses the frustrations we in the sport aerobatics field have felt for a long time.

Your recommendation toward education [of the media] is exactly what the IAC has been about since its formation in 1970. It is a constant uphill battle, but one in which each of us needs to be actively engaged in order to present accurate impressions of the safety of aviation. Thanks for your part in this effort.

Steven E. Morris
Oshkosh, WI

The article "Helping Set the Media Straight" promoted a brochure published by the Aircraft Owners and Pilots Association (AOPA) called "The ABC's of Aviation: A Glossary of Aviation Terms." The brochure is designed for non-aviation media and provides definitions of nomenclature common to us but maybe foreign to non-pilots. Copies of the brochure are free from AOPA; call (301) 695-2162. We and AOPA suggest that you get copies and pass them along to your local or national media.

• Birds of a Feather

I have a medium-sized bird who is domesticated but frequents the skies often. He has read the Kamikaze article (March/April 1992) by Cmdr. Danielson and begs to differ with him. He has informed me that the majority of the birds wish no harm to any aircraft. It is only a small, very radical collection of feathered foes that give all the birds a bad name. These birds believe they will go straight to animal heaven if they die for their cause. He apologizes for them but wishes to inform all pilots that they will not lay down their beaks until the skies are once again theirs and theirs alone.

Robert & Fluffy
Oklahoma City, OK

• ATP Instruction

I have three questions regarding FAR § 61.169, Instructor in Air Transportation Service.

1. *Can ATP's (without CFI ratings) instruct students or rated pilots under FAR Part 61 or 141 operations?*
2. *When can an ATP (without CFI ratings) instruct other than in "air transportation service"?*
3. *What is the definition of air transportation service since FAR Part 1 does not define it, or does it simply apply only to Part 121 or Part 135 operations?*

Clifford Moriarty, III
Langley AFB, VA

1. No. FAR § 61.169 states in part, "An airline transport pilot may instruct other pilots in air transportation service in aircraft of the category, class, and type for which he is rated." It then limits the type of instruction by stating, "Unless he has a flight instructor certificate, an airline transport pilot may instruct only as provided in this section."
2. An ATP may give flight instruction to a person only if the recipient is engaged in air transportation service.
3. The Federal Aviation Act of 1958, FAR Parts 1, 121, and 135 define air transportation service indirectly by defining the various types of air commerce and air transportation as well as the types of aircraft used in each type of service. FAR Part 1 defines air carrier, air commerce, and air transportation for interstate, intrastate, and foreign operations. FAR Parts 121 and 135 define the aircraft requirements for each type operation.

• Alaska Tale

Just a note to tell you what a great article in the January/February FAA Aviation News you had on "Flying to Alaska" because it was so thorough. It is the first time I've seen the "Information Source" printed anywhere, for example. Also, emphasis on knowing how to track ADF is so important up there. Down in the 48, we hardly ever need it.

I've flown the route from St. Paul, MN to both Anchorage and Fairbanks several times—the most recent this past summer (1991)—using both the airways and the highway. Every trip was an incredibly great trip. (My wife puts a blanket over her head when we fly the airways.) My original first aid kit was expanded after I started flying over remote territory. It now includes bigger adhesive bandages, stronger pain killers, Keopectate, burn cream, etc. Also, although handguns are not allowed in Canada, rifles are. I carry a heavy caliber rifle just in case one goes down where there are no streams or lakes and land game may be the only food one can get.

Keep up the good work. Every page of the FAA Aviation News *is always good.*

Kent Hadrits
Woodbury, MN

Thank you for your kind words. We always like to hear about our readers' flying experiences, be it in letter or article form. We also might suggest that your wife remove the blanket from her head and help you spot traffic and landmarks.

• Learning your ABC's

You reported the new alphabet (A, B, C, etc.) designation for airspace, effective September 1993. The old acronyms (e.g. TCA = Terminal Control Area) told us what they are. Now there will emerge "memory association" phrases to help recall what type of airspace the new alphabet letters signify.

Suggestions from us at AIR CHART Systems are:

- ***A = Altitude** (Positive Airspace above 18,000')*
- ***B = Busy**, close second was Bust N' Rue (for TCA's)*
- ***C = Contact 20** (for ARSA's where calling 20 nm out is requested)*
- ***D = Destination** (for Airport Traffic Areas and Control Zones)*
- ***E = Elsewhere** (for all other controlled airspace)*
- ***G = Go for it!** (for all uncontrolled airspace)*

Howie Keefe
Venice, CA

Thanks for your suggestion. One pilot suggested that B should stand for "Be careful" and that the "Elsewhere" is not used as in the old CAR (pre-FAA) terminology—controlled, uncontrolled, and elsewhere.

• Weathering CZ's

I would appreciate your comments on FAA policy regarding FAR § 91.155(c), which states that, "Except as provided in FAR § 91.157, no person may operate an aircraft, under VFR, within a control zone beneath the ceiling when the ceiling is less than 1,00 feet."

The control zone at Waco, TX, has two airports within it. Waco Regional is a Federal-tower facility with 24-hour national weather reporting. The other airport, Waco T.S.T.I., is a non-Federal-tower facility without weather reporting.

When the ceiling being reported at Waco Regional is less than 1,000 feet, can a pilot take off or land at T.S.T.I. without obtaining an IFR or special VFR clearance when:

a. A pilot reports no cloud formation at T.S.T.I.
b. A pilot reports a cloud formation at T.S.T.I. with the base at or above 1,000 feet.

Name withheld

The answer to both of your questions is no. The pilot would need an ATC clearance based upon FAR § 91.157, Special VFR Weather Conditions, to operate at T.S.T.I. under the conditions you listed. Control zones are designated to provide controlled airspace for terminal operations conducted under instrument meteorological conditions at the airport for which the control zone was established and extend upward from the surface of the earth to a designated altitude or to the adjacent or overlying controlled airspace. The primary airport's ceiling affects the type of operations that may be conducted throughout the control zone. When the ceiling is reported to be less than 1,000 feet at the primary airport, no VFR operations may be conducted in the control zone below the altitude of that ceiling, regardless of any PIREPS. However, it is reasonable to expect an aircraft to be in the control zone, operating above the reported ceiling of the primary airport, in visual meteorological conditions and operating under visual flight rules as provided for in FAR § 91.155. The key factor in determining whether a SVFR clearance is required is the reported ceiling at the primary airport in the control zone. For more information on control zones, you can review the Airman's Information Manual (AIM) which discusses control zones and weather reporting in paragraph 3-26.

Thomas C. Richards New FAA Administrator

Thomas C. Richards, a veteran pilot and retired Air Force four-star general who served on the President's Commission on Aviation Security and Terrorism, was sworn in as Administrator of the Federal Aviation Administration on June 27.

FAA Administrator Richards

Richards, who retired from the Air Force in October 1989, began his military career in the Army in 1948 and served as an infantryman in the Korean War. In Korea he rose to the rank of platoon sergeant and was wounded twice. After his discharge, he attended Virginia Polytechnic Institute where he enrolled in the Air Force ROTC program. He graduated in 1956 and was awarded a commission as a second lieutenant in the Air Force and was sent to flight school. Since earning his wings, he has flown over 15 different aircraft and logged more than 5,000 flight hours which includes the 624 combat missions he flew during the Vietnam War.

When he retired from the Air Force he was deputy commander-in-chief of the U.S. European Command. Before that he was commander of the Air University at Maxwell Air Force base in Alabama; vice-commander of the 8th Air Force, Strategic Air Command, at the Barksdale Air Force base in Louisiana; and commandant of cadets at the Air Force Academy in Colorado.

Richards, who was born in San Diego, is married and has six children.

Details on Important AIM Change

In the recent issue of the *Airman's Information Manual* (AIM), there are several changes and modifications. The following are a few that are of particular interest to pilots.

Paragraph 4–56's title was changed to USE OF RUNWAYS/DECLARED DISTANCES and a section c. was added to clarify declared distances. It now reads:

"c. At some airports, the airport proprietor may declare that sections of a runway at one or both ends are not available for landing or takeoff. For these airports, the declared distance of runway length available for a particular operation is published in the *Airport/Facility Directory*. Declared distances (TORA, TODA, ASDA, and LDA) are defined in the Pilot/Controller Glossary. These distances are calculated by adding to the full length of paved runway any applicable clearway or stopway and subtracting from that sum and sections of the runway unsuitable for satisfying the required takeoff run, takeoff, accelerate/ stop, or landing distance."

Paragraph 4–70 was modified to clarify the responsibilities of the pilot after landing and exiting the runway. It now reads:

"4–70 EXITING THE RUNWAY AFTER LANDING

"The following procedures should be followed after landing and reaching taxi speed.

"a. Exit the runway without delay at the first available taxiway or on a taxiway as instructed by air traffic control (ATC).

"b. Taxi clear of the runway unless otherwise directed by ATC. In the absence of ATC instructions the pilot is expected to taxi clear of the landing runway even if that requires the aircraft to protrude into or cross another taxiway, runway, or ramp area. This does not authorize an aircraft to cross a subsequent taxiway/runway/ ramp after clearing the landing runway.

"4–70b NOTE—The tower will issue the pilot with instructions which will normally permit the aircraft to enter another taxiway, runway, or ramp area when required to taxi clear of the runway.

"c. Stop the aircraft after clearing the runway if instructions have not been received from ATC.

"d. Immediately change to ground control frequency when advised by the tower and obtain a taxi clearance.

"4–70d NOTE 1—The tower will issue instructions required to resolve any potential conflictions with other ground traffic prior to advising the pilot to contact ground control.

"4–70d NOTE 2—A clearance from ATC to taxi to the ramp authorizes the aircraft to cross all runways and taxiway intersections. Pilots not familiar with the taxi route should request specific taxi instructions from ATC."

Paragraph 7–78 is new. It reads:

"7–78 EMERGENCY AIRBORNE INSPECTION OF OTHER AIRCRAFT

"a. Providing airborne assistance to another aircraft may involve formation flying. Most pilots receive little if any formal training or instruction in formation flying. Formation flying after a face to face planning session is difficult enough. Formation flying without sufficient time to plan (i.e., an emergency situation), coupled with the stress involved in a perceived emergency can be hazardous.

"b. The pilot in command of the aircraft experiencing the problem/emergency must take the lead in coordinating the airborne intercept and inspection and take into account the unique flight characteristics and differences of the category(s) of aircraft involved.

"c. Some of the safety considerations are:

"1. Direction and speed of intercept;

"2. Minimum separation distance;

"3. Communications requirements, lost communication procedures; and

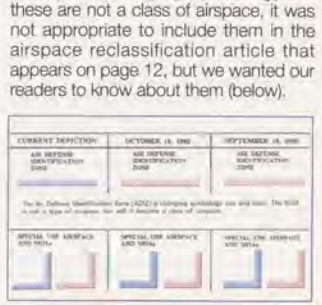
"4. Emergency actions to terminate intercept.

"d. Close proximity, in-flight inspection of another aircraft is uniquely hazardous. The pilot in command of the aircraft experiencing the problem/ emergency must not relinquish his/her control of the situation and jeopardize the safety of his/her aircraft. The maneuver must be accomplished with minimum risk to both aircraft."

The *Airman's Information Manual* is the official FAA guide to basic flight information and ATC procedures and is issued every 112 days. It is sold by the Superintendent of Documents (U.S. GPO, Washington, DC 20402–9371) and its yearly subscription cost is $26 ($32.50 foreign).

Charting a New Appearance

On October 15, a new cycle for printing VFR aeronautical charts begins and with it begins the implementation of charting changes for VFR products. An insert will be included in all new sectional and WAC charts to explain the charting changes. The majority of them are the result of the airspace reclassification, but not all. The Air Defense Identification Zone (ADIZ) is changing symbology size and color. Special Use Airspace and Military Operations Area (MOA) are changing symbology. As these are not a class of airspace, it was not appropriate to include them in the airspace reclassification article that appears on page 12, but we wanted our readers to know about them (below).



NOS Chart Users

If you use NOS instrument approach charts—before you depart on your next flight—check to see that the charts you are planning to use are actually in the book. An air taxi operator advised us that when he got to his destination, the charts he needed had been left out of his book during the printing process. Further, a collating error had misfiled several pages. This operator said this is the second time this year this has happened to him. BE ALERT! If you find this problem with your charts, be sure to call the 800 number in the back of the chart book to aid in the quality control process.

Physiological Training

The Federal Aviation Administration (FAA) is offering a one-day course on physiological training, primarily for pilots and other national airspace personnel. Physiological training is a program directed toward understanding and surviving in the flight environment. It covers the problem of high altitude exposure and recommends procedures to prevent or minimize human factor errors that occur in flight.

The physiological training course covers many topics. They include the environment to which the flyer is exposed, physiological functions of the body at ground level, and alteration of some of these functions by changes in the environment. The higher one flies, the more critical the need for supplemental oxygen becomes. This need is discussed so that the trainee will understand why a pilot cannot fly safely at altitudes in excess of 12,500 feet for a prolonged period without some aid, either supplemental oxygen or a pressurized aircraft. When humans are suddenly confronted with stressful or threatening situations, there is a tendency to breathe too rapidly or hyperventilate, so instructors discuss hyperventilation and methods of control. They also discuss and explain the causes of ear pain on descent.

The course addresses the potential consequences of alcohol, tobacco, and drug use as they apply to flying. Instructors discuss and demonstrate pilot spacial disorientation (vertigo) so that the trainee will understand why a VFR pilot or a noncurrent instrument pilot should never attempt to fly in clouds or other weather situations where visibility is significantly reduced. The course includes an altitude chamber flight where the trainees experience individual symptoms of oxygen deficiency as well as decompression. The chamber flight demonstrates the following: proper oxygen equipment and its use protects you from oxygen deficiency; experiencing and recognizing symptoms that are the same as those found in actual flight and therefore take the necessary action to prevent loss of judgement and consciousness; and decompression, which is not dangerous provided proper actions have been planned and taken when necessary.

H. Dean Chamberlain

FAA Instructor Roger Storey prepares a physiological training class for a "flight" in the FAA's Civil Aeromedical Institute's high altitude chamber.

The physiological training course is offered in several U.S. locations. The fee is $20, unless taken at the FAA Aeronautical Center, Oklahoma City, OK, where no fee is required. For further information about how to register, specific course dates and locations, and qualifications of eligibility to receive physiological training, contact the FAA, Civil Aeromedical Institute; Airman Education Programs Branch, AAM–420; Post Office Box 25082; Oklahoma City, OK 73125: or phone (405) 680–4837.

Accident Prevention Program Seminars

If you are going to be a "leaf peeper" this fall and head for New England to take in Nature's show of changing colors, consider attending one the Bedford, MA FSDO's General Aviation Safety Seminars or CFI Workshops. Accident Prevention Program Manager John F. Hemmer has provided the following schedule.

Mr. Hemmer notes that the locations and topics are subject to change and suggests that you give him a call for additional information and current scheduling. His telephone number is (617) 274–7130.

GENERAL AVIATION SAFETY SEMINARS

SUNDAY, SEPTEMBER 6, 8:00 a.m.
Plymouth Fun Day
Plymouth Municipal Airport, Plymouth, MA

THURSDAY, SEPTEMBER 10, 7:00 p.m.
Pilot Judgement/Human Factors
Westerly, RI

TUESDAY, SEPTEMBER 15, 7:00 p.m.
Aviation Security
Beverly, MA Airport

SATURDAY, SEPTEMBER 26
Helicopter Safety Seminar
Westford Regency, Westford, MA

SAT.-SUN., SEPTEMBER 26–27 9:00 a.m.–5:00 p.m.
Expo 92/Airfair 92
Hanscom Field, Bedford, MA

SATURDAY, OCTOBER 3, 8:00 a.m.
Glider Safety Seminar
Pepperell, MA Sport Center

TUESDAY, OCTOBER 13, 7:00 p.m.
Safety Seminar
Hanscom AFB "O" Club, Bedford, MA

THURSDAY, OCTOBER 15, 7:00 p.m.
Accident Review
TF Green Airport, Providence, RI

TUESDAY, OCTOBER 20, 7:00 p.m.
Corporate Aviation Safety Seminar
Jet Aviation, Hanscom AFB, Bedford, MA

TUESDAY, OCTOBER 27, 7:00 p.m.
Maintenance Topics for Pilots
Hyannis, MA

CFI WORKSHOPS

TUESDAY, SEPTEMBER 8, 7:00 p.m.
Helicopter Safety/CFI Workshop
Jet Aviation, Hanscom AFB, Bedford, MA

WEDNESDAY, SEPTEMBER 9, 7:00 p.m.
Bridgewater State College
Bridgewater, MA

THURSDAY, SEPTEMBER 17, 7:00 p.m.
High Altitude Flight
Newport Airport, Newport, RI

TUESDAY, OCTOBER 6, 7:00 p.m.
Stowe/Minuteman Airport
Stowe, MA

THURSDAY, OCTOBER 15, 7:00 p.m.
Analysis of Maneuvers
Bridgewater State College, Bridgewater, MA

THURSDAY, OCTOBER 22, 7:00 p.m.
Multiengine Procedures, CCRI
Warwick, RI

National Aerospace Teacher of the Year Award

by TSgt. Donnie R. Veasey, HQ CAP-USAF Public Affairs

Susan Broderick frequently conducts her first grade class aboard the space shuttle. On other days, class may convene in the cockpit of a Navy jet catapulting off a aircraft carrier. And if her frisky first graders are up to it, Broderick holds class high above the earth in an eye-catching, multi-colored hot air balloon.

Okay, so the Head Elementary School first grade teacher cannot get 25 six-year-old children in those lofty confines. But by experiencing those aerospace treats herself, with an innate ability to transfer the raw feel of these experiences to her students, and through judicious use of imagination, she helps her students get excited about school and learning.

This imagination and enthusiasm, plus an unrivaled desire to give children the ultimate learning experience, contributed to Broderick's earning the 1992 A. Scott Crossfield National Aerospace Teacher of the Year Award. The Award was presented in a special ceremony at the 25th Annual National Congress on Aviation and Space Education held recently in Oklahoma City. The Civil Air Patrol, Federal Aviation Administration, and National Aeronautics and Space Administration sponsor this annual congress. The award, named for famed aviation test pilot and aerospace pioneer A. Scott Crossfield, was started in 1986 to recognize and reward education teachers for outstanding accomplishments in aerospace education and for demonstrated dedication to their students.

Broderick's unquenchable interest in the aerospace world and her dedication in providing education and positive direction for youngsters during their formative years is not unique. What separates her efforts from others in that category is the fervor in which she pursues those goals. She strives to provide the perfect learning environment for her students. As mentioned earlier, Broderick routinely partakes in a myriad of "wild" aerospace adventures, and then translates them into interesting learning avenues. Some of her other aerospace adventures include: afterburner climbs in an Alabama Air National Guard F-16 jet fighter, attending the week-long Space Camp in Huntsville, AL, test flying flight simulators at Delta Operations in Atlanta, and flying in a 1941 open cockpit trainer and landing on a grass runway. These adventures are completed on her own time and in many cases, she foots the bill for the experience.

Susan Broderick and one of her students in her favorite aerospace classroom—a converted bus.

"I wanted to find something in my classroom that would touch children in a way that would build a foundation for learning specific skills of life and for learning other ways to gather knowledge. Aerospace education does that," the Montgomery, AL, native explained.

The 1975 Auburn University graduate first got involved in the aerospace education world some six years ago, when the Alabama Department of Aeronautics and Education needed someone to field-test the use of aerospace curricula in the classroom. Broderick's excitement about being the first teacher to have this opportunity has carried over to her students.

After winning a Christa McAuliffe Fellowship Grant, Broderick immediately pursued her dream to have the first mobile aerospace classroom. One year later, Broderick and her husband, Tim, converted an old bus into this mobile classroom, complete with a flight simulator. Broderick's teaching skills and her aerospace bus are in demand throughout the state.

Her efforts in the education world earned Broderick selection as a participant in the teacher-in-residence program in the School of Education, Auburn University of Montgomery. Her two-year stint in that position ends in 1993. Many of Broderick's other awards are even more lofty. They include: the 1989 Federal Aviation Administration's National Administrator's Award for Excellence in Aviation Education, the 1990 Christa McAuliffe Fellow for Alabama, and the 1991 Learning Magazine and Oldsmobile's National Professional Best Leadership Award.

Broderick says that the best thing to come out of winning awards is that it lets the public see that, "There are good things going on in classrooms all around America. We need to shine more light on those people who do good jobs," she said. "There are teachers out there who just give their lives to kids. They wake up in the morning and they dream all night about what they are going to do in their classroom," she said. "I am one of those teachers." ■

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