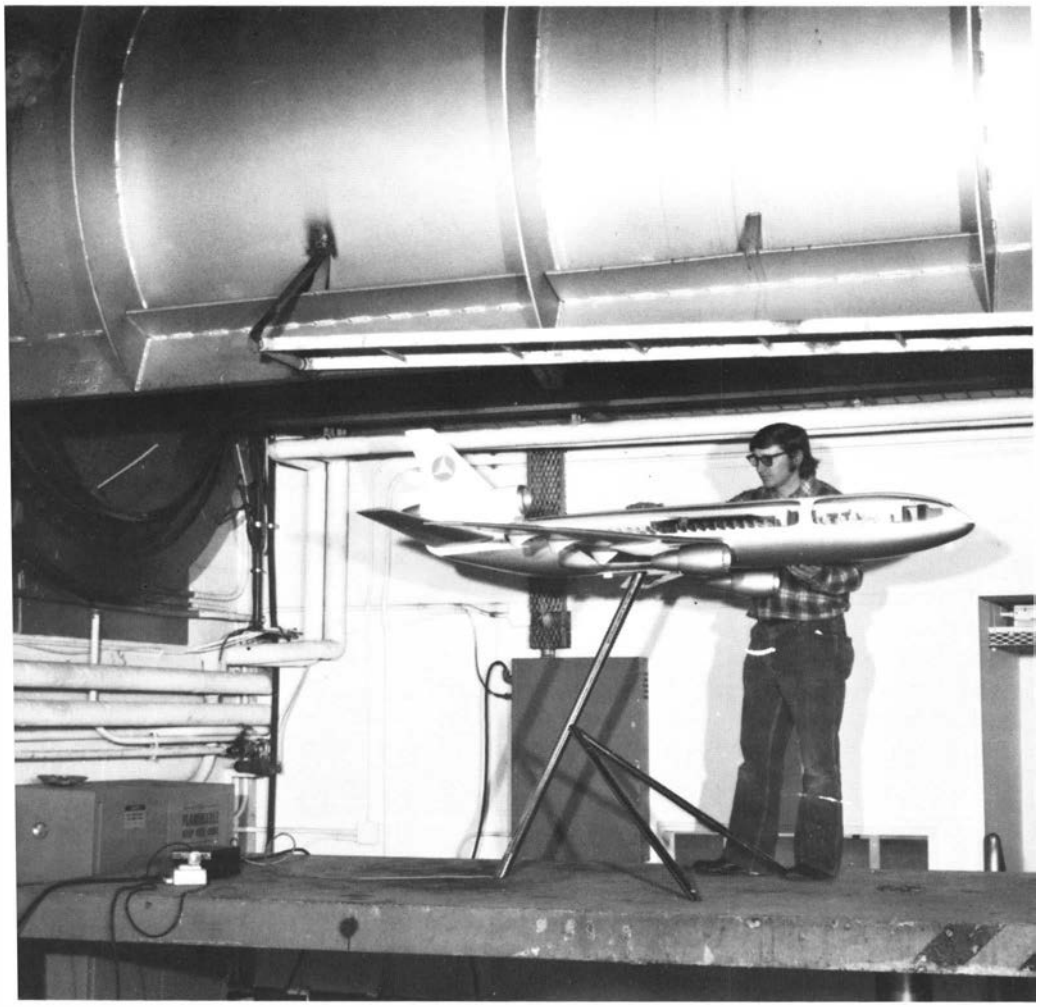
World

September 1981
Volume 11 Number 9

U.S. Department
of Transportation

**Federal Aviation
Administration**



Research Highlights

The FAA Technical Center is looking for the solution to a problem that isn't a problem, yet. Although no deaths resulted from smoke inhalation aboard U.S. passenger aircraft last year, the potential exists, so the center's Fire Safety Branch is starting to examine aircraft ventilation.

The center is using a British-made specially built one-twenty-fifth scale model of a DC-10 that has a transparent fuselage for viewing ventilation characteristics. The model, shown here with Joseph A. Wright of the Fire Safety Branch, can be pressurized, which will permit testing with simulated speeds approaching Mach 1—about 660 knots. The cabin will be filled with smoke, and different locations around the fuselage will be tested for the best areas of ventilation.

Following these tests, which should begin this month, the Tech Center hopes to evaluate the in-flight scenario at full scale with a Boeing 707 fuselage, similar to the aircraft slated for anti-misting-fuel crash tests in 1984.

It's creative instead of reactive research.

Front cover: **Writer and novice pilot Jim Poyner flies the Eagle ultralight, made by Lone Star Hang Gliders, over Dallas and snaps his own photograph.** Dallas Morning News: Howard Castleberry

Back cover: A picture-perfect setting: The view is from Rainbow Island at the departure end of Honolulu's Reef Runway. Photo by Jan M. Tatenshi

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FAA WORLD is published monthly for the employees of the Department of Transportation/ Federal Aviation Administration and is the official FAA employee publication. It is prepared by the Public & Employee Communications Division, Office of Public Affairs, FAA, 800 Independence Ave. SW, Washington, D.C. 20591. Articles and photos for FAA World should be submitted directly to regional FAA public affairs officers:

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By Nick Komons
The Agency Historian, he is the author of "Bonfires to Beacons" —a history of early Federal aviation policy— and other published works.

How Many Pilots?

A Short History of the Airliner's Third Seat

Part I

How many crew members does it take to fly a jet transport safely in scheduled air passenger service?

FAA, the airplane makers and the airlines say it depends on the airplane. Two crew members are enough in an airplane cockpit designed for two; three are enough in a cockpit designed for three.

The Air Line Pilots Association (ALPA) disagrees. It takes three pilots to operate a modern jet at optimum safety in today's air traffic environment, and it doesn't matter if the cockpit is designed for a two- or a three-man crew. Not that two pilots are unsafe in a two-pilot cockpit, the pilots' union says, but three are safer.

Last July, a task force appointed by President Reagan to look into this question decided that aircraft designed for two pilots can be safely flown by two pilots. The pilots' union leadership has agreed to abide by this verdict, thus bringing to a close one more chapter in a controversy that's been around longer than some people care to remember. Indeed, off and on, it's been nagging aviation for more than 35 years.

The issue first erupted immediately after World War II with the introduction into domestic passenger service of such four-engine, prop-driven transports as the Douglas DC-4. At the time, Federal regulations required only two flight crew members—a pilot and copilot—on airliners flying domestic routes. Pilots protested that the cockpits of the new four-engine aircraft were too complex for two men to handle.

The two-engine DC-3, the most widely used air transport of the prewar era, they pointed out, had 188 items that required the pilots' attention; in contrast, the DC-4 had 343 items and the DC-6, 445. No two pilots,

they held, could safely deal with this proliferation of instruments, levers, buttons, switches and dials and still give sufficient attention to flying the airplane.

The pilots, with the support of their union, the Air Line Pilots' Association, asked the airlines to assign a flight engineer to all four-engine aircraft. The flight engineer, who was then used almost exclusively on international flights, would relieve the pilots of some of their mechanical duties and allow them to concentrate on their main job—flying the airplane.

The first flight engineers were essentially airborne mechanics. At least one domestic airline in the late 1920s found it good practice to put a licensed mechanic on board ship. "A mate [i.e., a mechanic] is assigned to a certain ship and he is always with that ship and responsible at all times for its mechanical condition and appearance," explained the general manager of Southwest Air Fast Express. "A mechanic takes a great deal of pride in his work if given an opportunity to ... show individuality, by assigning a definite ship to his care."

Few, if any, domestic carriers in the 1920s emulated the example of Southwest Air Fast Express. They preferred to keep their mechanics stationed on the ground at repair stations. Putting an extra man in the cockpit was an expensive proposition because of the limited carrying capacity of the aircraft of that day. The Fokker F-10s and Ford Tri motors could not turn a profit even if fully loaded with passengers unless they also carried mail. Hence, most carriers flew a large portion of their routes with only one man in the cockpit, which is all Federal regulations required prior to 1931.

Carriers occasionally added a copilot on long routes and a radio operator on aircraft with radio equipment that was not within easy reach of the pilot. But airborne mechanics were rare. Economics did not permit cramming more people into the cockpit.

In 1930, when word made the rounds that Federal regulators were about to require a copilot on all trimotors, operators rose in protest. "We have averaged recently seven and a fraction occupied seats per trip," said a Colonial Airways executive. "Now then, with a pilot, co-pilot, courier (or steward) and, lastly, a radio operator, the result is an economic absurdity." The Department of Commerce, the Federal air regulator at the time, withdrew its proposed regulation.

A year later, however, Commerce decided to act. In a regulation that went into effect

The Boeing 307 Stratoliner entered service for Transcontinental and Western Air—now Trans-World Airlines—on July 9, 1940, the first domestic aircraft to staff the cockpit with a flight engineer. Smithsonian Institution photo

n Oct. 1, 1931, scheduled air transport flights were required to have a copilot (1) if the aircraft could carry fifteen or more passengers, or (2) if the aircraft's gross weight was 15,000 pounds or more or (3) if the pilot flew five or more hours in any one day in an aircraft seating eight passengers or more. With the 18,000-pound Douglas DC-2 destined to dominate the skies of the early 1930s, this regulation virtually assured the universality of the two-pilot cockpit. Two pilots are required on all scheduled air carrier passenger flights to this day.

Meanwhile, Pan American Airways was adding a third man to the cockpit. Pan Am was operating in areas of Latin America with minimal ground maintenance facilities. So, in 1933, the airline put a mechanic on its Fokker equipment. The mechanic made or supervised the making of repairs at outlying air stations. And, since he possessed a Federal mechanic's rating, he certified an aircraft airworthy once it had undergone repair.

Two years later, Pan Am put a mechanic—now designated a flight engineer—on its China Clippers. The practice was continued on the Yankee Clippers, or Boeing 314 flying boats. The design of the 314 gave the flight engineer access to the engines in flight, allowing him to perform in-flight repairs on these ships.

A proliferation of instruments, levers, buttons, switches and dials were interfering with pilots' attention to flying.

No domestic carrier put a flight engineer on the flight deck until TWA did so on July 8, 1940, with the introduction of its Boeing 307 Stratoliner service. The 307, a four-engine, long-range transport capable of high-altitude operations, was the first airliner with a pressurized cabin. And although the Civil Aeronautics Administration had certificated the transport for operation with a minimum cockpit crew of two pilots, TWA put a flight engineer aboard to lessen the mechanical burdens placed by the aircraft on the pilot.

The flight engineer on the Stratoliner, though he was a mechanic, was not the oil-spattered grease monkey that had flown on Pan Am's Fokkers. His primary function was not to perform repairs, but to take over manual functions traditionally performed by the pilot.

But the airborne mechanic was not dead yet. World War II created a demand for his services. The Army Air Forces and commercial air carriers under contract to the military needed mechanics to handle repairs at outlying air stations overseas. They assigned flight engineers to the C-54—the

By 1961, the flight engineers handled instrument monitoring not servicing functions, such as this one aboard a DC-8.

NYT Pictures

military version of the DC-4—which was originally outfitted with a two-man cockpit. On some international C-54 flights, military contractors even carried a navigator and a radio operator. The war over, the C-54s were converted to DC-4s and their cockpits rearranged for a two-man crew on domestic flights.

Meanwhile, Douglas was developing the DC-6, which would enter passenger service in April 1947, for operation with a two-man crew. Boeing was also designing a two-man cockpit for its new four-engine transport, the B-377 Stratocruiser.

Matters were by no means reverting to the prewar norm, however. On Feb. 15, 1946 TWA put the Lockheed L-049 Constellation on its New York-Los Angeles run. The Constellation was designed for a three-man flight crew, with a separate panel and side-facing seat for a flight engineer. It had 629 items requiring the attention of the flight crew; but Lockheed had given the flight engineer responsibility for 395, leaving the pilots, in the opinion of ALPA, with a manageable workload. ALPA wanted the manufacturers and the airlines to follow the example of Lockheed in designing the cockpits of four-engine aircraft.

A series of fatal air transport crashes during the first half of 1947 conspired to swing events in favor of the pilots. The accidents prompted President Harry S. Truman to appoint a Special Board of Inquiry on Air Safety, headed by James M. Landis. Landis recommended to Truman that the Civil Aero-

In two-man cockpits, CAB failed to tell the airlines what duties the flight engineer should perform.

nautics Board, the air safety rulemaker of that period, consider requiring an additional crew member in the cockpit of four-engine transports.

The CAB held hearings at which the Air Transport Association (ATA) and spokesmen for the individual airlines argued that flight engineers were not needed on domestic runs. Changing technology, refinements in cockpit design and the prevailing conditions on domestic routes obviated the need for a flight engineer. If anything, the airlines argued, the pilots had an easier job since the advent of automatic carburetion, devices for measuring fuel flow and torque meters for direct reading engine power.

The CAB, as anxious to ensure safety as to take the political heat off itself, adopted a rule in April 1948 requiring a flight engineer on all four-engine airliners with a maximum gross takeoff weight of more than 80,000 pounds.

It was an odd rule. To begin with, it was arbitrary. Aircraft weight, as industry critics pointed out, had nothing to do with pilot workload. Pilot workload was a function of cockpit design. Moreover, the rule didn't respond to the immediate safety crisis, except perhaps in a political sense. None of the accidents had been caused, directly or indirectly, by the absence of a flight engineer. Even more curious was that the CAB, probably out of a desire to limit the rule's economic impact on the carriers, deliberately excluded the 73,000-pound DC-4, which had been involved in the majority of the accidents, from the automatic provisions of the rule.

The rule affected only three transports: the Constellation, which already had a flight engineer; the Boeing 377, which had not yet entered service and whose cockpit could therefore be readily redesigned; and the DC-, which was already in service and operating ith a two-man crew.

American Airlines petitioned the CAB to exempt the DC-6 from the rule. "There is nothing whatever for a flight engineer to do in a DC-6," American said in its petition. There was no flight engineer's station on the aircraft; that meant the flight engineer would be forced to ride in the center jump seat, from where he could perform no meaningful duties. Besides, American said, a third man in a cockpit designed for two would "only get in the way" and pose a threat to the safe operation of the aircraft.

In reaffirming the rule, the CAB brushed aside American's arguments by maintaining that "the flight engineer is able to perform important duties and add to safety of flight, even when riding in the jump seat of a plane in which no flight engineer station has been provided." A flight engineer located in the center jump seat would provide the flight crew with an extra pair of eyes. The CAB said nothing of the fact that a crew member in the center jump seat could not relieve the pilots of burdensome mechanical duties—the stated purpose of the rule—because he did not have access to any dials, buttons or switches.

James M. Landis was appointed by President Harry S. Truman in 1947 to head a panel looking into the crew complement issue aboard four-engine transports. NYT Pictures

The CAB was being practical. In finding a function for a man in the jump seat, it was not only justifying its rule; it was also telling Douglas and the opertors that they need not go to the considerable expense of outfitting the DC-6 cockpit with a side-facing flight engineer's station.

Having adopted the rule, the CAB declined to tell the airlines precisely what duties the flight engineer should perform. This, it said, was for the airlines to determine on their own. Nor did the Board say if flight engineers should come from the ranks of pilots or mechanics. This, too, was left up to the airlines. The CAB's silence on these matters was not inconsequential. By remaining silent, the CAB had unwittingly sown the seeds of a festering jurisdictional dispute between rival unions.

The carriers divided into three groups in implementing the CAB rule. Eight airlines (American, Chicago & Southern, Continental, Eastern, National, Northwest, Western and TWA) followed the example of Pan American and used people with mechanical backgrounds as flight engineers; four (Braniff, Capital, Delta and Northeast) used pilots holding a flight engineer's certificate; one (United) used both pilots and mechanics. The result was that most airlines now had people from two different crafts belonging to different unions working in the same cockpit.

Flight engineers had originally looked to ALPA as the natural union to join. ALPA

Pan American's Yankee Clipper carried a mechanic in the 1930s who could actually service the plane's engines in flight.

refused to admit them. Indeed, under its constitution and by-laws, only pilots and copilots were eligible for membership. Rather than change its by-laws, ALPA subchartered a flight engineer's union, the Air Carrier Flight Engineers Association (ACFEA). Most flight engineers, preferring direct union membership, shunned ALPA's union and formed their own. The American Federation of Labor, ALPA's parent union, seeing trouble brewing and believing that all airborne personnel properly belonged to a single class or craft, urged ALPA to accept flight engineers and flight attendants directly into its organization. ALPA again refused, and the AFL countered, in December 1948, by chartering the Flight Engineers International Association (FEIA), which now competed with ALPA's ACFEA for members.

Some of the carriers that used pilots as flight engineers did so in the belief that crew members from two different unions could not exist in harmony in the same cockpit—not because they believed that a third pilot was necessary to safe flight. Delta executives, for example, immediately discerned that putting a mechanic and a pilot in the same cockpit was inviting trouble. They foresaw an outbreak of jurisdictional disputes, dissension and professional jealousy. A mechanic-trained engineer, they reasoned, would hold a deadend position and could never aspire to the status and pay of a captain. Delta's president, C. E. Woolman, told his staff, "We must never put a board on a man's head"—meaning, a third man would watch younger men rise above him while his own status was frozen.

Besides, there was no need for anyone with a mechanic's certificate in the cockpit. The possibility of repairing a modern aircraft in flight was nonexistent. Thus, on Delta and the airlines that followed its example, the flight engineer's seat became the first step toward the copilot's seat and finally to the captain's. More important, the flight crew on these lines belonged to ALPA and were covered by one collective-bargaining agreement. This made for harmony.

The airlines that had decided on mechanic-trained engineers, or who hired both pilots and mechanics as engineers, went through a prolonged period of labor unrest. Jurisdictional disputes broke out with regularity. The right to represent the flight engineers on three airlines changed hands seven times in 10 years. Jurisdictional strikes, though rare, spread bitterness when they did occur. In 1955, United Airlines broke a 51-day strike by FEIA by using ALPA members as flight engineers. Hard feelings were carried into the cockpit. Many a captain ordered a flight engineer off the flight deck. "On one airline, the feeling became so bitte that chalk marks were made on the floor to show the areas of responsibility," recalled one pilot.

In 1956, ALPA changed its membership policy by allowing any person who served "as a flight deck operating crew member" to join the union. All flight engineers, whether mechanic or pilot trained, were now eligible for direct membership.

At the same time, ALPA adopted as mandatory policy a resolution declaring that "no Turbo-Prop or Jet Turbine Powered Aircraft will be operated unless and until it is manned at all flight stations by a qualified pilot in the employ of the Company as a pilot . . . ." In liberalizing its membership policy and calling for pilot-trained flight engineers on jets, ALPA was taking dead aim at the flight engineer's seat.

It was no coincidence that this shift in

The more-productive jets suggested to airline pilots the prospect of technological unemployment.

policy came on the eve of the introduction of jet transports. The introduction of a new, more productive breed of aircraft has invariably brought home to the airline pilot the prospect of technological unemployment. "The whole story of air transportation . . . has been the fear of the flight crew that . . . the machine is somehow going to displace the people," said a former ALPA president. This fear came dramatically into focus with the impending introduction of the turbojet transport.

The Boeing 707s and Douglas DC-8s were workhorses the likes of which had never been seen before. Either of these aircraft could do the same amount of work in a unit of time as three Douglas DC-7s or five DC-6s. Yet the jets required no more pilots in the cockpit than the prop-driven aircraft they were about to replace.

Of course, pilots realized that because jets were so productive they might well create new markets for aviation services. They might even take business from other transportation modes. In fact, forecasts of aviation growth were bright. But would the market expand fast enough to avoid dislocations that might send pilots on extended furloughs? There was no telling.

In negotiating the crew complement issue with the airlines, ALPA relied on safety arguments. Jets would fly higher and faster than pistons and would have operating problems requiring a greater degree of crew coordination, the pilots said. Optimum crew coordination would not be possible with a non-pilot crewmember present. ALPA also argued that a third pilot in the cockpit would provide an extra margin of safety, because he would be able to replace one of the pilots in an emergency.

The operators didn't buy ALPA's brief. "We do not believe that the flight engineer should be tossed out of his job . . . ," American Airlines President C. R. Smith told his pilots. So American settled with FEIA and assigned the third seat to its mechanic-trained flight engineers.

But ALPA stuck to its mandatory policy, and American had a problem. It didn't want to absorb a strike that left its new and very expensive jetliners sitting idle. So it signed a contract with ALPA that put a fourth man in the cockpit. Other airlines that had traditionally employed mechanic-trained flight engineers, also wishing to avoid costly strikes, followed American's example.

The fourth man sat in the forward observer's seat where he had no meaningful duties to perform. Yet he drew the pay of a fully utilized crew member. He was quickly dubbed the "featherbird."

At the conclusion of a strike in 1961, Ron Brown, president of the Flight Engineers International Association, shakes hands with Nathan Feinsinger, who headed a commission appointed by President John F. Kennedy trying to resolve the problems created by a four-man cockpit crew. United Press International photo

It took nearly six years of labor turmoil, a series of representative disputes, and a Presidential commission headed by Nathan Feinsinger before the airlines could rid themselves of featherbedding in their cockpits. ALPA itself helped reduce crew size by its willingness to cross the picket lines of striking FEIA members and take their seats in the cockpit. When it was all over, FEIA was only a shadow of what it had been, while ALPA had secured a firm grip on the third seat on all but four U.S. lines.

Some students of this controversy have laid the blame for the labor strife that followed the 80,000-pound rule squarely at the feet of the government. The CAB, this view goes, by failing to specify whether pilot or mechanic training better fitted the flight engineer's craft, had created a situation in which competing unions were forced to stake out their own turf.

Be that as it may, by the time the dust had settled on these jurisdictional disputes, the days of the 80,000-pound rule were numbered: FAA tossed it out in 1965 in favor of a new rule. But the rule change, as we shall see, did nothing to still the controversy over crew complement. ■

Next month, we will trace the crew complement controversy as it developed under a 1965 FAA rule establishing workload as the standard for determining crew complement.

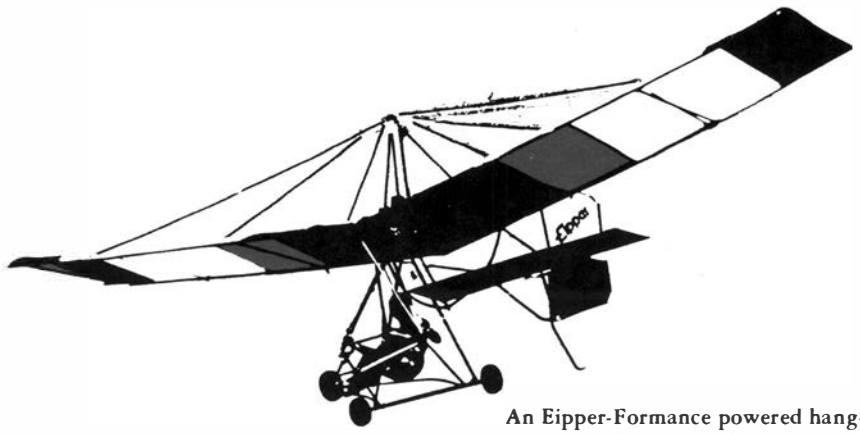
By Fred Farrar
A public information specialist in the Office of Public Affairs, he is a former Washington correspondent for the *Chicago Tribune*.

Safety for 'Mopeds of the Sky'

Ultralight Boom Leads FAA To Issue NPRM

Pilot Jim Poyner discusses a completed training flight with Lone Star Owner Gary Scheer. The Eagle features "dragelons" on the wing tips that function as rudders.

Dallas Morning News: Howard Castleberry



An Eipper-Formance powered hang-glider is typical of the ultralights growing in popularity around the country.

Larry Newman, who won fame in a lighter-than-air craft, is now into heavier-than-air . . . but not by much.

He is into ultralights, and he hopes they will bring him fortune as well. Ultralights are those frame and fabric mini-aircraft that used to be called hang gliders or powered hang gliders. Their popularity is soaring as more and more people decide that the ultralights, particularly the powered variety, offer a cheap and sporting way to get into flying.

This same popularity has not gone unnoticed by the Federal Aviation Administration, and it recently took its first step to apply at least a minimum level of regulation to hat a midwestern newspaper recently called ne "mopeds of the sky."

Newman, who was one of three men who made the first crossing of the Atlantic Ocean in a lighter-than-air craft in the balloon "Double Eagle" in 1978, is the head of American Aerolights of Albuquerque, N.M., one of the 15 companies—at the latest count—that make ultralights.

Newman's firm employs 75 people who are currently turning out seven ultralights a day. His version is powered by a pair of nine-horsepower engines, has an empty weight—minus pilot and fuel—of 153 pounds and has a cruising speed of 30 miles an hour. It costs $3,995—more than some but less than others.

It all began with the hang glider, a small frame and fabric craft that the pilot, at least in the early versions, literally hung on to as he stepped off the side of a cliff or mountain and glided to what he hoped would be a safe landing below. But these, by necessity, were limited to areas where there were mountains or cliffs to launch from. Then somebody hung an engine on a hang glider and made the matter of topography moot. They could be flown anywhere, and some of them were. Therein lies part of the problem.

In April of this year, a 727 captain reported a near miss with an ultralight as he was on approach to the Phoenix Sky Harbor Airport.

In March, the pilot of an executive aircraft reported flying between two ultralights off the end of the runway at the Winter Haven, Fla., airport. He said it was night, and the ultralights were operating without lights.

Another air-carrier pilot reported that while landing at the airport at Raleigh-Durham, N.C., he flew between two ultralights. There was no time for evasive action, he said.

Nor have the powered ultralights been the only offenders.

Sandia Crest, in the Sandia Mountains north of Albuquerque, is a popular jumping-off place for hang-glider enthusiasts. It also lies next to a busy approach corridor to the Albuquerque airport. The approaching aircraft are still relatively high at that point. Because of the favorable air currents there, however, so are the hang gliders. They regularly fly at from 13,000 to 15,000 feet. About two years ago, a group of hang glider pilots using Sandia Crest complained to the chief of the Albuquerque Tower that some 727s had passed beneath them while they were flying at 16,000 feet.

In the past, the FAA has been reluctant to get involved in the regulation of what was essentially a sport and did not pose a hazard to others, as long as it was confined to out-of-the-way areas. But with the booming popularity of the sport and the increasing number of near misses, it became apparent that something had to be done.

So, on July 27, the agency published a Notice of Proposed Rule Making in the *Federal Register* that would impose a minimum set of regulations on ultralights and their operators. Basically, the proposed regulation would do two things—specify where they could and could not fly and define what constitutes an ultralight and what does not.

The first is important for obvious reasons—to keep the ultralights away from other aircraft as much as possible. The second is important because if an ultralight is not an ultralight according to the definition, then it becomes a conventional airplane and would have to be type certificated and operated by a fully licensed private pilot.

The proposed regulation would keep ultralights out of controlled airspace and a five-mile radius from any airport, unless they have permission from the ATC facility involved. It would also prohibit them from flying over populated areas or any outdoor assembly of people. It imposes no altitude restrictions other than the 18,000 feet that is the start of controlled air space in most of the country and the floors of any terminal control areas. But it does recommend that they stay below 500 feet.

The definition of an ultralight is simply that it must have an empty weight of 155 pounds or less and, if it is a powered ultralight, a fuel capacity of 15 pounds or less. If it meets these criteria, it does not have to be type certificated: The owner doesn't have to spend all the time and money necessary to get

A Kasperwing ultralight is a tailless vehicle that uses a sweptback reflex-profile wing for stability. Photo by Thomas A. Horne 1981 © AOPA

the type certificate, and he does not have to be a licensed private pilot.

Meanwhile, many people in the ultralight movement, particularly the manufacturers, as well as others in aviation have recognized a need for some kind of policing of the sport.

Less than a week before the Notice of Proposed Rule Making was published, for example, the Aircraft Owners and Pilots Association was the host of a meeting of representatives of powered and unpowered ultralight groups and representatives from other groups ranging from the Airline Pilots Association to the Helicopter Association of America. They were there to discuss guidelines that could be adopted to lessen the potential for death or injury as more and more ultralights take off to share the airspace with conventional aircraft.

There was broad agreement in a number of areas and, in particular, on the need for more education for everyone involved. The ultralight groups agreed that their members needed education in the rules of using the airspace—Part 91 of the FARS—and in the legitimate concerns of the conventional pilots. The others agreed that they need to know more about the special needs and concerns of the ultralight flyer.

The meeting is expected to result in a number of recommendations to reduce the hazards as an interim measure, at least until the new FAA regulations become final. At airports where ultralights do get permission to fly, there was agreement that the ultralights should either have a separate traffic pattern or one that is shorter and closer in, because they are so much slower than conventional aircraft. There also was agreement that some kind of special flag or other warning should be used to advise the pilots of conventional aircraft that ultralights are operating there and that they should be on the lookout for them.

Some steps have already been taken. Lyle Byrum, a representative of Eipper-Formance, Inc., of San Marcos, Calif., a manufacturer of powered ultralights, said that his company includes a full review of the applicable Federal Aviation Regulations in the owner's manual

A Rogallo-wing hang-glider soars at Kitty Hawk, N.C. NASA photo

that comes with each of its ultralights and urges the buyer to study it.

Byrum also said that his firm is trying to get the powered-ultralight industry to set up a nationwide program under which certified flight instructors or persons designated as basic ground instructors—the ultralight equivalent of certified flight instructors—would certify that ultralight pilots have studied and understand the applicable regulations.

He said that industry figures show that 80 percent of the people who now are buying ultralights are getting training in the FARs from ultralight dealers or others. "It's that other 20 percent that we're worried about," he added.

And how does he feel about the FAA's move to impose some regulation on ultralights and their operators? "We welcome it. We want FAA help; we want that muscle." ■

The Ultralight NPRM—a Summary

The period for comments on Docket No. 21631 closes on November 25.

Part 91.1 (a), General Operating and Flight Rules, is amended to include "ultralight vehicles" in the exclusion from applicability.

Part 101, Moored Balloons, Kites, Unmanned Rockets and Unmanned Free Balloons—**Part 101.1 (a) (3)** defines an ultralight vehicle as any powered or unpowered vehicle for manned flight by a single occupant that weighs less than 155 pounds empty, has a fuel capacity not exceeding 15 pounds and does not have any U.S. or foreign airworthiness certificate.

101.43—No person may operate an ultralight vehicle except between the hours of sunrise and sunset.

101.45—In addition to requirements of 101.5 and 101.7, no person may operate an ultralight within an airport traffic area (radius of five miles from an airport with control tower from the surface up to 3,000 feet AGL), control zone (five-mile radius and up to 14,500 feet), terminal control area (specified limits) or a positive control area (basically from 18,000 feet to 60,000 feet) without prior air traffic authorization.

101.47—No person may operate an ultralight over any congested area of a city, town or settlement or over any open-air assembly of persons, excluding ultralight crews. An open area within a congested area, such as an unoccupied field, would be acceptable for ultralight operations.

101.49—Each person operating an ultralight shall maintain vigilance so as to see and avoid and shall yield the right of way to all aircraft and shall not operate so as to create a potential collision hazard. The applicability of 101.7 is extended to ultralights, which includes prohibiting the dropping of an object that may cause a hazard to persons or property.

101.5—No person may operate an ultralight except by visual reference to the surface. In other words, no operations "over the top" of clouds or other obscuring weather phenomena.

101.53—No one may operate an ultralight when flight visibility or distance from clouds is less than a cited table (essentially, one mile visibility in uncontrolled airspace, three in controlled; 500 feet below clouds, 1,000 feet above and 2,000 feet horizontal).

101.55—Each person operating an ultralight shall, upon request, make the vehicle available to FAA for inspection, including in operation, to determine its compliance with Part 101.

People

Aeronautical Center

■ **Arthur C. Caviness,** chief of the Engineering and Production Branch, FAA Depot, from the Aircraft Services Base.

■ **Calvin C. Fox,** chief of the Nav/Comm Section, Airway Facilities Branch, FAA Academy, from the Great Lakes Region's Training Branch.

■ **Jim L. Pitman,** chief of the Uniform Accounting System Operations Branch, from the General Accounting Branch.

Alaskan Region

■ **Elwin D. Roberts,** team supervisor at the Fairbanks Flight Service Station, from the Washington FSS.

■ **William D. Toppa,** chief of the King Salmon Flight Service Station, from the Bethel FSS.

Central Region

■ **Robert D. Rayfield,** team supervisor at the Springfield, Mo., Tower, from the St. Louis, Mo., Tower.

Eastern Region

■ **Frank Di Blasi, Jr.,** chief of the Poughkeepsie, N.Y., Tower.

Great Lakes Region

■ **Raymond J. Broderick,** chief of the Pellston, Mich., Flight Service Station, from the Detroit, Mich., FSS.

■ **Robert Bullard,** team supervisor at the Detroit Flight Service Station.

Richard H. Griffith, team supervisor at the Detroit City Airport Tower, from the Danville, Ill., Tower.

New England Region

■ **Lloyd P. Hughey, Jr.,** rehired into the Nashua, N.H., Airway Facilities Sector as crew chief.

Northwest Region

■ **Robert D. Martinelli,** promotion as central computer complex supervisor at the Seattle ARTCC made permanent.

Pacific-Asia Region

■ **Edwin T. Kaneko,** manager of the Honolulu, Hawaii, Hub Airway Facilities Sector, from the Airway Facilities Division.

Robert E. Mason, assistant manager of the Honolulu Hub Airway Facilities Sector.

Rocky Mountain Region

■ **Roger A. Benegar,** promotion as central computer complex supervisor at the Salt Lake City, Utah, ARTCC made permanent.

■ **Paul M. Cazzanigi,** team supervisor at the Denver, Colo., Tower.

■ **Theodore H. Davies,** team supervisor at the Denver Tower.

■ **William C. Fitch,** team supervisor at the Denver Tower.

■ **Merlin B. Fryer,** central computer complex supervisor at the Salt Lake City ARTCC.

■ **Kenneth E. Hukriede,** assistant chief at the Denver Tower.

■ **Alfred A. Lee,** team supervisor at the Salt Lake City ARTCC.

■ **Michael L. Moss,** team supervisor at the Denver Tower, from the Colorado Springs, Colo., Tower.

Southern Region

■ **David H. Adams, Jr.,** team supervisor at the Raleigh, N.C., Flight Service Station.

■ **Michael R. Berry,** team supervisor at the St. Petersburg-Clearwater, Fla., Tower, from the Tampa, Fla., Tower.

■ **Robert L. Butler,** chief of the Radar Unit in the Charlotte, N.C., Airway Facilities Sector Field Office, Raleigh AF Sector, from the Covington, Ky., AF Sector.

■ **Raymond Calvert,** chief of the Albert Whitted Tower in St. Petersburg, from the St. Petersburg-Clearwater Tower.

■ **Charles F. Criswell,** chief of the Balboa, Panama, ARTCC.

■ **Albert Dunn,** promotion to team supervisor at the Chattanooga, Tenn., Tower now made permanent.

■ **George W. Durant,** team supervisor at the Jackson, Miss., Tower.

■ **Arthur C. Eickenberg,** team supervisor at the St. Petersburg-Clearwater Tower.

■ **Gregory A. Grice,** team supervisor at the Key West, Fla., Flight Service Station, from the Miami, Fla., International Flight Service Station.

Eddie C. Head, team supervisor at the Jacksonville, Fla., ARTCC.

■ **Edward R. Jarzembowski,** chief of the Key West Airway Facilities Sector Field Office, Miami Hub AF Sector, from the Newark, N.J., AF Sector Field Office.

■ **James D. Langford,** chief of the Montgomery, Ala., Airway Facilities Sector, from the McGhee Tyson Airport Airway Facilities Sector in Knoxville, Tenn.

■ **Charles M. Mahaffey,** deputy chief of the Greensboro, N.C., Tower.

■ **Cesar A. Padilla,** proficiency development and evaluation officer at the Atlanta, Ga., Hub Airway Facilities Sector, from the Balboa, Panama, AF Sector.

■ **Charles D. Richardson,** team supervisor at the Memphis, Tenn., ARTCC, from the Roosevelt Roads Naval Air Station, San Juan, Puerto Rico.

■ **Scott Wilson,** team supervisor at the Fayetteville, N.C., Tower, from the Opa Locka, Fla., Tower.

Southwest Region

■ **Boyd V. Archer, Jr.,** team supervisor at the Hobby Tower in Houston, Tex., from the Houston Intercontinental Tower.

■ **Eugenio T. Garcia,** area officer at the Albuquerque, N.M., ARTCC, from the Balboa, Panama, ARTCC.

■ **John P. Jones,** team supervisor at the Dallas-Fort Worth, Tex., Tower, from the St. Louis, Mo., Tower.

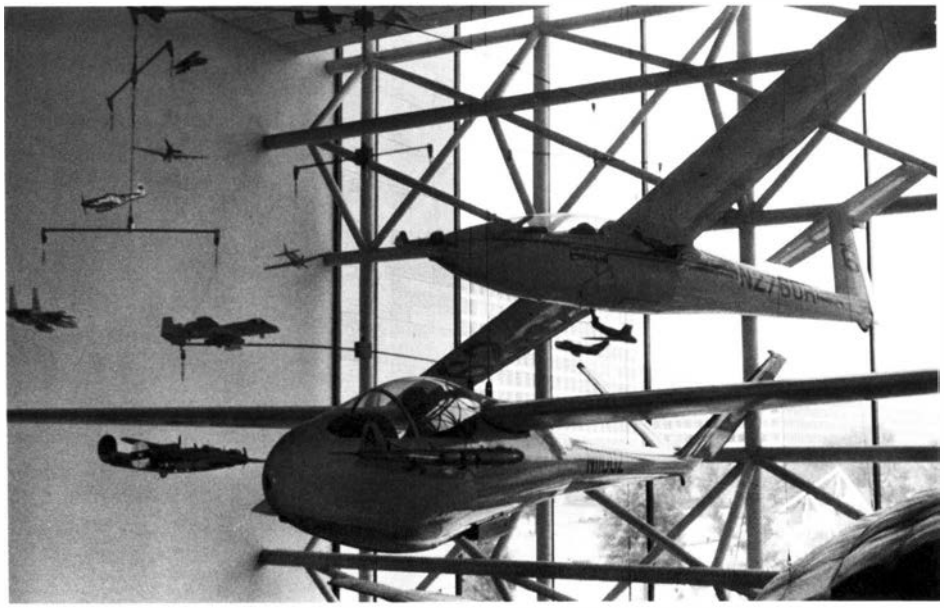
■ **James W. Seaman,** team supervisor at the Lake Charles, La., Tower.

■ **John C. Winters, Jr.,** team supervisor at the Shreveport, La., Flight Service Station.

Western Region

■ **Benjamin R. Marcelo,** assistant chief at the Los Angeles, Calif., Flight Service Station, from the Guam International Flight Service Station.

■ **John P. Weber,** team supervisor at the Oakland, Calif., TRACON.

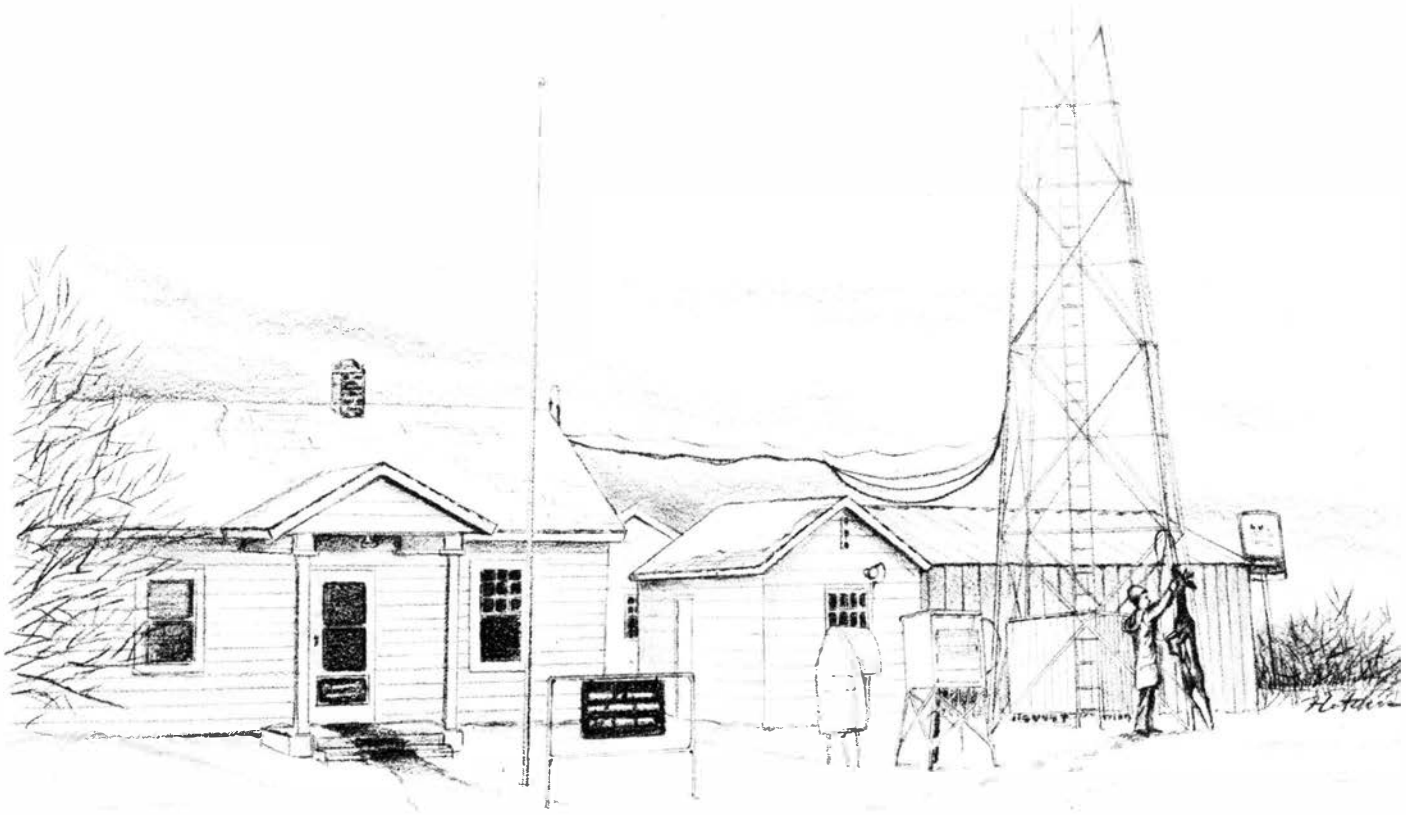


The closest thing to high-density air traffic in the immediate vicinity of the FAA headquarters building (background, left) are these sailplanes and military models at the west end of the National Air and Space Museum.

Photo by Claudette McDaniel
Photo Contest First Runner-Up
"Any Facet of Civil Aviation"

By Marjorie Kriz
A Great Lakes information specialist and former reporter, she has been published in the *Chicago Tribune* and *Chicago History* magazine.

Bad Day at Lone Rock



Art by Leonard Fletcher

When Rosemary Baker, chief of the Lone Rock Flight Service Station in the uplands region of Wisconsin, is on annual leave, her place at this mini-station on the Wisconsin River is taken by David R. Malueg, chief of the Wausau, Wis., FSS to the north. Of course, that's *the* time for things to go wrong.

Last winter, Malueg had a really bad day when called upon to fill in, which he documented in the Daily Record of Facility Operation—not your every day log of events. The times given are Greenwich Mean Time:

1335. DM ONW, WRKG all PSNS. WCLC. Previous 7230-4 noted. Late opening due to slippery roads, hitting deer, calling police, dressing deer, etc.

It's only 160 miles from Wausau to Lone Rock, so I left home at 4 a.m. to arrive at the FSS in time to get on the air by 7:30 a.m.

But the roads were slippery, and with snow and fog, the going was slow. Then, when I was almost out of Briggsville, half a dozen white-tailed deer roared out of a driveway, and I slammed into one, breaking two of the yearling buck's legs but not killing it. So, I called the sheriff, and a deputy came out and shot it. He put a tag on the deer and helped me get it into the trunk of my car. It wasn't very big, about 125 pounds, with two little spikes for horns.

I had to dress the deer as soon as I arrived, or the meat would spoil. I did it and hung the carcass from the tower on which the rotating beacon is located, just outside the station door. What am I going to do with it? Eat it, of course. The tenderloins, chops, steaks and roasts come first, then the rest will make up hamburger and venison sausage. You haven't lived until you tasted good venison sausage! That stuff is real, real good.

1507. MAM DLL TACAN.

Maintenance at the Dells was monitoring the Dells VORTAC, one of the responsibilities of Lone Rock FSS, which has only a chief and one specialist. That's why I had to come down from Wausau—the specialist had a regular day off. Steve Carlisle, a trainee, was there, so I really had two jobs going at once.

1748. MRM DLL TACAN.

At this point, the electronics technician at the Dells site—he was from the sector office at Madison—turned monitoring back to us.

1802. LNR VOR alarm, UN restore, but able to dial up IDENT. Monitor aurally.

A little after noon, the derned VOR alarm went off, right when I was busy, though low ceilings and visibility, with fog and snow, mostly kept operations down. I was able to monitor the frequency, but the alarm stayed on, so . . .

1820. AFS Jacoby ADZD of 1802 entry, on way to site.

. . . I told Ken Jacoby about it. He was in the next room checking out his equipment, but put on his coat and drove six miles up into the hills to check the VOR in person.

2045. DLL DME OTS. ACN.

The next thing, the DME [distance measuring equipment] on the VORTAC at the Dells went out of service, so I notified everyone who needed to know . . .

2100. NOTAM 12/008 DLL DME issued appended to 21 SA RPRT.

. . . and issued a NOTAM [Notice to Airmen], which was added to the 3 p.m. weather report on the Teletype.

2200. DLAD entry. CE ONW at 1330, on TRNG. CE OFW at 1900 RTRND ONW 2000.

Well, I was late in entering on the station report that Carlisle came on watch at 7:30 a.m., had lunch at 1 p.m. and returned to work at 2 p.m. Actually, he was waiting for me to arrive in the morning. Fortunately, he had a key, so he didn't have to wait outside in the awful weather.

2200 DM and CE OFW. ALL EQUIP APPRS NML except DLL DME RMNS OTS. Radio check 243.0 not made this date. DM.

I finally left for home at 4 p.m. [the station operates eight hours daily] with the deer carcass, which by now was partly frozen in the 30-degree weather. Carlisle also left. All equipment appeared normal, except that the Dells DME was still out of service. I didn't have time to make a radio check on 243.0 mHz, the military emergency frequency, because of all the other things going on.

Lone Rock, is a small FSS, but it is an important one for southwestern Wisconsin. In the early airmail days, it was very important because it was on the Chicago-Minneapolis route.

Rosemary probably was amused by the daily report, which didn't, of course, include that the roads back were just plain miserable. I guess I'll have to send her some of our famous venison sausage. ■

Q&A

An interpretation of FAA Handbook 7110.65B, Para. 490.a.(1) please. Our supervisors have told us that this means an aircraft needs only to be in contact with the facility—not the controller—providing the visual separation. Many of the controllers here believe that it is unsafe for a controller to provide visual separation without talking to either aircraft involved.

Paragraphs 490.a. and a.(1) state that the controller must be in communication with at least one of the aircraft, providing that the other aircraft is under control of the same facility. This means that if you apply visual separation under Paragraph 490.a.(1), another controller in your facility (tower or approach control) must be in communication with the other aircraft.

There is a great deal of confusion by pilots, controllers and examiners on the interpretation of FAR 91.105, 91.107 and ATP 7110.65B, Section 16, Special VFR. Some of the interpretations that I believe are not correct are (1) When the reported weather is VFR (1,000-foot ceiling and three-mile visibility), controllers cannot issue an SVFR clearance. Many controllers routinely cancel SVFR clearances when the weather reaches these minimums. (2) When the weather is VFR, the control zone no longer exists. Some say it continues to exist but has no effect. (3) When flying in a control zone beneath the ceiling, the requirement to maintain 500 feet below clouds is not required.

It is my understanding that the purpose of the control zone is to extend the controlled airspace down to ground level, to impose the clearance from cloud (not ceiling) and visibility requirements of FAR 91.105. This protects IFR aircraft from encountering a VFR plane immediately after breaking out a cloud. Para. C further states that no person may operate under VFR in a control zone beneath the ceiling when the ceiling is less than 1,000 feet, except as provided in 91.107 (SVFR). This allows operations at airports in other parts of the control zone to continue VFR operation when the ceiling is 1,000 feet or above in their area, regardless of the weather reported at the airport in the center of the control zone. Para. D serves the same purpose for visibility requirements in the control zone.

I believe that a pilot is required to maintain a cloud clearance in a control zone and that a pilot wanting to make landings with 800 feet scattered clouds would need to obtain an SVFR clearance or maintain the cloud clearance.

Even when the ceiling is 1,000 feet or above, a pilot often wants to fly at the normal pattern altitude and not maintain the cloud clearance. I believe he would require an SVFR clearance to comply with the regulations.

There are other conditions where an SVFR would be required.

What are the correct interpretations?

FAR 91.107 states, in part, that the special weather minimums of that section apply only after an appropriate ATC clearance is received. If you took that statement alone, without supporting controller procedures, such as those in Section 16 of Handbook 7110.65B, it would allow each controller to make his or her own determination as to what an appropriate clearance is and under what conditions to issue that appropriate clearance. However, this is not the case.

The handbook defines an appropriate clearance as an SVFR clearance and sets forth the following conditions for issuing it: (a) It must be requested by the pilot. (Controllers may not initiate an SVFR clearance.) (b) It will not cause any delay to IFR arrivals and departures. (c) It contains necessary instructions that would ensure separation from other SVFR and IFR operations. (d) It is made effective only in a control zone. (e) It must only be issued on the basis of the official weather observation at the airport where the pilot wants to operate and that reported weather must be less than the minimums prescribed in 91.105. If the weather is not reported, then the controller may issue the clearance based on the pilot's statement that he or she is unable to maintain flight under VFR. A pilot's desire to merely swap VFR and SVFR distance-from-cloud minimums in a control zone that is reporting VFR conditions would not be an example of one's inability to maintain flight under VFR.

On your first interpretation, if any one of the above conditions is not met, then the controller is required to refuse to issue an SVFR clearance or to cancel one that is in effect. These conditions are required to ensure a control zone environment where ATC can effectively plan and manage air traffic.

For the most part, we agree with your as-

sessment on the existence of a control zone. Control zones are areas of controlled airspace designed to provide protection for aircraft operating to and from an airport where instrument flight conditions prevail. They are established by the rule-making process and described in Part 71 of the FARs.

As to the application of control zones, Handbook 7400.2B, Procedures for Handling Airspace Matters, prescribes the requirements and criteria for control-zone designations. In general, it states that control zones (1) shall be designated where an FAA control tower is in operation, (2) may be designated when a non-FAA control tower is in operation, (3) shall be designated to accommodate prescribed instrument approach procedures and (4) shall be designated to accommodate special instrument approach procedures, if justified and in the public interest. Communications capability must exist to the runway surface of the airport, and weather observation and reporting capability must exist at the airport before the control zone can be designated.

This is where the issue starts to generate some questions. What if the weather observer gets sick and goes home or communications are temporarily lost—should we cancel or suspend the control zone by NOTAM? No, the control zone still exists.

There are two key factors to remember. First, control zones are part of the regulatory process; unless we change the rule or have a provision in the rule to modify it, the control zone must remain. Second, the purpose of the control zone is to establish controlled airspace, not to establish weather reporting or communications. To resolve the quandary, a NOTAM should be issued to inform the flying public that weather reporting or communications are temporarily unavailable. We do not cancel the control zone. If those services become consistently unavailable, rule-making action should be taken to revoke or modify the zone.

Handbook 7400.2B allows for changes in control zone hours by NOTAM, enabling the hours to conform to seasonal trends in air traffic. However, it may be used only (1) when the description of the control zone in Part 71 specifically includes that a NOTAM can be used and (2) after coordination with and approval from the regional office. This provision cannot be used to routinely extend or shorten hours on a frequent basis.

We agree that the interpretation on cloud distance is incorrect. FAR 91.105(a) specifies the minimum distance from clouds that a pilot must maintain while in controlled airspace under VFR, which, therefore, includes control zones.

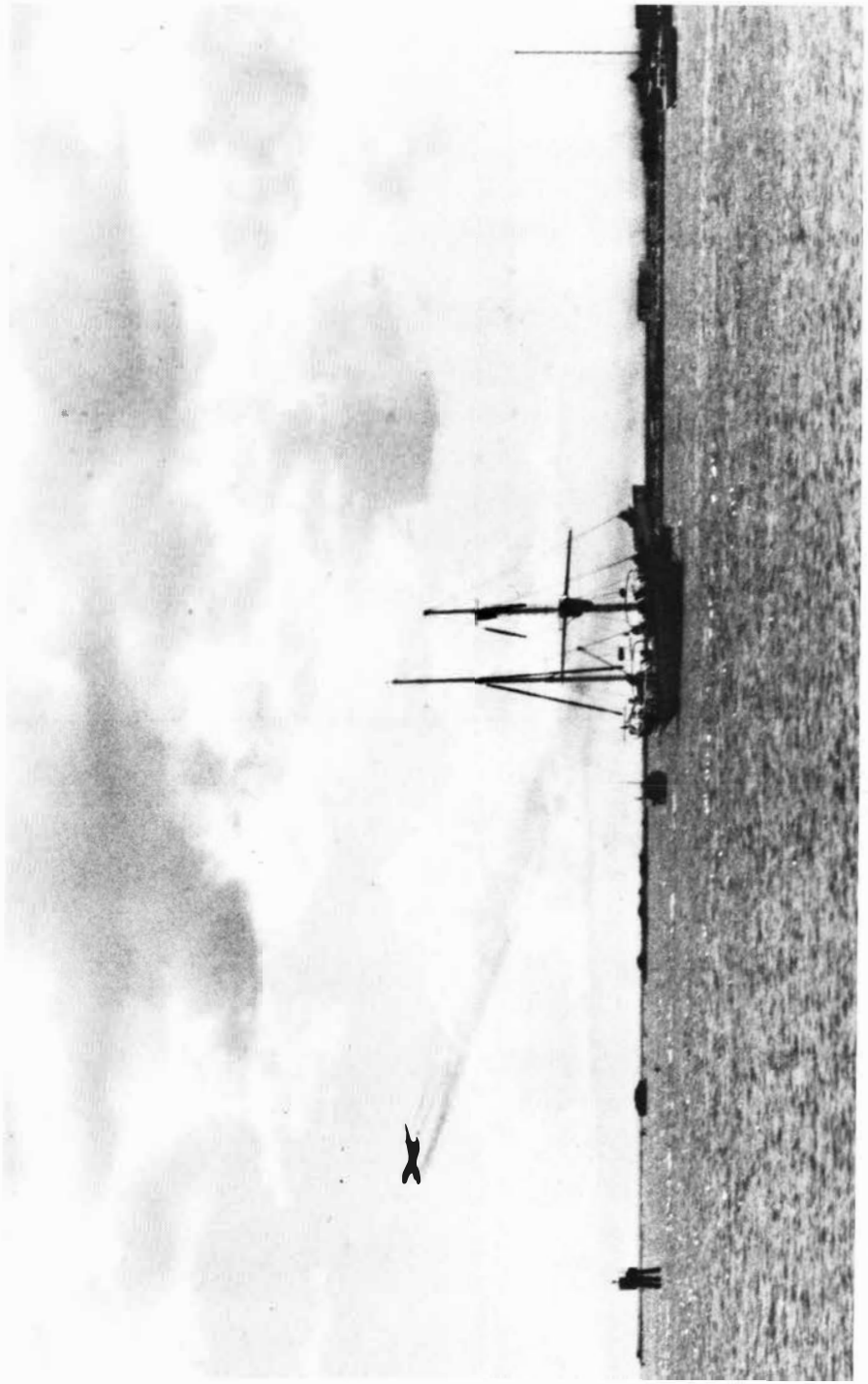
On the other hand, your understanding of VFR flight beneath the ceiling is incorrect. FAR 91.105(c) prohibits VFR flight in a control zone beneath the ceiling when the ceiling is less than 1,000 feet. Ceiling (FAR 1.1) means "the height above the earth's surface of the lowest layer of clouds or obscuring phenomena that is reported as 'broken,' 'overcast' or 'obscured.' "Therefore, the reported ceiling in the official weather report for the airport upon which the control zone is based prevails for the entire control zone. That reported ceiling must be considered in determining whether an SVFR clearance is required for operations at an airport in the control zone where the weather is not reported.

My chief gave me a Quality Within Grade Increase certificate. Two months later, I asked my facility about the effective date, since I had not received an increase in pay. I learned that the award had not been processed at the regional office because a copy of my performance standards had not been received with the approved award justification. It was now effective.

I contend that my QWI should be retroactive to the pay period following the receipt of the papers by the Personnel Management Division two months earlier—in accordance with Order 3450.7C, Para. 33h and Para. 34(5)(c), which states "actions must be made effective the next pay period after the error, delay or oversight is noticed." The regional office acknowledges requesting a copy of my standards right after receipt of the papers. Para. 34(5)(c) says "noticed" not "corrected." I don't believe that this paragraph is pertinent because it deals with an approving official not approving an award retroactive.

This delay cost me about $200. I understand how mistakes can be made, but I feel I have been unjustly treated.

Para. 34(5)(c) of the cited order prescribes that "retroactive action cannot be taken for quality increases delayed beyond their original date due to administrative error, delay or oversight. These actions must be made effective the next pay period after the error, delay or oversight is noticed." The administrative error occurred when the performance standards were not forwarded to the Personnel Management Division with the approved award justification. Even though Personnel noticed the standards were not attached, there is no authority to process the award until all supporting documentation is received. In any case, there is no legal basis that allows retroactive quality increases.



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